

CHICOPEE ELECTRIC LIGHT

Customer Service Handbook

Effective 1 February, 2025

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CEL STATEMENT OF PURPOSE

“As a consumer owned utility, our purpose is to provide reliable, high quality services to the community at the lowest cost consistent with ensuring resources for proper maintenance, modernization and meeting the demands for future expansion. It is also our purpose to strive for excellence in our daily operations and to provide a safe and productive workplace in which all employees are treated with equity and respect.”

TERMS AND CONDITIONS

Effective as of 1 February, 2025

1. General:

This Terms and Conditions Agreement has been established to communicate the conditions that you, as a Customer, agree to when requesting service from CEL. The benefits and obligations of this Agreement will commence on the day that you, as the Customer, request to be connected to CEL's service and will inure to and be binding upon the successors and assigns, survivors and executors or administrators of the original parties. CEL reserves the right to revise, amend, supersede, supplement or change these Terms and Conditions at any time in accordance with applicable laws, regulations and policy. The Terms and Conditions shall remain consistent with the Department of Public Utilities ("DPU") regulations. In the event that any of the Terms and Conditions is in conflict with any applicable DPU regulation, DPU regulations shall govern.

2. Application:

Service shall not be supplied unless and until the Customer completes an "Application for Service". The Application must be accurate, true, complete and signed by the Customer of Record. All Customers' electrical needs present and future, as known at the time of application, must be stated on the Application.

3. Deposit:

A deposit may be required on any commercial or residential account. A sufficient deposit to secure the payment for electricity service based on the highest three (3) months of usage in a twelve (12) month period may be required in advance from any consumer. Deposits may be waived if the Customer provides CEL with proof that the Customer of record is the owner of the real estate for which service is requested. CEL reserves the right to request a deposit at any time, and from time to time, on any account that does not remain in good standing or for which the customer of record no longer owns the real estate.

Interest is payable annually on all deposits which are retained longer than six (6) months at a rate that is at or above such rate specified by applicable laws and regulations. Such rate may be credited to a Customer's account. Refunds on deposits may be returned to customer when an account is final billed and contains a zero balance.

All deposits shall be received by CEL in good funds before service will be provided.

4. Metering and Equipment:

For the purpose of determining the amount of electricity used, a meter or meters will be installed and maintained by CEL on the Customer's premises. All meters, wires and other equipment furnished by CEL are and shall remain the sole and exclusive property of CEL. Customer agrees that the wiring upon the premises of the Customer to which service will be connected shall be installed with legal permits and maintained by Customer in accordance with the requirements of the National Electrical Code, The Massachusetts Electrical Safety Code as updated from time to time, and all requirements of and permits from the City of Chicopee and CEL.

CEL and its authorized agents shall have access to the Customer's premises at all times to install, read, inspect, test, operate, maintain, repair, or remove CEL equipment, to discontinue service, to determine the rate or rates for the Customer's service, or for any other purpose related to the operation of the CEL system.

The Customer shall not injure, interfere with, destroy or tamper with any meter or other property of CEL. The CEL owned meter shall be connected only directly to the opening of the CEL approved, customer owned, meter socket or to CEL owned equipment. No intermediary equipment shall be installed between the CEL owned meter and the meter socket unless such equipment is – at CEL's sole discretion – owned, maintained, installed, and removed by CEL. The

Customer shall be responsible for the care and protection of all of CEL's property located or installed on the Customer's premises and shall not permit anyone but CEL or its authorized representatives to have access to such property. CEL's property, machinery or equipment shall not be handled or operated by anyone other than CEL or its authorized representatives without the express advance written consent of CEL in its sole discretion. CEL will lock or seal all enclosures containing meters or metering equipment, and no person, except an employee or duly authorized agent of CEL shall be permitted to, in any way, change or modify CEL's meters or other CEL equipment. No seals or locks shall be permitted to be removed without the express advance written authorization of CEL in its sole discretion. Customer shall defend, indemnify and hold CEL harmless, should any violations of these provisions result in injury, death or damage to persons or property, including without limitation CEL legal and expert fees and expenses relating to the CEL investigation and defense of all such claims.

Subject to the provisions of Massachusetts General Laws and applicable DPU regulations, when a meter is found to be tampered with, service to that meter will be terminated. To have service restored, the Customer shall be required to pay all charges (related to disconnection, damages and investigation, including without limitation CEL legal and expert fees and expenses) and may be required to pay an additional security deposit. Service shall not be restored until Customer has paid all charges in full. Instances of tampering with meters will be reported to the appropriate authorities. Customer may also be subject to criminal and civil penalties pursuant to the Massachusetts General Laws.

5. Meter Reading/Bills:

A bill based on actual or estimated reading of CEL's metering equipment shall be rendered monthly, payable upon receipt. When a Customer is serviced through more than one meter, each meter will be billed separately.

If CEL cannot obtain a meter reading, CEL shall render an estimated bill, provided CEL has not rendered an estimated bill for the billing period prior to that for which the estimate is made, except in the case where circumstances reasonably beyond the control of CEL prevent it from obtaining an actual meter reading. Subject to the provisions of Massachusetts General Laws and applicable DPU regulations, if any Customer, directly or indirectly, prevents or hinders any such employee or agent of CEL from entering such premises for the purposes of making such examination, CEL may pursuant to M.G.L. c. 164, § 116 make a complaint to any court or magistrate authorized to issue criminal process and Customer shall be required to pay all charges related to disconnection, damages and investigation, including without limitation all CEL legal and expert fees and expenses, before service will be restored.

6. Classification:

CEL determines a Customer's appropriate rate based on information provided by Customer at the time of application for service. The rate classes are intended to provide each Customer the most advantageous rate available at the time of application. It is the Customer's responsibility to assure itself that it is on a rate most advantageous to itself. Customer should promptly notify CEL of any change in circumstances, which may qualify Customer for a different rate.

7. Discontinuance of Service/Non-payment:

A. Unsafe wiring, fraud, or theft: CEL may discontinue service without notice if a Customer's wiring is found to be in a dangerous or unsafe condition or as is necessary to protect CEL or the public from harm, fraud or theft. Service shall not be resumed until the city of Chicopee Wiring Inspector certifies to CEL that any dangerous or unsafe condition has been corrected and all wiring is compliant with the applicable laws, codes and regulations.

B. Unsatisfactory Equipment: CEL may discontinue service and remove its equipment if, in its judgment, the equipment has become unsatisfactory for further service due to danger, deterioration, civil commotion, vandalism, state of war, explosion, fire, storm, flood, lightning, or any other cause reasonably beyond CEL's control. Customer may be required to pay the applicable rates and other charges for the remainder, in any, of the applicable term of service. Customer agrees CEL is not responsible to inspect Customer equipment at any time.

C. Access to Premises and Equipment: Subject to the provisions of Massachusetts General Laws and applicable DPU regulations, if any Customer, directly or indirectly, prevents or hinders any employee or

agent of CEL from entering a premises or accessing its equipment for the purposes of making an examination, operating the distribution system (including connecting and disconnecting customers), removing meters , or for the purpose of ascertaining the quantity of electricity consumed or supplied, such Customer shall be subject to termination of service.

D. Non-Payment of Charges: If a Customer defaults on payments due to CEL, service may be discontinued in accordance with DPU Regulations, to the extent that such regulation is applicable. CEL shall not restore service until the Customer has:

1. Made an application for service and paid all bills due for service previously furnished in full; and
2. Made a satisfactory deposit in CEL judgement to insure payment of future bills; and
3. Paid all costs of reconnection of the premises for which service has been discontinued.

CEL shall not be responsible or liable for loss, injury, death or damage to any person or property resulting from disconnection of service regardless of whether service is disconnected at the Customer's request or by CEL and regardless of whether the Customer owns the premises to which service has been supplied.

In the event of an actual or threatened shortage of energy supplies or resources, CEL may, in its sole discretion, curtail, allocate, or interrupt electric service to any Customer or Customers if CEL determines, in its sole discretion, any part of the generation, transmission or distribution systems CEL utilizes may be threatened by a condition that may affect its ability to continue to supply electric service of sufficient quality, quantity and reliability.

Although CEL will make every effort to make necessary repairs and changes to its system without having to suspend the delivery of service, CEL reserves the right to suspend service at any time, with or without notice in order to make repairs or changes.

8. Collection:

The Customer is responsible for payment for all collection costs, including all collection costs, including court costs and attorneys' and experts' fees associated with any unpaid balances, meter tampering, theft of services, fraud or otherwise, and all related investigations. CEL may refer overdue accounts to a collection agency and the Customer is responsible for all costs of the collection agency. CEL may also report overdue accounts to credit bureaus and other credit reporting agencies, including without limitation, Experian, Equifax and Creditwise.

9. Limitations of Liability:

The City of Chicopee, CEL, and all of their respective agents and employees shall be afforded the maximum exemptions and limitations of liability available under applicable laws and regulations arising on account of their actions or omissions relating directly or indirectly to any provision of electrical service. Without limiting the generality of the foregoing, and except to the extent otherwise expressly provided in Massachusetts General Laws Chapter 258:

Neither the City of Chicopee, nor CEL nor any of their respective agents or employees shall be liable to any person:

- A. For any failure by CEL to supply electric service or for any interruption or voltage change in the supply of or delay in the restoration of such service.
- B. For any damage to any person (including personal injury or death) or any damage to any property, directly or indirectly, arising as a result of the electric service provided or not provided by CEL, the presence of CEL's apparatus or equipment on any Customer's premises, or any acts or omissions of CEL.
- C. For discontinuance of electrical service to any Customer who fails to comply with, or perform any of the Customer's obligations under these Terms and Conditions, applicable laws and regulations, or other agreements with CEL.

- D. The discontinuance of electrical service if any equipment or apparatus of any Customer interferes with service provided by CEL or with the delivery of service to other Customers or interferes with the integrity of CEL's system.
- E. For any variation, or interruption in electrical service including without limitation, any such variation or interruption because of stray, abnormal or reduced voltage, emergency load reduction programs, blackouts, or any causes beyond the reasonable control of CEL, including, but not limited to, accidents, war, civil commotion, acts of God, pandemics, labor difficulties, acts of Customers, supply chain issues or acts of any public authority.

10. Inspections

Written approval by the City of Chicopee Wiring Inspector for electric service is required before service can be initiated or restored to any new, or newly wired or rewired building, structure or residence.

11. METER TAMPERING AND DIVERSION

As per the GENERAL LAWS OF MASSACHUSETTS, PART 1. ADMINISTRATION OF THE GOVERNMENT, TITLE XXII. CORPORATIONS, CHAPTER 164, MANUFACTURE AND SALE OF GAS AND ELECTRICITY, INSPECTION OF GAS AND METERS, SECTION 127 & SECTION 127 A, DESTRUCTION OF OR TAMPERING WITH, ELECTRIC OR GAS LINES, METERS, ETC.; THEFT OF ELECTRICITY OR GAS states:

Section 127: Whoever unlawfully and with intent to avoid payment by himself or another person for a prospective or previously rendered service the charge or compensation for which is measured by a meter or other mechanical device injures or destroys, or suffers to be injured or destroyed, any meter, pipe, conduit, wire, line, pole, lamp or other apparatus belonging to a corporation engaged in the manufacture or sale of electricity or to any person, or whoever unlawfully and with intent to avoid payment by himself or another person for a prospective or previously rendered service prevents an electric meter from duly registering the quantity of electricity supplied, or in any way interferes with its proper action or just registration, or, without the consent of such corporation or person, unlawfully and intentionally diverts or suffers to be diverted any electrical current from any wire of such corporation or person, or otherwise unlawfully and intentionally uses or causes to be used, without the consent of such corporation or person, any electricity manufactured or distributed by such corporation, or charged to such person, shall be punished by a fine of not more than one thousand dollars or by imprisonment for not more than one year, or both.

The existence of any of the conditions with reference to meters or attachments described in this section shall be prima facie evidence that a firm, corporation or other business entity, commercial or industrial, to whom such electricity is, at the time, being furnished by or through such meters or attachments has, with intent to defraud, created or cause to be created with reference to such meters or attachments, the condition so existing; provided, however, that nothing in this paragraph shall be construed to limit the introduction of any other competent evidence bearing upon the question of whether or not the defendant was responsible for the acts alleged to have been committed; provided, further, that the prima facie evidence referred to in this paragraph shall not apply to a residential customer; provided, further, that the prima facie evidence referred to in this paragraph shall not apply to any firm, corporation or other business entity, commercial or industrial, so furnished with electricity for less than thirty-one days or until there has been at least one meter reading, whichever first occurs.

Section 127 A: Whoever unlawfully and intentionally injures or destroys, or suffers to be injured or destroyed, any meter, pipe, conduit, wire, line, pole, lamp or other apparatus belonging to a corporation, including municipal corporations which own municipal lighting plants engaged in the manufacture or sale of electricity or gas or to any person, or unlawfully and intentionally prevents an electric or gas meter from duly registering the quantity of electricity or gas supplied, or in any way interferes with its proper action or just registration, or, without the consent of such corporation or person, unlawfully and intentionally diverts or suffers to be diverted any electric current from any wire or gas from any pipe of such corporation or person, or otherwise unlawfully and intentionally uses or causes to be used, without the consent of such corporation or person, any electricity or gas manufactured or distributed by such corporation, or charged to

such person shall be liable to such corporation or person for triple the amount of damages sustained thereby or one thousand dollars whichever is greater. Damages shall include the value of the electricity or gas used and the cost of equipment repair and replacement. Any damages assessed under the provisions of this section in excess of the actual damages sustained by the corporation or person manufacturing, distributing or selling such electricity or gas shall be paid to the commonwealth; provided, however, that if a municipal lighting plant brings an action pursuant to this section such damages in excess of the actual damages shall be paid to such municipal lighting plant.

Report suspected Meter Tampering or Diversion of Electric Service to CEL, Customer Service Department at (413) 594-2400.

CHAPTER 1

INTRODUCTION

1.1 PURPOSE “CEL CUSTOMER SERVICE HANDBOOK”

The “CEL Customer Service Handbook” is issued to provide information to Chicopee Electric Light Customers, Electrical Contractors, Architects and Engineers, in order that electrical installations, to be connected to the Department's System may be made in a standard, uniform and proper manner. The requirements contained herein are supplementary to the Department's Schedule of Rates and Terms and Conditions filed from time to time with the Department of Telecommunications and Energy.

It is not intended that this booklet give complete coverage for wiring details and other lawful requirements. It has been prepared as a guide and is supplementary to the applicable National, State and Local Electrical Codes, Safety Code, OSHA requirements, and to ordinances passed by authorities having jurisdiction. This issuance of this booklet by the Department shall not be construed as relieving the customer and/or his contractor from the responsibility of installing wiring in accordance with Rules and Regulations published by authorities having jurisdiction, nor shall the Department be deemed thereby to have accepted any responsibility for the condition of the customer's wiring and equipment.

Installing new electric service is a joint project between the customer and CEL. CEL is responsible for bringing power to the site, installing the meter in the socket provided by the customer, and energizing the service. The customer is responsible for the following:

1. Obtaining permits and inspections.
2. Providing and maintaining the overhead path or underground trench or conduit for the electric wires.
3. Installing the equipment at the service entrance.
4. Paying all necessary services charges associated with the new / upgraded service.

Please note: No service charge or payment made to CEL shall constitute the sale of any physical equipment. Any and all equipment installed by CEL shall remain the property of CEL and be considered part of CEL's electric and/or telecommunication distribution system(s). No equipment shall be considered sold, gifted, abandoned or otherwise transferred to any party by CEL, unless done so specifically and explicitly in writing.

1.2 RESIDENTIAL SERVICE

Residential service is defined as service to a single-family residence or a multi-family residence such as an apartment or condominium.

Voltage for residential services is typically 120 / 240 volts, except for special situations. Current ratings (ampacities) available for single-family residences are listed below.

Residential service ampacities:

Current Ratings	Typical Use	Comment
Less than 200 amps	Small Homes	
200 amps	Medium Homes	The Most Common Service
400 amps	Large Homes	
Over 400 amps	Very Large Homes	Apartments or Condominiums

1.3 TEMPORARY SERVICE

Temporary service is defined as electric service to a site for less than one year. The most common use of temporary service is to deliver power during the construction phase of a project. When the project is complete, the temporary service is replaced by permanent service. Temporary services are usually 120/240 volts, single-phase, 100 or 200 amperes.

1.4 BUSINESS SERVICE

Business service is defined as electric service to a commercial or industrial site.

1.4.1 Primary Voltage Service (i.e. Primary Service, Primary Metered Service)

Business services are typically below 600 volts, delivered from the secondary side of CEL's distribution transformers. Primary Service (13.8 kV) is available to qualified customers, provided the service will not, in CEL's opinion, adversely affect service to other customers or CEL's distribution system, and will be distributed by the customer in a safe and reliable manner. At the discretion of CEL's Engineering Department, Primary Service may be required. This would typically be the case for services which will exceed the capacity of CEL's largest standard transformer, but CEL reserves the sole right to make this determination. Customers receiving service at primary voltage may own poles, conductors, cables, transformers, and protective devices. This equipment is subject to approval by CEL. To assure timely restoration of service in case of failure, this customer-owned equipment should be of the same type or specification as equipment used by CEL. Primary voltage service is metered using current transformers (CTs), voltage transformers (VTs; also called potential transformers or PTs), and transformer-rated meters.

Any customer considering primary voltage service must consult with CEL before construction begins to address the location of the point of delivery, primary metering equipment, disconnect devices to separate Utility owned and Customer owned primary voltage systems, ferroresonance, system protection, and grounding.

CHAPTER 2

OVERHEAD SERVICES

The cost for overhead service depends on the extent of special engineering required. The least complicated and least costly situation is when there is a preexisting transformer on a pole on, or near the property. If this is the case, special engineering may not be required. The customer's electrician would install the service entrance equipment, receive a successful wiring inspection, and contact CEL to have service connected. The customer is responsible for providing, installing, and maintaining all equipment on their side of the point of delivery except for the meter. CEL is responsible for providing and installing the meter, completing the connections between the meter and the service conductors, and making the final connections at the point of delivery.

2.1 TYPICAL OVERHEAD SERVICE

1. Service Lines are the overhead wires that run from a pole to your house and installed and maintained by CEL.
2. Service Hook attaches the service line to the house. This is installed and maintained by the customer or their electrician.
3. Weather Head attaches to the service cable. This prevents water damage to the wiring. This is installed and maintained by the customer or their electrician.
4. Service Cable (i.e. Service Entrance Cable, SE Cable) runs from the weather head to the meter socket and from the meter socket, inside the house. The Service Cable is installed and maintained by the customer or their electrician.
5. Meter Socket is installed and maintained by the customer or their electrician.
6. Meter is installed and maintained by CEL. (Refer to Figure 2-1)

Wiring inside the house/building is always the Customer's responsibility

2.2 TYPICAL OVERHEAD INSTALLATION

The picture in Figure 2-2 shows a finished installation of an overhead service. The customer provides everything shown here, except the meter, the overhead service line, and the utility pole and pole-mounted equipment.

The following conditions must be met before CEL will install or energize any service:

1. Appropriate paperwork is completed.
2. All fees are paid (if applicable).
3. The customer has installed the service equipment.
4. CEL has received the wiring inspector's approval.

2.3 OVERHEAD LINE CLEARANCES

The required clearances for overhead service equipment, including the meter socket, are as follows. Figures 2-3 and 2-4, and 2-5 also show clearances under overhead lines for the conditions most commonly encountered. In practice there may be scenarios not contemplated by this standard. In such a case, please contact CEL's Engineering Department.

1. 24 ft over a railroad
2. 16 ft over a State Highway
3. 12 ft above grade on private property
4. The drip loop must be 10.5 ft above grade
5. 13.5 ft over a roof with permanent access
6. 12.5 ft over a roof without permanent access
7. 12 ft over a deck, porch, patio or other pedestrian structure on private property
8. 3 ft from a gas meter
9. 5 ft from a window or projection
10. 10 ft horizontally from any part of a swimming pool (including diving boards, slides, decks and other structures)

The customer does not install the overhead service conductor, but is required to provide a point of attachment high enough and strong enough, to allow the utility to install the service line and maintain the required clearances. For overhead services, the following additional requirements and guidelines apply:

11. The point of attachment shall not be located such that a CEL line worker is required to stand or walk on any part of a customer-owned roof to service, access, connect or disconnect service at the building.
12. If the span of the service line exceeds 125 feet, a service pole may be required to relieve the tension on the service hook or mast (Refer to CEL SERVICE FEE information).
13. Avoid a route for the service line that passes over a driveway. Lines that cross driveways can be struck by tall trucks and other vehicles, causing damage to the service equipment and to the building.
14. Aerial trespass – via a route through a separate, non-contiguous parcel – shall not be permitted unless an easement is provided at the customer's expense.

If the service line will pass through trees, the customer must prune or remove the trees to provide a clear path for the line. CEL is responsible for regular tree pruning to keep the path clear. If the service line will pass over brush, the customer must clear a path for CEL's installation service personnel.

2.4 HORIZONTAL CLEARANCES FROM ROADWAY, RAILWAY AND HYDRANTS

Figures 2-6a, 2-6b and 2-6c show horizontal clearances from Roadways, Railways and Hydrants. For other situations and for additional details, see the NATIONAL ELECTRICAL SAFETY CODE or contact CEL Engineering or the City of Chicopee, electrical inspector.

2.5 CHECK LIST FOR INSTALLING OVERHEAD SERVICE

The customer is responsible for providing, installing, and maintaining all equipment on their side of the point of delivery, except for the meter. CEL is responsible for providing and installing the meter, completing the connections at the weather head, and making the final connections at the point of delivery.

To obtain new overhead service, the customer/ electrician shall:

- a. Check if local regulations permit the installation of an overhead service.
- b. Contact CEL to open an account and complete an "Application for Service". Forms can be obtained at the CEL Customer Service Department or online at celd.com. (Refer to CEL's Terms and Conditions)
- c. Make arrangements for a service deposit, if required. (Refer to CEL Terms and Conditions)
- d. Obtain an electrical work permit from the Building Dept. located at City Hall.
- e. Fill out and return a "Service and Meter Location" form to CEL Customer Service Department.
- f. Install the service equipment.
- g. Receive approval from the City of Chicopee wiring inspector for electric service before any service can be connected to any new, or newly wired building, structure or residence.
- h. Pay all fees for any additional equipment that may be needed to provide electric services to the property. (Refer to CEL Service Fee Information)

Upon all above requirements being met, CEL will:

1. Install the meter in the meter socket, and
2. Install the service from the pole to the weather head and make all necessary connections at the pole and building

2.6 SERVICE MAST, METER

There are service configurations where it may be necessary to install a service mast to attain the appropriate clearance(s). A service mast must meet the following requirements:

1. A service mast must be installed if it is required to meet one or more of the clearances listed in 2.3.
2. If the service line must cross a road to reach the mast, the mast must be guyed.
3. If the service mast extends 26" or higher above the roof penetration, the mast must be guyed.

4. All service mast installations must be inspected and approved by CEL Engineering (see Service Mast Approval Form on page 17)

The pictures in Figure 2-7a and Figure 2-7b show details of a service mast, with the meter on the surface of the building. The service could be wired to an exterior meter as shown. The customer installs everything in the picture, except the meter.

The following conditions must be met before CEL will install or energize an overhead service with a mast:

1. Appropriate paperwork, including the Application for Service and Meter and Service Locate Form, must be completed.
2. Service Mast Approval Form is completed. Form can be obtained on page 20, at the Customer Service Dept., or online at celd.com.
3. All fees are paid.
4. The customer has installed the service equipment.
5. CEL has received the approval of the wiring inspector.

2.7 TEMPORARY OVERHEAD SERVICE, METER POST

Figure 2-8 on Page 20 shows a finished installation for a temporary service using a meter post. The customer provides everything shown, except the meter and the overhead service line. The following conditions must be met before CEL will energize the temporary service.

1. Appropriate paperwork must be completed.
2. All fees are paid*
3. Location of temporary service pole to be specified by CEL such that the service drop can later be transferred to the permanent location and:
Note: The service drop span not to exceed 125 feet measured from the utility pole to the meter post. If the span of the service line exceeds 125 feet a service pole may be required (Refer to CEL Service Fee Information) to relieve the tension on the temporary meter post, and to maintain clearance over the roadway.
4. If timber is used, it shall be structural grade fir or pine with cross section not less than nominal 6" x 6".
5. The temporary service pole shall be at least 20 feet long. Additional length may be required to provide service drop minimum clearances of 16 feet over the road and driveway and 12 feet over other areas.
6. The temporary service pole shall be set a minimum of 4 feet in firm ground with well tamped backfill.
7. The temporary service pole shall be adequately braced to support at its top, both a man on a ladder and a service drop tension of 600 pounds. A minimum of three 2" X 4" braces, one-in-line with the service drop, and the other two braces at right angles to the brace that is in line with the service drop.
8. There shall be no excavation near the temporary service pole or its braces that might reduce its stability.
9. A weather head shall be installed approximately one foot from top of pole and minimum 16 feet above ground.
10. An approved meter socket shall be installed approximately 5 feet above the existing grade.
11. CEL receives the City of Chicopee wiring inspector's approval.

Notes:

- a) Refer to CEL Temporary Service Fee Information
- b) If a Three Phase Temporary Service is required contact the CEL Engineering Department.

2.8 OVERHEAD SERVICE, METER POLE

Figure 2-9 shows an overhead service to a meter pole. The customer provides everything in the picture, except the meter and the overhead service line. (Pole can be installed by CEL at a service charge.) After the customer installs the service equipment, CEL installs the meter in the meter socket, installs the service line and makes all necessary connections between the service line and service entrance cable. (Refer to CEL Service Fee Information.)

