



Residential/Commercial Customer Requirements for Electric Service

Effective: May 2025



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1. INTRODUCTION

This manual, “Residential/Commercial Customer Requirements for Electric Service” is written as a reference for Customers, Contractors, Architects, Engineers and other interested parties who may be concerned with installation considerations that the HLD experience has shown to be necessary in order to provide safe and satisfactory electric service.

It is the intention of the HLD that the Customer’s service facilities requirements in this booklet shall be consistent with all applicable federal, state, county, and municipal regulations, laws, codes, and ordinances as may be in effect now or hereafter in the area served by the HLD. To the extent such governmental regulations are more stringent than the requirements stated, the governmental regulations shall control. To the extent such governmental regulations are less stringent, the requirements stated in this manual shall control.

Requirements stated are not necessarily complete facility or safety specifications. Rather, they cover matters of mutual concern to the Customer and the HLD, which facilitate the supplying of electric service. The requirements are subject to revision from time to time without notification so that they keep pace with developments and progress in the electric industry.

Compliance with these requirements does not absolve the Customer from obligation to install and maintain wiring and equipment in a safe condition; also, HLD does not accept any responsibility for the quality or condition of the Customer’s wiring and equipment. The Customer shall comply with the latest edition of the National Electrical Code (NEC) and all applicable safety codes and practices.

Unless otherwise noted, statements and drawings in this booklet refer to services of 600 volts or less and Customer requirements for primary voltages of 15 kV and less. Consult the HLD with questions regarding services at higher voltages and special residential, commercial, and industrial requirements.

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Hagerstown, MD 21740
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2. DEFINITIONS

Unless the context clearly indicates otherwise, certain words and phrases when used in this booklet shall be defined as shown below. For additional definitions, see the latest edition of the National Electrical Code and the National Electric Safety Code.

- **AMPACITY**- Current carrying capacity expressed in amperes.
- **APPROVED**- Indicates approval by HLD.
- **CUSTOMER**- Any present or prospective user of HLD services or his/her representative.
- **ESA**- An Electric Service Agreement that guarantees a minimum annual revenue for three years for three phase customers.
- **FURNISHED AND INSTALLED BY CUSTOMER**- Materials so specified shall be purchased and installed by the Customer at the expense of the Customer.
- **FURNISHED AND INSTALLED BY HLD**- Either HLD or an authorized agent acting on its behalf shall provide labor and material at the expense of HLD for the items so specified.
- **FURNISHED BY HLD, INSTALLED BY CUSTOMER**- Materials so specified shall be provided by HLD at no expense to the Customer and be installed at the Customer's expense.
- **HLD**- The Hagerstown Light Department
- **NEC**- National Electrical Code, NFPA 70.
- **NESC** - National Electric Safety Code
- **SERVICE DROP**- The overhead wires through which service is supplied between HLD distribution facilities and the point of their connection to the Customer's service facilities located at the Customer's building or other support.
- **SERVICE LATERAL**- The underground wires through which service is supplied between HLD distribution facilities and the first point of their connection to the Customer's service facilities located at the building or other support.
- **SERVICE ENTRANCE**- All components between the service point of the overhead service drop or underground service lateral and the Customer's main disconnecting means with the exception of HLD metering equipment.

- **SERVICE ENTRANCE CONDUCTORS**- The wires between the point of termination of the overhead service drop or underground service lateral and the Customer's main disconnecting device.
- **SERVICE POINT**- Point of connection between the facilities of HLD and the Customer's wiring.
- **SUPPLIED AND INSTALLED BY HLD AND PAID FOR BY THE CUSTOMER**- Either HLD or an authorized agent acting on its behalf shall provide labor and material at the expense of the Customer. Costs will either be paid for in full before work is completed or there will be covered by an ESA post construction.
- **TEMPORARY SERVICE**- Service supplied for construction purposes or of limited duration and delivered to a single point through one meter.

3. AVAILABLE ELECTRIC SERVICES

HLD supplies alternating current at a nominal frequency of 60 Hertz (Hz) or cycles per second. The following table lists the standard voltages, 600 volts or less, which are available depending upon available HLD facilities, method of service, and the size and character of the Customer's load:

<u>Voltage</u>	<u># Of Phases</u>	<u># Of Conductors</u>
120/240	1	3
120/208	3 Wye	4
277/480	3 Wye	4

Consult HLD for availability of 120/240, 3-phase, 4-wire delta. This service voltage is not available for underground service energized from an underground primary source regardless of the source voltage. This service voltage is only available from an overhead closed-delta or open-delta transformer bank energized from an overhead 13.80 kV primary source and is treated as a past-standard.

Other Service Information:

Single-phase, 120/208 volt, 3-wire service (network), not exceeding 200 amperes, may be obtained for multi-family dwelling units where meters are grouped at one location. Meter sockets for such service require a fifth terminal (jaw) mounted in the 9 o'clock position for the neutral connection (see **Detail 17**).

4. SERVICE INSTALLATION AND CUSTOMER RESPONSIBILITY

A. INSTALLATION AND RESPONSIBILITY

It is necessary for the protection of the Customer that all work, wiring and apparatus be installed and maintained in a safe manner by a qualified electrician. A qualified electrician is one who has the skills and knowledge related to the construction and operation of the electrical equipment, systems, and installations and has received safety training on the hazards involved. The HLD requires electrical work to be performed by a licensed electrician and who also possesses a City of Hagerstown License. The Customer, in accepting service from the HLD, assumes full responsibility for the safety of his or her wiring and equipment. The Customer agrees to indemnify and hold harmless the HLD from any liability that may arise as the result of the use of service supplied to the Customer by the HLD.

The Customer shall not operate any apparatus which creates a condition that interferes with HLD operation and prevents the HLD from supplying satisfactory service to the Customer or to other Customers. This includes, but is not limited to, operating equipment which interferes with the satisfactory operation of other Customers' radio, television, and communication equipment.

The HLD reserves the right to place restrictions on the type and manner of use of all the Customer's electrical equipment which is connected to the HLD electrical system, especially prohibiting any large loads of highly fluctuating or low power factor characteristics.

B. CUSTOMER ALTERATIONS AND ADDITIONS

HLD facilities used to provide service have definite capacity limitations and can be damaged by overloads. Therefore, the Customer shall notify the HLD prior to increasing the load requirements or making alterations to the service entrance equipment so that facilities of proper capacity may be provided. Failure to properly notify the HLD of such additional requirements may result in damage to the Customer's and/or HLD equipment. The Customer shall be responsible for all expenses and/or damages to the Customer's and/or HLD facilities resulting from failure to give proper notification. The Customer may also be subject to charges by the HLD for work required to meet the Customer's alterations. The Customer shall consult the HLD for information concerning charges for such work. A certificate of electrical inspection approval shall be required from the City of Hagerstown Permits and Inspections Department located at City Hall, 1 East Franklin St. Hagerstown, MD 21740.

C. CUSTOMER RIGHT-OF-WAY RESPONSIBILITY

Customer shall have the responsibility to maintain clearance of customer owned trees from HLD overhead facilities and the HLD shall not be held liable for any damages to customer owned trees resulting from maintenance of HLD owned facilities.

5. GENERAL REQUIREMENTS FOR ELECTRIC SERVICE

A. REQUIREMENTS OF ELECTRICAL INSPECTION

The HLD will supply service to new electrical installations when all the requirements contained in this book and the HLD electric service Tariffs, as filed with the Public Service Commission of Maryland having jurisdiction over HLD operations, have been met. Electrical installations requiring inspections include, but are not limited to the following:

1. New services, temporary services, mobile home feeds, service upgrades or modifications (including changes in grounding), and repairs to existing installations (see F below).
2. Service disconnected for more than one year.
3. "Service disconnected" INCLUDE cut and de-energized installations.
4. "Service disconnected" DO NOT INCLUDE energized booted but inactive (no usage) installations.
5. When tampering resulting in a dangerous condition is detected.
6. Where the installation is deemed unsafe by the HLD.
7. When service poles are replaced.
8. Inspections are not required when a main breaker only is replaced in-kind.

B. SWIMMING POOL LOCATION

For safety reasons, the HLD does not recommend placing a swimming pool under its existing service drop or other conductors. Specifically, a swimming pool is not to be located within twenty-five (25) feet of HLD overhead conductors measured horizontally from the closest edge of the pool without written approval of the HLD. HLD primary and secondary underground cable shall not be installed within ten (10) feet measured horizontally from the closest edge of the pool or its auxiliary equipment.

C. STRUCTURES NEAR OVERHEAD LINES

Structures, including signs, flag poles, light standards, antennas, or aerials shall not be installed under, over, or in such close proximity to lines carrying electric current that they could be raised into or fall onto such lines or that they cannot be safely maintained. Antennas or aerials shall not be attached to an HLD pole or any pole used in supplying electric service to the Customer. Consult the HLD for clearance requirements.

D. FIRE HYDRANTS

Fire hydrants shall be a minimum distance of four (4) feet from HLD facilities.

E. ATTACHMENTS ON HLD-OWNED FACILITIES

Under no conditions will the Customer's facilities or other equipment such as signs, posters, or notices be installed on HLD poles or other property unless special arrangements have been made with the HLD.

F. REQUESTED PROTECTION FOR PERSONS WORKING NEAR HLD FACILITIES

Upon reasonable advance notification to the HLD, by an individual or contractor, that proposed work is to be performed within such distance of HLD facilities that could be hazardous for the person(s) performing the work, or may otherwise be in violation of federal or state regulations, the HLD will cover, de-energize, or temporarily move its facilities in the work area as it deems appropriate under the circumstances. The HLD may bill the notifying individual or contractor for the amount of its costs of performing such work. If circumstances require work outside normal work hours, costs for the overtime period will be computed and billed at overtime rates.

G. ACCESS TO CUSTOMER'S PREMISES

HLD authorized agents and employees shall have access to the Customer's premises, only to the extent needed by the HLD for access to its property and at all reasonable hours, for purposes necessary in connection with supplying and maintaining service, and upon termination of service shall be permitted to remove any or all such property. Authorized HLD employees visiting the premises of the Customer for any purposes are furnished with an identification card. The Customer should refuse admission to persons not having proper identification.

H. HLD EQUIPMENT ON CUSTOMER'S PREMISES

The Customer shall provide, without cost to the HLD, satisfactory right-of-way and suitable location and housing for HLD equipment which is necessary for supplying service to the Customer on premises owned or leased by the Customer.

I. HLD RESPONSIBILITY

The HLD will use reasonable diligence in providing reliable electric service. However, the HLD shall not be liable for any loss, cost, damage, or expense to any Customer occasioned by any failure to supply electricity according to the terms of the contract, or by an interruption or reversal of the supply of electricity, if such failure, interruption or reversal shall be due to the elements, public enemies, strikes, or order of Court, which are beyond the control of the HLD, or any cause except willful default or neglect on its part. Unless caused by an unreasonable practice of the HLD, the HLD may, without liability, interrupt or limit service to any or all Customers whenever, in the sole judgment of the HLD, such action is necessary in order to prevent or limit any actual or threatened instability or disturbance on the electric system of the HLD or any electric system interconnected with the HLD. Customers should be aware that they could occasionally experience intermittent power interruptions. Since most interruptions are temporary, the HLD designs its electrical system to clear these intermittent interruptions without permanently interrupting electric service.

J. RIGHT TO REFUSE OR DISCONTINUE SERVICE

Since it is the HLD's obligation to provide safe and satisfactory service to all Customers, the HLD reserves the right to refuse or discontinue service without notice if, in the opinion of the HLD or the City of Hagerstown Permits and Inspections Department, the Customer's wiring, equipment, or appliances are unsafe for receiving electric service or are harmful to the service of other Customers. The HLD will make a reasonable effort to notify the Customer prior to disconnection and shall inform the Customer of the steps that shall be taken to have service restored.

The HLD reserves the right to refuse or discontinue service with or without notice, and without liability, under various circumstances other than those mentioned above. These circumstances are set forth in the HLD Tariff as filed with the Public Service Commission of Maryland and the rules and regulations of the commissions.

K. STAND-BY GENERATOR SERVICE

The generator and all wiring installations connecting the generator to the Customer's wiring shall be installed in accordance with the NEC. The Customer assumes full responsibility for the installation and safe operation of the generator. The HLD reserves the right to discontinue service to the Customer, without notice, any time it is discovered that the generator is improperly connected to the Customer's circuits or is otherwise unsafe.

L. TRANSFORMER VAULTS

When conditions are such that it is necessary to install transformers within a building on the Customer's premises, the Customer will provide a suitable vault to house the transformers and accessories.

Customers shall secure vault specifications from the HLD and consult the HLD regarding the location and construction of transformer vaults while building plans are being prepared.

Vaults or rooms shall be so located as to be easily accessible by direct entry from outside the building, for the purpose of installation, maintenance, and removal of HLD equipment. Vaults shall be of standard fireproof construction, be adequately ventilated, and adequately drained. Customer shall provide and install oil containment in vaults where oil-filled HLD equipment will be located. Vaults shall comply with the NEC and any applicable codes.