TYPICAL OVERHEAD SERVICE

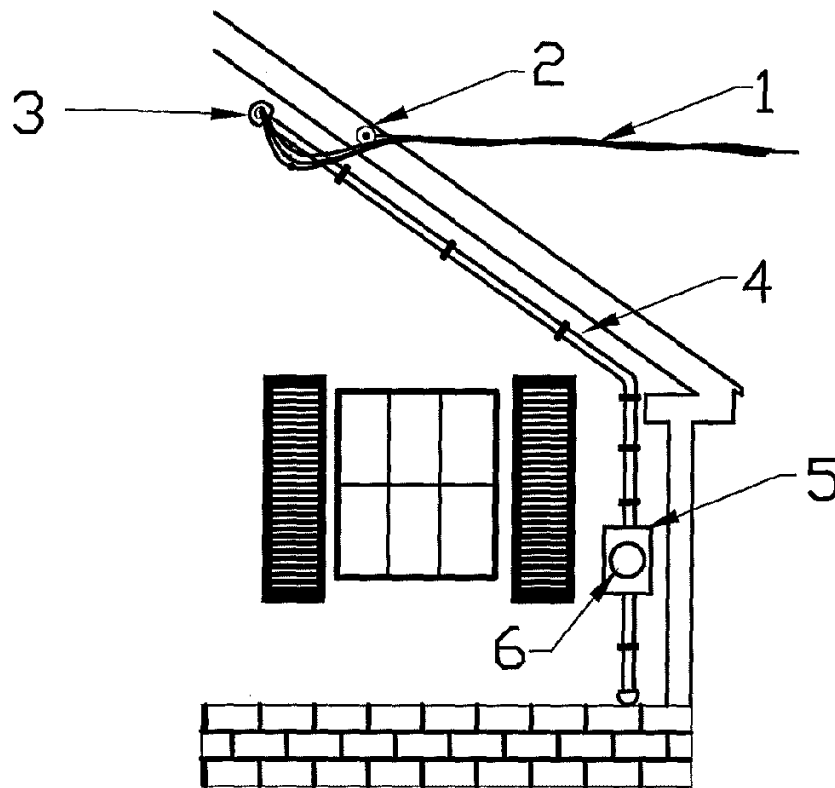


FIGURE 2-1

1. SERVICE LINES
2. SERVICE HOOK
3. WEATHER HEAD
4. SERVICE CABLE
5. METER SOCKET
6. METER

TYPICAL OVERHEAD SERVICE

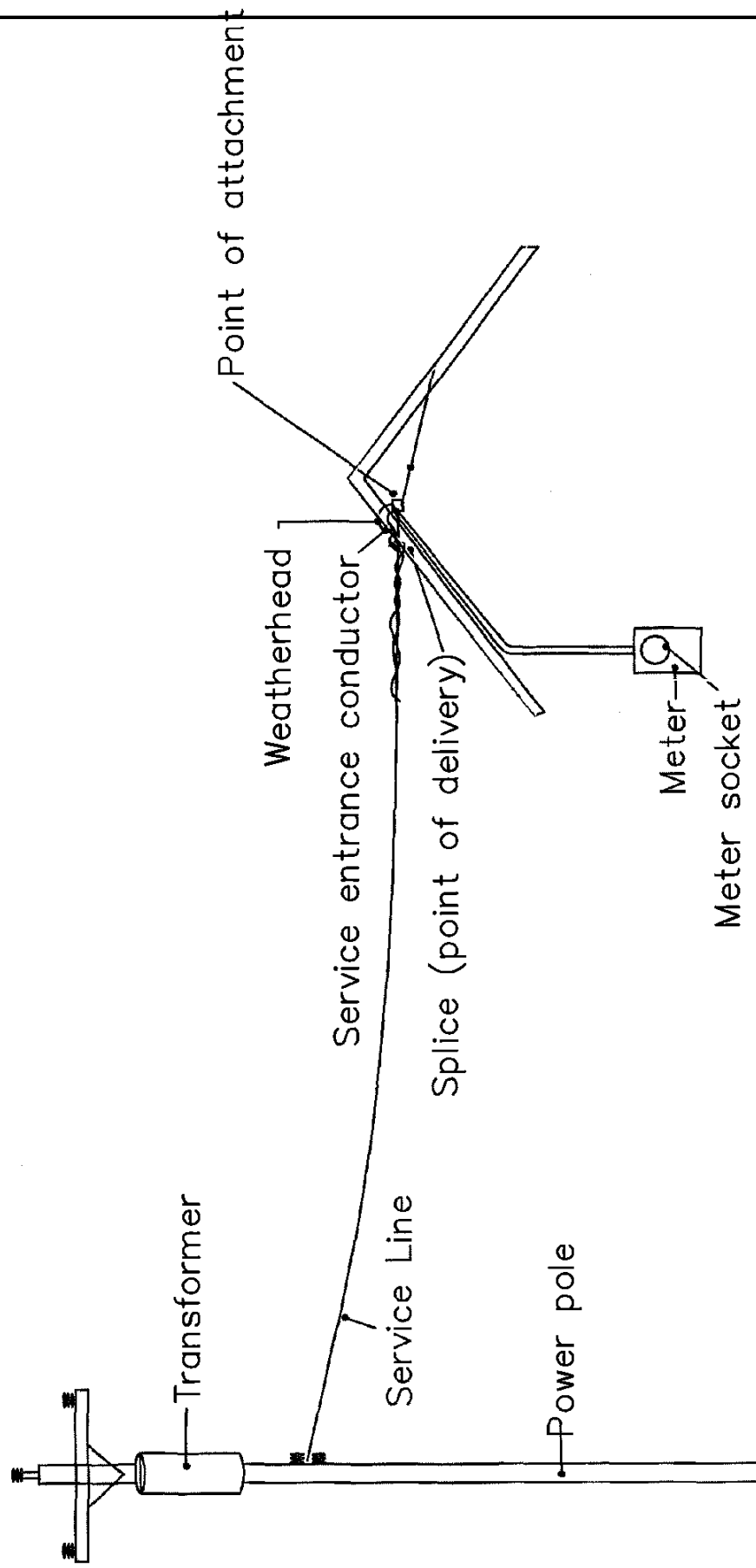
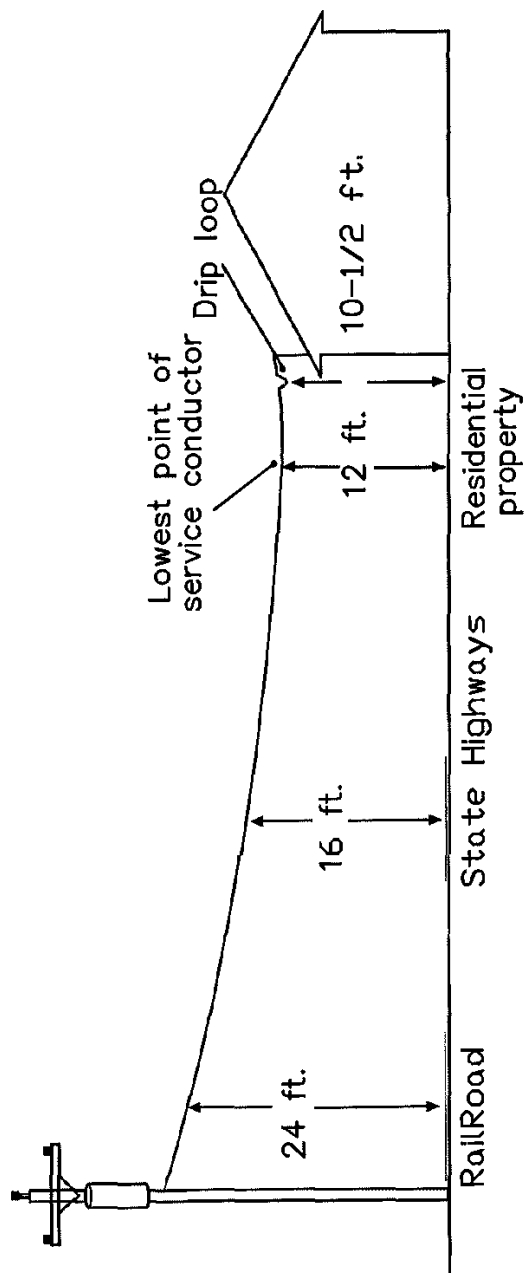
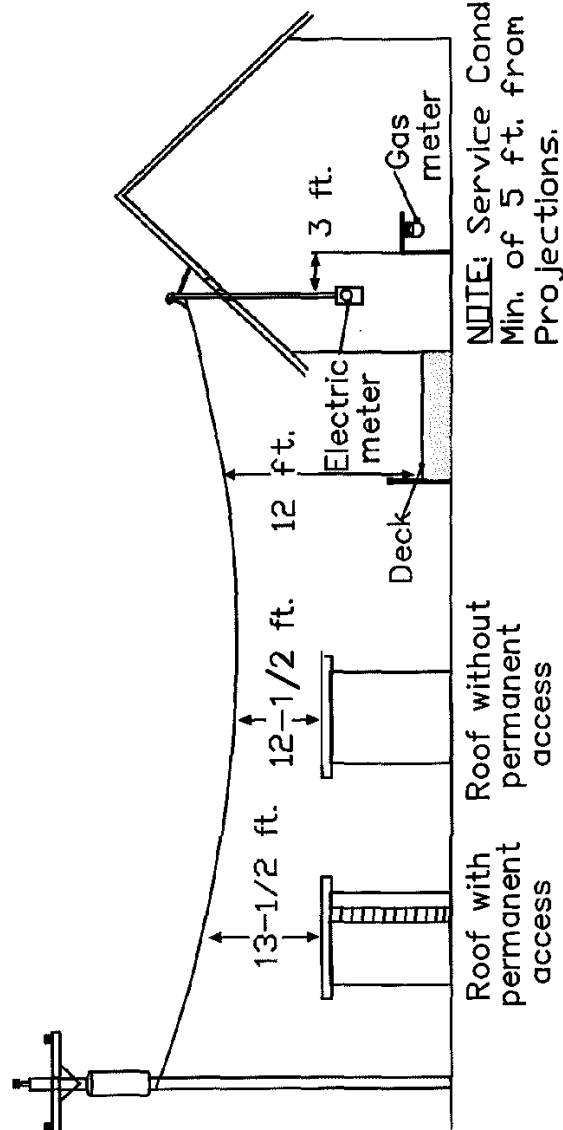


FIGURE 2-2

MINIMUM OVERHEAD LINE CLEARANCES



MINIMUM OVERHEAD LINE CLEARANCE
FIGURE 2-3



NOTE: Service Conductors to be a Min. of 5 ft. from Windows and Projections.

MINIMUM CLEARANCES OVER OTHER STRUCTURES

FIGURE 2-4

CLEARANCES OF WIRES, CONDUCTORS, OR CABLES OVER OR NEAR SWIMMING AREAS AND SWIMMING POOLS

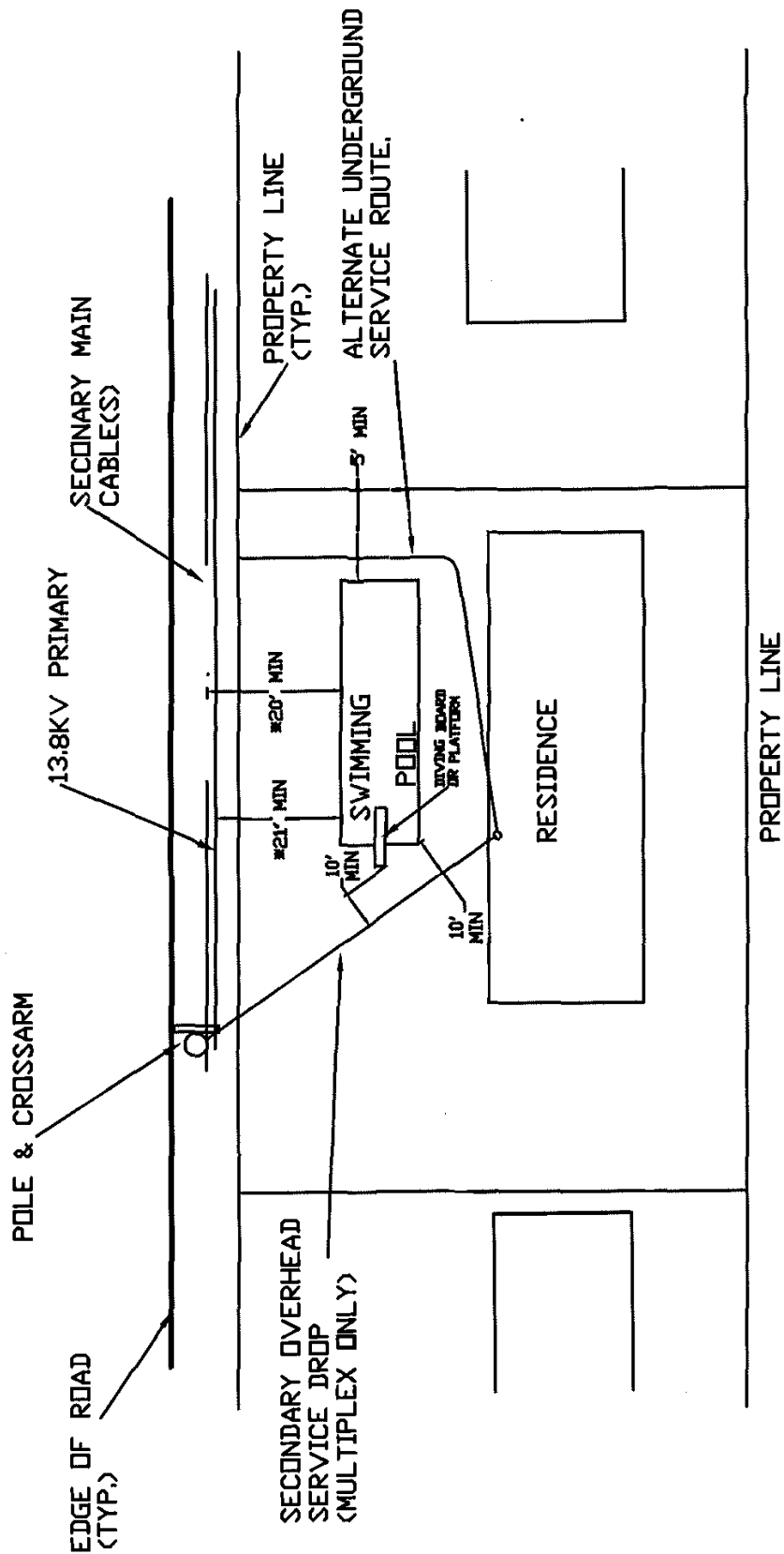
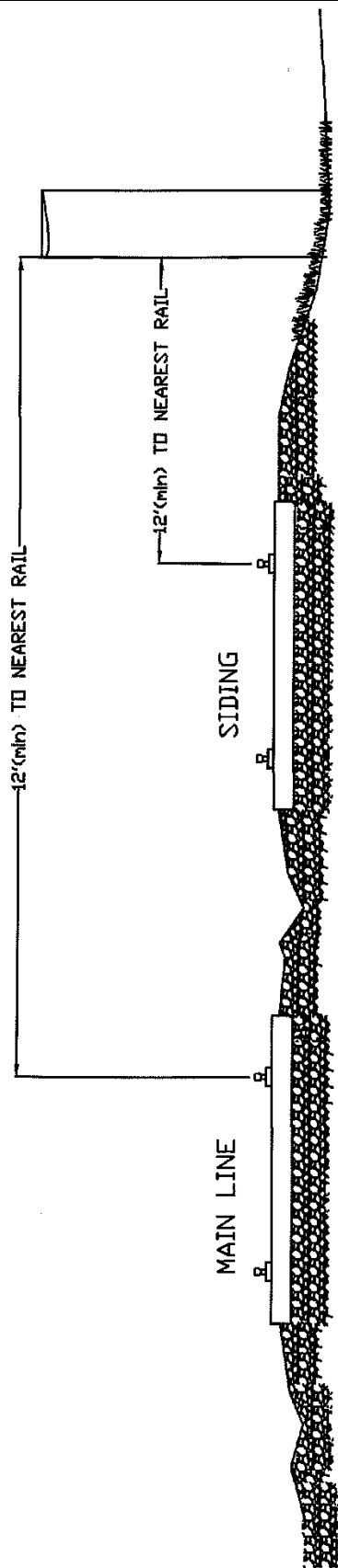
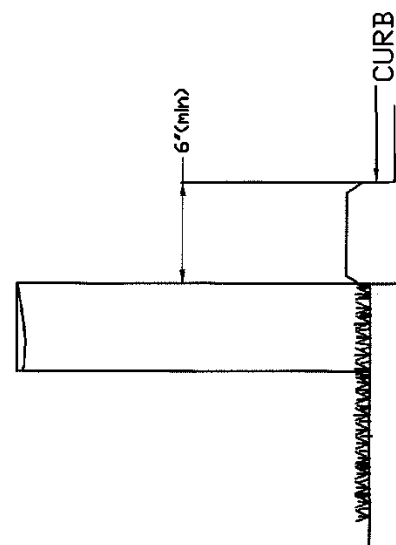


FIGURE 2-5

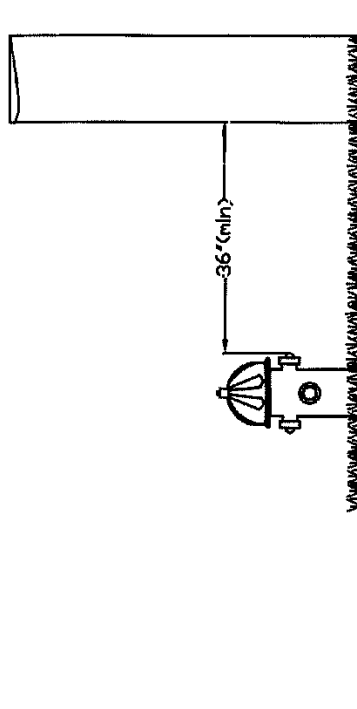
HORIZONTAL CLEARANCES



HORIZONTAL CLEARANCE FROM A RAILROAD
FIGURE 2-6A



HORIZONTAL CLEARANCE FROM ROAD SIDE
FIGURE 2-6B



HORIZONTAL CLEARANCE FROM A HYDRANT
FIGURE 2-6C

OVERHEAD INSTALLATION

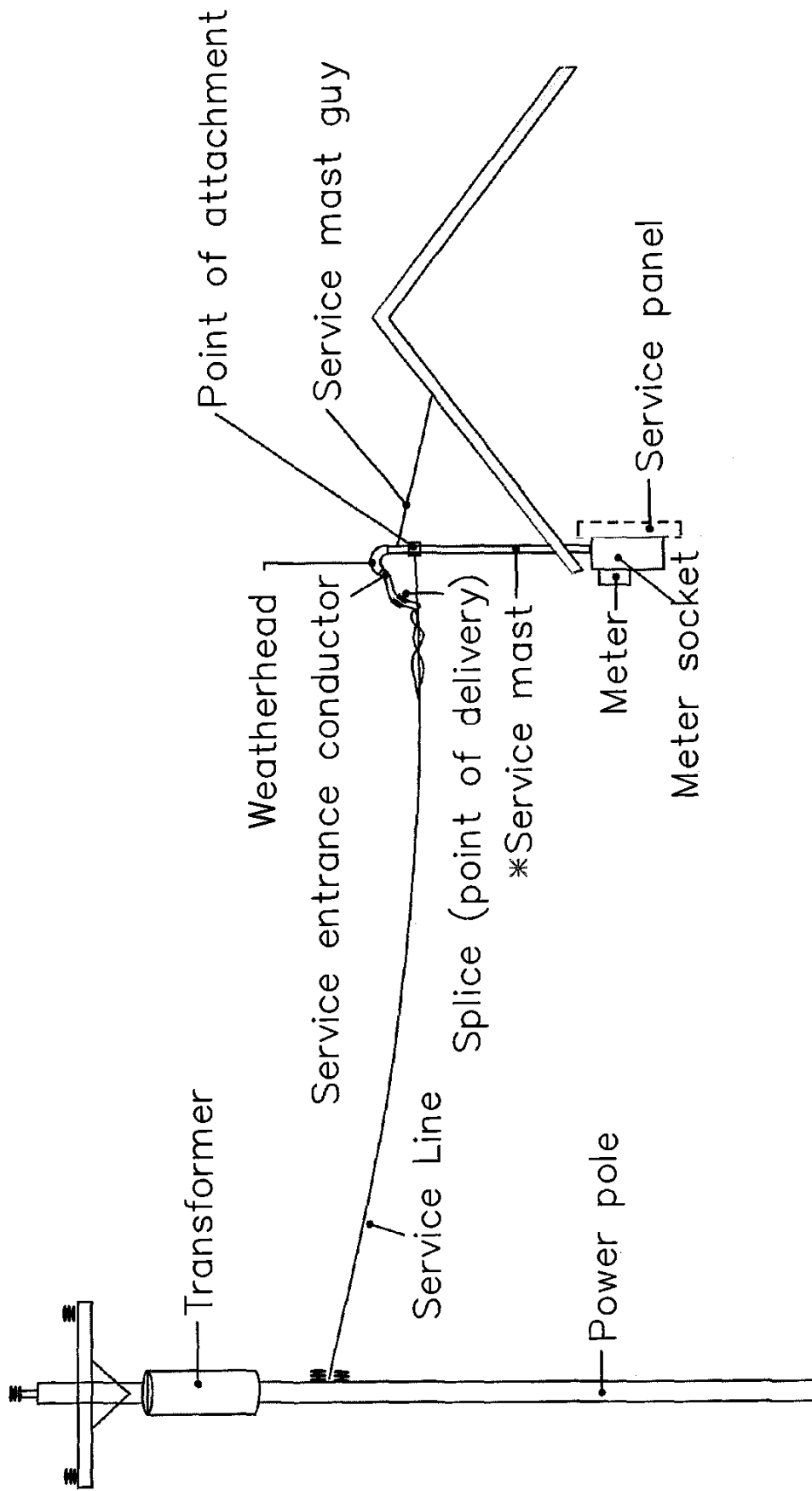


FIGURE 2-7A

SERVICE MAST METER

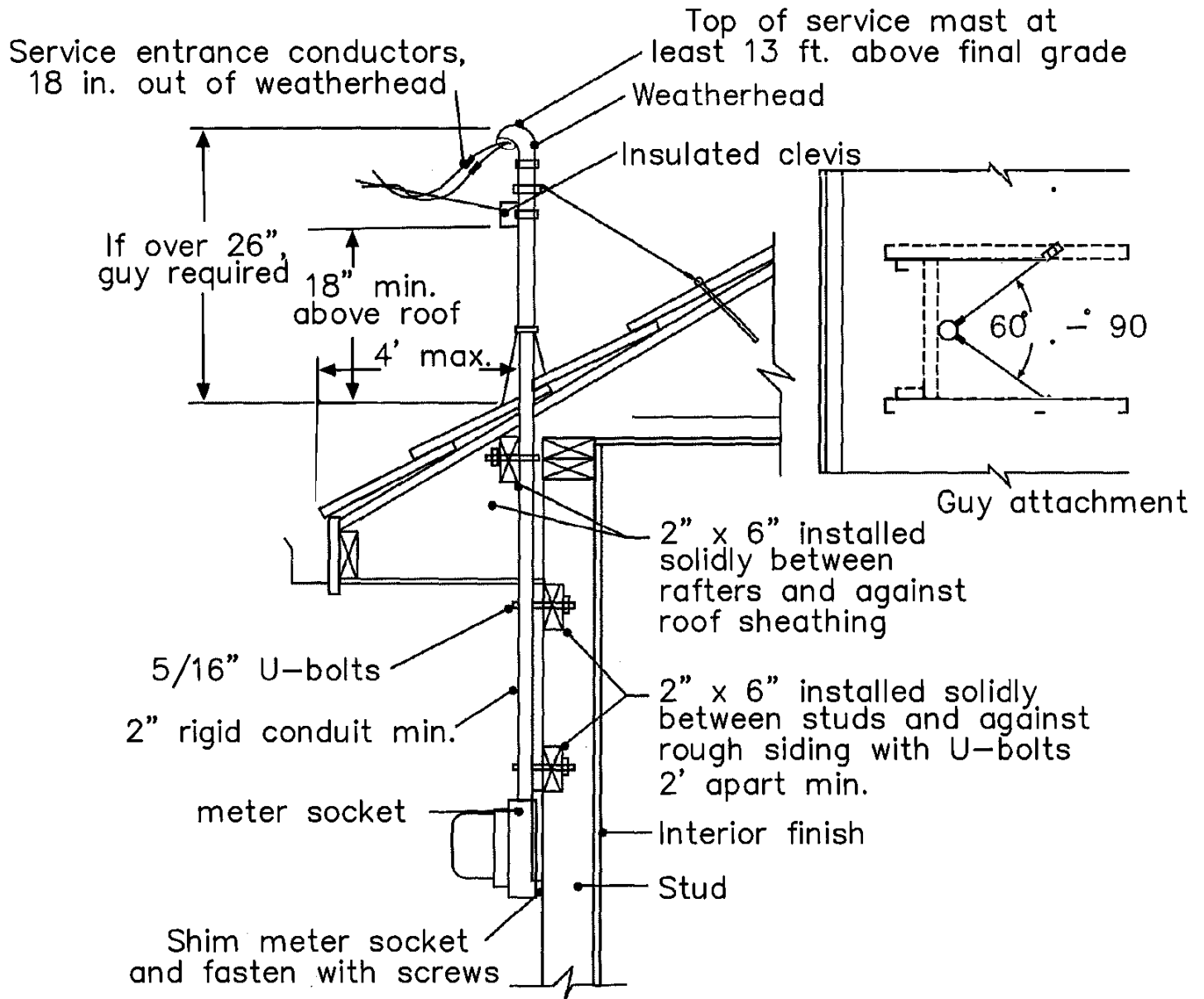


FIGURE 2-7b

APPROVAL FOR VERTICAL MAST



CHICOPEE ELECTRIC LIGHT
725 Front St
P.O. Box 405
Chicopee, MA 01020

Name: _____

Owner of the Property at: _____

I acknowledge the Chicopee Electric Light policy not to provide electric service to a building by means of attaching service conductors to a roof penetrating or side mounted vertical mast, unless specific approval is granted.

If CEL will grant its approval to supply electric service through means of the existing mast, I affirm that the City of Chicopee will not be responsible for any damage, either personal or property, which occurs as a result of such mast having been used or installed.

Signed: _____

Date: _____

THE BELOW IS TO BE COMPLETED BY CEL ONLY

CEL grants its approval to supply electric service to the address listed above through means of the service mast as inspected on the following date

Inspected by: _____

Signature: _____

Date: _____

TEMPORARY SERVICE

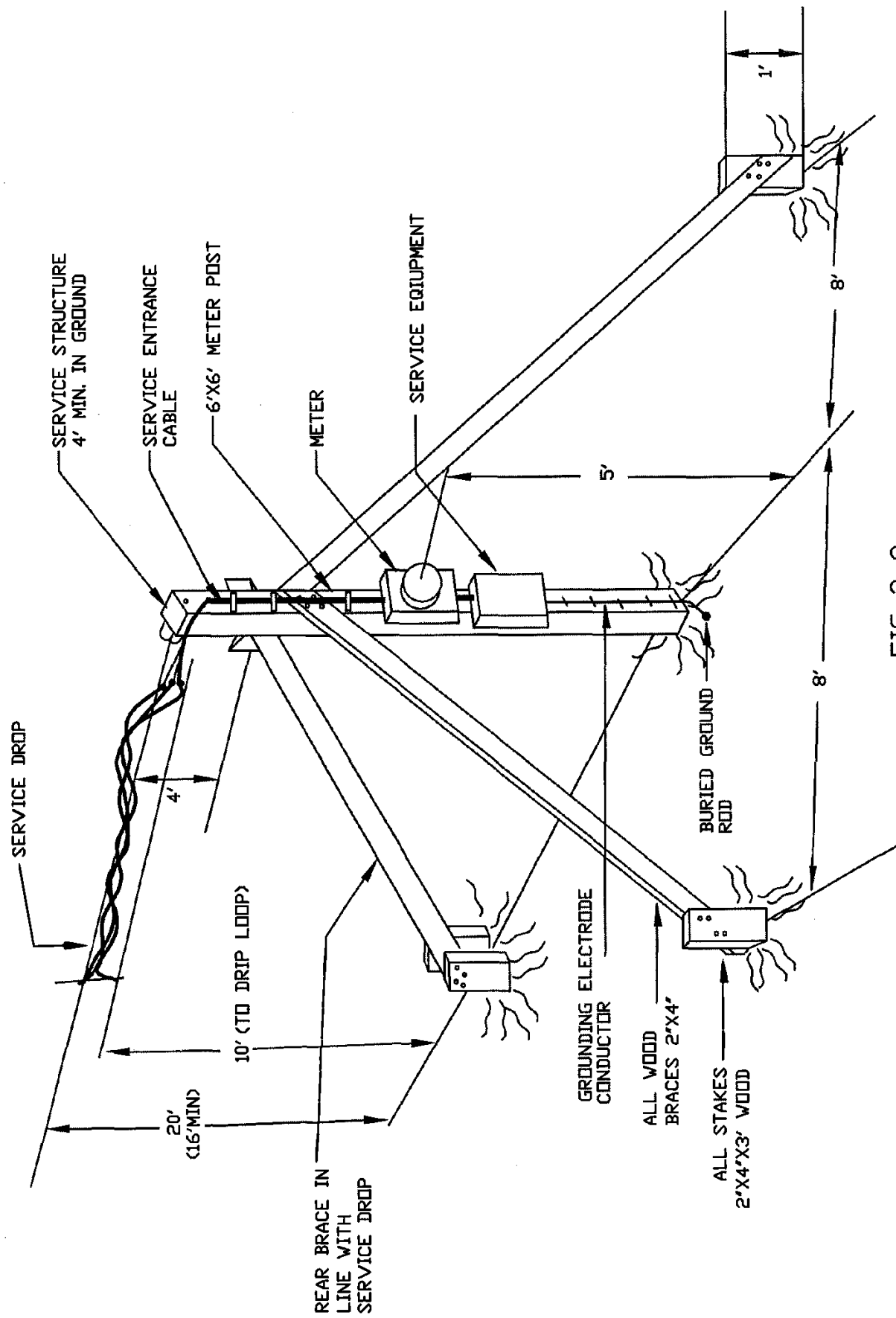


FIG 2-8

OVERHEAD SERVICE METER POLE

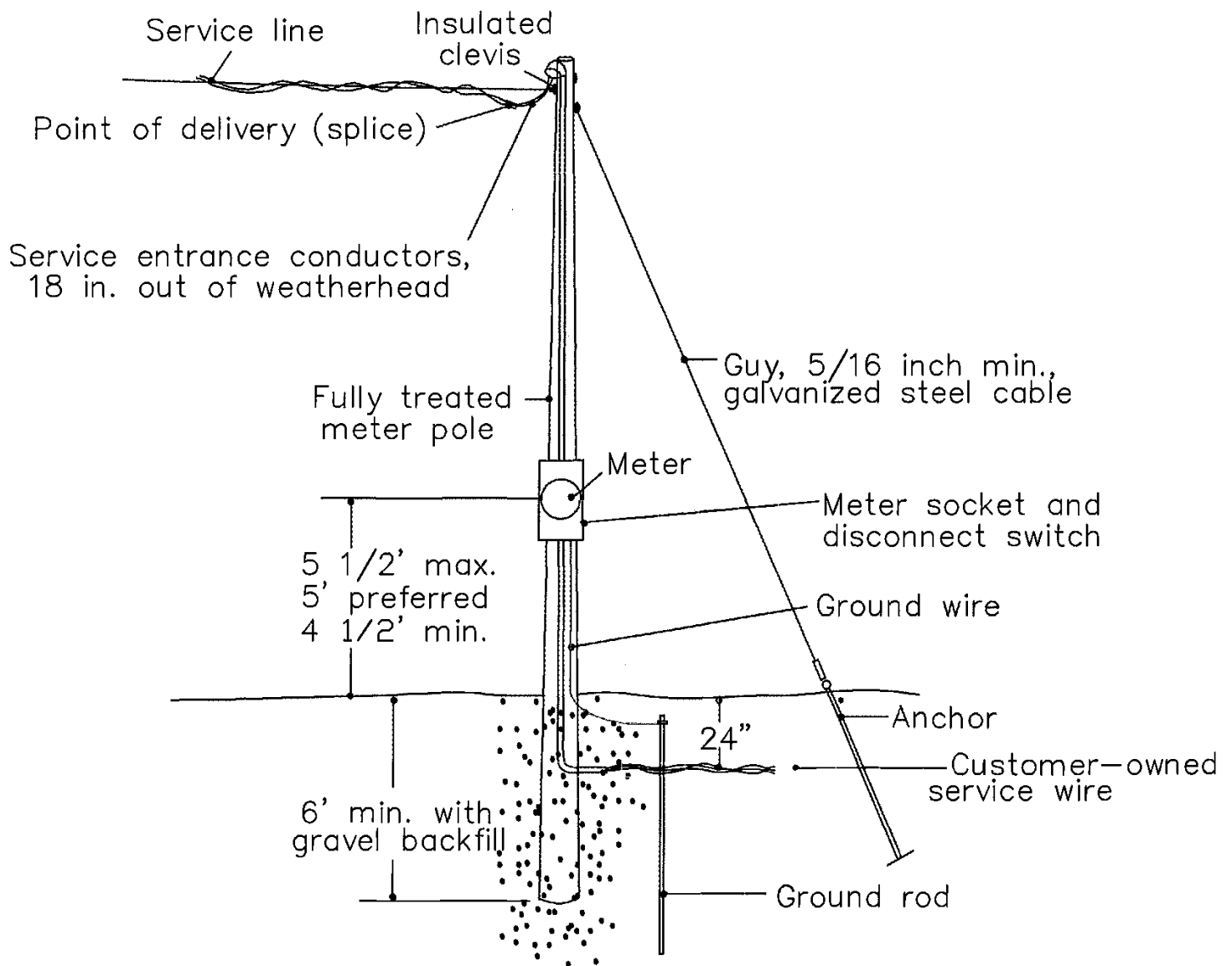


FIGURE 2-9

CHAPTER 3

UNDERGROUND SERVICES

The cost for underground service depends on the extent of special engineering required. The least complicated and costly situation is if a CEL pole, stub-out, or handhole is already near the property. If this is the case, special engineering may not be required; the customer's electrician simply installs the conduit and service entrance equipment, has it inspected, and calls CEL to have the service connected. The customer is responsible for providing, installing, and maintaining all equipment from the point of delivery except for the meter. CEL is responsible for providing and installing the meter, completing the connections at the point of delivery between the meter and the service conductor, and making the final connections at the point of delivery. For new pad-mounted Transformer Installations, the electrical contractor connects and hand tightens the secondary conductors to the transformer, leaving CEL to make the final torqued connections. If a new electric service is to be installed to an existing pad-mounted transformer, the electrical contractor must coordinate with CEL's Engineering Dept. to schedule a time to take the transformer out of service. The electrical contractor can make no connections to the transformer until this time has been scheduled. On CT rated services, CEL provides the CTs, the customer or their electrician installs them in the CT cabinet, and CEL makes the connections between the CTs and the meter.

3.1 CHECK LIST FOR INSTALLING UNDERGROUND SERVICE

To obtain a new underground service, the customer/electrician shall:

1. Contact CEL to request the service and discuss the project to determine the point of delivery and where the service line will originate.
2. If requested, provide CEL with:
 - a) Site drawings or digital copy (if available)
 - b) Load information
 - c) An easement for permanent equipment owned by CEL and installed on the customer's property. (Only required if customers other than the property owner, or their tenants, are supplied electric service from this equipment.)
3. Obtain an electrical work permit from the City of Chicopee's Building Dept.
4. Fill out and return a "Service & Meter Location" form to CEL Customer Service Dept. (Refer to Chapter 5)
5. Call/contact Dig Safe (1-888-DIG-SAFE or digsafe.com) to locate any existing underground wires, cables and pipes - this shall be the responsibility of every excavator.
6. Dig a trench from the point of delivery to the meter location.
7. Place the conductors in the trench or conduit - both conductor and conduit to be properly sized per the Mass. Electrical Code.
8. Install the service equipment.
9. Label the conductors at the meter location and connect the conductors to the meter socket, if applicable.
10. Complete all appropriate paperwork.
11. Pay all required fees.
12. CEL receives the City of Chicopee Electrical Inspectors approval.

If all the above conditions have been met, CEL will:

1. Connect the conductors at the point of delivery, or makes the final torque connections for pad-mounted transformer applications.
2. If CTs are being used, provide the CTs and complete the wiring between the CTs and the meter
3. Install the meter in the socket.

3.2 LOCATING UNDERGROUND UTILITIES

The customer must submit a ticket with Dig Safe at 1-888-DIG SAFE (1-888-344-7233) or at digsafe.com and allow three working days (72 Hours) before trenching or excavating for the underground service. One call to the locating service notifies all utilities that locate. In some areas, not all utilities are members of the one-call system. When working in Chicopee, the customer/excavator must contact the City of Chicopee Water Dept. and Department of Public Works. Excavation must not begin until the location of underground wires, cables, and pipes have been marked, or the utilities have informed the customer that they have no facilities in the area. Any digging within 24 inches of location marks must be done by hand.

The color code for marking underground utilities is:

<u>Color</u>	<u>Underground Service</u>
Red	Electric
Yellow	Gas, Oil, Steam
Orange	Telecommunications, Cable TV
Blue	Water
Purple	Reclaimed Water
Green	Sewer
Pink	Temporary Survey Marks
White	Proposed Excavation

3.3 SECONDARY RESIDENTIAL, AND SMALL BUSINESS SERVICES 400A MAX, SINGLE PHASE 120/240V OR THREE PHASE 208Y/120V

When installing a secondary service the customer has two options:

Option 1: The Customer's electrician installs the conduit and electrical conductors from the meter location to a CEL pole, handhole, manhole or stub out, leaving adequate slack to allow CEL to connect to the existing utility owned conductors. The Electrician shall ensure the installation meets all Mass. Electrical Code, and NESC requirements Under Option 1, the customer shall own the underground service cable(s).

Option 2: The Customer's electrician installs 1 or 2 - 4" (minimum), schedule 40 conduit with pull string from a CEL pole, handhole, manhole, or stub out to the meter and CEL installs the service conductor at a SERVICE CHARGE to be determined by CEL's Engineering Department. Under this Option, CEL retains ownership of the underground service cable(s).

The City of Chicopee Electrical Inspector and CEL Engineering Department must approve both options.

3.3.1. TRENCHING

The customer is responsible for the service trench and installing the required conduit or direct buried conductors. The customer backfills and compacts the trench.

Trenching rules and tips:

- a) Dig trenches in straight lines between takeoff points, to the greatest extent possible.
- b) Any trenching within 24 inches of CEL facilities must be done by hand.
- c) If any conductors or pipes are encountered while digging, leave them covered.
- d) If rock or other extremely difficult digging is involved, contact CEL to discuss the situation
- e) Provide extra width when digging a joint use trench to allow for a minimum of 12 inches of separation between the electric conduit or cables, and the telecom./T.V. Conduit or cables (Refer to Figure 3-2).
- f) Keep the spoils pile at least 24 inches away from the edge of trench.
- g) Schedule the trenching so the trench is open for the shortest practical time to avoid creating a public hazard and to minimize the possibility of the trench collapsing due to other construction activity, rain, etc.

- h) Prior to backfilling, the City of Chicopee Electrical Inspector and CEL Engineering Dept. must each inspect and approve the trench for adequate depth, conduit or cable placement. If corrections are required, an additional inspection is required after the modifications are completed.
- i) Place 4 inches of clean bedding material at the bottom of the trench. Clean bedding material is defined as sand or clean soil with no solid material larger than 1 inch. Place the cable or conduit on top of this bed. Then cover the cable or conduit with a 6-inch layer of clean bedding material. Compact the bedding material carefully, so the cable will not be damaged.
- j) Install electric caution tape approximately 12" above the conduit or electric conductors.
- k) The remainder of the trench is backfilled using available clean material. Pieces of scrap cable and other construction items must not be buried in the trench. Tamp the soil, leaving a slight mound to allow for settling.
- l) Soil within 36 inches of riser poles, transformer pads, pedestals, and terminal points must be compacted mechanically.
- m) All rock, debris, scrap cable, and other construction items must be removed from the site.
- n) Trench to the nearest CEL pole, handhole, manhole, or transformer.

3.3.2 SINGLE-USE TRENCH

Secondary Residential and Small Business Services
400 Amps, 1 or 3 Phase
(Refer To Figure 3-1)

3.3.3. JOINT-USE TRENCH

Secondary Residential and Small Business Services
400 A, 1 or 3 Phase

The customer may place telecommunications, cable TV, or other electronic signal conductors in a trench with electric utility wires, providing the installation meets the requirements of the electric utility and all other parties.
(Refer to Figure 3-2)

3.3.4 Direct-Burial Conductors

All inspections for the trench, conductor size, and conductor placement in the trench will be by the City of Chicopee Wiring Inspector. The installation of the direct-buried conductors shall be the responsibility of the customer's electrician.

3.3.5. CONDUIT SIZE

Listed in the chart below are the CEL conduit requirements, if CEL is installing the secondary cables.

<u>Current Rating</u>	<u>Single-Phase, 3 Wire</u>	<u>Three-Phase, 4 Wire</u>
0 to 200 amps	One 4 Inch	One 4 Inch
201 to 400 amps	One 4 Inch	Two 4 Inch

3.3.6 UNDERGROUND CONDUIT

When the Customers Electrician is installing the electric conduit, the following conditions must be met:

1. If the conduit run is long or has many bends, an electric handhole may be required (Size of the handhole to be determined by CEL Engineering Dept. - applies only if CEL is to install the service conductor).
2. Electrical - grade Schedule 40 GRAY PVC conduit shall be utilized. Electrical-grade Schedule 80 GRAY PVC to be installed under roadways, railways, driveways, and on the riser pole.
3. The customer shall seal around the conduit where it enters the service panel, and grout where it enters CEL manholes or vaults, to prevent water and other substances to enter.
4. The customer shall coordinate with CEL Engineering Department on conduit entry location and procedures prior to installation into CEL's handhole, manhole, or vault.
5. An expansion coupling is required between the meter socket and the finished grade. No bends are allowed in this riser other than the 90 degree elbow bend at the bottom of the riser. This bend must have a radius of 36 inches. The customer shall ensure the conduit is plumb and attached securely to the structure.

6. After the City of Chicopee Electrical Inspector and the CEL Engineering Dept. inspect and approve the conduit, the trench can be back filled with proper material (Refer to Figure 3-1 or Figure 3-2) and 3" Electric Caution tape to be installed approximately 12" above the electric conduit.

Note: CEL Engineering Dept. only needs to inspect the conduit when CEL is installing the electric conductors

7. The customer's electrician shall brush and clean the conduit and install a 900 lb pull string in the conduit with 6 feet of line extended from each end of the conduit and cap the conduit at both ends to keep it free from dirt and debris. This applies only when CEL is to install the service conductors

3.3.7 UNDERGROUND SERVICE METER

Figure 3-3 shows a finished underground installation with the meter on the surface of a house. The customer is responsible for everything shown here, except the meter. The source for the service can be a CEL pole, handhole, manhole, or pad-mounted transformer (Off to the left and not shown here). The requirements needed to install the electric conductors from a CEL pole, handhole, manhole, or pad-mounted transformer are contingent upon service option chosen.

3.3.8 UNDERGROUND SERVICE, METER WITH PEDESTAL

A meter pedestal is a freestanding structure that supports service equipment for an underground service. If a meter pedestal is called for, it is the customer's responsibility to purchase and install it. (Refer to Figure 3-4). It shall be installed between the home/building and normal public access, and within 30 feet of the home/building. The final location must be approved by CEL. The pedestal usually contains the disconnect switch required by the Mass. Electrical Code. The requirements needed to install the electric conductors from a CEL Pole, handhole, manhole, or pad-mounted transformer are contingent upon which service option the customer chooses.

3.3.9 TEMPORARY UNDERGROUND SERVICE, METER POST

Figure 3-5 shows a finished installation for temporary service, using a meter post. The service is fed underground from a CEL pole, handhole, manhole, or pad-mounted transformer; Conductors placed in the trench bring the power to the base of the post. From the post, the service to the building is usually underground, but could be overhead. The customer provides everything shown, except the meter.

3.4 BUSINESS, INDUSTRIAL OR MULTI-FAMILY RESIDENTIAL BUILDING SERVICES, SINGLE PHASE OR THREE PHASE (greater than 400 A, 120/240V, 208Y /120V or 480Y /277V)

The customer shall be responsible for installing the primary conduit, secondary conduit, the precast transformer box pad, ground grid and the service conductors in the conduit, from the transformer to the building, as detailed in Figures 3-10 and 3-11. CEL shall be responsible for providing and installing the pad-mounted transformer, and all primary cable and connections at the customer's site.

3.4.1 Safety and Work Clearances around Transformers and Pad-mounted Switchgear

Clearances from pad-mounted transformers to structures are measured from the nearest metal portion of the transformer, to the structure or any overhang. The minimum clearance from a building or any other structure to the rear and sides of the transformer is 3 feet. A minimum clearance of 10 feet of level working space is required at the front of the pad-mounted transformer (the side on which the doors open). Landscaping and other obstructions must not encroach upon these clearances. A path to access the transformer shall be maintained at all times. Refer to Figure 3-6, 3-7, and 3-8 for additional clearance requirements in the area around pad-mounted transformers.

When it is necessary to install pad-mounted switchgear at a site, a minimum of 10' of clearance on all sides shall be maintained.

3.4.2 Guard Posts (Bollards)

It is the customer's responsibility to install and maintain guard posts (bollards) where CEL equipment is exposed to vehicular traffic.

If the post is placed in stable soil, surround it with 6 inches of concrete. If the soil is unstable or sand, surround the post with 12 inches of concrete. The location of guard posts is subject to final approval by CEL Engineering Dept.

If several guard posts are used, locate them no more than 5 feet apart. For extra visibility, paint the posts traffic yellow. (Refer to Figure 3-9)

3.4.3 Pad-mounted Transformer Installation

On services that require the installation of a pad-mounted transformer, Chicopee Electric Light shall be responsible for the following:

1. Providing and installing the required utility poles from the street to the new service location. The number and location of poles and applicable services charges will be determined by the CEL Engineering Dept.
2. Providing and installing the required length of underground primary conductors from the new riser pole or manhole to the transformer pad location, at a service charge to be determined by the CEL Engineering Dept.
3. Providing and installing the pad-mounted transformer. The service charges will be determined by the CEL Engineering Dept. The transformer size will be determined by the CEL Engineering Dept. upon review of the proposed load information provided by the customer.

The Owner/Electrician shall be responsible for, but not limited to, the following Items:

1. Providing and Installing the precast concrete pad per CEL Specifications - refer to CEL "Construction standard for a single phase transformer pad installation (Figure 3-10), or CEL "construction standards for a three phase transformer pad (Figure 3-11) for the transformer box size, ground grid layout and guard post layout (Figure 3-9).
2. Coordinating with CEL Meter Dept. concerning meter locations and requirements.
3. Coordinating with CEL Customer Service Dept. concerning the following administrative requirements:
 - a. The Electrical Contractor shall fill out and return a "Service and Location Form". Forms can be obtained at the CEL customer Service Department or electronically at celd.com.
 - b. The Owner shall fill out and return a "Commercial/Industrial Application For Service Form" if applicable. Forms can be obtained at the CEL Customer Service Dept. or electronically at celd.com.
 - c. The Owner shall coordinate deposit requirements if applicable, for installation.
 - d. CEL must receive the City of Chicopee Electrical Inspector's approval prior to energizing the service.
4. Connecting the customer(s)' service conductors to the secondary terminals of the transformer. This must be done as follows:
 - a. Two hole lugs must be used – these must be **crimp style**
 - b. ½" bolts with flat washers and lock washers must be used – normally 2" washers will work depending on cable/lug size
 - c. Cables are to be installed first on the rear bushing holes (those closest to the transformer) i.e. back-to-front. If paralleling cables is necessary this also must first be done on the rearmost bushing holes
 - d. Cables are to be installed loosely (i.e. "finger tight"). Final torquing will be completed by CEL
 - e. Cables are to be installed with gradual bends so as not to cause excessive force or strain on transformer secondary bushings

3.4.4. Dedicated Pole-Mounted Transformer Installation

CEL shall be responsible for the following:

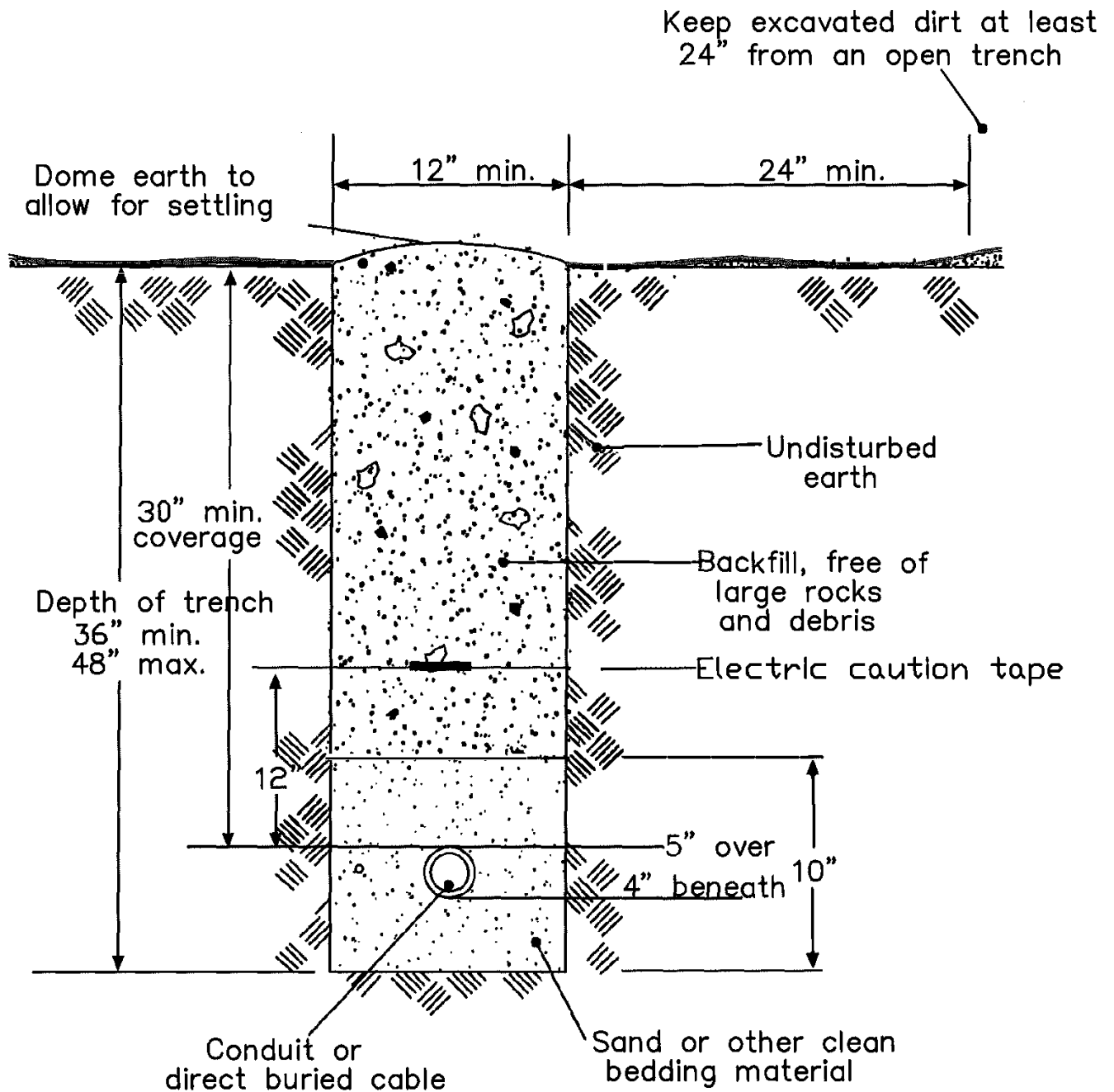
1. Providing and installing a dedicated single-phase transformer (120/240V) or a three phase transformer bank (208Y/120V) at a SERVICE CHARGE to be determined by the CEL Engineering Department
2. Providing and installing any necessary overhead primary conductor, poles, and related equipment required to accommodate the transformer at a service charge to be determined by the CEL Engineering Dept.
3. Providing and installing the appropriately sized overhead or underground secondary wire from the transformer location to the service attachment point at a SERVICE CHARGE to be determined by the CEL Engineering Dept.

The Owner / Electrical Contractor shall be responsible for, but not limited to the following items:

1. Coordinate with CEL Meter Dept. concerning meter location and requirements.
2. Coordinate with CEL Customer Service Dept. concerning the following requirements:
 - a. The Electrical Contractor shall fill out and return a "Service And Meter Location Form". Forms can be obtained at the CEL Customer Service Dept. or electronically at celd.com.
 - b. The Owner shall fill out and return a "Commercial/Industrial Application For Service Form", if applicable. Forms can be obtained at the CEL Customer Service Dept. or electronically at celd.com.
 - c. The Owner shall coordinate deposit requirements, if applicable, for installation.
 - d. CEL must receive The City of Chicopee Electrical Inspector's approval prior to energizing the service.
3. For underground services where the Customer/Electrician will provide and install the conduit from a CEL pole, manhole, or handhole to the meter location - refer to Section 3.3 for options.