Transformer vaults shall contain only the transformers and their auxiliary equipment. The Customer's secondary fuses, switches, circuit breakers, and HLD meters shall not be installed in the transformer vault.

HLD reserves the right to serve other Customers from HLD equipment located in vaults on the Customer's premises, provided this does not interfere with the Customer's service.

6. Overhead Service Requirements (600V and less)

A. GENERAL

Customers desiring overhead service shall consult the HLD, prior to the start of construction to obtain a service sketch, discuss the type of metering facilities to be used, cost, and other information relative to this type of service.

The HLD will provide overhead electrical service in accordance with the Public Service Commission of Maryland requirements for overhead extension or, in the absence of such requirements, in accordance with the HLD electric service Tariff. The HLD shall not be required to provide rear-lot construction to any Customer. The HLD shall provide service from facilities located along public roadways that the HLD has a legal right to occupy or on public lands and private property across which satisfactory rights-of-way or easements may be obtained.

If the HLD requests, the Customer shall furnish to the HLD, at no charge, property plats, utility plans, grading plans, roadway profiles, load requirements, and other

items showing details of proposed construction in a reasonable time to allow the HLD to engineer, design, acquire materials, and construct its facilities in a safe, efficient manner.

The Public Service Commission of Maryland generally requires extension of service to new buildings for residential, commercial, and industrial occupancy to be made underground. However, where the Commission permits overhead construction, provisions of this section will apply.

B. SERVICE DROPS

The HLD shall provide, install, own, and maintain the service drop conductors from the overhead distribution system to the point of attachment at the Customer's overhead service entrance.

The Customer shall provide and install the service bracket necessary for the attachment of HLD service drop conductors. In cases where a service mast is required, only power service drop conductors shall be attached to the service mast.

The Customer shall provide and maintain a safe, substantial support for HLD overhead service connections. In no case will the HLD be responsible for the condition of any Customer's building or structure to which service conductors are attached, unless caused by an unreasonable practice of the HLD. Cinder blocks, stucco, veneered, and similar type walls usually require HLD approved anchor bolts, or other acceptable means of support for termination of the service drop. Parapet walls and chimneys are not acceptable supports. The HLD reserves the right to approve or deny alternate support designs.

The service drop should not be installed over buildings or swimming pools. If the service drop must be installed over buildings, NESC clearances shall be maintained. Trees should not be planted under service drop conductors.

The HLD shall not be required to furnish or install more than one service drop for each building served. However, exceptions to this rule will be made if HLD approval is obtained prior to proceeding with any work and any of the following conditions are met:

1. Where required for types of service of different phase or voltage.
2. Where required by law.
3. Where required for fire pumps or emergency lighting or public safety regulations.
4. Where a single property extends over an area that makes it impractical to serve through one service drop.
5. Where HLD needs more than one service drop to supply the Customer's load requirements.

6. Where multi-occupancy buildings have no common locations for service equipment that is accessible to all occupants.

C. SERVICE ENTRANCE

The Customer shall provide, install, own, and maintain the complete service entrance when supplied from an overhead service drop, including meter socket. In addition, the Customer shall supply, install, own, and maintain all material located on the load side of the service entrance disconnect.

Where required, all transformer-operated metering enclosures shall be furnished and installed by the Customer. Current Transformers and Meters will be supplied and installed by HLD and paid for by the Customer.

The service entrance conductors shall be of sufficient ampacity to meet the requirements of the NEC and any other applicable codes. The service entrance conductors shall not be spliced.

The Customer's service entrance shall have a minimum of two driven ground rods (8 feet minimum length) at least six (6) feet apart. The grounding electrode conductor shall be continuous from the service entrance main disconnect to both driven ground rods. The Customer shall install the service entrance in such a manner to ensure that all of the grounding/ bonding requirements of the NEC are met or exceeded.

D. CONNECTIONS BETWEEN HLD AND CUSTOMER'S FACILITIES

The connections between the HLD and the Customer's facilities shall be made only by authorized employees of the HLD. The Customer's installation shall be completed and any required inspections obtained prior to the HLD installing its facilities.

The Customer will be responsible for connecting all service entrance conductors to any form of Customer-owned disconnecting devices or equipment. In cases involving large service drops, or parallel services, the HLD will advise the Customer sufficiently in advance of the time when service is required concerning the number, size, and type of the HLD conductor(s). The Customer will also be responsible for ensuring that the main disconnect or terminal box has the proper number and size of terminals and that the connected loads are balanced among phases and sets of conductors.

The HLD will be responsible for making all connections to HLD power transformers or metering transformers, regardless of whether involved conductors are HLD or Customer- owned. The HLD will provide connectors, and make the connections between the Customer's service entrance conductors and HLD service drop conductors. This will be at a point designated by the HLD when the Customer's service

entrance conductors are 750 kcmil or smaller and not more than one entrance cable or set of conductors per Customer. If the service entrance conductors are larger than 750 kcmil, the Customer furnishes HLD-approved connectors. The Customer shall provide sufficient length of conductor for the HLD to make required bends and connections.

When the Customer's load necessitates parallel service entrance conductors, the Customer shall furnish and install suitable equipment to allow HLD to connect the service drop with a single set of attachments.

E. PERMANENT OVERHEAD SERVICE INSTALLATIONS

A typical permanent overhead service installation is shown in **Detail E-1**. The service drop support provided by the Customer shall be installed in such a manner to maintain the clearances specified in **Detail E-1**. If the Customer's building is not of sufficient height to provide for the clearances required, the Customer shall provide a support for attaching HLD service drop similar to that shown in **Detail E-2**.

F. TEMPORARY OVERHEAD SERVICE INSTALLATIONS

A typical temporary overhead service installation is shown in **Detail E-4**. The service drop support provided by the Customer shall be installed in such a manner to maintain the clearances specified. The longest section of conduit shall be used on the top section of the service mast.

G. OVERHEAD SERVICES IN EXCESS OF 600 VOLTS

The Customer shall consult the HLD if a service voltage in excess of 600 volts is required.

7. Underground Service Requirements

A. GENERAL

Customers desiring new underground service or modifications to existing underground service, shall consult the HLD prior to the start of construction to obtain the point of service lateral attachment at the Customer's building or other support, type of metering facilities to be used, cost, and other information relative to this type of service.

The length, nature, and route of an underground service lateral shall be governed by good engineering practices and shall be installed in such a manner that they are free

of drainage fields, septic systems, pipes, areas of deep cultivation, and other interference. Shrubs and trees should not be planted over the underground service lateral.

The Customer shall obtain all rights-of-way, easements, and local, state, and federal governmental agency permits required for service on the Customer owned or leased property prior to the HLD installing its facilities. The HLD will obtain all rights-of-way, easements, and permits required for service beyond the Customer's property. In those governmental jurisdictions where the Customer is not permitted to perform trenching work under HLD permit, the Customer shall obtain all permits required to complete the work. The Customer shall be required to clear the service lateral route of trees, tree stumps, and other obstructions and prepare rough grade to within six (6) inches of final grade on the Customer's property prior to the HLD installing its facilities. If the Customer performs any future modifications (such as: grading, building additions, swimming pools, etc.) that will require the service lateral to be relocated, the Customer shall pay for this relocation.

The HLD shall control the initial and subsequent use of the trench and its backfill. At HLD's option, communication utilities such as telephone and CATV, may share the trench. A minimum of twelve (12) inches of horizontal separation between HLD cables and telephone or CATV facilities is required by the HLD. Telephone and CATV Companies may require further separation. Joint trench with gas, water, or sewer should be avoided unless local conditions or regulations require the use of a shared trench. Gas, water, and sewer lines may share the trench provided an eighteen (18) inch minimum horizontal separation is maintained between the gas, water, sewer, and electric lines; however, greater separation should be maintained where practical. Local gas, water, and sewage companies may require further separation. Customer's private lines are not permitted to be placed in trenches provided for HLD use.

The HLD will provide underground electrical service in accordance with the Public Service Commission of Maryland requirements for underground extension or, in the absence of such requirements, in accordance with the HLD electric service Tariff.

The HLD shall not be required to provide rear-lot construction to any Customer. The HLD shall provide service from facilities located along public roadways that the HLD has a legal right to occupy or on public lands and private property across which satisfactory rights-of-way or easements may be obtained.

If the HLD requests, the Customer shall furnish the HLD, at no charge, property plats, utility plans, grading plans, roadway profiles, load requirements, and other items showing details of proposed construction in a reasonable time to allow the HLD to engineer, design, acquire materials, and construct its facilities in a safe efficient manner.

B. SERVICE LATERAL (RESIDENTIAL)

The Customer shall provide a location suitable to the HLD for the required pad-mounted transformer(s) and other devices. Such location shall be free from obstructions and, where required, the Customer shall furnish and install protection from vehicular traffic as shown in **Detail E-12**. The HLD will furnish single-phase, pad-mounted transformer foundation(s) and they shall be set by the customer/contractor. For services to multi-family residential buildings that require 3-phase services, the Customer shall furnish and install 3-phase pad mounted transformer foundations in accordance with HLD specifications (see **Details E-13, E-14, and E-15**).

When the Customer decides to install shrubs to shield a pad-mounted transformer or other pad-mounted equipment, see **Detail E-11** for recommended planting distances from equipment. The Customer is warned that pad-mounted transformers and pad-mounted equipment have underground electric cables entering and exiting them below grade. State law requires the Customer to call Miss Utility (811) to have the underground cables located before digging. The HLD accepts no responsibility for damage to Customer owned shrubs resulting from maintenance of HLD-owned facilities.

The Customer shall provide, at their expense, all necessary excavating and backfill and shall furnish and install the service lateral conduits. The HLD shall own and maintain all service lateral facilities, including the service lateral facilities installed by the Customer. The HLD will specify the type and size of the conduits to be installed. Also, the Customer shall install a 1/4" diameter nylon pulling rope that is necessary for the HLD to pull and install its underground conductors. Final acceptance of all work performed by the Customer shall be determined by HLD personnel subsequent to the installation of HLD facilities. The HLD reserves the right to refuse service until HLD standards and specifications have been met.

C. SERVICE LATERAL (COMMERCIAL OR INDUSTRIAL)

The Customer shall provide a location suitable to the HLD for the required pad-mounted transformer(s) and other equipment. Such location shall be free from obstructions and, when required, the Customer shall furnish and install protection from vehicular traffic as shown in **Detail E-12**.

For single-phase installations:

1. The HLD will furnish single-phase pad-mounted transformer foundation(s) and shall be installed by the customer (See **Detail E-16**).
2. When the metering is located on the Customer's building or structure, the HLD will provide and install all service lateral conductors to the point of metering. Customer shall provide, for HLD use, all necessary excavating and backfill and shall

furnish and install the service lateral conduits. The HLD will specify the type and size of the conduits to be installed. Also, the Customer shall install a 1/4" diameter nylon pulling rope that is necessary for the HLD to pull and install its underground conductors. The HLD shall own and maintain all service lateral facilities to the point of metering, including the service lateral conduits installed by the Customer unless other conditions are set.

For three-phase installations:

1. The Customer shall furnish and install three-phase, pad-mounted transformer foundation(s) in accordance with HLD specifications (see **Details E-13, E-14, and E-15.**)
2. For three-phase service lateral installed in conduit, the conductors shall be installed as A-B-C-N in each conduit rather than segregated by phases.
3. When the metering is located on the Customer's building or structure, the HLD will provide and install all service lateral conductors to the point of metering. Customer shall provide, for HLD use, all necessary excavating and backfill and shall furnish and install the service lateral conduits. The HLD will specify the type and size of the conduits to be installed. Also, the Customer shall install a 1/4" diameter nylon pulling rope that is necessary for the HLD to pull and install its underground conductors. The HLD shall own and maintain all service lateral facilities to the point of metering, including the service lateral conduits installed by the Customer unless other conditions are set.
4. When the metering is located at HLD pad-mounted transformer (preferred), the Customer shall provide all necessary excavating and backfill and shall furnish, own, install, and maintain the service lateral conduits and conductors. The HLD will furnish, install, and own all metering facilities on the transformer.

D. SERVICE ENTRANCE

The Customer shall provide, install, own, and maintain the complete service entrance from and including the meter socket to the service entrance disconnect. In addition, the Customer shall supply, install, own, and maintain all material located on the load side of the service entrance disconnect. The service entrance conductors shall be of sufficient ampacity to meet the requirements of the NEC and any other applicable codes. The service entrance conductors shall not be spliced. The Customer's service entrance shall have a minimum of two driven ground rods eight (8) feet minimum length at least six (6) feet apart. The grounding electrode conductor shall be continuous from the service entrance main disconnect to both driven ground rods. The Customer shall install the service entrance in such a manner to ensure that all of the grounding/bonding requirements of the NEC are met or exceeded.

E. CONNECTIONS BETWEEN HLD & CUSTOMER'S FACILITIES

The connections between the HLD and the Customer's facilities shall be made only by authorized employees of the HLD. The Customer's installation shall be completed and any required inspections obtained prior to the time the HLD installs its facilities.