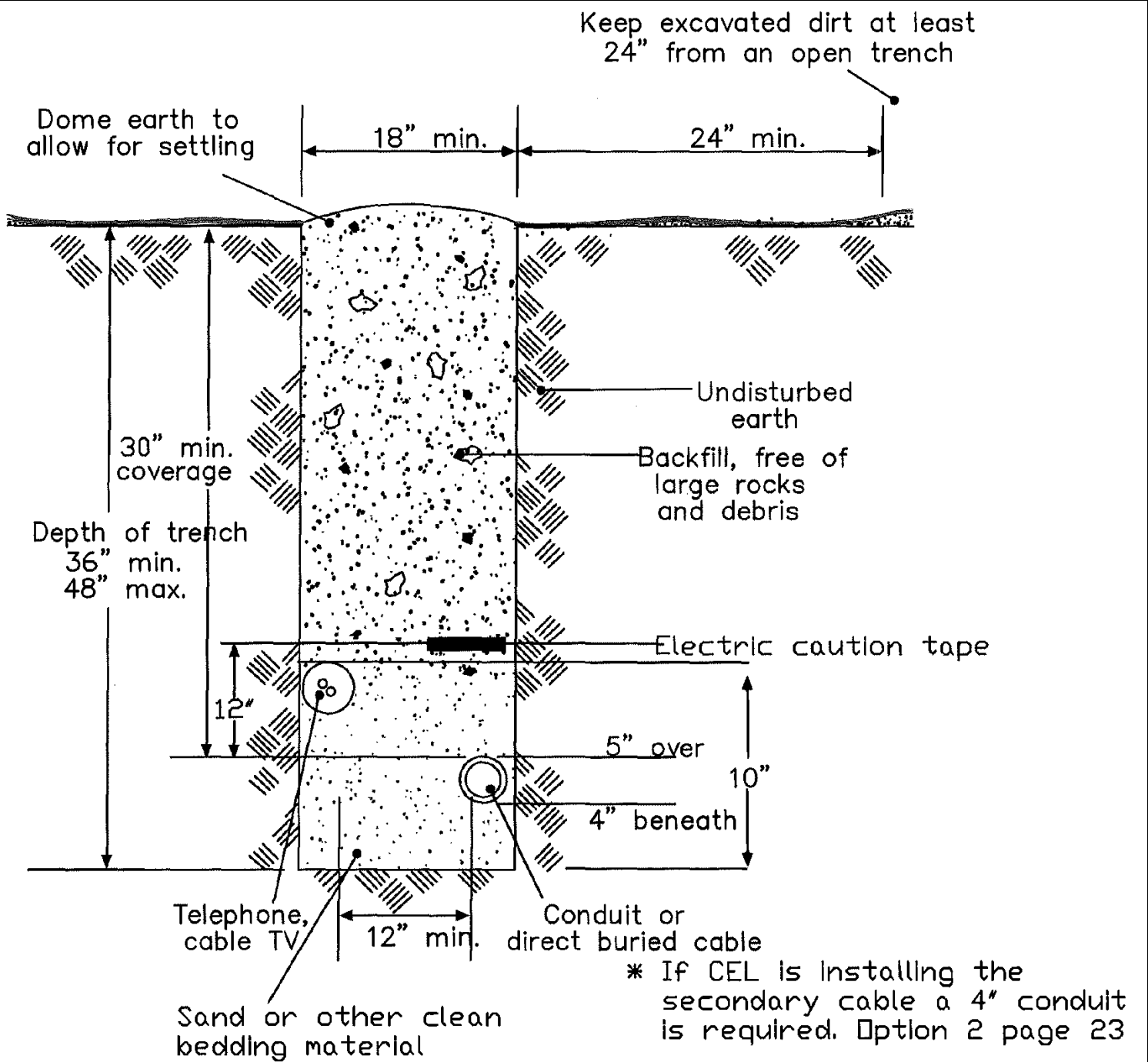
3.5 CEL UNDERGROUND DISTRIBUTION STANDARD DRAWINGS

- a. TYPICAL Electrical Handhole Installation: Figure 3-12
- b. TYPICAL Underground Conduit Encasement 4 - Bank: Fig. 3-13A, 3-13B
- c. TYPICAL Manhole Cover and Frame: Figure 3-14
- d. TYPICAL Service Manhole (4' x 4'shown): Figure 3-15
- e. TYPICAL Full Size Manhole (5' x10'shown): Figure 3-16

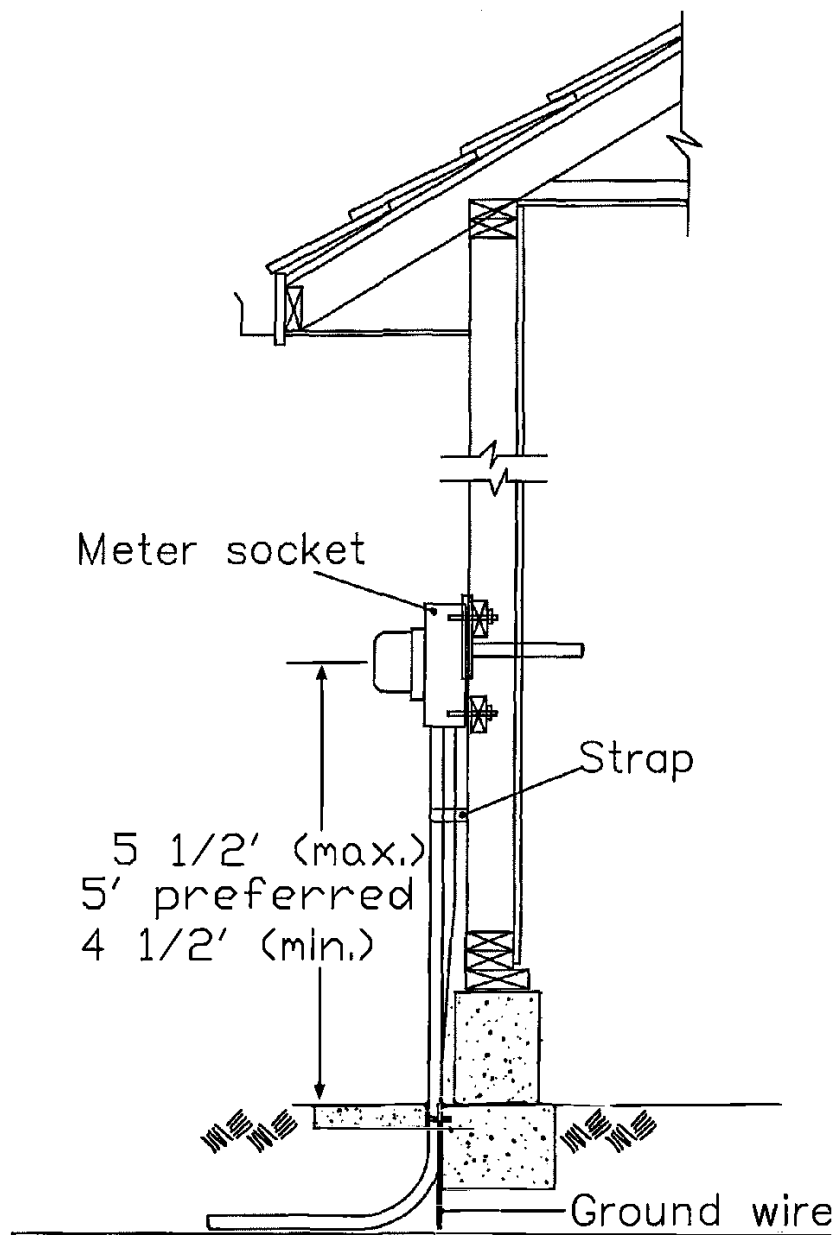


* If CEL is installing the secondary cables. A 4" conduit is required. Option 2 page 23.

SINGLE - USE TRENCH
FIGURE 3-1



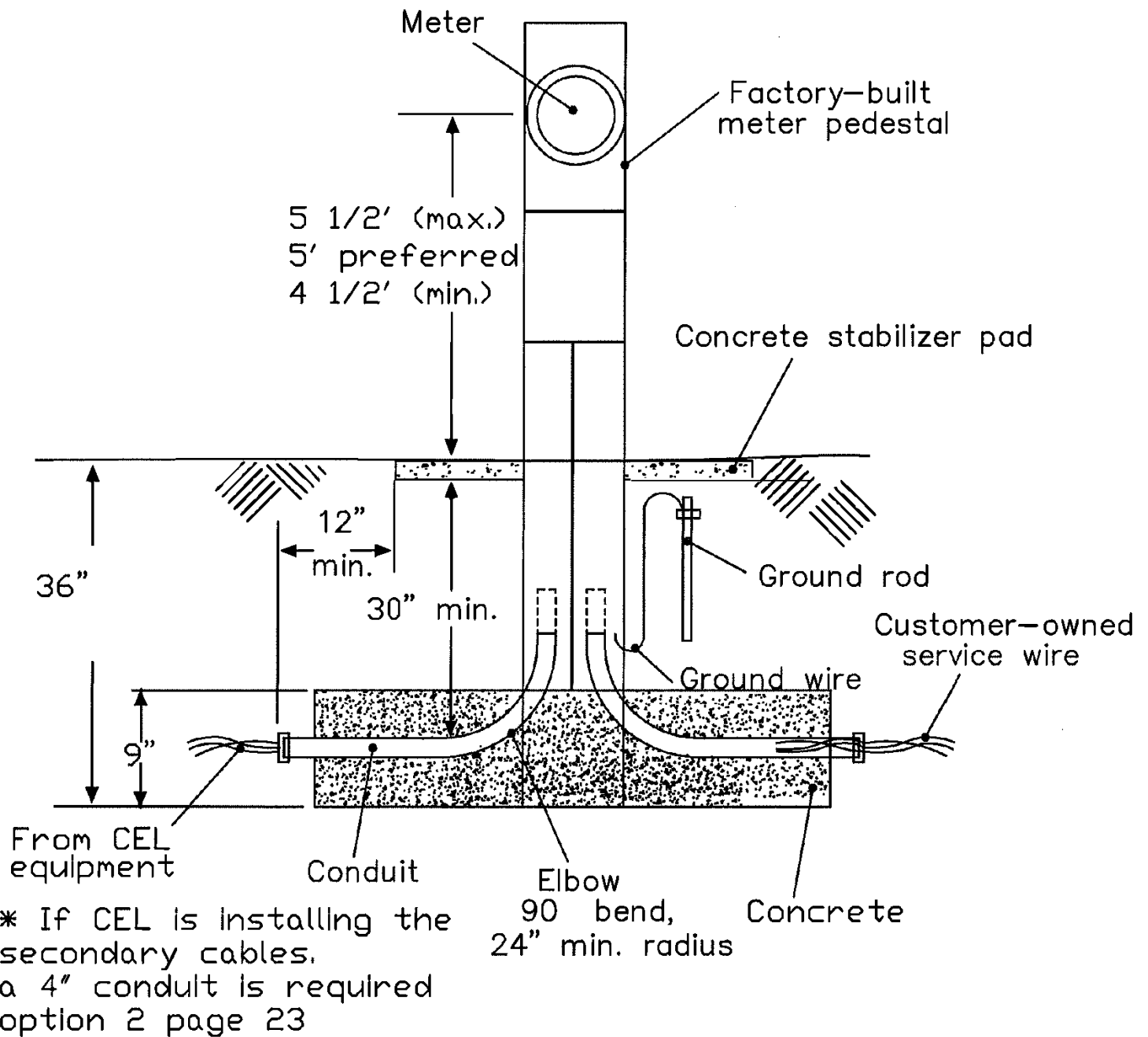
JOINT - USE TRENCH
FIGURE 3-2



* If CEL is installing the secondary cables, a 4" conduit is required option 2 page 23.

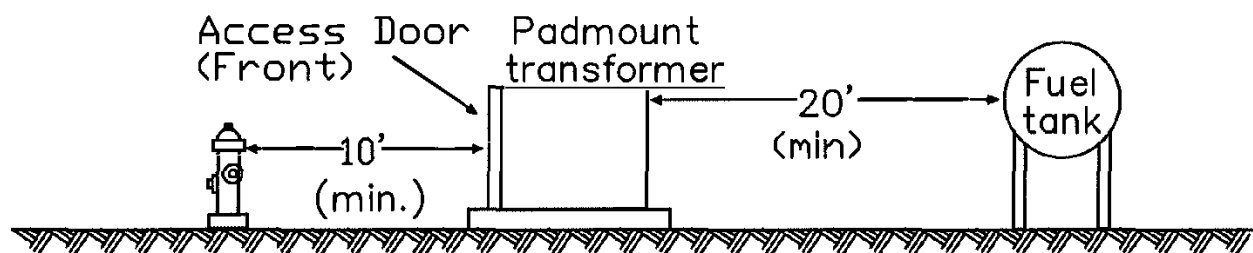
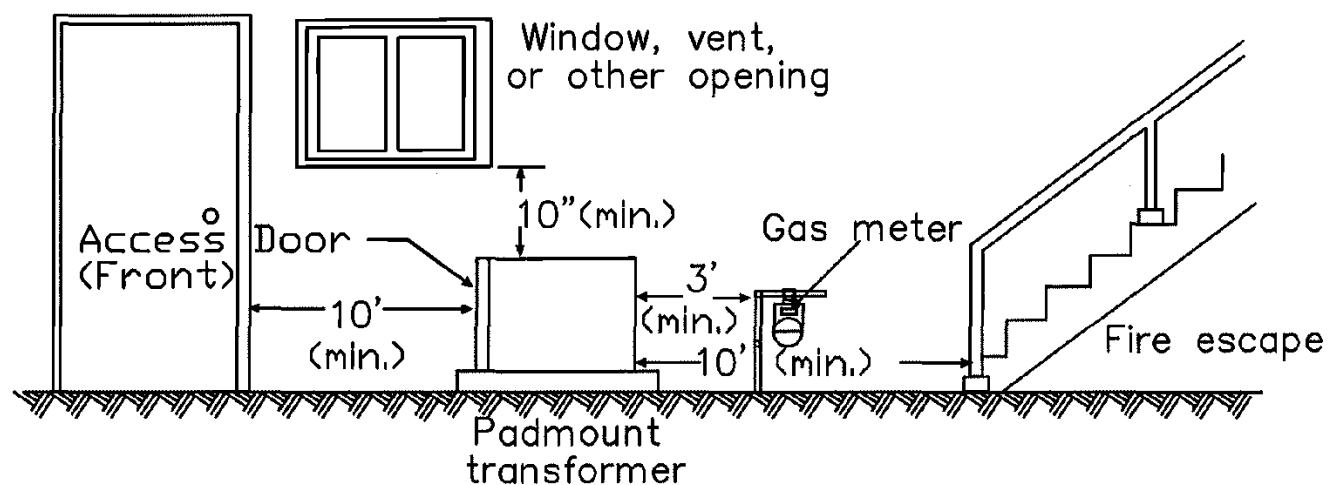
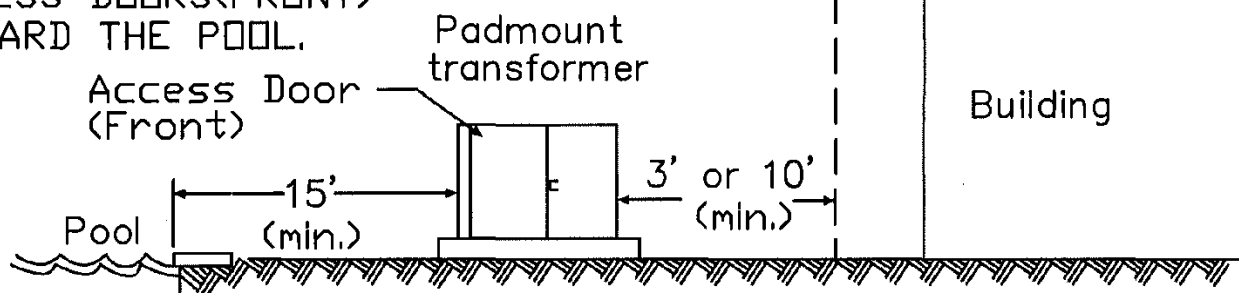
UNDERGROUND SERVICE, METER

FIGURE 3-3

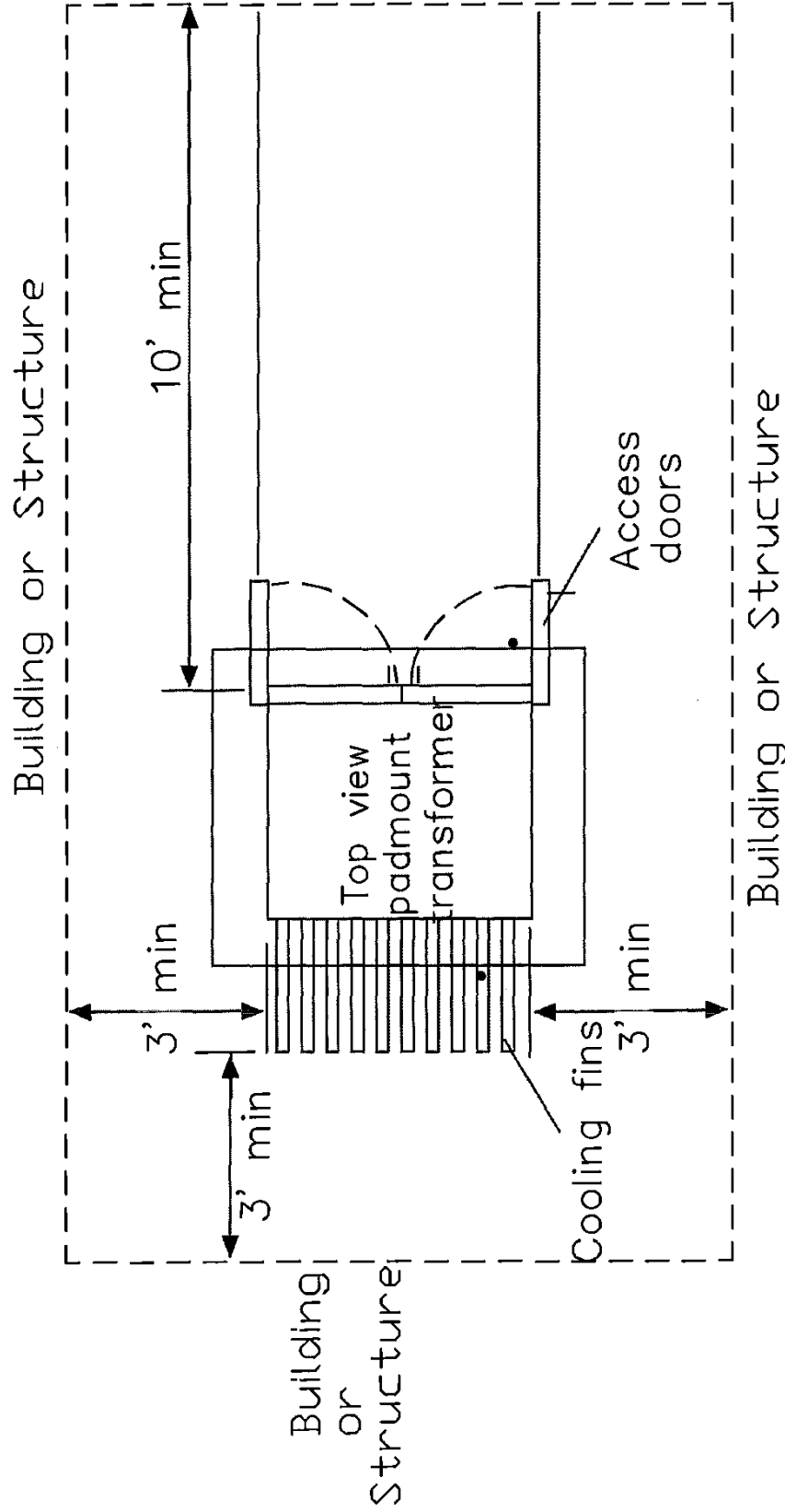


UNDERGROUND SERVICE PEDESTAL METER
FIGURE 3-4

NOTE
DO NOT FACE
ACCESS DOORS(FRONT)
TOWARD THE POOL.



CLEARANCES FROM PAD MOUNTED TRANSFORMER TO STRUCTURES
FIGURE 3-6



WORK CLEARANCES AROUND TRANSFORMERS
FIGURE 3-7

CLEARANCE FROM UNDERGROUND UTILITIES

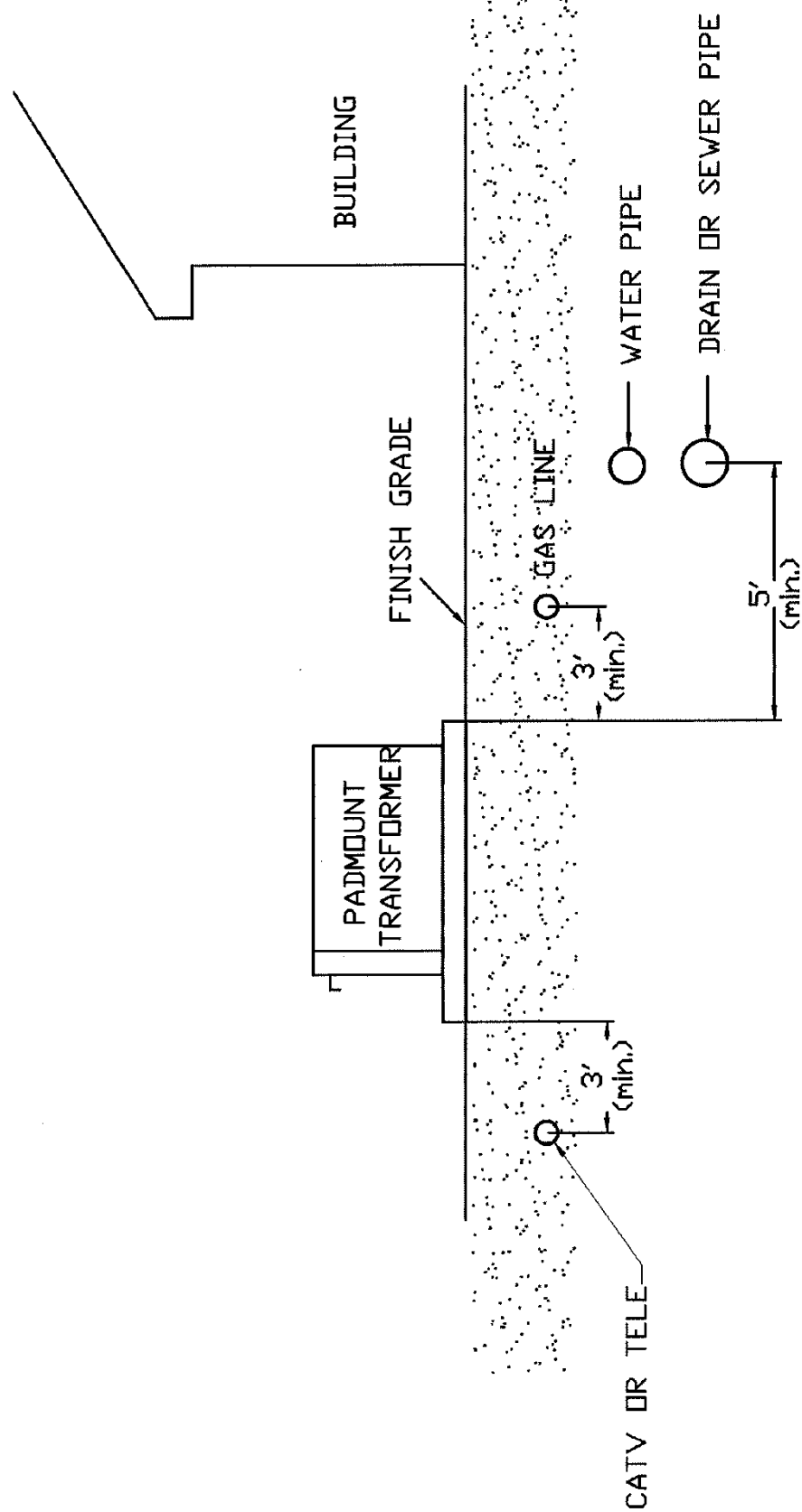
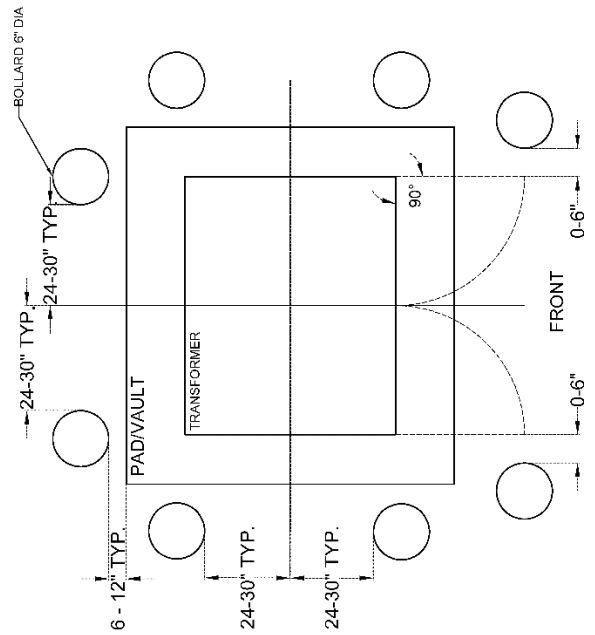


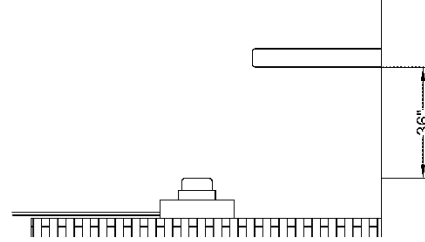
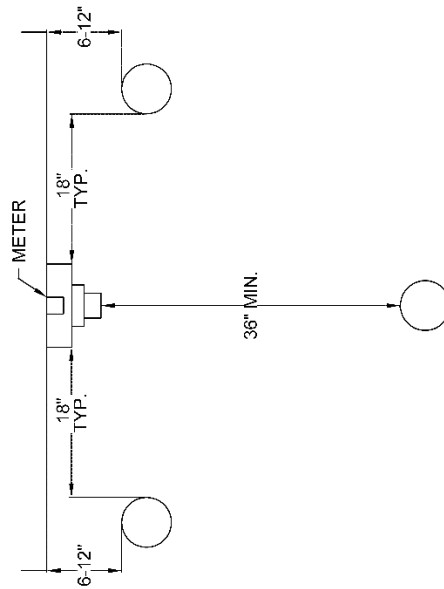
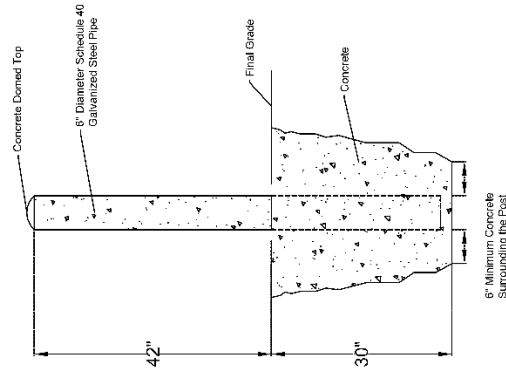
FIGURE 3-8

FIGURE 3-9



NOTES:

- 1) IT IS THE CUSTOMER'S RESPONSIBILITY TO INSTALL AND MAINTAIN BOLLARDS WHERE CEL EQUIPMENT IS AT RISK OF BEING DAMAGED BY VEHICLES OR EQUIPMENT.
- 2A) IF BOLLARD IS INSTALLED IN STABLE SOIL SURROUND IT WITH 6" OF CONCRETE.
- 2B) IF BOLLARD IS INSTALLED IN UNSTABLE SOIL OR SAND SURROUND IT WITH 12" OF CONCRETE.
- 3) BOLLARDS MUST BE 6" IN DIAMETER.
- 4) BOLLARDS MUST BE PAINTED TRAFFIC YELLOW.
- 5A) BOLLARDS MUST BE INSTALLED 6-12" FROM THE EDGES OF TRANSFORMER PAD/VULT AND 3' FROM FRONT OF METERS.
- 5B) MULTIPLE BOLLARDS MAY BE REQUIRED NEAR METER(S) IF INSTALLED IN A DRIVEWAY.
- 5) TRANSFORMER DOORS MUST NOT BE OBSTRUCTED. THE DOORS MUST BE ALLOWED TO OPEN 90 DEGREES.
- 6) THE BOLLARDS ON ALL SIDES OF TRANSFORMERS MUST BE INSTALLED 24-30" FROM THE CENTER LINES OF THE TRANSFORMER PAD.
- 7) BOLLARDS MAY NOT BE REQUIRED ON ALL SIDES OF THE TRANSFORMER OR NEAR METERS DEPENDING ON LOCATION AND TRAFFIC PATTERNS. COORDINATE BOLLARD INSTALLATION PLANS WITH CEL ENGINEERING.



CHICOPEE ELECTRIC LIGHT
725 FRONT STREET, CHICOPEE, MA 01020

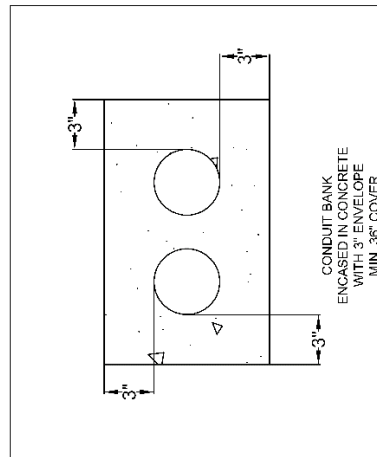
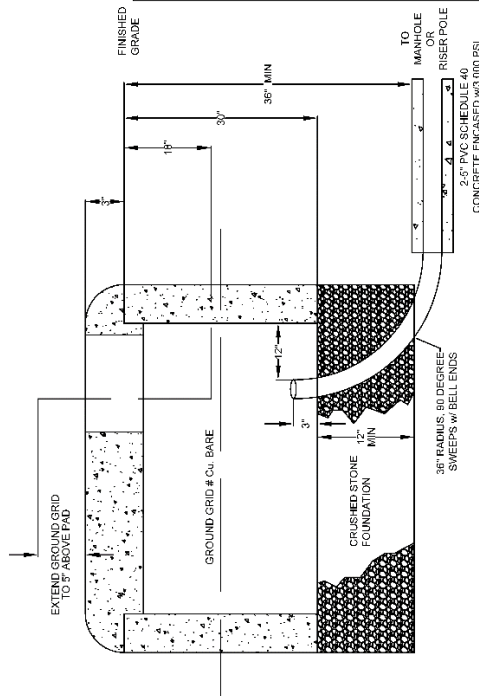
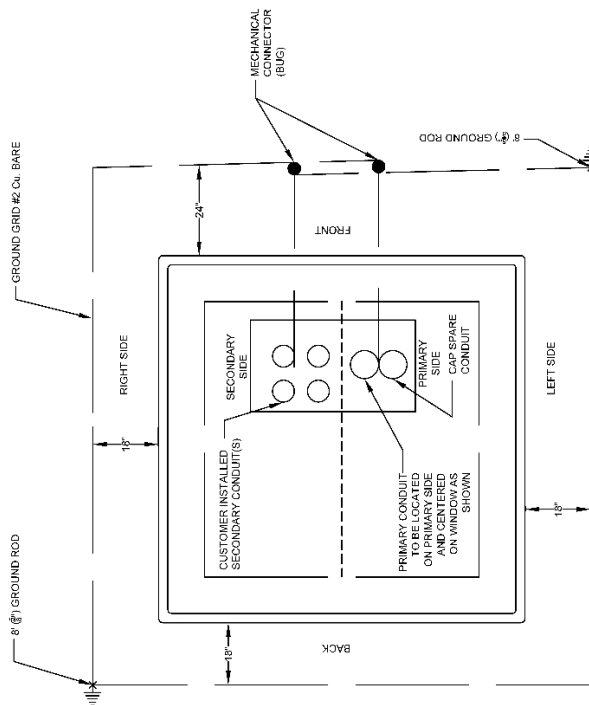
TYPICAL BOLLARD CONSTRUCTION STANDARD

DRAWN BY: D. PRIVE	SCALE: N.T.S	DATE: 10/26/2023
CHECKED BY: E. MORGAN		

FIGURE 3-10

NOTES:

- (1) 25-100 KVA - INSTALL 42" x 46" PAD (WITH VAULT OF 30" DEPTH)
- (2) 100-167 KVA - INSTALL 48" x 48" PAD (WITH VAULT OF 30" DEPTH)
- (3) PRIMARY CONDUIT - CONTRACTOR SHALL INSTALL 2-5" & 1-2" SCHEDULE 40 CONCRETE (3000 PSI) ENCASED PVC CONDUIT (3" ENVELOPE AROUND CONDUIT) WITH BELL ENDS AND A MINIMUM OF 36" OF COVER FROM THE POLE OR MAN-HOLE TO THE PRIMARY SIDE OF THE PAD.
- (a) ALL CONDUIT SHALL BE CLEANED AND BRUSHED
- (b) A 900 LB. PULL STRING SHALL BE PROVIDED IN EACH CONDUIT
- (c) APPROVE LOCATION ON THE POLE, ONE CONDUIT MUST BE EXTENDED 10' UP THE POLE USING SCH 80 CONDUIT WITH THE OTHER CONDUIT CAPPED/PLUGGED JUST ABOVE GRADE LEVEL. THE CAPPED CONDUIT SHALL ALSO BE CAPPED INSIDE THE TRANSFORMER PAD. PRIMARY CONDUITS SHOULD BE CENTERED IN PRIMARY SIDE OF VAULT.
- (d) CONCRETE ENCASEMENT MUST STOP SHORT OF THE POLE - ENCASE THE COUPLING BETWEEN THE CONDUIT & SWEEP/ELBOW
- (3) TRANSFORMER PAD SHALL BE LOCATED A MINIMUM OF 3' FROM ANY STRUCTURE (BACK AND SIDE) AND A MINIMUM OF 10' OF CLEARANCE AT THE FRONT OF THE PAD SHALL BE MAINTAINED
- (4) OWNER/CONTRACTOR SHALL BE RESPONSIBLE FOR THE INSTALLATION OF ALL SECONDARY CONDUIT, CABLES, AND CONNECTORS FROM THE TRANSFORMER PAD TO THE SERVICE ENTRANCE.
- (a) ALL SECONDARY CONDUIT(S) MUST TERMINATE WITHIN THE SECONDARY SIDE OF THE TRANSFORMER VAULT (GENERALLY CENTERED ON THE RIGHT THIRD OF THE PAD - APPROXIMATELY 18-30" FROM SIDEWALL OF PAD).
- (b) TWO HOLE COMPRESSION CONNECTORS SHALL BE UTILIZED AT THE TRANSFORMER AND MUST BE HAND TIGHTENED BY CONTRACTOR AND LEFT FOR CEL TO MAKE THE FINAL TORQUED CONNECTIONS.
- (c) SECONDARY CABLES SHALL HAVE SUFFICIENT SLACK TO ALLOW FUTURE MAINTENANCE. THE INSTALLATION SHALL MEET ALL APPLICABLE CODES AND CEL STANDARDS AND APPROVAL.
- (5) TWO (2) 3/8" X 8' COPPER CLAD GROUND RODS SHALL BE DRIVEN 18" BELOW GROUND LEVEL, LOCATED AT THE CORNERS CLOSEST AND FURTHEST FROM PRIMARY OPENING IN THE PAD, AS SHOWN IN THE DRAWING.
- (a) A GROUND GRID SHALL BE CREATED BY CONNECTING #2 BARE CU. IN AN ENVELOPE AROUND THE PAD AND EXTENDING THE CONDUCTOR TAILS 5' ABOVE THE SECONDARY AND PRIMARY OPENING OF THE PAD.
- (6) CONTRACTOR TO INSTALL CONCRETE BOLLARDS AROUND TRANSFORMER, IF NECESSARY - LOCATION TO BE DETERMINED BY CEL
- (7) CEL MUST APPROVE ALL WORKMANSHIP PRIOR TO ENCASEMENT AND BACKFILLING
- (8) EXCAVATION FOR PAD SHALL BE CARRIED TO A DEPTH OF 12" BELOW BOTTOM OF PAD WALLS. BACKFILL UNDER THE WALLS SHALL BE CLEAN GRAVEL/STONE AND PLACED IN 2 - 6" LAYERS AND COMPACTED w/ MECHANICAL TAMPERS TO NO LESS THAN 98% OF THE MAX DENSITY AS DETERMINED BY STANDARD COMPACTION TEST, AASHTO OR ASTM, D.698.
- (9) LOCATION OF CONDUIT MUST BE APPROVED BY CEL BEFORE INSTALLATION.



CHICOPEE ELECTRIC LIGHT
725 FRONT STREET, CHICOPEE, MA 01020

TYPICAL CONSTRUCTION STANDARDS FOR SINGLE-PHASE TRANSFORMER PAD AND CONDUIT

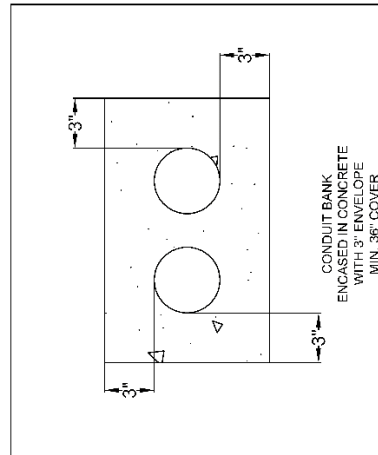
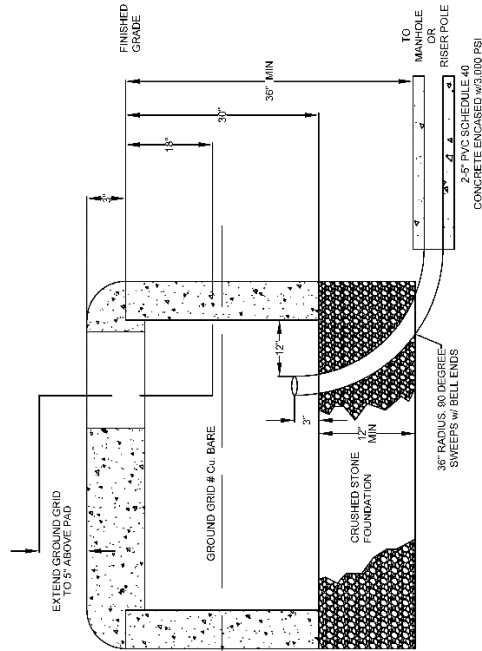
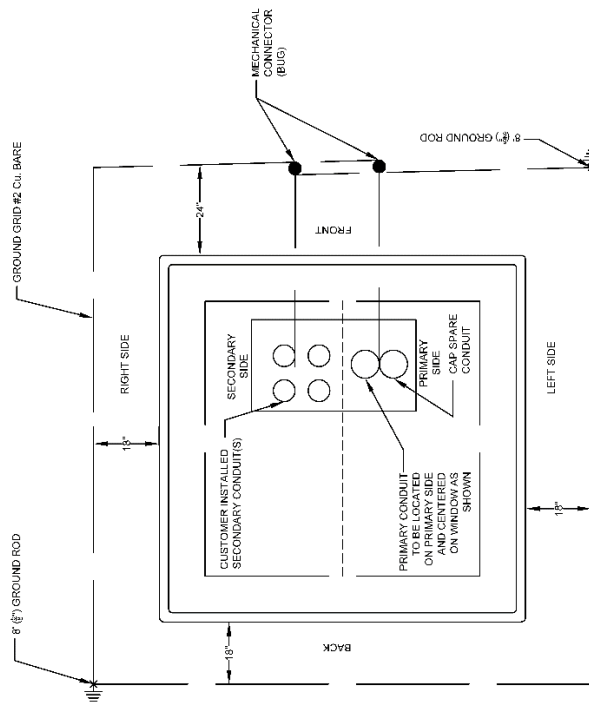
DRAWN BY: D. PRIVE
CHECKED BY:

SCALE: N.T.S.
DATE: 7/7/2023

FIGURE 3-11

NOTES:

- (1) 75-300 kVA - INSTALL 76" x 70" x 36" PAD (WITH VAULT OF 30" DEPTH)
- (2) 500-2000 kVA - INSTALL 84" x 84" x 36" PAD (WITH VAULT OF 30" DEPTH)
- (3) PRIMARY CONDUIT - CONTRACTOR SHALL INSTALL 2.5" & 1-2" SCHEDULE 40 CONDUIT (3" ENVELOPE AROUND CONDUIT) WITH BELL ENDS AND A MINIMUM OF 36" OF COVER FROM THE POLE OR MANHOLE TO THE PRIMARY SIDE OF THE PAD.
- (4) ALL CONDUIT SHALL BE CLEANED AND BRUSHED
- (5) A 900 lb. PULL STRING SHALL BE PROVIDED IN EACH CONDUIT
- (6) APPROVE LOCATION ON THE POLE. ONE CONDUIT MUST BE EXTENDED 10' UP THE POLE USING SCH 80 CONDUIT WITH THE OTHER CONDUIT CAPPED/PLUGGED JUST ABOVE GRADE LEVEL. THE CAPPED CONDUIT SHALL ALSO BE CAPPED INSIDE THE TRANSFORMER PAD.
- (7) CONCRETE ENCASUREMENT MUST STOP SHORT OF THE POLE - ENCASE THE COUPLING BETWEEN THE CONDUIT & SWEEPELBOW.
- (8) TRANSFORMER PAD SHALL BE LOCATED A MINIMUM OF 3' FROM ANY STRUCTURE (BACK AND SIDE) AND A MINIMUM OF 10' OF CLEARANCE AT THE FRONT OF THE PAD SHALL BE MAINTAINED.
- (9) OWNER/CONTRACTOR SHALL BE RESPONSIBLE FOR THE INSTALLATION OF ALL SECONDARY CONDUIT, CABLES, AND CONNECTORS FROM THE TRANSFORMER PAD TO THE SERVICE ENTRANCE.
- (10) ALL SECONDARY CONDUIT(S) MUST TERMINATE WITHIN THE SECONDARY VAULT (GENERALLY THE RIGHT THIRD OF THE PAD - APPROXIMATELY 18-30" FROM SIDEWALL OF PAD).
- (11) TWO HOLE COMPRESSION CONNECTORS SHALL BE UTILIZED AT THE TRANSFORMER AND MUST BE HAND TIGHTENED BY CONTRACTOR AND LEFT FOR CEL TO MAKE THE FINAL TORQUED CONNECTIONS.
- (12) SECONDARY CABLES SHALL HAVE SUFFICIENT SLACK TO ALLOW FUTURE MAINTENANCE. THE INSTALLATION SHALL MEET ALL APPLICABLE CODES AND CEL STANDARDS AND APPROVAL.
- (13) TWO (2) - 8" X 8" COPPER GLAD GROUND RODS SHALL BE DRIVEN 18" BELOW GROUND LEVEL, LOCATED AT THE CORNERS CLOSEST AND FURTHEST FROM PRIMARY OPENING IN THE PAD, AS SHOWN IN THE DRAWING.
- (14) A GROUND GRID SHALL BE CREATED BY CONNECTING #2 BARE CU IN AN ENVELOPE AROUND THE PAD AND EXTENDING THE CONDUIT TAILS 5' ABOVE THE SECONDARY AND PRIMARY OPENING OF THE PAD.
- (15) CONTRACTOR TO INSTALL CONCRETE BOLLARDS AROUND TRANSFORMER, IF NECESSARY - LOCATION TO BE DETERMINED BY CEL.
- (16) CEL MUST APPROVE ALL WORKMANSHIP PRIOR TO ENCASMENT AND BACKFILLING
- (17) EXCAVATION FOR PAD SHALL BE CARRIED TO A DEPTH OF 12" BELOW BOTTOM OF PAD WALLS. BACKFILL UNDER THE WALLS SHALL BE CLEAN GRAVEL/STONE AND PLACED IN 2-6" LAYERS AND COMPACTED w/ MECHANICAL TAMPERS TO NO LESS THAN 95% OF THE MAX DENSITY AS DETERMINED BY STANDARD COMPACTION TEST, AASHTO OR ASTM, D 698.
- (18) LOCATION OF CONDUIT MUST BE APPROVED BY CEL BEFORE INSTALLATION



CHICOPEE ELECTRIC LIGHT
725 FRONT STREET, CHICOPEE, MA 01020

TYPICAL CONSTRUCTION STANDARDS
FOR THREE-PHASE TRANSFORMER PAD
AND CONDUIT

DRAWN BY: D. PRIVE

SCALE: N.T.S.

DATE: 7/7/2023

CHECKED BY:

TYPICAL HANDHOLE INSTALLATION

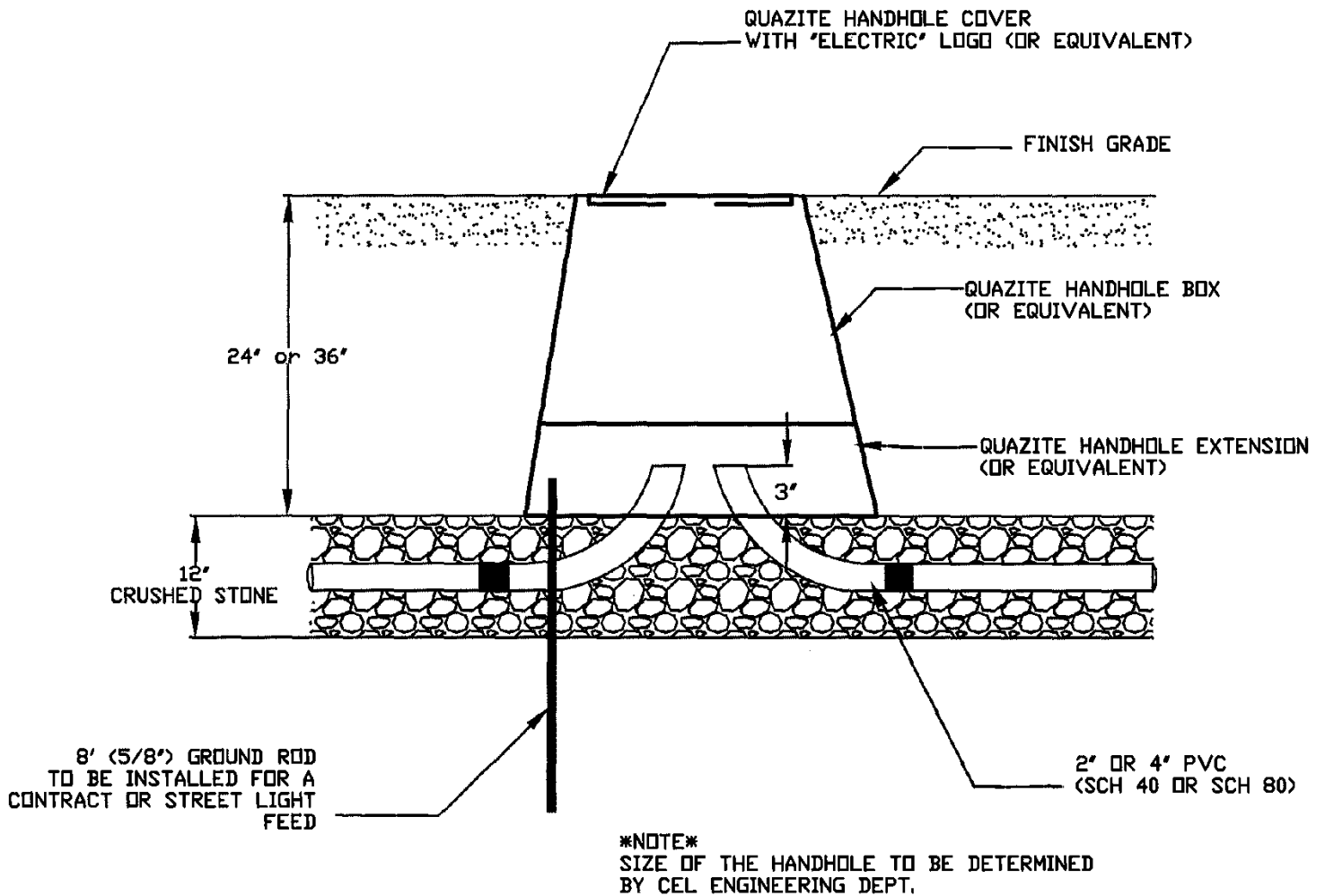
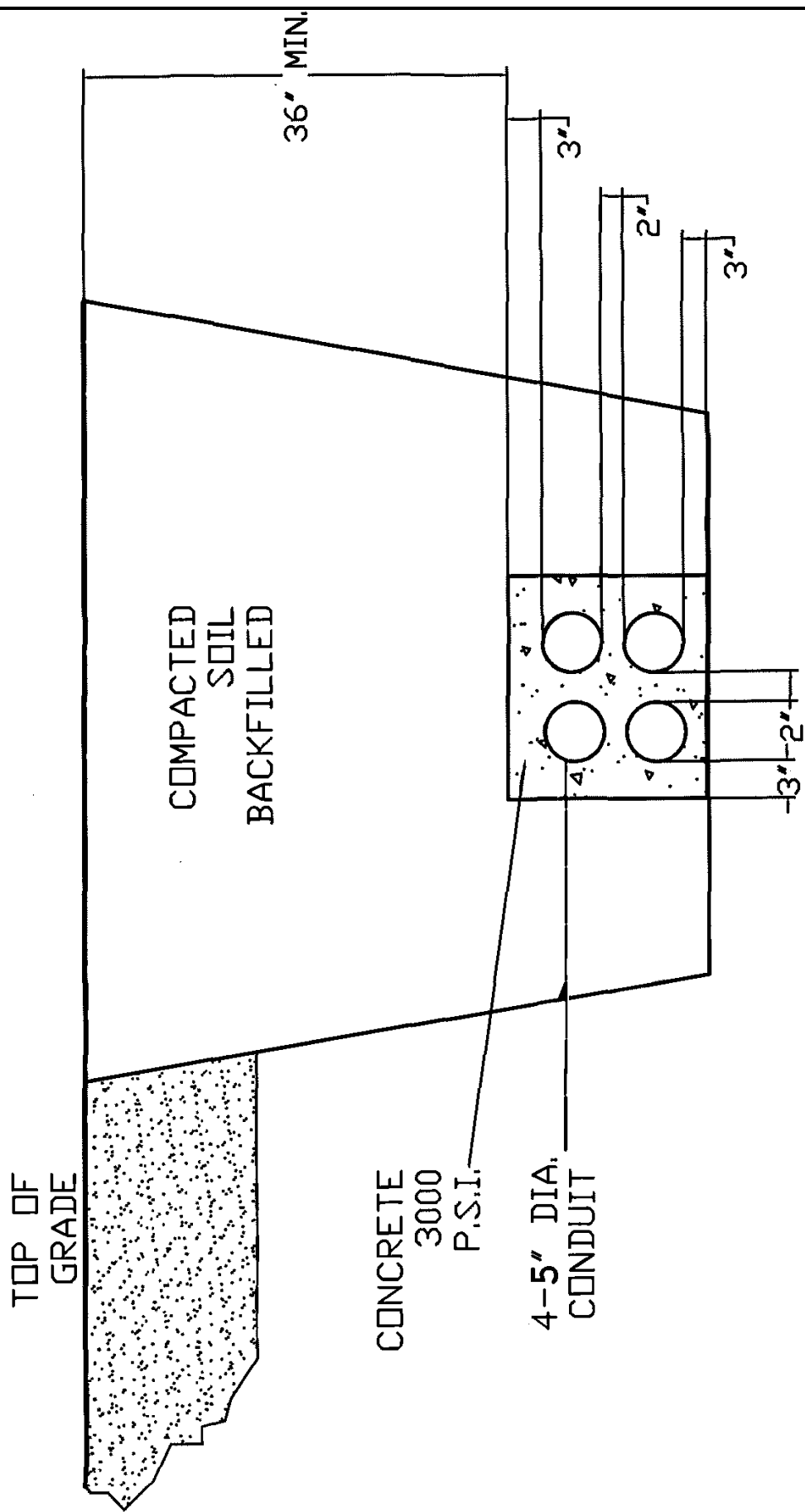
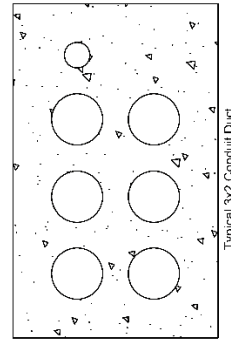
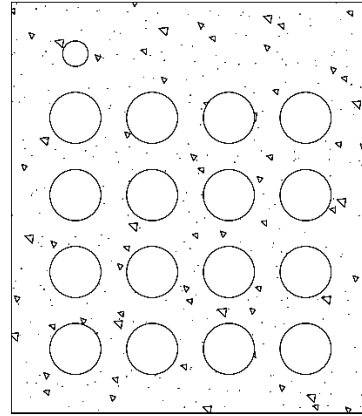
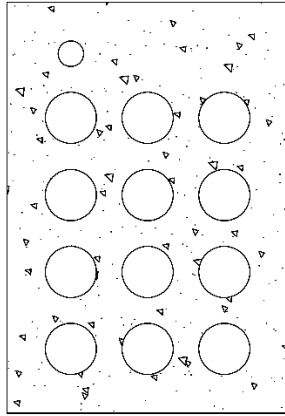
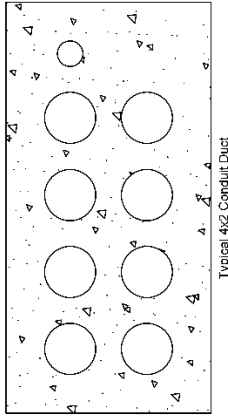
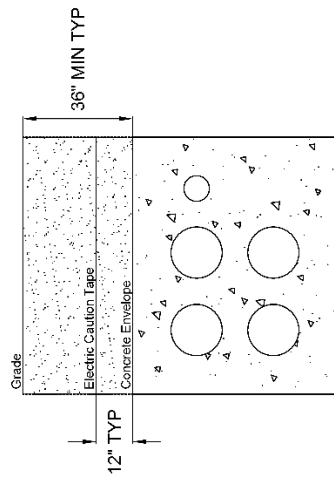
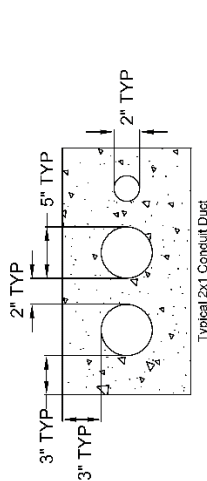


FIGURE 3-12



TYP, UNDERGROUND CONDUIT
ENCASEMENT 4-BANK
FIGURE 3-13A



NOTES:

- (1) ALL CONDUIT SHALL BE INSTALLED BY THE CONTRACTOR.
- (2) PRIMARY CONDUIT MUST BE 5" IN DIAMETER, MINIMUM SCHEDULE 40 PVC (OR RIGID STEEL), AND ENCASED IN CONCRETE (3000 PSI) WITH A MINIMUM 3" ENVELOPE AND 36" OF COVER FROM THE POLE OR MANHOLE TO THE PRIMARY SIDE OF THE TRANSFORMER PAD.
- (3) 1-2" SCHEDULE 80 CONDUIT MUST BE INSTALLED FOR CROSSROADS FIBER. THIS CAN BE INSTALLED IN THE SAME TRENCH AND ENCASED IN CONCRETE BUT MUST NOT ENTER TRANSFORMER PAD. COORDINATE TERMINATION/RISER LOCATION WITH ENGINEERING.
- (4) IF CHICOPEE ELECTRIC LIGHT IS TO INSTALL SECONDARY CONDUCTOR THE SECONDARY CONDUIT MUST BE 4" IN DIAMETER AND BE SCHEDULE 40 PVC (SCHEDULE 80 PVC AT SWEEPS AND UNDER HEAVILY TRAFFICKED AREAS) WITH A MINIMUM OF 36" OF COVER FROM THE POLE, MANHOLE, OR TRANSFORMER PAD TO THE METER SOCKET.
- (5) OTHER UTILITIES MAY BE INSTALLED NO CLOSER THAN 12" FROM ELECTRIC CONDUIT.
- (6) ELECTRIC CAUTION TAPE MUST BE INSTALLED APPROXIMATELY 12" ABOVE ELECTRIC CONDUIT.
- (7) ALL CONDUIT MUST BE INSTALLED WITH 900 POUND PULL TAPE EXTENDING 6' FROM EACH END AND UNUSED CONDUIT MUST BE CAPPED.