The Customer will be responsible for connecting all service entrance conductors to any form of Customer owned disconnecting devices or equipment. In cases involving underground service laterals or parallel services, the HLD will advise the Customer sufficiently in advance of the time when service is required concerning the number, size, and type of conductor(s) the HLD will use. The Customer will also be responsible for ensuring that the main disconnect or terminal box has the proper number and size of terminals to accept HLD conductors and that loads shall be so connected as to be balanced among phases and sets of conductors.

The HLD will be responsible for making all connections to its power transformer or metering transformers regardless of whether involved conductors are HLD or Customer-owned. The HLD will connect its service lateral to the Customer's service entrance. For commercial or industrial Customers, the HLD will furnish and install the connectors necessary to connect the Customer's service lateral to the HLD pad-mounted transformer. The Customer shall provide sufficient length of conductor for the HLD to make required bends and connections.

F. PERMANENT UNDERGROUND SERVICE INSTALLATION

Typical permanent underground service installations are shown in **Detail E-3**. The service lateral shall be installed in such a manner to maintain the clearances as shown.

G. TEMPORARY UNDERGROUND SERVICE INSTALLATION

A typical temporary underground service installation is shown in **Detail E-5**.

H. UNDERGROUND SERVICE INSTALLATIONS IN EXCESS OF 600 VOLTS

The Customer shall consult the HLD if a service voltage in excess of 600 volts is required.

I. EXCAVATION NEAR UTILITY UNDERGROUND FACILITIES

By written law, for safety to persons, property, or to prevent loss of service to the public, person(s) planning to excavate shall mark the area to be excavated with white paint and call the telephone number listed below for locating and marking underground facilities. This call shall be made at least 48 hours, not including

weekends and holidays, in advance of the planned excavation.

“Miss Utility” (811)

Excavation shall not begin until the above has been completed.

In the event excavation uncovers buried electrical cables, conduits, or red warning tape with the following message “CAUTION—BURIED ELECTRICAL LINE BELOW,” please discontinue excavation immediately and notify the HLD at (301) 790-2600.

8. CUSTOMER EQUIPMENT

A. GENERAL

The Customer shall notify the HLD prior to adding electrical equipment so that facilities of proper capacity may be provided to assure satisfactory operation of the Customer’s equipment and to protect both the Customer’s and HLD equipment against damage. The Customer is required to provide protection that will prevent damage to equipment from normal operations of the HLD supply system. This equipment includes motors, welders, heating equipment, HVAC, voltage sensitive devices, harmonic producing equipment, x-ray equipment, and other equipment that may require special starting and protection.

B. MOTOR INSTALLATIONS

It is characteristic for most motors to draw a heavy momentary current on starting. The starting current for AC motors can be on the order of three to ten times the normal running current. If sufficient capacity is not present in the Customer’s circuits and in HLD facilities serving them, the motor may not start properly, resulting in overheating, failed fuses, or damage to the motor and other equipment. In addition, it may result in excessive voltage fluctuations and light flicker that may be objectionable to the Customers using the motor, as well as to other Customers supplied from the same lines. It is, therefore, necessary for the HLD to place restrictions on the starting current of a motor either by limiting the size of the motor or by requiring the Customer to install suitable starting devices. Motors installed should be suitable for operation at the service voltage available. The Customer shall consult the HLD prior to purchasing or installing any motor to verify the voltage, frequency, and phase characteristics of the services to be supplied, the capacity available, and the suitability of the proposed equipment for operation at the intended location.

The following maximum permissible motor starting currents shall apply to the installation of motors:

<u>Equipment for Operation at:</u>	<u>Total Locked Rotor Current Not to Exceed:</u>
Single Phase	
120V	50 Amps
240V	
2HP or less	60 Amps
2HP to 6.5 HP	60 Amps plus 20 Amps per HP in excess of 2HP
Over 6.5 HP	Consult HLD Engineering
Three Phase	
240V	
2HP or less	50 Amps
2HP to 19.9HP	50 Amps plus 14 Amps per HP in excess of 2HP
Over 19.9HP	Consult HLD Engineering

C. MOTOR INSTALLATIONS (continued)

Upon proper application, the HLD will investigate the possibility of serving single-phase capacitor start, capacitor run motors larger than 6.5 hp where such service does not adversely affect our Customers.

For poly-phase motors and equipment to be operated at voltages other than 240 volts, the locked rotor currents specified for 240 volts shall be multiplied by the inverse ratio of the voltages.

Where equipment, ratings, or starting characteristics other than those covered in the preceding table are being considered, the HLD will furnish information regarding higher starting currents for single-phase motors and 3-phase motors which will be permitted under specific conditions. Permissible starting currents will depend upon the size of the motor, the frequency of the starting, the character of the Customer's load, and the design and capacity of the HLD supply system in the area. Generally, this will be equivalent to the maximum starting current that, in HLD opinion, can be supplied without causing undue interference with service to other Customers. Whenever a starting current that is not covered in the preceding table causes undue interference with service to other Customers, the Customer shall provide a starting device of a type that will reduce the starting current to the value required to eliminate such interference.

The Customer shall consult the HLD prior to the installation of any DC motor or adjustable speed drive.

D. REQUIRED EQUIPMENT PROTECTION

It is the Customer's responsibility to provide protection in accordance with the Customer's requirements and any applicable codes.

Specifically, the use of phase-failure and phase-reversal relays, are required on all new poly-phase motor installations. It is also highly recommended that existing poly-phase motor installations be retrofitted with phase-failure and phase-reversal relays to protect the motors from damage. Single-phasing conditions in the electrical supply system may damage motors. The Customer has several options to provide phase-failure and phase-reversal protection. Some of the options are as follows:

1. One phase-failure and phase-reversal device may protect a single motor or a group of motors.
2. The phase-failure and phase-reversal device can be installed on each motor and open all motor contacts and/or the device can activate an alarm to alert the Customer that a phase-failure or reversal condition exists.

The HLD will not be responsible in any way for damage to the Customer's equipment that is due to failure of the Customer to provide adequate protection.

E. AIR CONDITIONERS, CENTRAL SPACE HEATING, HEAT PUMPS, INCLUDING SUPPLEMENTAL HEATING ELEMENTS IN HEAT PUMPS

Thermostatically controlled electric furnaces, boilers, and supplemental resistance heating elements in heat pumps with an installed capacity greater than 12kW shall be switched in 6kW (max.) increments at minimum intervals of 10 seconds, whether incrementally increasing or decreasing the load.

For installations greater than 24kW, the HLD shall be consulted to determine staging parameters, unless switching can be accomplished in stages of 6kW as indicated in the preceding paragraph.

A Customer, installing a heat pump or air conditioner, in excess of 5 ton single-phase or 20 ton three-phase, shall consult the HLD prior to installation of the equipment.

F. ELECTRIC WATER HEATERS

The heating elements of residential electric water heaters and tank-less water heaters shall be limited to a maximum of 5,500 Watts each, shall be 208 or 240 volts, thermostatically controlled, and connected to prevent simultaneous operation. All water heaters shall be equipped with an American Standards Association approved pressure-temperature relief valve located in the top of the tank, a two-pole, manual reset over-temperature cutoff switch with 190°F maximum cutoff of electric supply, and UL listed.

The HLD shall be consulted before installing electric water heating equipment with heating elements in excess of 5,500 Watts.

All bathtubs, showers, sinks, and washtubs shall have all their metallic parts, metallic water pipes, and metallic drainpipes bonded and grounded.

G. ELECTRIC WELDING, X-RAY, RADIO, ELECTRONIC EQUIPMENT, ETC.

Electric welding equipment shall not be connected to HLD lines without first consulting the HLD. Electric welding equipment may cause serious flicker in the Customer's lighting as well as that of other neighboring Customers. On rural lines and urban residential distribution systems, welding equipment shall be limited to a maximum of 50 amperes when supplied at 240 volts. A transformer-type welder is recommended for use on HLD lines. Straight resistance line voltage welders are not acceptable. Electric apparatus (such as X-ray equipment, radio, television and electronic transmitting equipment, and other electronic applications), which have an adverse effect on HLD ability to supply adequate service to all its Customers, shall not be installed on and operated from HLD lines until the Customer has secured specifications and available capacity from the HLD.

H. LIGHTNING AND SURGE PROTECTION

The HLD provides protection on its lines to minimize damage from lightning. The HLD will not be responsible for damage to Customer's equipment because the Customer did not provide adequate lightning or surge protection or due to the failure of any such devices.

I. THREE-PHASE CONVERTER

Phase converters may be used to supply energy to 3-phase motors from a single-phase service. 3-phase motors served from phase converters may cause serious flicker in the Customer's lighting or adversely affect the operation of other equipment in the Customer's premises. The phase converter shall be sized properly for the load to be served in order to minimize the magnitude of voltage fluctuations caused by motor

starting. The HLD shall be consulted before a phase converter is installed to ensure that its operation will not affect other neighboring Customers. The HLD reserves the right to refuse service to a phase converter installation if it is determined that it would adversely affect the HLD's ability to supply adequate service to all its Customers.

9. METER INSTALLATIONS

A. GENERAL

Meters and meter testing devices are furnished, installed, and maintained by the HLD. They remain the property of the HLD and shall not be moved or the connections changed by any person other than authorized employees of the HLD.

All metering shall be installed on the line side of the Customer's main disconnecting means except for a 480Y/277 volt metering installation where HLD requires a meter disconnect ahead of the meter or where the NEC requires a main disconnect ahead of a group more than six (6) meters. See **Details E-17A, E-17B, E-18, and E-19** for self-contained, 480Y/277 volt, 4-wire metering installations. Consult the HLD prior to purchasing or installing equipment. All three-phase self-contained meter sockets shall be included with a bypass lever to allow the HLD to remove the meter for testing without disrupting the electrical service. Customer equipment will not be installed ahead of the meter except for main service disconnects for a 480Y/277 volt metering installation where the HLD requires a meter disconnect ahead of the meter or where the NEC requires a main disconnect ahead of a group more than six (6) meters.

Meter sockets, metering transformer cabinets, and all other enclosures and switchboxes installed on the line side of the meter shall be equipped with provisions to accept an HLD meter seal before connection will be made by the HLD. Meter sockets, transformer cabinets, and other meter service enclosures are not to be used by the Customer as junction boxes—only service entrance conductors are permitted. Metered and unmetered conductors shall not be installed in the same conduit, enclosure, or raceway. Any energized meter socket must be properly covered at all times when the meter is not in place. Meter sockets and service conduits shall not be recessed into the wall.

The HLD, in accordance with the rate schedule selected and the type of service supplied, determines the capacity and type of meter installation to accommodate the Customer's load.

B. METER LOCATIONS

The Customer shall provide space for the installation of HLD meters and equipment at an outside location designated by the HLD. Outdoor meter locations are required for all meters except where the HLD gives approval otherwise. For residential single-family, duplex, and townhouse dwellings, the meter socket shall be located outside within 15 feet of the nearest corner of the dwelling to HLD facilities. If this location is not feasible due to physical obstructions, such as garage doors or windows, the HLD will choose an alternate location closest to its service facilities.

The meter socket shall be installed so that the center of the meter glass is 4'-0" to 5'-6" above the finished grade. The Customer shall provide at least 15" of clear space on all sides of the meter as well as 36" in front of the meter. The above clearances shall be maintained regardless of structural changes of the building. The HLD will not accept a meter to be located in an area which could be dangerous to meter readers or testers, or where conditions would prevent the meter person from standing in front of the meter to test or read. Meters, meter sockets, and metering transformers shall not be located in a manhole or any similarly classified location. A meter may be located on a Customer-owned pole with prior HLD approval. This pole shall be yellow pine, cedar, or equivalent, pressure-treated, and provide proper clearances. Before installing pole, consult the HLD for proper size and setting depth. Any metering installation on an HLD-owned pole shall have the specific written approval of the HLD.

C. METER RELOCATIONS

When alterations or additions to a building or its wiring require a change in meter location, the Customer shall notify the HLD before proceeding with any work. The Customer may be responsible for HLD costs for facility modifications. The Customer shall be responsible for all costs incurred in moving the socket and wiring.

D. EMERGENCY METER REMOVAL

Firefighters and other emergency personnel **SHALL NOT** remove electric meters during fires or other emergencies. Removing a meter **MAY NOT** de-energize the building or contribute to the safety of firefighters or emergency personnel.

E. GROUP METER INSTALLATION

In serving groups of residential or commercial installations, provisions may be made to group meters at a single location that will be accessible to the tenant and to the HLD (see **Details E-19, E-20, and E-21**).

The Customer is responsible for permanently labeling each meter socket with its corresponding apartment, office, etc. being served. Labeling shall be by stenciled

paint, engraving, stamping, or riveted metal tag. Written black marker is NOT acceptable.