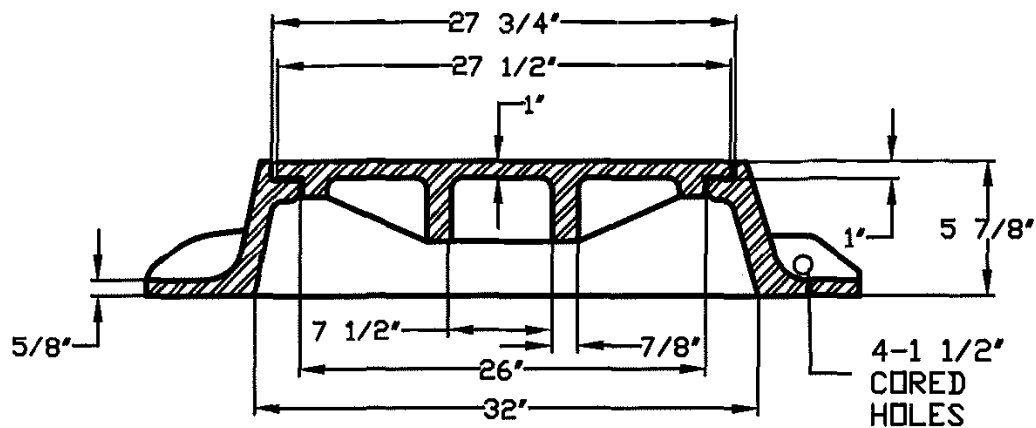
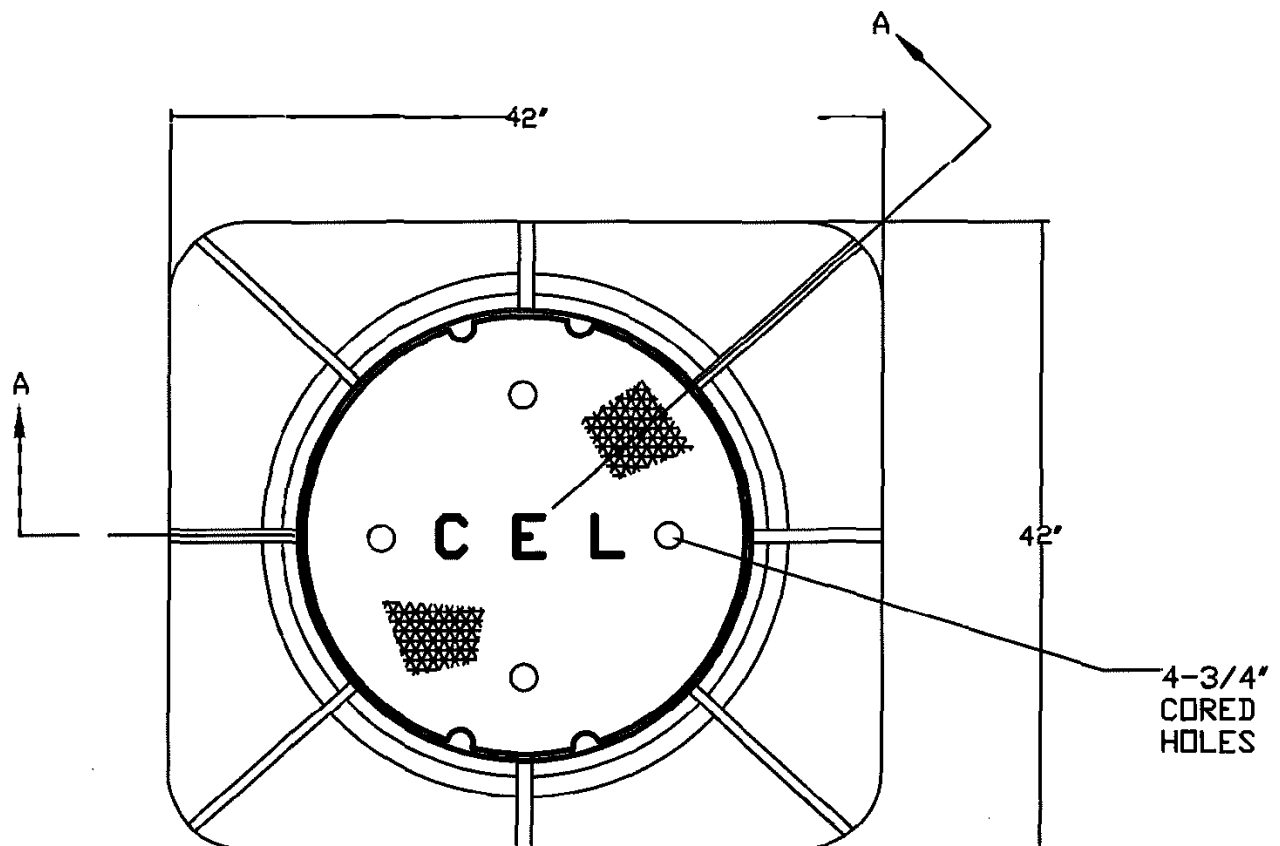


CHICOPEE ELECTRIC LIGHT
725 FRONT STREET, CHICOPEE, MA 01020

TYPICAL CONDUIT AND DUCT BANK INSTALLATION

DRAWN BY: D. PRIVE SCALE: N.T.S. DATE: 6/29/2023

FIGURE 3-13B

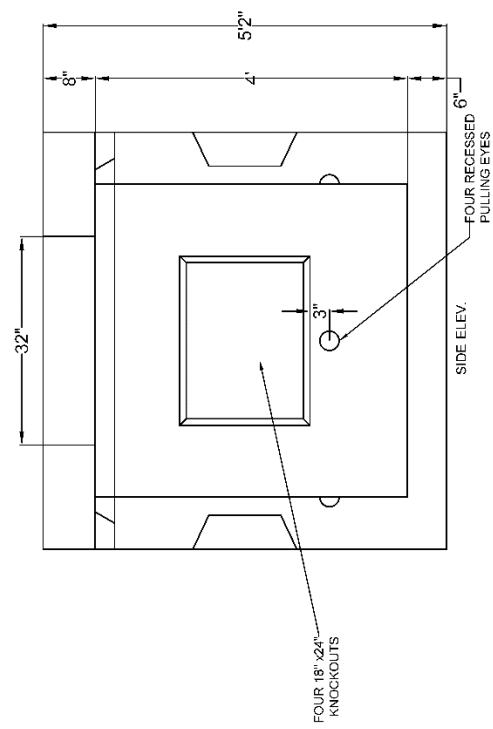
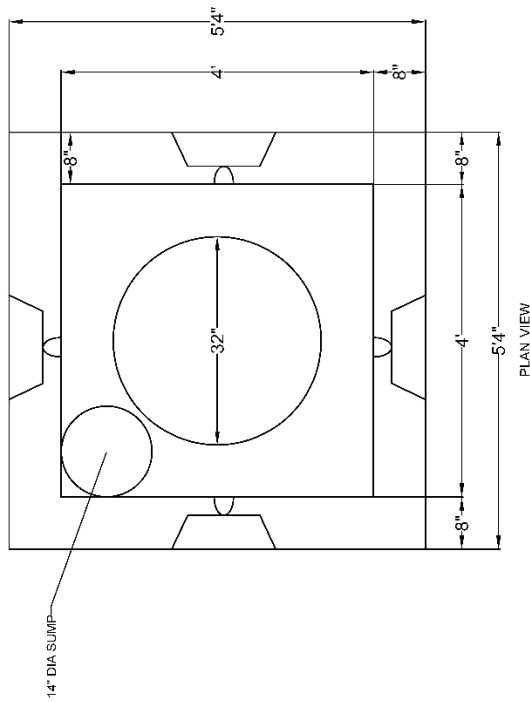


SECTION: A-A

TYPICAL MANHOLE COVER
AND FRAME

FIGURE 3-14

FIGURE 3-15



NOTES:

- (1) CONSTRUCTION JOINTS SEALED WITH 1" DIA. ASPHALT ROPE TAR WHERE APPLICABLE.
- (2) H20 DESIGN FOR HEAVY TRAFFIC AREAS.



CHICOPEE ELECTRIC LIGHT
725 FRONT STREET, CHICOPEE, MA 01020

TYPICAL SERVICE MANHOLE (4'X4', 4'X6')

DRAWN BY: D. PRIVE
CHECKED BY:

SCALE: N.T.S.

DATE: 7/10/2023

METER INSTALLATIONS

There are four basic ways to measure electricity consumption (Meter Socket configurations shown in Figure 4-1):

- a. Services up to 400 A are metered directly using self-contained (i.e. direct-connect) meters.
- b. Services greater than 400 A are metered using current transformer cabinet, current transformers (CTs) and instrument-rated meters.
- c. Very large services are metered at Switchgear housing CT's and instrument-rated meters.
- d. Services large enough to exceed CEL's largest standard transformer (2000 kVA, 277/480V) are metered at medium voltage (7,970/13,800V) using utility grade CTs and PTs. In this case, the customer installs, owns, and maintains all transformers in addition to all other customer-owned equipment.

The customer's electrician provides and installs all equipment beyond the point of delivery: meter sockets, cabinets and enclosures, connection lugs, conduit, grounding, protection devices, and wiring from the socket to the load. CEL provides and installs the meter, and CT's (and PT's if necessary).

4.1 LOCATING THE METER

It is in the mutual interest of the customer and CEL to install the meter in a location suitable for meter reading, testing, repair and removal. Meter locations are subject to approval by CEL's Meter Department.

4.1.1 Meter Locations

- a) All residential meters shall be outside on the front or front corner of the house. (The front of the house is considered to be the side facing the city or private roadway).
 - i.) If an existing residential service which has a meter or meters in a non-approved location (for example, in the basement) is upgraded, relocated or otherwise significantly altered, the meters SHALL BE required to be moved to an approved location as part of the service work.
- b) Commercial meters shall normally be located outdoors.
- c) Meters shall be grouped together to keep the number of meter locations to a minimum - normally one location per structure.
- d) Instrument transformer enclosures may be located indoors in a suitable area readily accessible by CEL personnel. (The meter socket shall normally be located outdoors).
- e) Single meters are to be installed five feet from the center of the meter to finished grade.
- f) Banks of multiple meters are to be installed such that the highest meters are no higher than six feet from the center of the meter to finished grade, and the lowest meters are four feet (minimum) from the center of the meter to finished grade.

4.1.2 Meter Should Not Be Located At Following Locations

- a) Behind a fence or enclosure.
- b) In areas subject to being fenced or enclosed such as patios, pool areas, decks, porches and backyards.
- c) Where shrubs or landscaping could obstruct access to the meter.
- d) In an unsafe or inconvenient location, such as above a stairway or window well.
- e) On a mobile structure such as a houseboat or mobile home – the meter is usually mounted on a pedestal in this scenario.
- f) Outside bedrooms or bathrooms and near doors and windows, to respect customer privacy.
- g) In a location with abnormal temperature vibration, corrosive air, or excessive noise (Example: Motors, Compressor rooms, etc.)
- h) On a pole owned by CEL or another utility (Exceptions: Primary Metering, services for other pole attachee's equipment).
- i) In areas subject to damage from a vehicle. Bollards may be installed to mitigate this risk (Refer to Figure 3-9).

The requirements listed above also apply to meters for outbuildings such as detached garages, barns, shops, storage buildings, pump houses, and other structures that do not provide living space.

Note: If an additional meter is required for a second structure (such as a garage, barn, carport etc.) on the same parcel, please consult with the City of Chicopee Building Department prior to commencing work.

4.1.3 Meters Located Inside The Electrical Room

If a single meter or multiple meters are approved by CEL to be located inside an electrical room, the following conditions are required. The electrical/meter room must:

- a) Contain only power and communication equipment
- b) Not to be used for storage
- c) Be accessible during all hours of all days
- d) Be well lit
- e) Be accessible through a door that opens directly to the outside, or with prior approval by CEL, opens directly to the lobby of the building's main entrance. If the facility could be locked during normal business hours (such as a school, church or meeting hall), the electrical equipment room door must open directly to the outside. The door must be at least two feet, eight inches wide and six feet, eight inches high, and open outward. The exterior of the door must have a sign saying "Electrical Room". The customer must supply CEL with a key to the door.
- f) Must provide adequate workspace and walkways (refer to figure 4-2)

4.2 CLEARANCES AROUND THE METER

Meter clearances are measured from the center of the meter socket, or from the center of the face of the meter. The meter socket shall be installed between 4.5' and 5.5' above finished grade (5' preferred). A minimum 3 ft by 3 ft working space shall be maintained in front of the meter. This space must be permanently free of all obstructions, including landscaping or obstructive vegetation.

Additionally, Allow 3 feet of clearance from a gas meter, and 3 feet from windows or doors for customer privacy. (Refer to Figure 4-2).

4.3 INSTALLATION FOR AN APARTMENT BUILDING

Figure 4-3 shows a typical multiple meter single-phase installation for a multifamily building. If the installation has more than six meters, a main disconnect is required.

4.4 INSTALLATION FOR AN OFFICE BUILDING

Figure 4-4 shows a typical multiple-meter three-phase installation for services of 200 amps or less (120/208V). If the installation has more than six meters, a main disconnect is required. The clearances shown for this office installation also applies to factory-built multiple meter panels, meters must be a minimum of 4 feet above the floor, and maximum of 6 feet.

4.5 METERING TO MULTIPLE MOBILE HOMES

Figure 4-5 shows a single-phase self-contained metering to multiple mobile homes. If the meter structure is installed in a vehicle traffic area, install a guard post/bollard. (Refer to Figure 3-9 for guard post requirements.)

4.6 GENERAL REQUIREMENTS FOR METER SOCKETS

Meter sockets must meet the following requirements:

- a. Ringless with sealing provisions or Ring-type, to accept a meter sealing ring
- b. Rated NEMA 3R-for exterior use and weather-tight
- c. Installed level, plumb, and fastened securely to a rigid structure
- d. All unused openings in the enclosure, closed with plugs and secured tightly from the inside.
- e. Covered and sealed with a transparent cover, if live lines are installed
- f. Not jumpered to provide power
- g. Acceptable to CEL and UL listed
- h. For residential meter sockets, a manual bypass socket is not required
- i. For all commercial and three phase self-contained meters, a manual bypass must be provided

4.6.1 Sockets For Residential And Temporary Services

Most residential services, and all temporary services (120/240V), use a socket with five jaws and a ground terminal.

- a. Figure 4-6a shows a typical meter socket used on an overhead service.
- b. Figure 4-6b shows a typical meter socket used on an underground service

4.7 METER INSTALLATION REQUIREMENTS

4.7.1 Cable Runs

- a. Metered circuits and un-metered circuits must not be intermixed in raceways or enclosures.
- b. Customer equipment is not allowed inside a meter enclosure or CT cabinet
- c. Customer load monitoring equipment, if installed, must be on the load side of the meter.
- d. Line-side conductors are connected to the top terminals of the meter socket.
- e. After the installation is complete, make these mechanical checks: Conductors are not under undue strain on their terminals, connections are tight, terminals are rated for the size of conductor used, strands have not been removed to make conductors fit under-sized terminals.

4.7.2 Labeling

For multi-meter installations, each meter socket must be marked in such a way as to identify the billing address and/or unit identifier. This may be done with permanent marker (so long as the writing is clear and legible), a permanently engraved metal or hard plastic label, or a weather-rated printed label. This also applies to production meters for Distributed Generation (DG) systems.

4.7.3 Protection

- a. The ampacity rating of the main circuit breaker, or safety switch, must not exceed the maximum rating of the meter socket. For a three-phase service, if the marked continuous ampacity exceeds 320 amperes, the customer must install CT metering.
- b.. The metering (self-contained meters and/or CT's) must be electrically located on the LINE SIDE of the disconnect switch (i.e. it must be 'hot sequenced'), except in special situations approved by CEL or where electrical code requires it.
- c.. Current limiting fuses, which protect the customer's electrical system from excessive current, must be located in the customer's service panel or in a separate enclosure between the socket and the panel.
- d.. All meter sockets, enclosures, and conduit must be grounded and bonded in accordance with Massachusetts and National Electrical Codes. The neutral conductor must be connected to the neutral terminal in the socket.
- e.. When metering equipment is installed in a location where it might be struck by a vehicle, the customer must install and maintain a guard post/bollard. (Refer to Figure 3- 9 for guard post requirements)

4.8 SELF-CONTAINED METERS

Self-contained meters carry full load current and connect directly across full line voltage. Self-contained meters are also called direct-connect meters. Self-contained, socket-type meters are installed on following type of services:

- a. Single Phase, up to 400 A (320 A full load)
- b. Three Phase, up to 400 A (320 A full load) amps, and with motors up to 60 hp for 120/208 service, and up to 320 amps, and with a motor up to 125 hp for 277/480 volt service

The following is a list of services metered using self-contained meters:

- a. Single Phase 120/240V, 3 wire, 400 A and smaller (Figure 4-7a)
- b. Single Phase 120/208V, 3 Wire, 400 A and smaller Network (Figure 4-7b)
- c. Three Phase 120/208V, 4 Wire WYE, 400 A and smaller (Figure 4-7c)
- d. Three Phase 277/480V, 4 Wire WYE, 400 A and smaller (Figure 4-7d)

Services larger than these are metered using instrument-rated meters utilizing current transformers (CT's).

4.9 CURRENT TRANSFORMER METERING

Current transformers (CT's) are used with instrument-rated meters, to meter three phase services greater than 400 A (320 A full load). Smaller services use self-contained metering.

The customer's electrician provides and installs all equipment beyond the point of delivery including, but not limited to the meter sockets, cabinets and enclosures for the meter, pre-wired test switch, connection lugs, conduit grounding, protection equipment, and wiring from the load to the CT mounting base.

CEL provides the CT's , installs the meter, and wiring associated with the meter, and CTs. The customer's electrician is responsible for installing the CT's (white dot on the CT's to the line side of the service) and properly torquing bus bar or lug connections.

NOTE: Where a service is fed from a dedicated, pad-mounted transformer, the customer's electrician is responsible for the installation of all secondary conductors from the pad-mounted transformer to the CT cabinet, and installing the CT's. Refer to Chapter 3, Section 3.4.3.

The following is a list of services metered using instrument-rated meters and current transformers:

- a. Three Phase, 120/208V 4 wire wye (Figure 4-8b)
- b. Three-phase, 277/480V, 4 wire wye (Figure 4-8c)

4.9.1 Current Transformer Cabinet

The customer provides and installs a cabinet for the current transformers, and the conduit between the CT cabinet and the meter enclosure. The CT cabinet is metal, weather tight, NEMA 3R rated, and securely mounted on a rigid surface plumb in both directions. The cabinet is to have a side-hinged, sealable door. When open, the door must not block a safe exit. The top of the cabinet must be not higher than 7 feet above the floor, and the bottom of the cabinet must be at least 6 inches above the floor. The dimensions of the CT cabinet are:

<u>Service</u>	<u>Number of CTs</u>	<u>Width</u>	<u>Height</u>	<u>Cabinet Depth</u>
Three-Phase, greater than 400 A	3	36"	48"	11"

The location of the CT cabinet is subject to the approval of CEL Meter Dept. Inside the cabinet, the customer installs a mounting base for the CTs and a neutral lug. The base has two cable termination bolts on the line and the load side of each phase, and two bolts on the neutral bus.

The CT cabinet contains only the main service conductors. A maximum of four main service conductors may be served from the load side of each termination bolt, as long as the lugs are not stacked and they do not restrict mounting the CTs. Use "stair step" lugs if more than two conductors are terminated at a CT. If the CT cabinet is installed in a vehicle traffic area, install a guard post/bollard. (Refer to Figure 3-9 for guard post requirements).

4.9.2 Meter Socket, Enclosure And Conduit

The distance between the meter socket enclosure and the CT cabinet must not be less than 10 inches and must not be more than 50 feet. The two enclosures must be mounted as close together as conditions feasibly allow.

Meter Socket and Enclosure for CT services

The customer's electrician provides and installs a 13-terminal meter socket with a pre-wired test switch, with conduit between the meter enclosure and the CT cabinet. (Refer to Figure 4-9).

4.9.3 Conduit

For conduit, use rigid steel, rigid PVC plastic (Schedules 40 or 80), or IMC/EMT conduit. Flex conduit is not permitted. When metallic conduit is used, provide grounding bushings at each end. When PVC conduit is used, install a green insulated bonding jumper in the conduit. 1 inch conduit or larger is required, with proper fittings and bushings to protect metering conductors. The conduit enters the meter enclosure adjacent to the test switch. A pull string is required if the conduit is over 25 feet. Conduit bends must not exceed 360 degrees total.

4.9.4 Mounting Base for Current Transformers, Three-Phase Services

The customer installs this CT mounting base in the CT cabinet for three-phase services. This mounting base accepts bar-type current transformers, only. For overhead or underground services, the customer's electrical contractor connects the line and load conductors to the terminals on the mounting base. The mounting base must be rated for fault current of 50,000 amperes, minimum. Based on EUSERC 329B (Refer to Figure 4-10)

4.10 SWITCHGEAR METERING

A custom-built Switchgear may be utilized for three phase services, typically for those over 800 amperes. The switchgear will include the switchgear service section, current transformer (CT) mounting base, and a means for locking the CT cabinet with independent access by CEL. The customer must submit one set of drawings to CEL for approval, prior to shipment of the switchgear from the manufacturer.

The point of delivery must be no more than 5 feet vertical or horizontal inside the building from the point of entrance. Locate the metering compartment on the supply side off the main switch or breaker (i.e. the metering MUST be Hot Sequenced), with the CT's in a CT compartment. The meter socket and test switch will be installed outside the building less than 50 feet from the CT compartment. The Switchgear may be located outside – if it is rated appropriately – or inside. The space below this compartment's barrier may be used as the main switch (breaker) compartment, or a load distribution compartment, or a bottom-fed terminating pull section. CEL will own, provide, and install the meter and related wiring between the meter and CT's. CEL will provide the CT's and the electrical contractor will install the CT's in the CT compartment. CEL is responsible for the wiring between the CT's and the meter. Mount each socket outside the building and connect it to the switchgear with approved conduit. (Refer to Figure 4-9 for the 13-Terminal socket for three-phase services using CTs)

Switchgear Meter Installation

A typical switchgear meter installation is show in Figure 4-11 with the meter mounted outside the building

4.11 OFF-PEAK METERING

CEL offers off-peak metering for services which utilize only electric appliances for functions traditionally performed by fossil fuel appliances – heat, hot water, cooking etc. In order to qualify for off-peak metering an inspection will be performed by CEL's Engineering Department and Meter Department, using the checklist shown below. If the installation meets CEL standards, the customer shall sign for the off-peak meter and the off-peak meter will be installed.

OFF-PEAK (ELECTRIC HEAT) INSPECTION CHECKLIST

- a. Baseboard, Heat Pump, Electric Hot Water, or other Electric Heating System present
- b. Electric Range and Dryer or Electric outlets (208V or 240V) present, if applicable.

c. 200 AMP minimum main breaker in the distribution panel. 100 AMP minimum breaker is allowable if the building is multi-unit.

d. Electric Hot Water – Heat Pump Tank, Resistive Tank, or Tankless present

e. None of the following are located on premises:

- Oil, Natural Gas, or Propane Furnace or other heating device (excluding portable heaters)
- Wood Burning Furnace
- Oil Tank
- Propane Tank feeding house/building
- Gas Meter or Meter Manifold
- Gas or Propane Range/Stove (excluding outdoor grills)
- Gas or Propane Clothes Dryer

METER SOCKETS

Meter sockets come in the following configurations.
The services used with each type are shown here.