When it is necessary that the Customer install a main/service disconnecting means because of the number of meters, this disconnecting means shall be sealed and the Customer will be permitted to break the switch seals only for the purpose of replacing fuses or for maintenance. In such instances, the Customer shall promptly notify the HLD that the seals have been broken.

F. TRANSFORMER-RATED METER INSTALLATIONS

The transformer-rated cabinet and metering conduit is furnished and installed by the Customer. Meter socket is provided by the HLD and installed by the Customer. Consult the HLD for details (see **Details E-23, E-24, E-25 and E-26**).

Provisions shall be made for the installation of metering transformers for single-phase or 3-phase services in excess of 320 amperes. Metering transformers are furnished and installed by HLD and are paid for by the Customer and are normally installed on the line side of all service protective equipment, except where the NEC requires a main disconnect ahead of the metering.

When overhead service is provided, the metering transformer(s) will normally be of the outdoor-type and mounted sufficiently high, on the outside of the building, so that a transformer enclosure is not required (see **Detail E-26**).

Metering transformers may be installed in Customer-owned transformer vaults, cubicles, switchgear, or on switchboards, when prior arrangements are made with the HLD. Meters, meter sockets, and metering transformers shall not be located in a manhole or any similarly classified location.

Sufficient access and working space shall be provided and maintained about all metering equipment. The meter socket shall be furnished by the HLD and installed and paid for the Customer and located outside and be mounted so that the center of the meter glass is 4'- 0" to 5'-6" above finished grade and within 30' (cable length) of the current transformers.

If changes are made on the premises, thereby making the existing meter location unsafe or inaccessible for reading or testing, the Customer shall consult the HLD. The HLD shall be responsible to make the necessary changes to correct the situation at the Customer's expense.

Customer-owned equipment shall not be connected in the secondary metering circuit.

The preferred location for transformer-rated metering will be at HLD-owned, pad-mounted transformer. The Customer shall be required to provide all facilities on the load side of the metering. The HLD shall be consulted regarding necessary space requirements and equipment to be furnished and installed by the Customer.

G. SEALS

The HLD will seal all meters and points of access to the wiring, ahead of the meter. All cabinets, switchboxes, terminal boxes, and etc., either inside or outside the building, which contain unmetered wires, shall be made sealable by the Customer before service will be supplied. Where equipment is not arranged for sealing, 1/8" diameter holes shall be provided by the Customer for sealing purposes. All service entrance conduit fittings used outside the building ahead of the meter shall have non-removable covers. All such fittings used inside the building ahead of the meter, if not of the non-removable cover-type, shall be drilled for sealing. The HLD prohibits the breaking of HLD seals by unauthorized persons, or tampering with meters including any wiring or equipment located ahead of the meter.

H. METER SOCKETS, GENERAL

A self-contained meter socket will be used for single-phase and 3-phase electric service not exceeding 320 amperes at service voltages less than 600 volts.

I. METER SOCKET INSTALLATION SPECIFICATIONS

A self-contained meter socket shall be an outdoor-type, ringless, weatherproof construction, Underwriter's Laboratories (UL) listed, suitable for overhead or underground installation, and plug-in type meter. The enclosure shall be a minimum of 16-gauge galvanized or zinc coated steel or 14-gauge aluminum with painted finish. Provision shall be made for sealing by wire and padlock.

Meter sockets shall be securely mounted in a true vertical position on a wall or other support with a minimum of four (4) corner fasteners. For non-masonry structures, meter sockets shall be secured to bracing installed between exterior wall studs with 1/4" lag screws (or No. 12 sheet metal screws) embedded 1-1/2" into the wood. Where secured to brick or other masonry, 1/4" lag screws (or No. 12 sheet metal screws) with lead anchor shields embedded 1-1/2" into the masonry shall be used. For manufactured homes (HUD approved) mounted on a permanent foundation, meter sockets shall be mounted to the exterior wall studs using the center hole positions in the socket. Meter sockets and service conduits shall not be recessed into the wall. All cable or conduit connections on the top of the meter socket shall be rain tight. The socket shall be mounted so that the center of the meter glass is 4'-0" to 5'-6" above the finished grade.

J. HLD-FURNISHED METER SOCKETS

The HLD will furnish meter sockets paid for by the Customer for the following:

1. Meter sockets mounted on 3-phase, pad-mounted transformers.
2. Meter sockets for transformer-rated metering services greater than 320 Amps.
Note: Meter sockets shall not be installed on single-phase, pad-mounted transformers.

K. CUSTOMER-FURNISHED METER SOCKETS

The Customer will furnish and install meter sockets for the following:

1. All self-contained sockets for 100, 200 and 320 amperes, single-phase, 120/240 volt service. Also, all self-contained sockets for 100 and 200 amperes, single-phase, network, 120/208 volt service, only where 120/208 volt is available.
2. All self-contained sockets for 200 and 320 ampere, 3-phase, 4-wire, 240/120 volt delta, 208/120 volt wye and 480/277 volt wye services.
3. All multi-gang meter sockets, factory assembled multi-meter centers, mobile home pedestals, and other special locations requiring 120/240 volt and 120/208 volt, single- phase, 3-wire service.

L. METER SOCKET REPAIRS/REPLACEMENTS

Customers are responsible for the maintenance and replacement of their meter sockets unless the meter socket is located on the transformer. In the event of a failure, damage, or the replacement of the socket due to rewiring, the Customer shall engage an electrical contractor to have this work performed and inspected.

M. METER SOCKET SPECIFICATIONS

1. Single-phase, 3-wire 120/240 volt meter sockets

General: 4-terminal, ring-less, UL label, socket suitable for plug-in meter. For 120/208 volt (network), meter sockets require a fifth terminal (jaw) in the 9 o'clock position.

Requirements for approximate physical dimensions do not apply to multi-position sockets. Number of concentric knockouts may be increased on multi-position sockets.

- a. 100 Ampere Continuous (Overhead Service)

1. Line and load lugs: lay-in for #2 AL or CU.

2. Neutral: double lay-in for #2 AL or CU.
 3. By-pass: horn-type
 4. Approximate physical dimensions: 8.0" W X 10.5" H X 3.5" D minimum.
 5. Raised hub opening in the top with provisions for interchangeable gasket-less conduit hubs or closure plate.
- b. 200 Ampere Continuous (Overhead Service)
1. Line and load lugs: lay-in for up to 350kcmil AL or CU.
 2. Neutral: double lay-in for up to 350kcmil AL or CU.
 3. By-pass: horn-type.
 4. Approximate physical dimensions: 11.0" W X 14.0" H X 4.5" D minimum.
 5. Raised hub opening in the top with provisions for interchangeable gasket-less conduit hubs or closure plate.
- c. 200 Ampere Continuous (Underground Service)
1. Line and load lugs: lay-in for up to 350kcmil AL or CU. Line terminals to be offset (bussed) to side.
 2. Neutral: double lay-in for up to 350kcmil AL or CU offset (bussed) to side.
 3. By-pass: horn-type.
 4. Approximate physical dimensions: 13" W X 15.5" H X 5" D minimum.
 5. Knockouts: two sets of concentric knockouts in bottom plate for 3" conduit.
- d. 320 Ampere Continuous (Overhead/Underground Service)
1. Line and load: 3/8" stud with Belleville washer and nut to accommodate AL/CU terminal lugs. Line terminals to be offset (bussed) to side.
 2. Neutral: two 3/8" studs, same as line and load.
 3. By-pass: lever arm by-pass with jaw tension release.
 4. Approximate physical dimensions 15.0" W X 29" H X 5.0" D minimum.
 5. Knockouts: two sets of concentric knockouts in bottom plate for 3" conduit.
 6. Raised hub opening in the top with provisions for interchangeable gasket-less conduit hubs or closure plate.
 7. Socket shall be able to accept either a 200 or 320 ampere meter.
2. Three-phase, 4-wire, 240/120 volt delta, 208/120 volt wye and 480/277 volt wye meter sockets

General: 7-terminal, ring-less, UL label, socket suitable for plug-in meter. Meter socket shall have a transparent, crack resistant safety shield to provide protection from shorts and shock. Requirements for approximate physical dimensions do not

apply to multi- position sockets. Number of concentric knockouts may be increased on multi-position sockets.

a. 200 Ampere Continuous (Overhead Service)

1. Line and load lugs: lay-in for up to 350kcmil AL or CU.
2. Neutral: double lay-in for up to 350kcmil AL or CU.
3. By-pass: lever arm by-pass with jaw tension release.
4. Raised hub opening in the top with provisions for interchangeable gasket-less 3" conduit hubs or closure plate.
5. Approximate physical dimensions: 12.0" W X 19.0" H X 5.0" D minimum.
6. Knockouts: two sets of concentric knockouts in bottom plate for 3" conduit.

b. 320 Ampere Continuous (Overhead/Underground)

1. Line and load: 3/8" stud with Belleville washer and nut to accommodate AL/CU terminal lugs. Line terminals to be offset (bussed) to side.
2. Neutral: two 3/8" studs, same as line and load.
3. By-pass: lever arm by-pass with jaw tension release.
4. Approximate physical dimensions 18.0" W X 33.0" H X 6.0" D minimum.
5. Knockouts: two sets of concentric knockouts in bottom plate for 4" conduit.
6. Raised hub opening in the top with provisions for interchangeable gasket-less conduit hubs or closure plate.
7. Socket shall be able to accept either a 200 or 320 ampere meter.

N. METER ROOMS

When conditions are such that it is necessary to install meters within a building on the Customer's premises, the Customer will provide a suitable room to house the meter sockets and accessories.

Customers shall secure room specifications from HLD and consult HLD regarding the location and construction of the meter room while building plans are being prepared. Rooms shall be so located as to be easily accessible by direct entry from outside the building, for the purpose of installation, maintenance, testing, removal, and reading of HLD meters and equipment. The room will not be accessible by any persons other than HLD except building maintenance personnel.

HLD reserves the right to serve other Customers from HLD equipment located in the meter room on the Customer's premises, provided this does not interfere with the Customer's service.

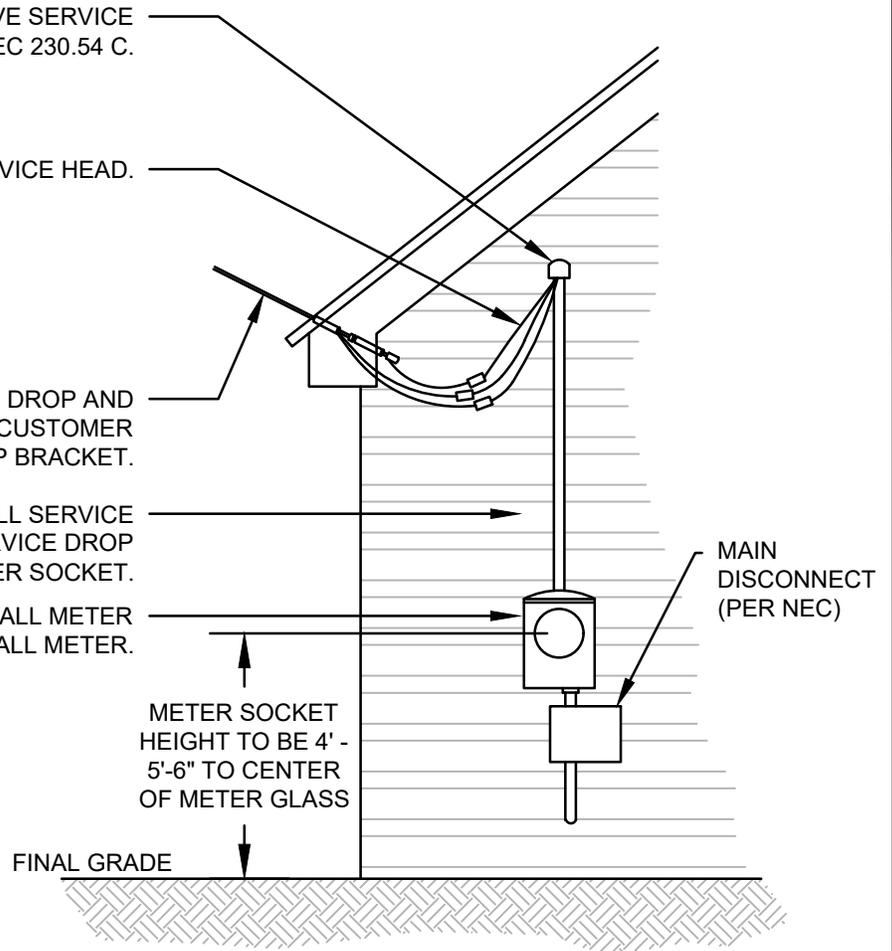
SERVICE HEAD SHOULD BE LOCATED ABOVE SERVICE DROP ATTACHMENT PER NEC 230.54 C.

36" MINIMUM WIRE LEAD FROM SERVICE HEAD.

HLD WILL FURNISH AND INSTALL SERVICE DROP AND WILL CONNECT TO SERVICE ENTRANCE. CUSTOMER TO PROVIDE AND INSTALL SERVICE DROP BRACKET.

CUSTOMER WILL FURNISH AND INSTALL ALL SERVICE ENTRANCE FACILITIES FROM SERVICE DROP CONNECTORS TO METER SOCKET.

CUSTOMER WILL FURNISH AND INSTALL METER SOCKET. HLD WILL FURNISH AND INSTALL METER.



NOTES:

1. CUSTOMER MUST CONSULT WITH HLD FOR POINT OF ATTACHMENT OF SERVICE DROP AND METER LOCATION.
2. ALL CUSTOMER WORK MUST BE COMPLETED AND REQUIRED INSPECTIONS BE OBTAINED BEFORE HLD WILL PROVIDE SERVICE.
3. SERVICE DROP POINT OF ATTACHMENT MUST BE SUFFICIENT HEIGHT TO MEET THE FOLLOWING MINIMUM SERVICE DROP CLEARANCES:
 - A. TEN FEET (10') FOR MULTIPLEX SERVICES ABOVE SIDEWALKS AND FINISHED GRADES.
 - B. TWELVE FEET (12') FOR OPEN WIRE SERVICES ABOVE SIDEWALKS AND FINISHED GRADES (0-300V) TO GROUND.
 - C. FIFTEEN FEET (15') OVER RESIDENTIAL DRIVEWAYS.
 - D. EIGHTEEN FEET (18') OVER PUBLIC STREETS, ALLEYS, ROADS, PARKING LOTS, AND DRIVEWAYS OTHER THAN RESIDENTIAL PROPERTY.
 - E. TWO FEET (2') CLEARANCE FROM TELEPHONE AND CATV WIRES AT MIDSPAN CROSSINGS.
4. INHIBITOR COMPOUND SHALL BE USED ON ALL ALUMINUM WIRE TERMINATIONS.
5. REFER TO DETAIL **E-06** FOR GROUNDING SPECIFICATIONS.

**320 AMP OR LESS
OVERHEAD SERVICE**



CITY OF HAGERSTOWN, MD
ELECTRIC SYSTEM

DATE: 05-23-25

DRAWN: ACS

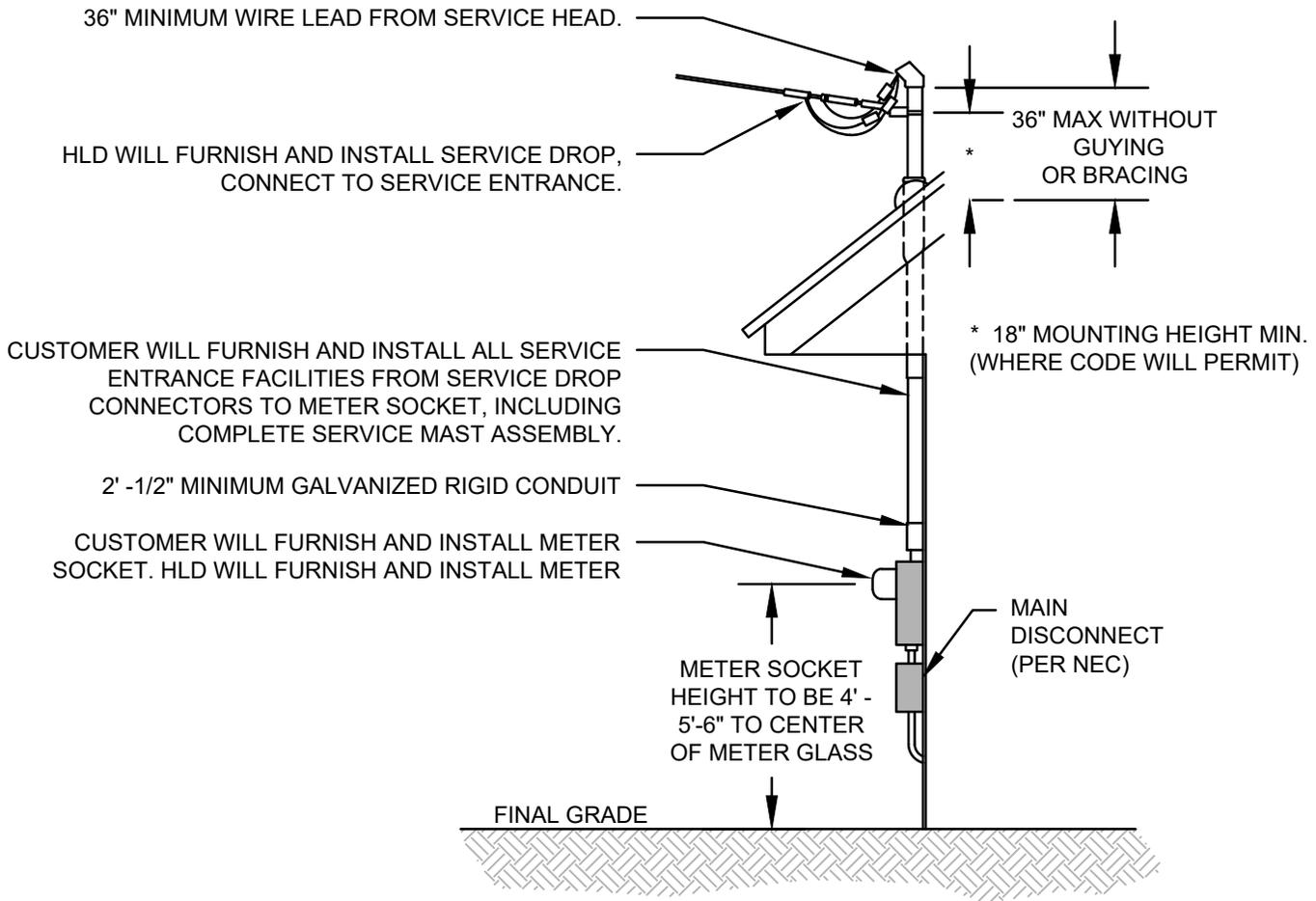
APPR: JMB

SCALE:
NONE

CONSTRUCTION
STANDARDS

DETAIL:

E-01



NOTES:

1. CUSTOMER MUST CONSULT WITH HLD FOR POINT OF ATTACHMENT OF SERVICE DROP AND METER LOCATION.
2. ALL CUSTOMER WORK MUST BE COMPLETED AND REQUIRED INSPECTIONS MUST BE OBTAINED BEFORE HLD WILL PROVIDE SERVICE.
3. SERVICE DROP POINT OF ATTACHMENT MUST BE SUFFICIENT HEIGHT TO MEET THE FOLLOWING MINIMUM SERVICE DROP CLEARANCES:
 - A. TEN FEET (10') FOR MULTIPLEX SERVICES ABOVE SIDEWALKS AND FINISHED GRADES.
 - B. TWELVE FEET (12') FOR OPEN WIRE SERVICES ABOVE SIDEWALKS AND FINISHED GRADES (0-300V) TO GROUND.
 - C. FIFTEEN FEET (15') OVER RESIDENTIAL DRIVEWAYS.
 - D. EIGHTEEN FEET (18') OVER PUBLIC STREETS, ALLEYS, ROADS, PARKING LOTS, AND DRIVEWAYS OTHER THAN RESIDENTIAL PROPERTY.
 - E. TWO FEET (2') CLEARANCE FROM TELEPHONE AND CATV WIRES AT MIDSPAN CROSSINGS.
4. INHIBITOR COMPOUND SHALL BE USED ON ALL ALUMINUM WIRE TERMINATIONS.
5. REFER TO DETAIL **E-06** FOR GROUNDING SPECIFICATIONS.

**320 AMP OR LESS
OVERHEAD SERVICE MAST**



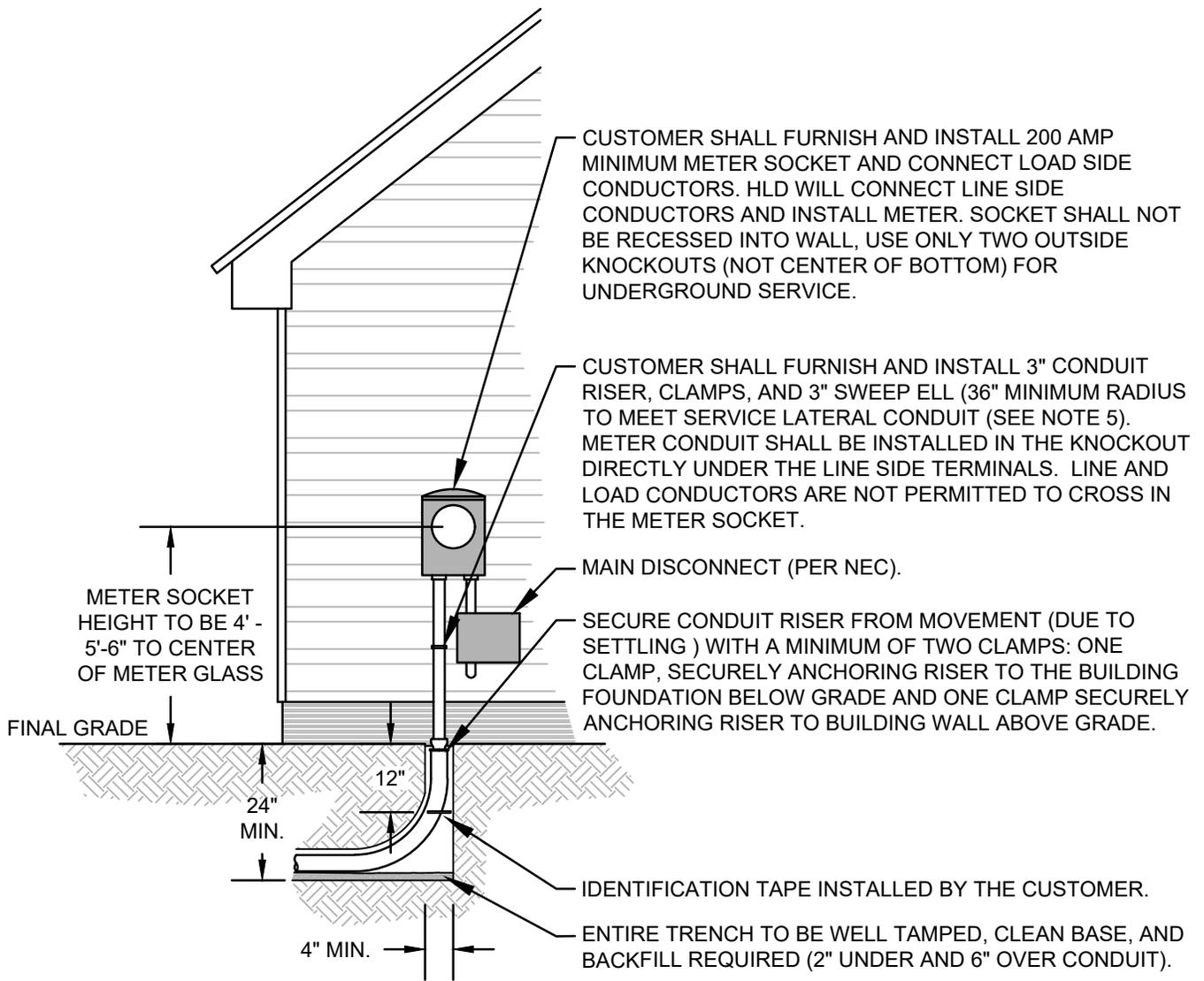
CITY OF HAGERSTOWN, MD
ELECTRIC SYSTEM

DATE: 07-20-23 DRAWN: ACS APPR: JMB

SCALE:
NONE

CONSTRUCTION
STANDARDS

DETAIL:
E-02



NOTES:

1. CUSTOMER SHALL CONTACT HLD FOR METER LOCATION. CUSTOMER TO TRENCH AND BACKFILL; FURNISH AND INSTALL CONDUIT WITH 1/4" NYLON PULL ROPE FOR HLD SERVICE LATERAL CONDUCTORS. TRENCH TO BE EXCAVATED IN LOCATION INDICATED BY HLD AND GRADED TO WITHIN 6" OF FINAL GRADE BEFORE SERVICE CONNECTION WILL BE MADE.
2. ALL CUSTOMER WORK MUST BE COMPLETED AND REQUIRED INSPECTIONS BE OBTAINED BEFORE HLD WILL PROVIDE SERVICE.
3. INHIBITOR COMPOUND SHALL BE USED ON ALL ALUMINUM WIRE TERMINATIONS.
4. CONDUIT RISER AND SWEEP ELL SHALL BE 3" SCHEDULE 80 PVC. SERVICE LATERAL CONDUIT SHALL BE 3" SCHEDULE 40 PVC. ALL CONDUITS SHALL BE ELECTRICAL GRADE. CLAMPS SHALL BE SECURELY ANCHORED TO FRAMING TIMBER OR MASONRY.
5. CUSTOMER SHALL PROVIDE 3" SCHEDULE 80 PVC SWEEP ELL (36" MINIMUM RADIUS) AT TERMINAL POLE OR 3" SCHEDULE 40 PVC SWEEP ELL (36" MINIMUM RADIUS) INTO PAD MOUNTED TRANSFORMER OR HANDBOX. SEE **DETAILS E-16, 29, AND 30** FOR INSTALLATION DETAILS.
6. REFER TO **DETAIL E-06** FOR GROUNDING REQUIREMENTS.