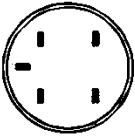
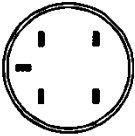
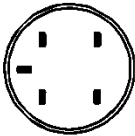
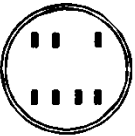
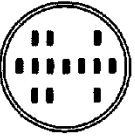
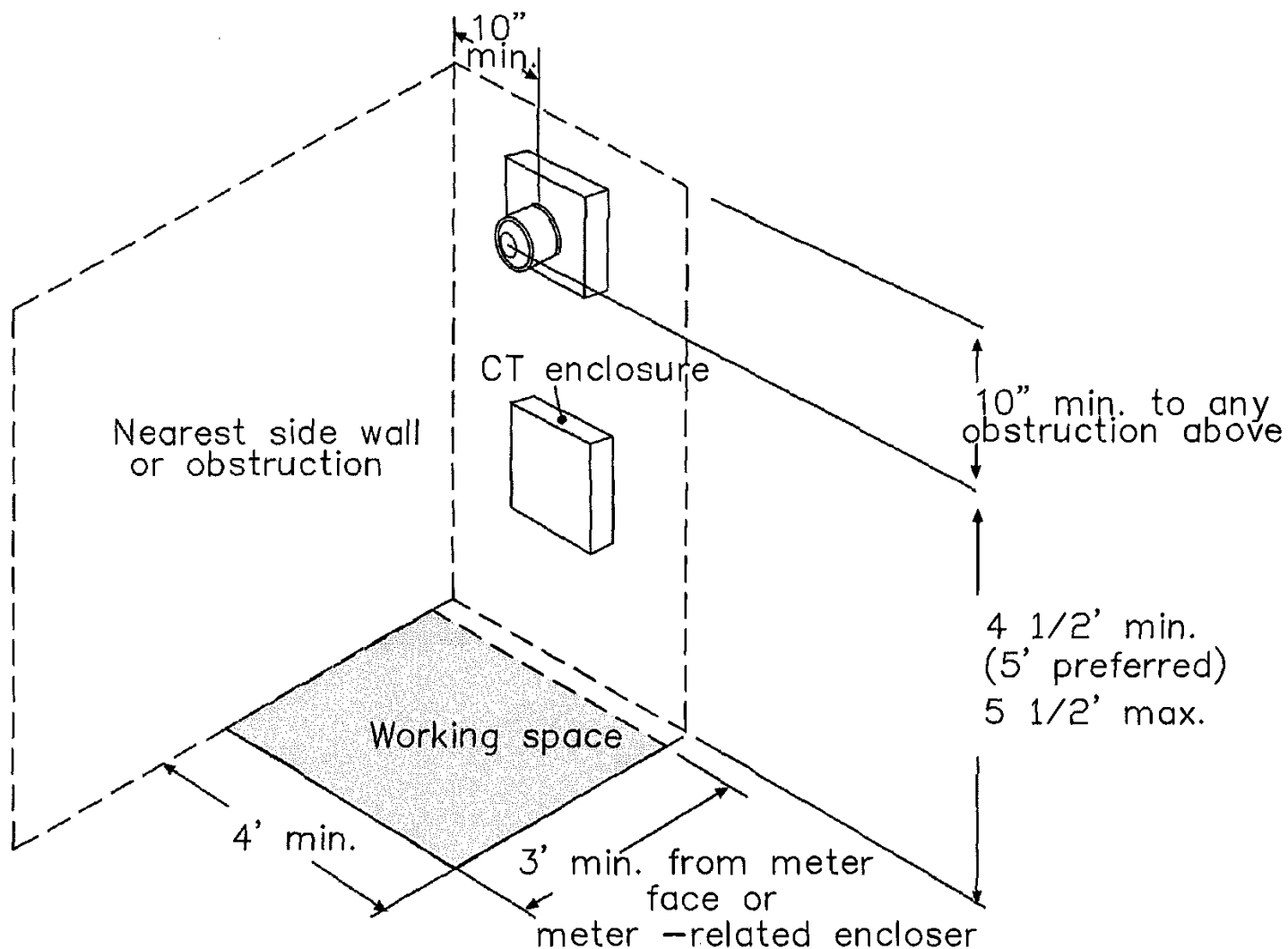
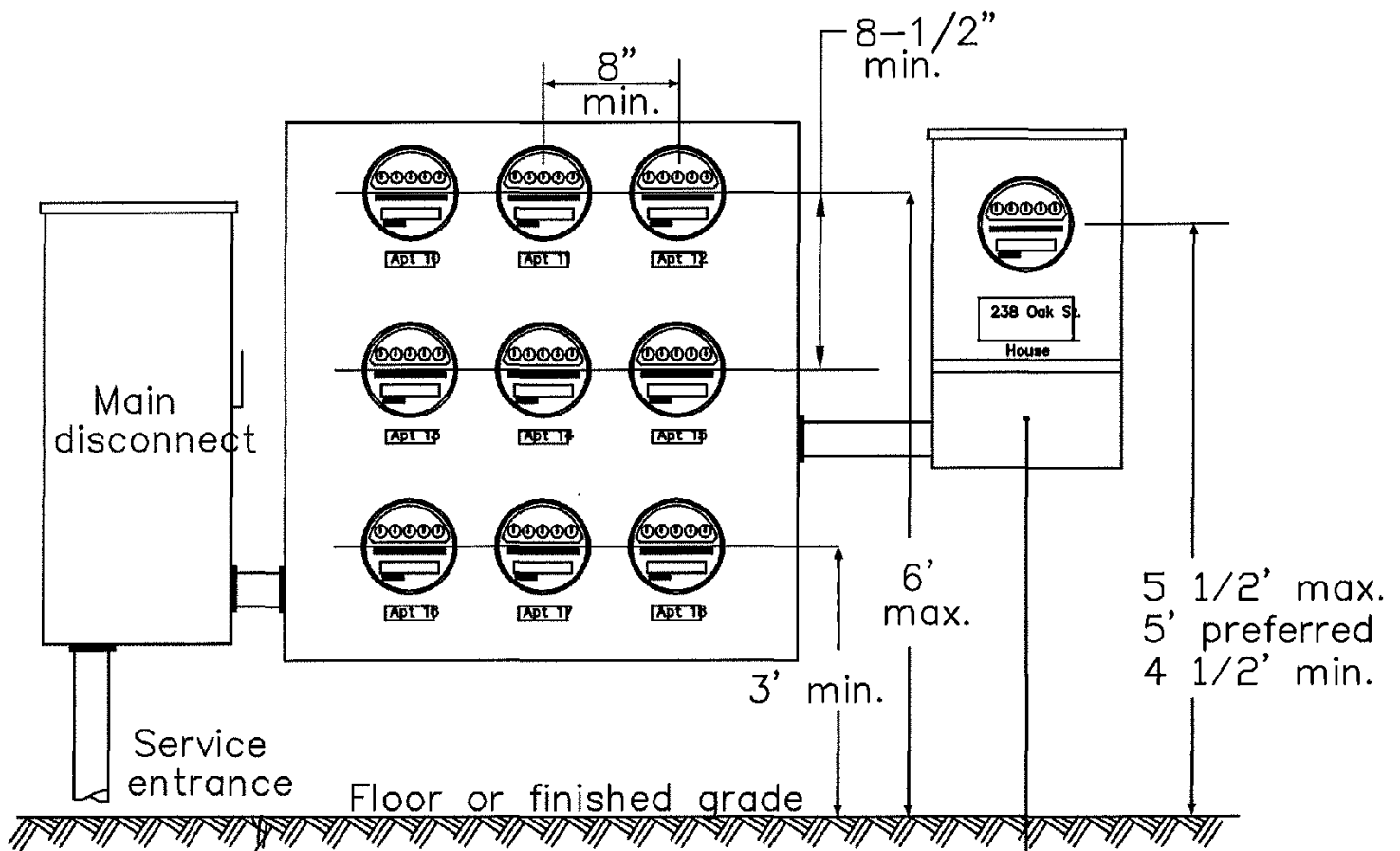
SOCKET	VOLTAGE	CURRENT	COMMENT
For single-phase circuits:			
	120/240V, 3-WIRE	UP TO 200 AMPS	Direct-connect socket
	120/208V, 3-WIRE	UP TO 200 AMPS	Direct-connect socket
	120/240V, 3-WIRE	201 TO 320 AMPS	Direct-connect 320A socket
For three-phase circuits:			
	120/208V, 4-WIRE 277/480V, 4-WIRE	UP TO 320 AMPS UP TO 200 AMPS	Direct-connect socket
	120/208V, 4-WIRE 277/480V, 4-WIRE	Above 320 AMPS Above 320 AMPS	With CTs

FIGURE 4-1



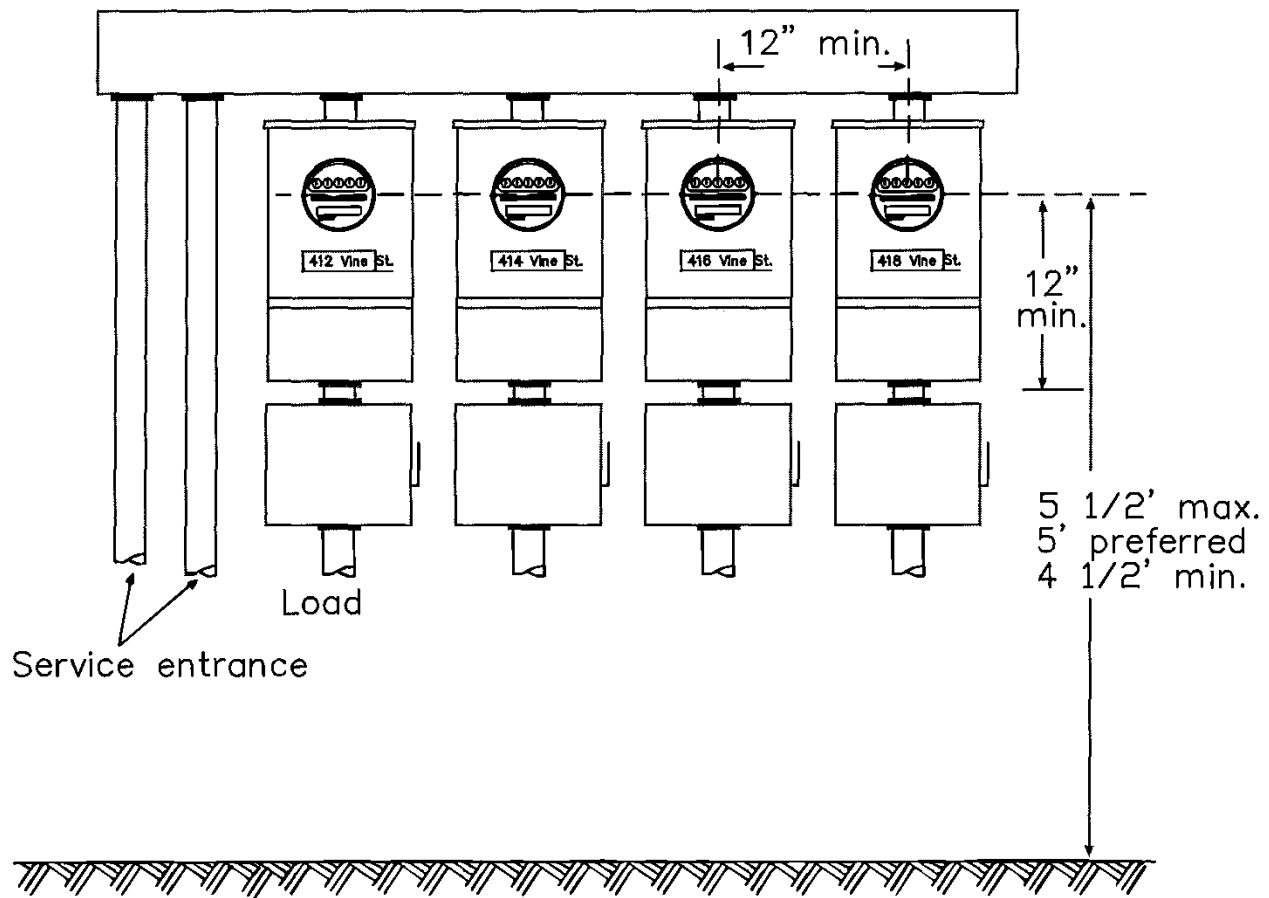
*WORKING SPACE SHOULD BE KEPT CLEAR OF SHRUBS, TREES, DEBRIS, PLANTS, FENCES, AND OTHER STRUCTURES.

CLEARANCES AROUND THE METER
FIGURE 4-2



NOTE: HOUSE METER SOCKETS, NO MANUAL BYPASS REQUIRED FOR SINGLE PHASE RESIDENTIAL METERS (SINGLE OR MULTI-FAMILY SERVICES)

INSTALLATION FOR AN APARTMENT BUILDING
FIGURE 4-3

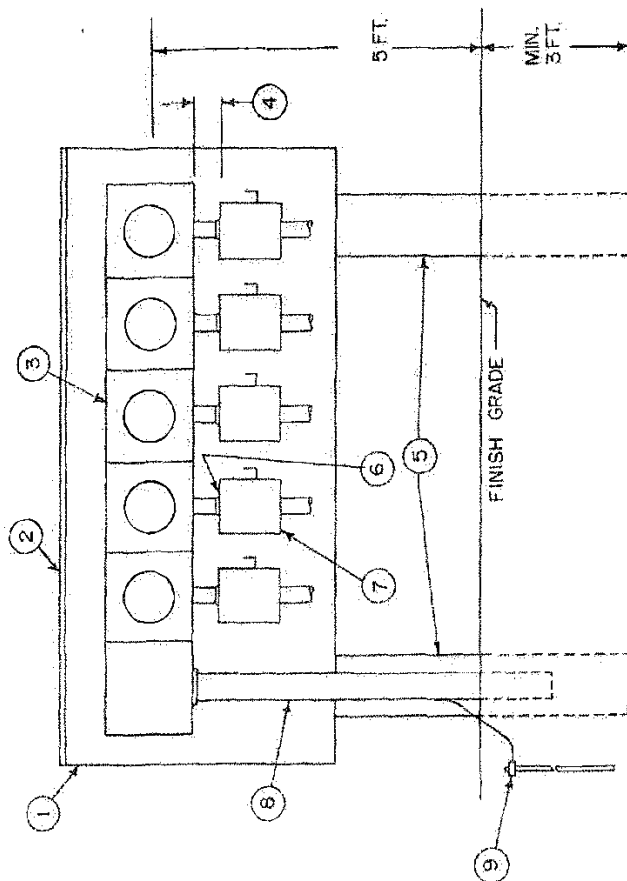


MULTI-METER THREE PHASE 200 AMP OR LESS (120/208V)
FIGURE 4-4

KEY

1. PAINTED METERBOARD, 3/4" EXTERIOR PLYWOOD
2. UPPER EDGE TRIMMED TO PREVENT SEEPAGE INTO LAMINATIONS
3. PRE-BUSSED, GANG METER SOCKETS MARKED INSIDE AND ON COVER OF SOCKET WITH MOBILE HOME IDENTIFICATION. METER SOCKETS MUST HAVE FIFTH TERMINAL KIT INSTALLED. USE A #12 COPPER WHITE INSULATED CONDUCTOR BETWEEN THE FIFTH JAW IN THE 9 O'CLOCK POSITION AND THE NEUTRAL BAR.
4. MINIMUM 6" SPACE BETWEEN METER SOCKET AND SERVICE EQUIPMENT
5. SUITABLE SUPPORTS TO BE GALVANIZED STEEL IN CONCRETE OR MINIMUM 6"X 6" TREATED WOOD
6. WEATHER PROOF JOINT
7. SERVICE EQUIPMENT 200 AMP'S OR LESS FOR EACH MOBILE HOME MARKED WITH MOBILE HOME IDENTIFICATION
8. 4" SCH. 40 (OR AS REQUIRED BY CODE) PVC, GALVANIZED IMC, OR RIGID STEEL CONDUIT; REFER TO CHAPTER 3, PAGES 23 (INSTALLING AN UNDERGROUND SERVICE OPTION 1&2).
9. DRIVEN GROUND ROD INSTALLED AND BONDED TO NEUTRAL

NOTE: GROUND AT SERVICE EQUIPMENT IN ACCORDANCE WITH THE MASS. ELECTRICAL CODE.



CHICOPEE ELECTRIC LIGHT
725 FRONT ST. CHICOPEE, MA.

SINGLE PHASE SELF-CONTAINED METERING
TO MULTIPLE MOBILE HOMES

DRAWN BY: PSB

SCALE:

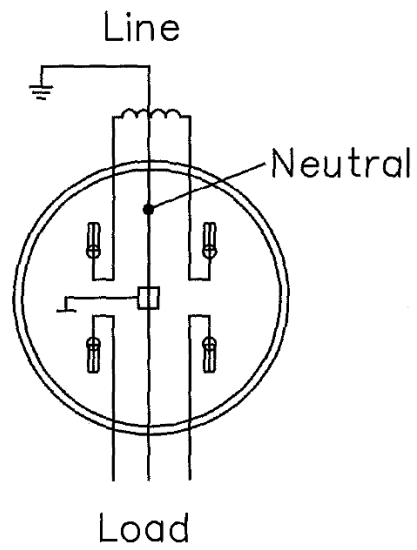
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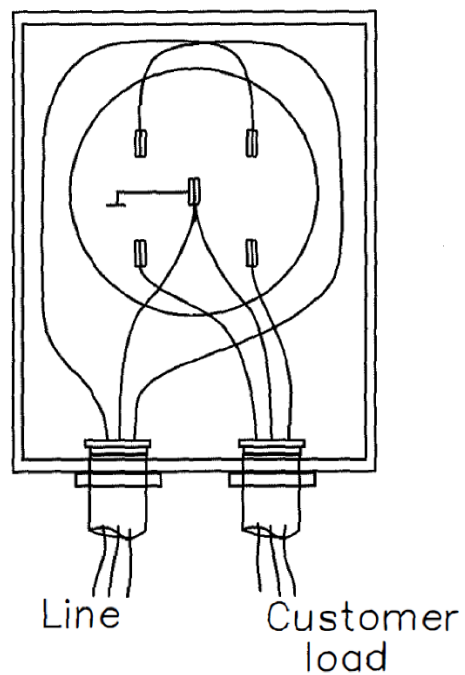
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FIGURE 4-5



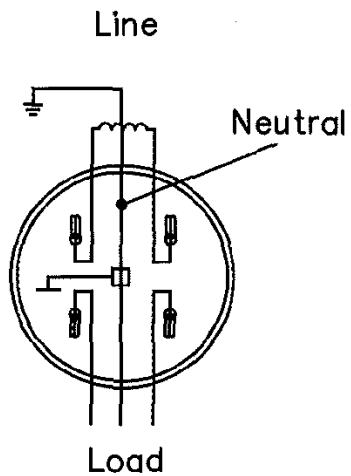
OVERHEAD SERVICE
FIGURE 4-6a



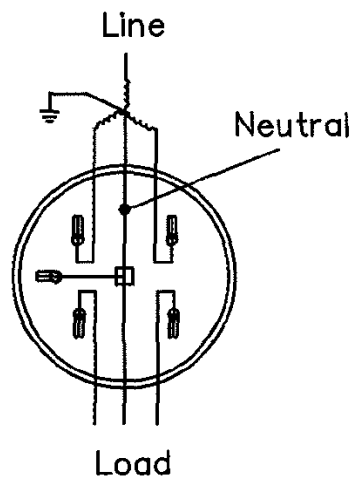
UNDERGROUND SERVICE
FIGURE 4-6b

SERVICE METERED USING DIRECT-CONNECT METERS

FOR SINGLE-PHASE SERVICES:

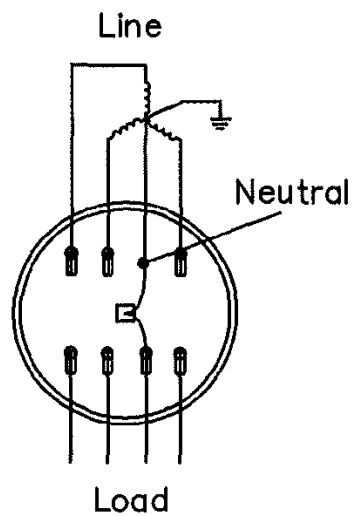


120/240V 3-WIRE
FIGURE 4-7a

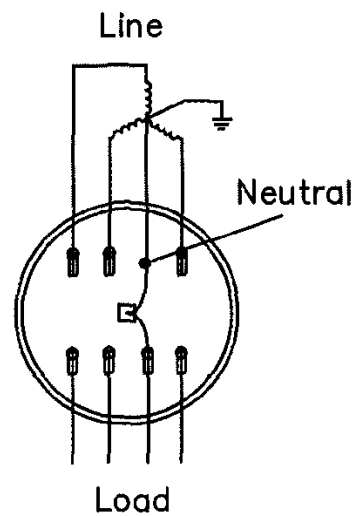


120/208V 3-WIRE NETWORK
FIGURE 4-7B

FOR THREE-PHASE SERVICES:

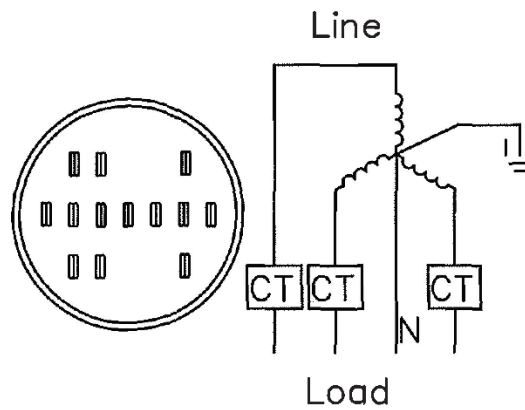


120/208V 4-WIRE WYE
FIGURE 4-7c

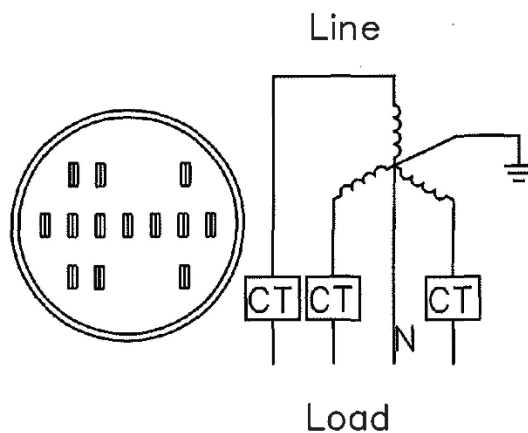


277/480V 4-WIRE WYE
FIGURE 4-7d

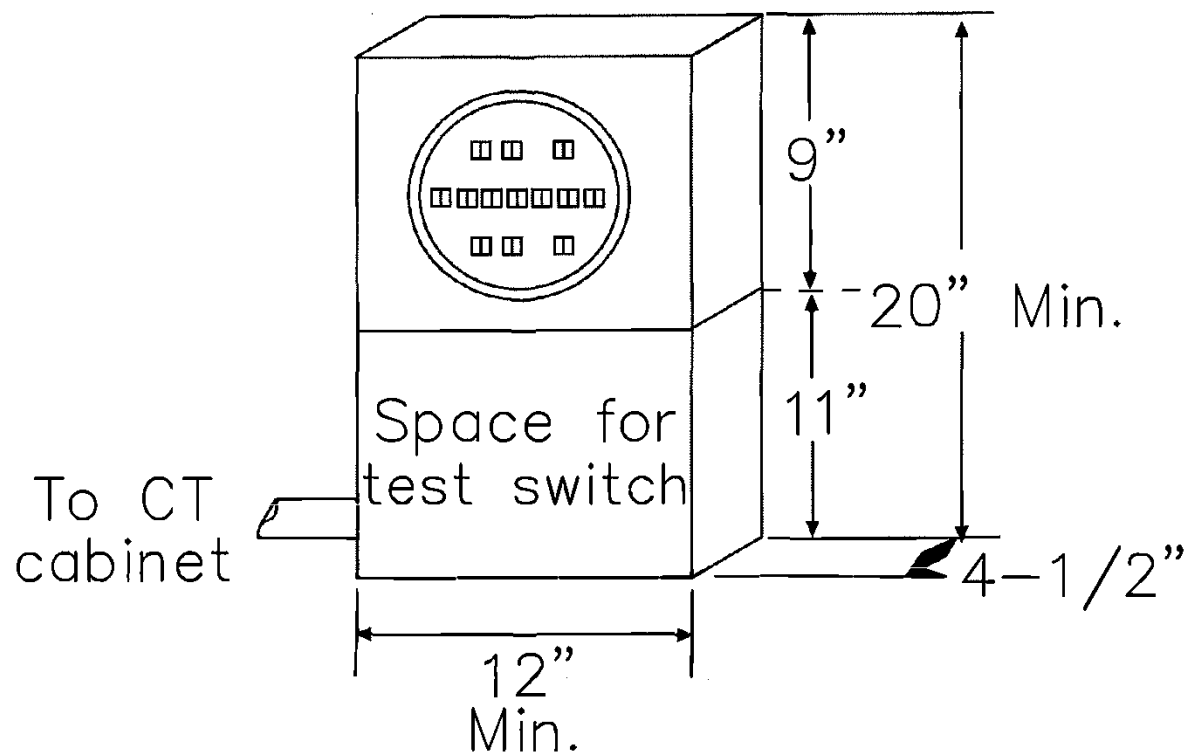
SERVICES METERED USING CURRENT TRANSFORMERS



THREE PHASE
120/208V 4-WIRE WYE
FIGURE 4-8a



THREE PHASE
277/480V 4-WIRE WYE
FIGURE 4-8b



METER SOCKET AND ENCLOSURE
FOR THREE PHASE SERVICE USING CTs
FIGURE 4-9

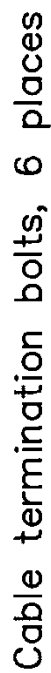
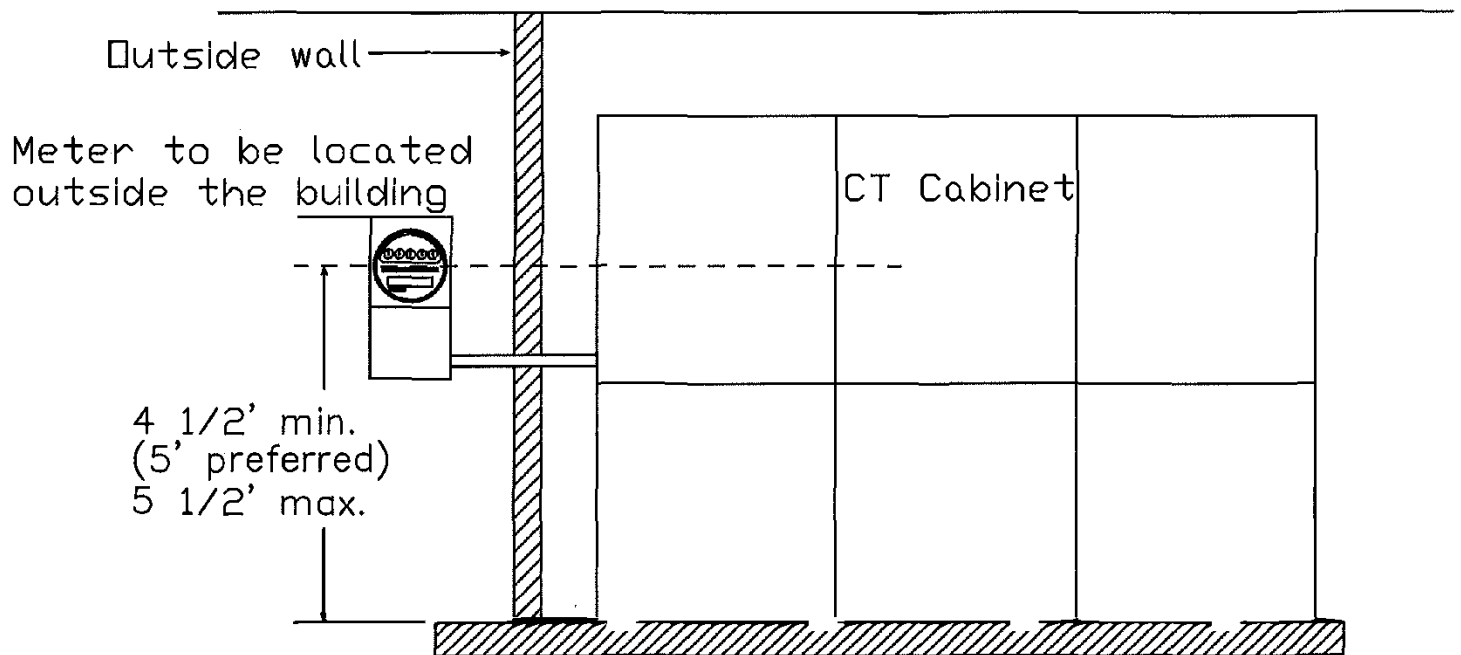


FIGURE 4-10



SWITCHGEAR METER INSTALLATION

FIGURE 4-11

CHAPTER 5

GENERATION

There are two basic types of generation a customer can install: Back-up Generation or Distributed Generation. These each entail their own set of requirements, described in this section.