**320 AMP OR LESS
UNDERGROUND SERVICE**



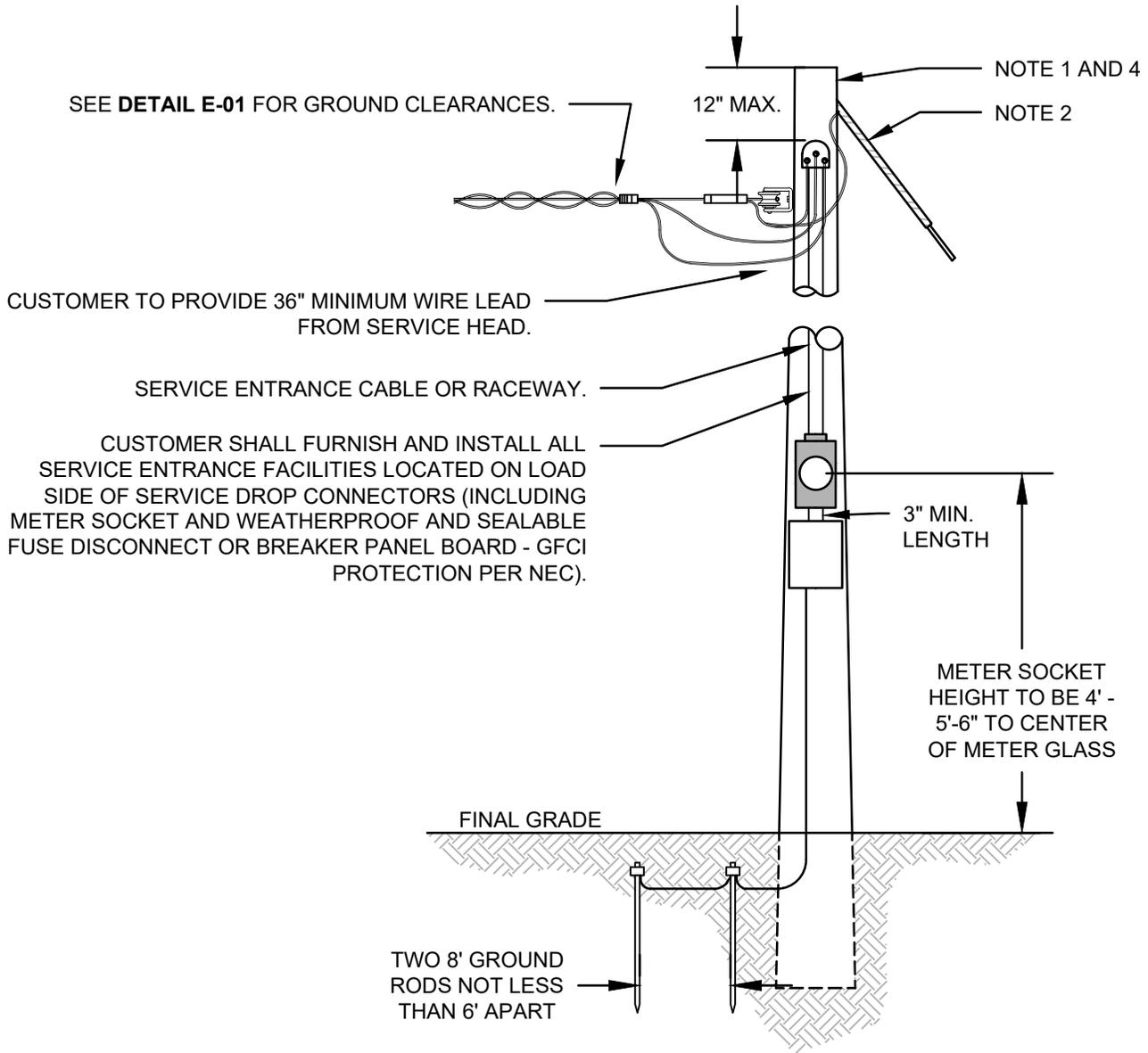
CITY OF HAGERSTOWN, MD
ELECTRIC SYSTEM

DATE: 05-20-25 DRAWN: ACS APPR: JMB

SCALE:
NONE

CONSTRUCTION
STANDARDS

DETAIL:
E-03



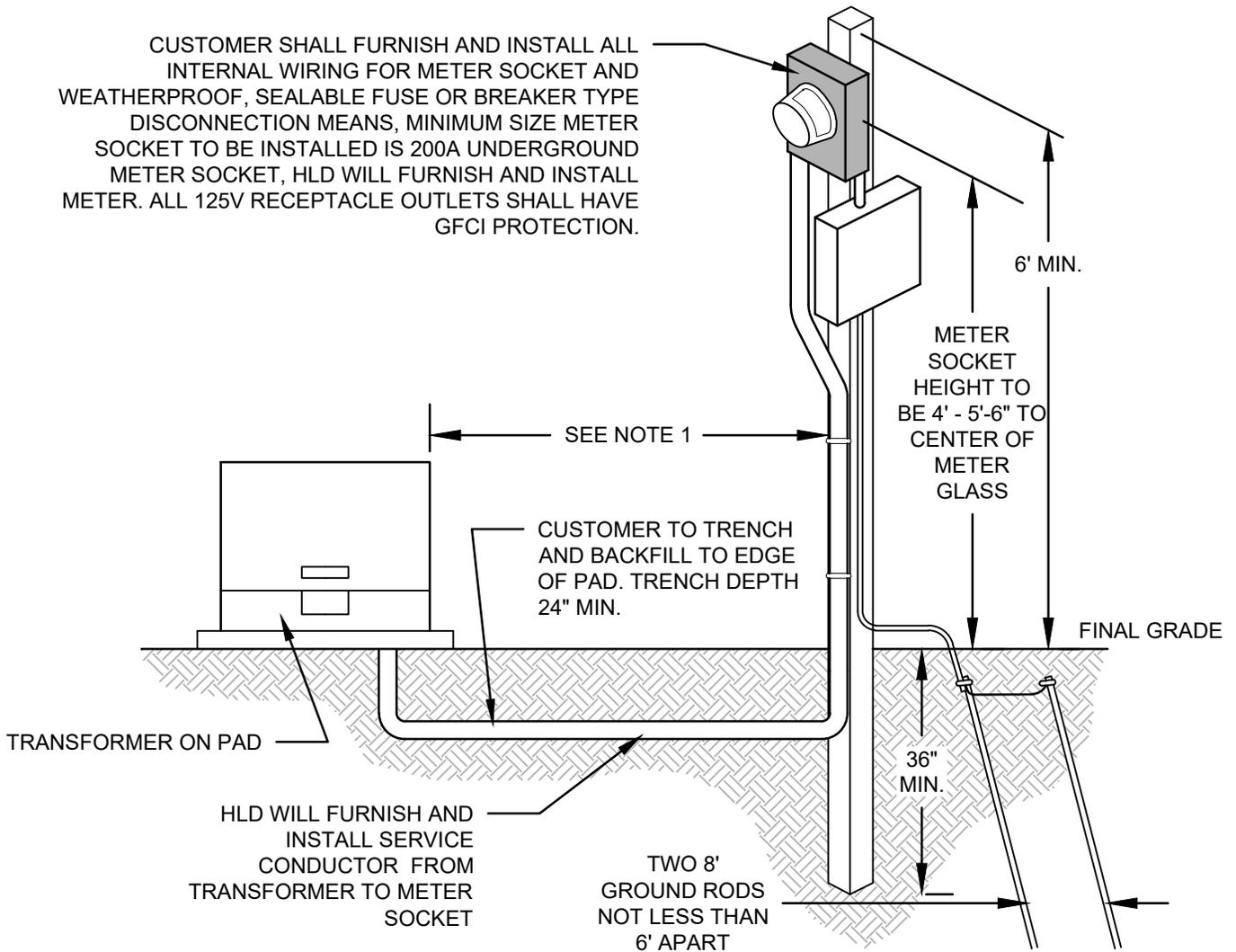
NOTES:

1. CUSTOMER SHALL CONTACT HLD FOR LOCATION OF TEMPORARY SERVICE POLE, SUCH POLE SHALL BE LOCATED NOT LESS THAN 10' OR MORE THAN 75' FROM HLD TRANSFORMER OR SECONDARY, UNLESS OTHERWISE APPROVED BY HLD.
2. CUSTOMER MAY BE REQUIRED TO FURNISH AND INSTALL PROPER GUYING OR INSTALL A PUSH BRACE.
3. ALL CUSTOMER WORK SHALL BE COMPLETED AND INSPECTIONS OBTAINED BEFORE HLD WILL PROVIDE SERVICE.
4. SERVICE POLE WILL BE PROVIDED AND INSTALLED BY CUSTOMER. MUST BE 18' MINIMUM LENGTH TYPICAL POLE OR 18' TREATED 6"X6" TIMBER INSTALLED A MINIMUM OF 4' IN GROUND AND WELL TAMPED.
5. INHIBITOR COMPOUND SHALL BE USED ON ALL ALUMINUM WIRE TERMINATIONS.
6. SERVICE POLE INSTALLATION SUBJECT TO HLD APPROVAL BEFORE CONNECTION.

**TEMPORARY OVERHEAD
SERVICE SUPPORT**

		CITY OF HAGERSTOWN, MD ELECTRIC SYSTEM	
DATE: 07-20-23		DRAWN: ACS APPR: JMB	
SCALE: NONE	CONSTRUCTION STANDARDS	DETAIL: E-04	

CUSTOMER SHALL FURNISH AND INSTALL ALL INTERNAL WIRING FOR METER SOCKET AND WEATHERPROOF, SEALABLE FUSE OR BREAKER TYPE DISCONNECTION MEANS, MINIMUM SIZE METER SOCKET TO BE INSTALLED IS 200A UNDERGROUND METER SOCKET, HLD WILL FURNISH AND INSTALL METER. ALL 125V RECEPTACLE OUTLETS SHALL HAVE GFCI PROTECTION.



NOTES:

1. CUSTOMER SHALL CONTACT HLD FOR LOCATION OF TEMPORARY SERVICE PEDESTAL; SUCH PEDESTAL SHALL BE LOCATED WITHIN 5' OF HLD TRANSFORMER OR SECONDARY UNLESS OTHERWISE APPROVED BY HLD.
2. CUSTOMER SHALL FURNISH AND INSTALL 4"X4"X8' PRESSURE TREATED POST, SELF CONTAINED PEDESTAL, OR OTHER HLD APPROVED SUPPORT DEVICE.
3. ALL CUSTOMER WORK SHALL BE COMPLETED AND INSPECTIONS OBTAINED BEFORE HLD WILL PROVIDE SERVICE.
4. CUSTOMER SHALL TRENCH AND BACKFILL. TRENCH TO BE EXCAVATED IN LOCATION INDICATED BY HLD.
5. INHIBITOR COMPOUND SHALL BE USED ON ALL ALUMINUM WIRE TERMINATIONS.
6. SERVICE PEDESTAL INSTALLATION SUBJECT TO HLD APPROVAL BEFORE CONNECTION.

TEMPORARY UNDERGROUND SERVICE AT TRANSFORMER



CITY OF HAGERSTOWN, MD
ELECTRIC SYSTEM

DATE: 07-20-23

DRAWN: ACS

APPR: JMB

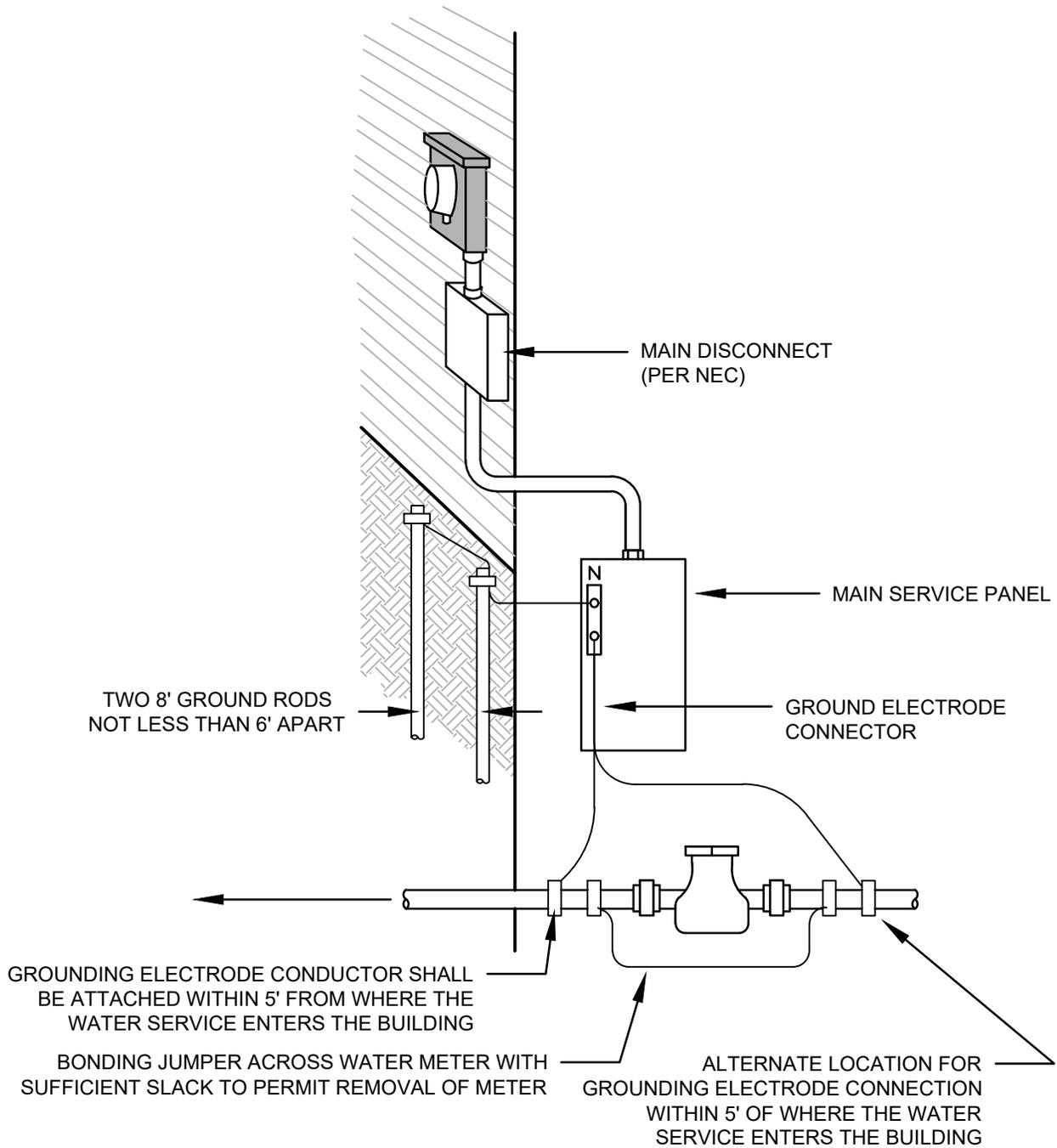
SCALE:
NONE

CONSTRUCTION
STANDARDS

DETAIL:

E-05

OUTSIDE ← → INSIDE



GROUNDING DETAIL



CITY OF HAGERSTOWN, MD
ELECTRIC SYSTEM

DATE: 05-20-25

DRAWN: ACS

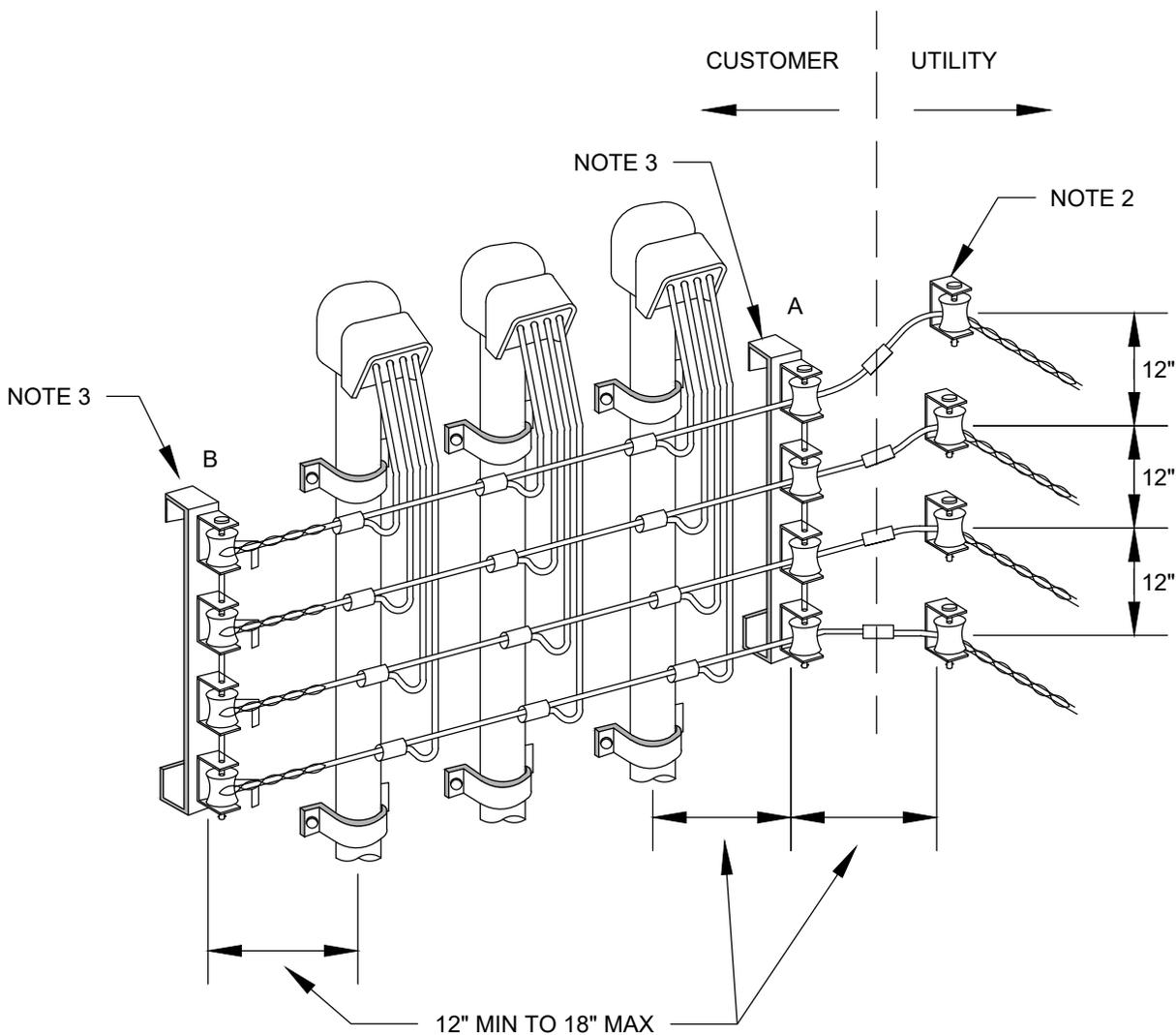
APPR: JMB

SCALE:
NONE

CONSTRUCTION
STANDARDS

DETAIL:

E-06



NOTES:

1. CONTACT HLD FOR DETAILS BEFORE INSTALLATION.
2. HLD WILL TERMINATE SERVICE DROP ON ONE-POINT RACKS AT A SINGLE POINT AGREED ON BY THE CUSTOMER AND HLD.
3. CUSTOMER FURNISHES AND INSTALLS BUS WIRING (A TO B), MOUNTING BRACKETS AND INSULATORS. INDIVIDUAL RACKS MAY BE SUBSTITUTED FOR MULTIPLE SPOOL BRACKETS.
4. TYPICAL POLY-PHASE INSTALLATION IS SHOWN ABOVE. THIS METHOD SHALL ALSO BE USED FOR SINGLE-PHASE INSTALLATIONS.

CONNECTING MULTIPLE SERVICES



CITY OF HAGERSTOWN, MD
ELECTRIC SYSTEM

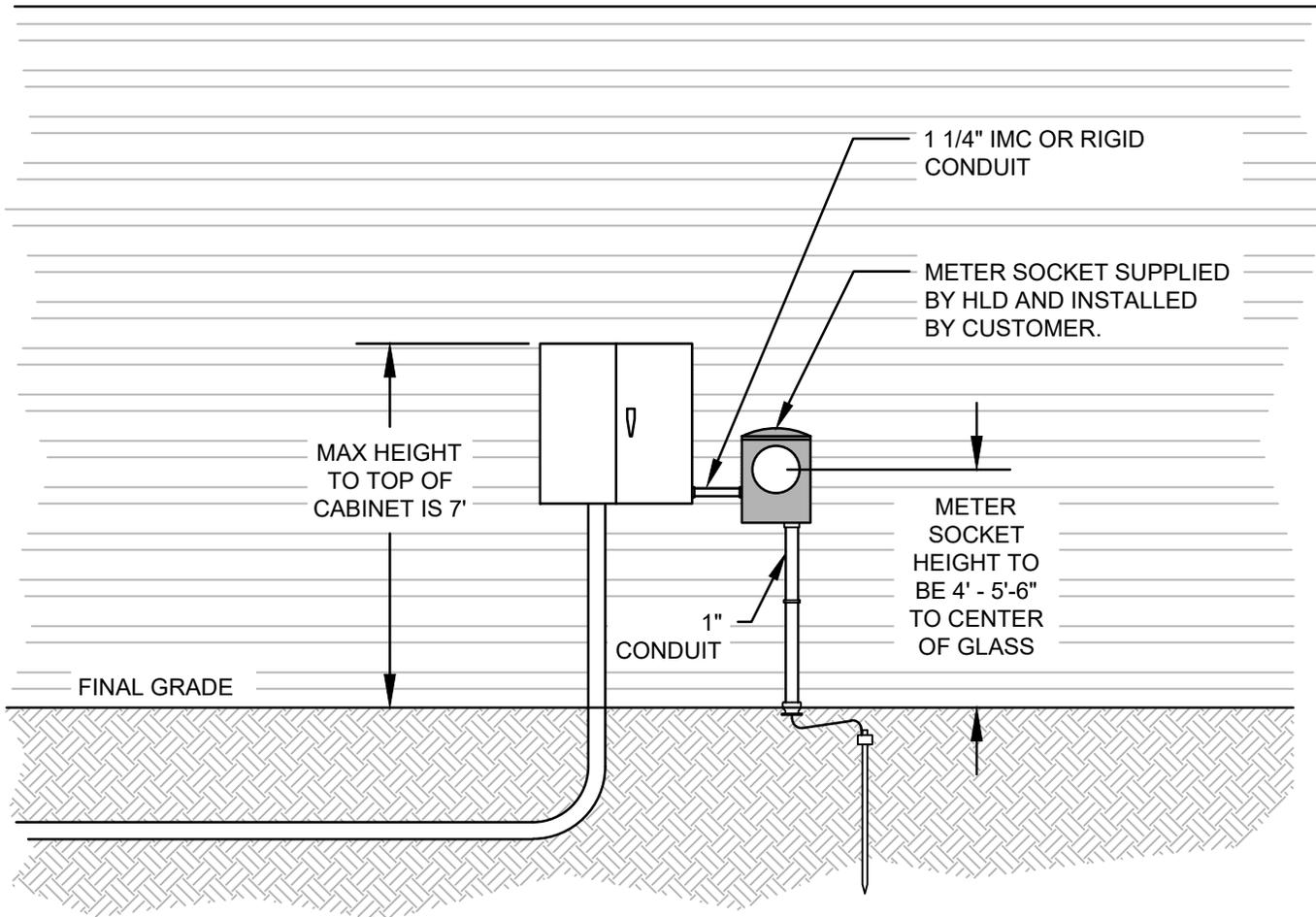
DATE: 07-20-23 DRAWN: MWC APPR: JMB

SCALE:
NONE

CONSTRUCTION
STANDARDS

DETAIL:

E-07



NOTES:

1. CONTACT HLD FOR DETAILS BEFORE INSTALLATION.
2. CUSTOMER SHALL SUPPLY CUT SHEET OF CT CABINET TO THE HLD FOR APPROVAL PRIOR TO PURCHASE.
3. CUSTOMER SHALL FURNISH AND INSTALL CT CABINET, SERVICE CONDUITS, AND PULL ROPE. CUSTOMER SHALL INSTALL METER SOCKET (SUPPLIED BY THE HLD) AND RELATED CONDUIT.
4. THE HLD SHALL SUPPLY AND INSTALL THE LINE SIDE SERVICE CONDUCTORS, CT'S, CT WIRING, AND METER.
5. CUSTOMER SHALL TERMINATE THE LOAD SIDE CONDUCTORS IN THE CT CABINET.
6. CUSTOMER SHALL COORDINATE INSTALLATION LOCATIONS OF CT CABINET AND METER SOCKET WITH THE HLD PRIOR TO INSTALLATION.