No CEL Customer shall be permitted to energize any part of the CEL system during a system outage (planned or unplanned).

5.1 BACK-UP GENERATION

Back-up Generation or a Back-up Generator is considered a Customer owned, alternate source of energy which shall supply some portion of the Customer's load when, and only when it is not connected to CEL's supply (such as during a power outage).

Any generation which is installed and intended to supply Customer load simultaneously with the CEL supply, even for a brief period of time, must follow the requirements section 5.2 Distributed Generation.

A CEL Customer may install a back-up generator or means to connect a back-up generator without any additional approval from CEL provided the following criteria are met:

- a) Any and all generator transfer switches must be open transition i.e. "break-before-make".
- b) All other codes and requirements must be followed, including but not limited to NEC, MEC, and local building codes.
- c) No other CEL rules, requirements, or regulations are violated (Metering, Overhead Services, Underground Services etc.).
 - Devices which are installed between the utility meter and the jaws of the meter socket – for the purpose of connecting back-up generation or otherwise – are not permitted to be installed by the customer.

5.2 DISTRIBUTED GENERATION

A Distributed Generation (DG) system, is considered a customer owned source of AC power which is designed and intended be connected to CEL's system, for any period of time, either directly or in parallel (i.e. concurrently) with customer load. These are most commonly - but not always - inverter-based photovoltaic generation systems.

To install a DG system a customer must follow the DG Interconnection Process. This includes submitting an Interconnection Application and entering into an Interconnection Agreement with CEL. This process includes review by CEL Engineering for *ALL* proposed DG projects. To begin this process or for more detailed information on the Interconnection Process please contact CEL Engineering.

Most DG systems can be categorized into two major categories: Residential and Commercial. Some of the major requirements for these systems are outline in the following sections. For more detailed and/or additional information or to address a situation not contemplated by this document, please contact CEL Engineering.

5.2.1 DG Requirements

All DG systems installed on CEL's system must meet the following requirements. It is important to note that all DG systems will undergo engineering review and there may be additional requirements for individual systems not mentioned in this document.

- a) Technical Information: When submitting an Interconnection Application the following supporting technical information/documents are required:
 - A specification/data sheet for the proposed inverter(s)/generator(s).
 - A site plan showing the existing/proposed site and buildings and the key DG Facility equipment.
 - An electrical one line showing the existing/proposed electric service and how the proposed DG Facility will interconnect to it (see Figure 5-1, Figure 5-2, Figure 5-3).
 - For Large DG Facilities, the electrical one line must be stamped by a Massachusetts, Electrical PE.
 - Any additional information specifically requested by CEL Engineering.
- b) AC Disconnect: a CEL-accessible AC system disconnect is required for ALL DG Facilities. The disconnect must:

- Be located in close proximity to and within sight of the generation and/or service meter.
 - The AC Disconnect location for systems installed at facilities with an existing interior meter, must be reviewed and approved by CEL.
 - Be lockable in the “open” position
 - Be capable of providing a visible break
 - Be accessible at all hours of all days
 - Disconnect ALL on site generation when operated “open”
- c) Secondary Equipment Ratings: The DG Facility, alone or in aggregate with previously installed Facilities, shall not exceed:
- The kVA rating of the distribution transformer to which it is connected.
 - The thermal rating (in Amps) of the secondary conductor to which it is connected.
 - In either case System Modifications will be required to interconnect the DG Facility – this shall be determined during CEL engineering review.
- d) Balanced System: The DG Facility must be installed in such a manner as to be as electrically balanced as possible. This means:
- Inverters, or generators with a single phase, 240 V or 208 V output must be installed line-to-line on a 120/240 V or 120/208 V, single phase service.
 - A DG Facility consisting of a single inverter or generator with a single phase, 120 V output shall NOT be installed at any location on the CEL system.
 - A DG Facility consisting of multiple, single phase inverters or generators shall be installed such that the Facility creates an imbalance between phases/lines of the service of no more than 0.5 kW or the rating of a single inverter/generator to be installed – whichever is smaller. This applies to:
 - 120 V, single phase inverters/generators installed on a single phase service OR
 - Single phase inverters of any voltage installed on a three phase service.
 - Three phase DG Facilities consisting of single phase inverters which exceed 30 kW in aggregate will likely require additional study/review.

5.2.1.1 Residential DG Systems

A Residential DG system is considered a DG system which is installed on/connected to a service which qualifies for and receives a residential rate. Residential DG facilities must meet the following requirements:

- a) The DG Facility must be installed electrically on the load side of the existing or proposed customer meter (i.e. “behind the meter”) and a CEL owned Production Meter will be installed to meter the generation.
- b) The Interconnecting Customer must install a meter socket to accommodate the CEL-owned Production Meter. The production meter socket must:
 - Be located, electrically, on the load side of the customer’s existing or proposed service meter and immediately on the line side of ALL on site generation such that it will meter the output of all generation but no loads (except for inverter “parasitic” loads).
 - Be configured, electrically such that the generation is connected to/feeds the LINE side of the Production Meter i.e. generation is read as “positive” kWh on the Production Meter.
 - Be located, physically on the exterior of the structure adjacent to the existing/proposed service meter. Residences with existing interior meters will be dealt with on a case-by-case basis.
 - Be installed per all applicable electrical codes and CEL requirements.

5.2.1.2 Commercial DG Systems

A Commercial DG System shall be considered a DG system which meets the following criteria:

- a) It is installed at a service which has on-site electric usage
- b) It is installed at a service which does not qualify for a residential rate

- c) The maximum, aggregate AC capacity of the system, in kW, is small enough such that major service upgrades (service conductor, service transformer etc.) are not required to facilitate its installation, or it is small enough to qualify for “Net Metering” (see CEL Net Metering Policy), whichever is smaller.

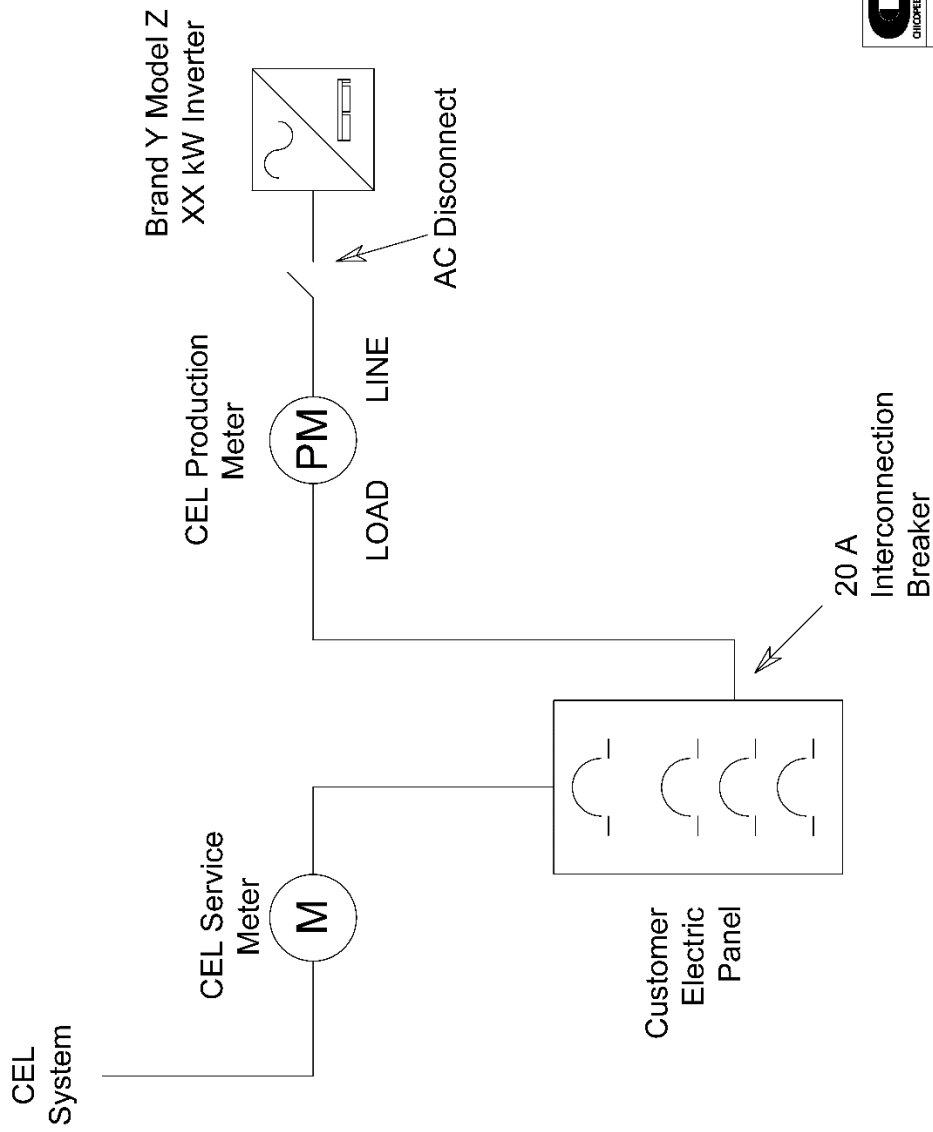
Commercial DG facilities must meet the following requirements:

- a) **Commercial/Industrial, NON-export DG systems (utilizing a 32 relay) are NOT permitted on the CEL system.**
- b) The DG Facility must be installed on the site of an existing or proposed CEL customer with electrical usage.
- c) The DG Facility will be installed electrically such that it is connected to a separate, dedicated CEL-owned generation meter. This meter shall be wired such that the LINE side of the metering (self-contained or CT cabinet or compartment) shall be connected to the output of the generation and the LOAD side of the metering is connected to the utility feed. This is effectively a separate generation service.
- d) The Interconnecting Customer must install a meter socket (and CT cabinet or switchgear if necessary) to accommodate the CEL-owned generation metering. The meter socket must:
 - Be located, electrically between the AC output of ALL on site generation and the LINE side of the existing/proposed service meter. In this way, this meter - electrically speaking – is a dedicated generation service.
 - Be located, physically on the exterior of same structure and in close proximity to the existing/proposed service meter. Services with existing interior meters shall be dealt with on a case-by-case basis.
 - Be installed per all applicable electrical codes and CEL requirements commensurate with a service large enough to accommodate the maximum output of the DG Facility.

5.3 LARGER DG SYSTEMS

If a customer or potential customer is interested in installing a DG System that is larger than, or does not meet the criteria of 5.2, they should contact CEL Engineering directly. Such systems may or may not be permitted for interconnection on the CEL system, and will be dealt with on a case-by-cases basis. All such systems will require additional engineering study.

NOTES:



CHICOPEE ELECTRIC LIGHT
725 FRONT STREET, CHICOPEE, MA 01020

Residential Distributed Generation
One-Line Example
Figure 5-1

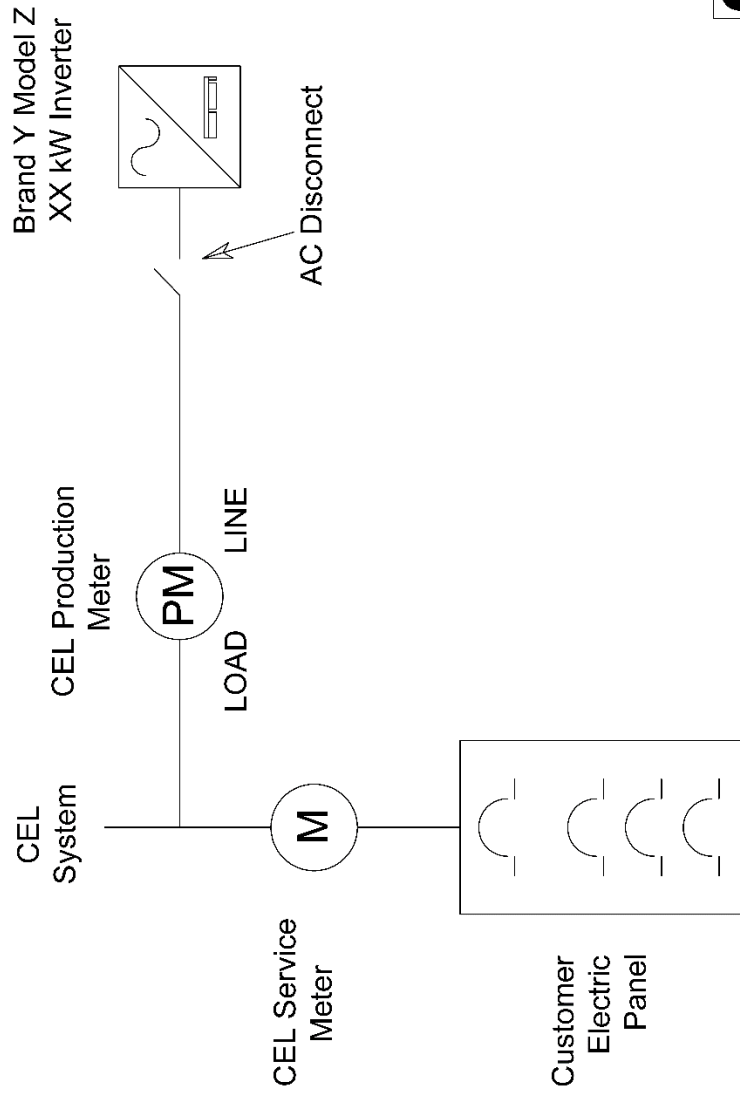
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CHECKED BY:

SCALE: N.T.S

DATE: 2/6/2023

NOTES:



CHICOPEE ELECTRIC LIGHT
725 FRONT STREET, CHICOPEE, MA 01020

Commercial Distributed Generation
One-Line Example
Figure 5-2

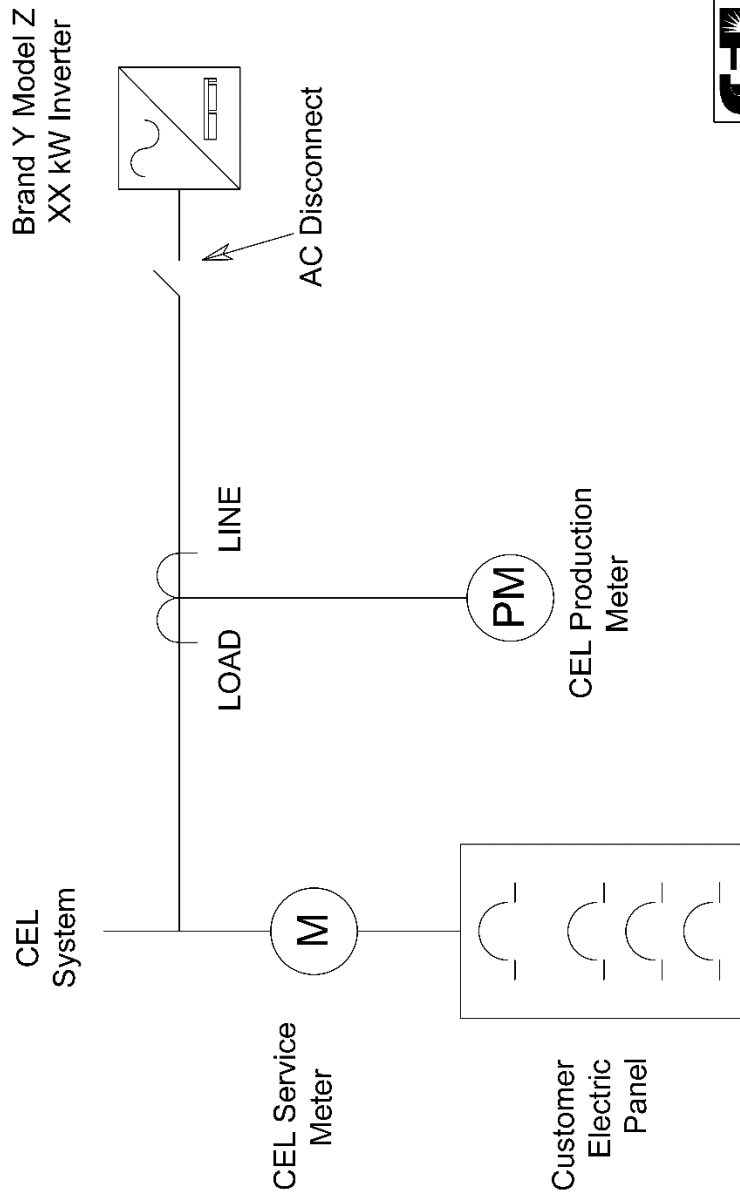
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NOTES:



CHICOPEE ELECTRIC LIGHT
725 FRONT STREET, CHICOPEE, MA 01020

Commercial Distributed Generation with CT Metering
One-Line Example
Figure 5-3

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DATE: 2/7/2023

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GLOSSARY

ANSI	American National Standards Institute. An independent administrator and coordinator of voluntary industry standards
Bypass	A device which shunts current around the socket, so the meter can be removed without interrupting service
Clearance	There are two, quite different meanings for “clearance.” One meaning is: A specified minimum distance between two objects to assure adequate space for safety, security, or access. The other meaning is: An agreement between a foreman and the system operator, for permission. When describing new electric services, “clearance” has the first meaning: the distance between two objects.
Common Ground Point	The point where the grounding electrode connects to the equipment grounding conductor and / or the circuit-grounding conductor
Conduit	A pipe with a smooth interior surface for easy drawing-in of electrical conductors. Conduit may be metallic or nonmetallic
Corrosion Inhibitor	An electrical joint compound used to impede oxidation at electrical connections
Current Transformer	A transformer whose secondary current is a precise fraction of its primary current. Using current transformers, high-current circuits can be measured with conventional meters. Abbreviation: CT.
Demand	The average rate at which energy (kilowatt hours) is consumed during a specified interval of time.
Direct-Burial Cable	Cable that may be installed in the ground without the protection of a conduit.
Direct Connect Meter	A meter that carries full load current and connects across full line voltage. Also called a self-contained meter.
Drip Loop	A downward loop in the customer's conductors, near where the customer's conductors attach to the power company's overhead conductors, to prevent water from entering the service mast at the weather head.
Fault	A partial or total failure of insulation that causes a short circuit between conductors, or between a conductor and ground, causing an abnormal current to flow. Also, a failure in a conductor that causes an open circuit.
Fault Current	A current that flows between conductors, or between a conductor and ground, due to an abnormal connection between the two. A fault current flowing to ground may be called a ground fault current.
Guy	A cable or brace that supports a mast or pole
High Leg	In a four - wire delta service, the phase with a voltage higher than the other two phases. Also called wild leg, delta leg.

Instrument Transformer	A transformer that delivers as its output, a precise fraction of the input line current or line voltage. Instrument transformers allow standard meters to measure high currents and voltages.
Instrument-rated meter	A meter used in conjunction with instrument transformers, to measure high voltage or high current services. Also called a transformer-rated meter
Line Conductor	A service conductor installed by the electric utility, to the meter.
Load Conductor	A service conductor to the customer's load, after the meter.
Manual Link Bypass	Provision for manually installing conductive links between the line and load terminals in the meter socket. These links maintain electrical service to the customer when the meter is removed. Also called manual circuit-closing block.
Manufactured Home	A factory-assembled structure built on a permanent chassis, transportable in one or more sections, and designed to be used as a dwelling with a permanent foundation. Also called a modular home. New electric service to a manufactured home has the same requirements as installing new service to a permanent single-family residence.
Mass. Electric Code (MEC)	State regulations for the installation of electrical equipment inside buildings. MEC rules apply to equipment on the customer's side of the point of delivery.
Meter Jaw	A spring-loaded receptacle inside a meter socket that captures the terminals (blades) of a meter, and connects the meter terminals to the service conductors.
Meter Pedestal	A factory-built assembly containing a meter socket and disconnect switches.
Meter Ring	A metal ring that secures the meter to the meter socket, which can be sealed by the electric utility to prevent tampering with the meter.
Meter Socket	The mounting device consisting of meter jaws, connectors, and enclosure for receiving a socket-type meter.
Mobile Home	A factory-assembled structure built on a permanent chassis, transportable in one of more sections, and designed to be used as a dwelling without a permanent foundation. Underground service to a mobile home is provided by a meter pedestal.
NEC	National Electrical Code. National regulations for the installation of electrical equipment inside buildings. Published by the National Fire Protection Association. NEC rules apply to equipment on the customer's side of the point of delivery.
NEMA	National Electrical Manufacturers Association. A trade association which publishes standards for manufacturers of electrical equipment, including enclosures, and racks.
NESC	National Electrical Safety Code. National regulations for the installation, operation, and maintenance of electric supply and communication lines. Published by Institute of Electrical and Electronics Engineers. NESC rules apply to equipment on the electric utility's side of the point of delivery.

Neutral	The grounded conductor in a single-phase three wire, or three-phase-four wire system.
Points of Attachment	The point at which the utility's service conductors are mechanically attached to the customer's premises. For overhead services, the point of attachment is usually an insulated clevis.
Point of Delivery	The point where the utility's service line makes the electrical connection to the customer's wires. For overhead services, the point of delivery is the splice between the utility's and the customer's conductors. For underground services, the point of delivery is the secondary lugs of the distribution transformer, or the service stubout or the secondary hand hole - if the utility's existing service is on the customer's property. If the utility's existing service is not on the customer's property, the point of delivery is the customer's property line. The utility determines the point of delivery based, in part, on convenient access to existing service.
Power Factor	Technically, the cosine of the phase angle between the circuit voltage and current waveforms. Since phase angles are difficult to measure, power factor is usually derived by measuring power or impedance. Power factor is the ratio of active power to apparent power (watts divided by volt-amperes). Power factor has no units, but is commonly expressed as a percentage. For example, if active power is 96 kW and apparent power is 100 kW, the power factor is 96 % .
Primary Voltage	The voltage at which electricity is delivered from substations to distribution transformers. Primary voltage is greater than 600 volts.
Raceway	An enclosed channel for holding wires or cables. If designated for line conductors, the raceway must be sealable. The intermixing of line and load conductors in the same raceway is not permitted.
Seal	A locking device to secure a meter or other service equipment.
Secondary Voltage	The voltage at which electricity is delivered from distribution transformers to customers. Secondary voltage is less than 600 volts.
Select Backfill	Soil or sand free from sharp objects, rocks, scrap building material, and corrosive material.
Self-Contained Meter	A meter that carries full load current and connects directly across full line voltage. Also called a direct-connect meter.
Service Drop	For overhead service, the power company's service line between the utility pole and the point of delivery.
Service Line	Conductors from the distribution transformer to the customer's point of delivery. See service drop, service lateral.
Service Entrance Equipment	The service equipment which is supplied by the customer: conduit, conductors, mast, weather head, meter base, enclosures, disconnects, and panels.
Service Lateral	For underground service, the service line between the distribution transformer and the point of delivery.

Service Mast	For overhead service, the conduit rising above the meter to provide mechanical protection to the customer's conductors and to support the service drop from the power company.
Socket	The mounting device for socket meters. Includes spring-loaded meter jaws, connectors for line and load conductors, and an enclosure.
Temporary Service	Electric service during the construction and/or demolition phase of a project.
Test Switch transformers.	A device used to isolate connections to a meter from its instrument
Transformer-Rated Meter	A meter used in conjunction with instrument transformers, to measure high-voltage or high-current services. Also called an instrument-rated meter.
UL certification organization.	Underwriters Laboratories. An independent product-testing and
Voltage Transformer	A transformer whose secondary voltage is a precise fraction of its primary voltage. Using voltage transformers, high-voltage circuits can be measured with conventional meters. Abbreviation: VT, or PT (potential transformer).