**UNDERGROUND CT CABINET METERING
(3-PHASE, 4-WIRE SERVICE)**



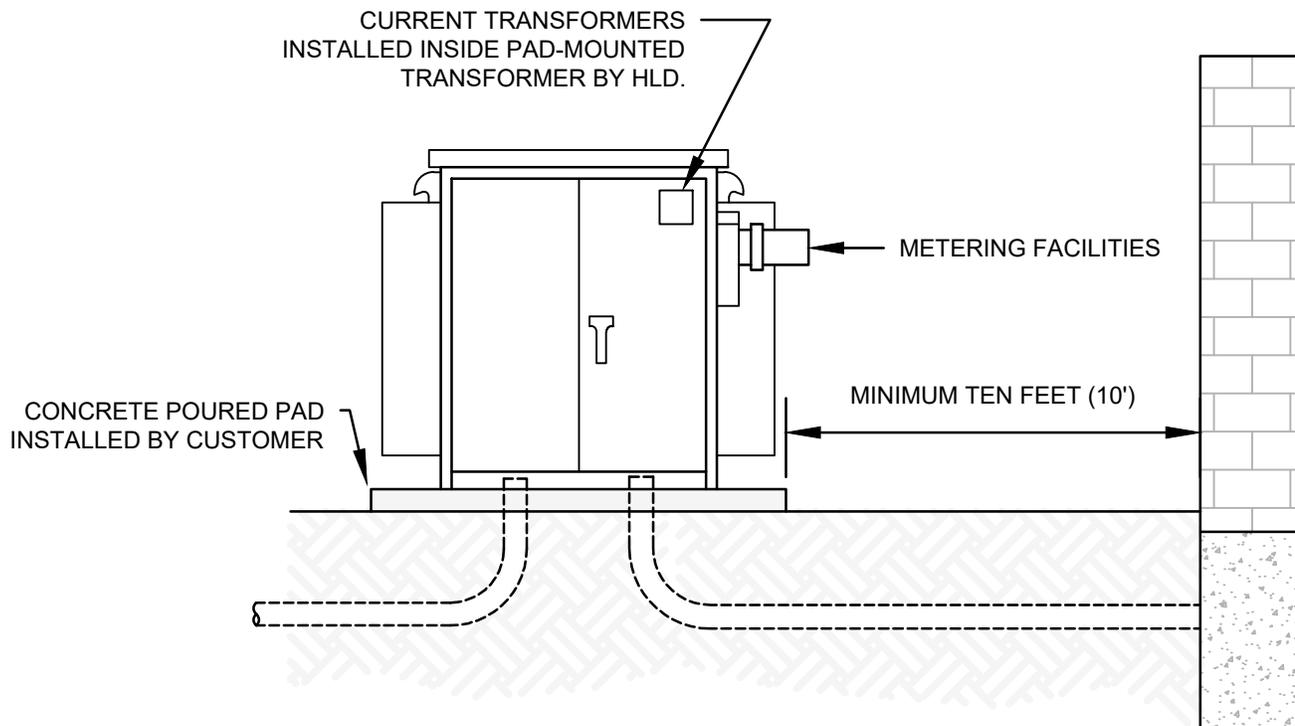
CITY OF HAGERSTOWN, MD
ELECTRIC SYSTEM

DATE: 07-20-23 DRAWN: ACS APPR: JMB

SCALE:
NONE

CONSTRUCTION
STANDARDS

DETAIL:
E-08



NOTES:

1. CONTACT HLD FOR DETAILS BEFORE INSTALLATION.
2. FOR METERING LOCATED AT PAD-MOUNTED TRANSFORMER, SERVICE LATERAL SHALL BE FURNISHED, INSTALLED, OWNED, AND MAINTAINED BY THE CUSTOMER.
3. TRENCHING AND BACKFILLING SHALL BE DONE BY THE CUSTOMER.
4. SERVICE LATERAL INSTALLED IN CONDUIT SHALL BE INSTALLED AS A-B-C-N IN EACH CONDUIT.
5. HLD WILL PROVIDE ALL CONNECTORS AND MAKE ALL CONNECTIONS AT THE TRANSFORMER.
6. CUSTOMER SHALL GIVE HLD ADEQUATE ADVANCED NOTICE AS TO NUMBER AND SIZE OF CONDUCTORS THAT WILL BE INSTALLED.
7. BARRIERS MAY BE REQUIRED BY HLD FOR PROTECTION OF TRANSFORMER. SEE **DETAIL E-12**.

**TRANSFORMER-RATED METERING
AT PAD-MOUNTED TRANSFORMER
(3-PHASE, 4-WIRE SERVICE)**



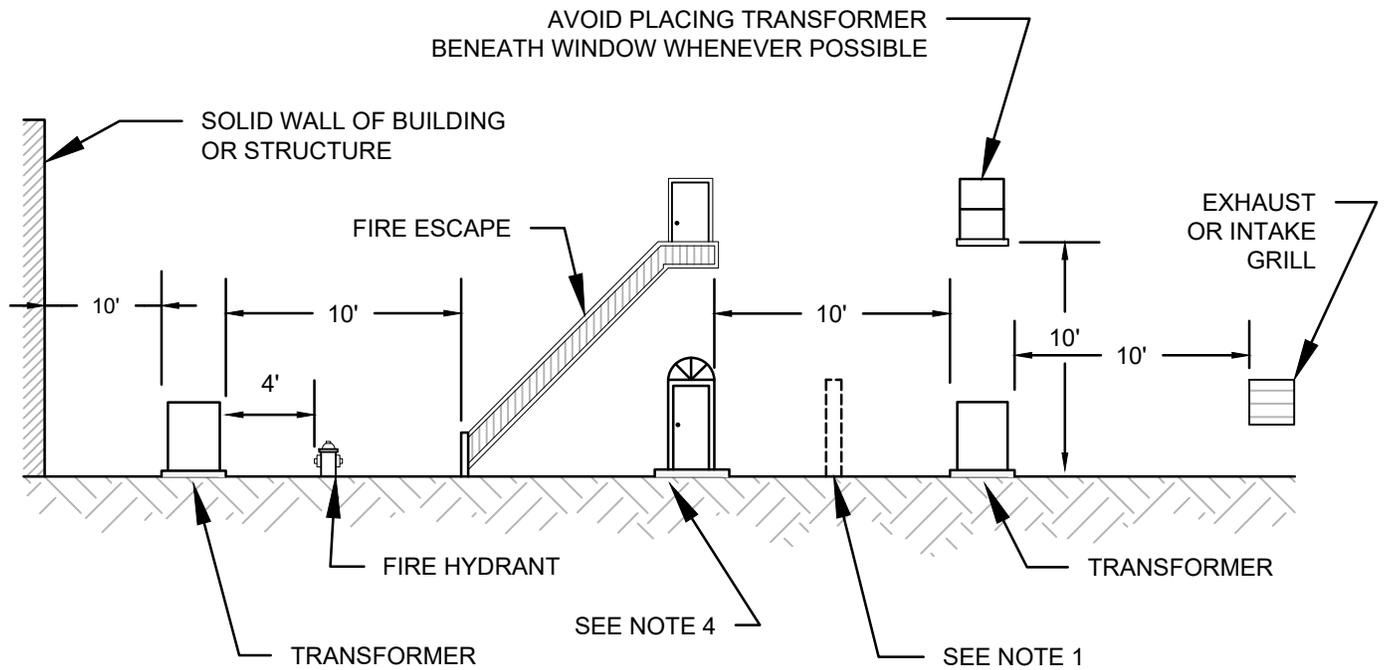
CITY OF HAGERSTOWN, MD
ELECTRIC SYSTEM

DATE: 07-20-23 DRAWN: MWC APPR: JMB

SCALE:
NONE

CONSTRUCTION
STANDARDS

DETAIL:
E-09



NOTES:

1. IN CASES WHERE REQUIRED DISTANCES CANNOT BE OBTAINED, FIRE RESISTANT BARRIER OF 6' MINIMUM HEIGHT SHALL BE CONSTRUCTED.
2. CERTAIN CONDITIONS MAY REQUIRE CURBING TO CONFINE OIL IN CASE OF TANK RUPTURE.
3. NO PORTION OF BUILDING OR BUILDING STRUCTURE SHALL OVERHANG ANY PART OF PAD MOUNTED TRANSFORMER.
4. CLEARANCE FROM THE BUILDING TO THE TRANSFORMER SHOULD BE INCREASED TO 25' IN CASES OF EXITS FROM PUBLIC ASSEMBLY, SUCH AS AN AUDITORIUM, THEATRE, ETC. UNLESS THERE IS A BARRIER.

CLEARANCE REQUIREMENTS FROM BUILDINGS FOR PAD-MOUNTED TRANSFORMER



CITY OF HAGERSTOWN, MD
ELECTRIC SYSTEM

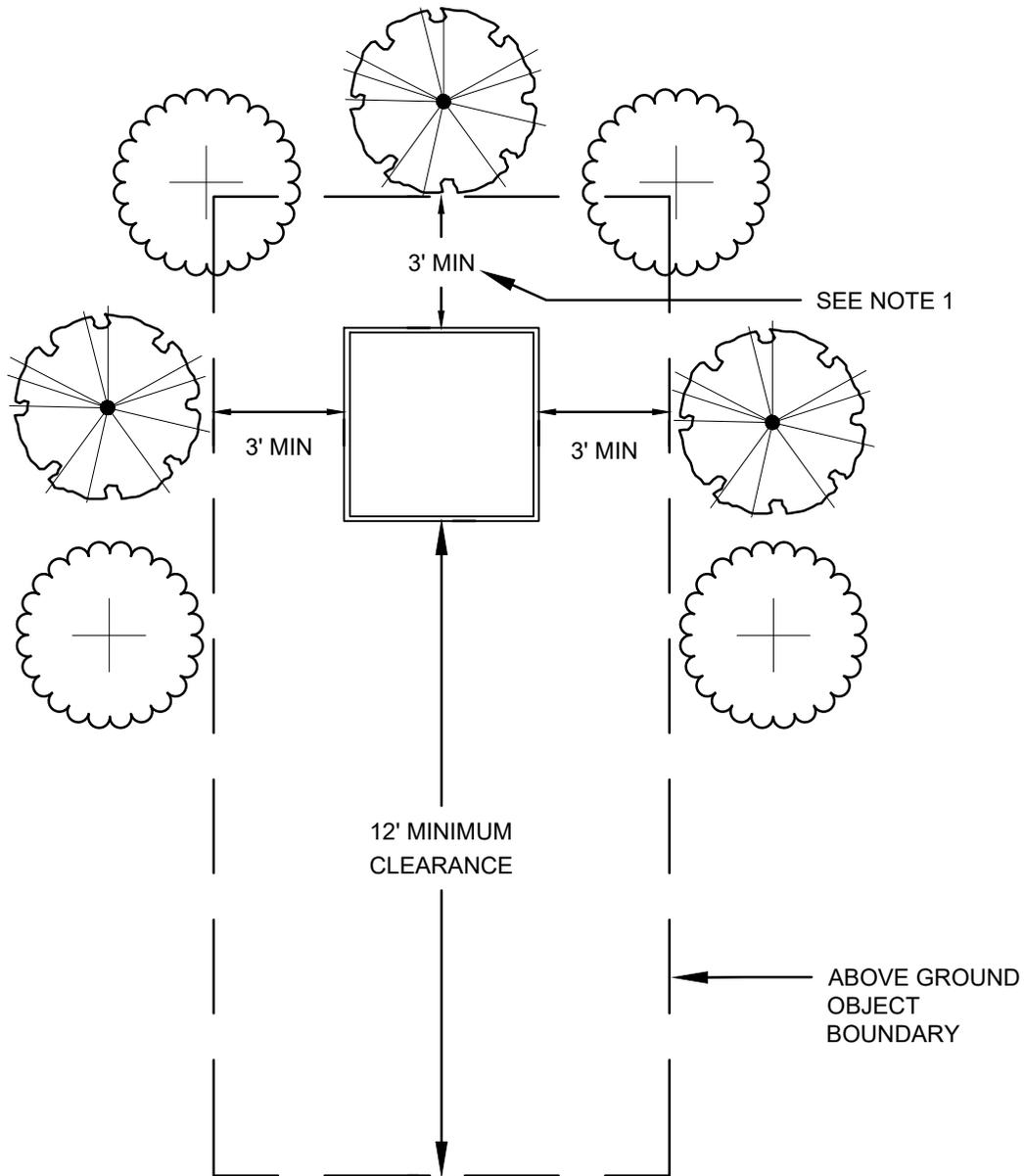
DATE: 07-20-23 DRAWN: MWC APPR: JMB

SCALE:
NONE

CONSTRUCTION
STANDARDS

DETAIL:

E-10



NOTES:

1. THREE FEET (3') MINIMUM CLEARANCE SHALL BE MAINTAINED WHEN PLANTS REACH MATURITY. ALLOW ADEQUATE SPACE FOR FUTURE GROWTH AND DO NOT PLANT SHRUBS OR SET POSTS DIRECTLY OVER CABLES. IF PAD-MOUNTED EQUIPMENT IS SWITCH OR OTHER SIMILAR DEVICE WITH FRONT AND REAR DOORS, THIS DISTANCE SHALL BE INCREASED TO TWELVE FEET (12').
2. WARNING – PAD-MOUNTED TRANSFORMER AND PAD-MOUNTED EQUIPMENT HAVE UNDERGROUND ELECTRICAL CABLES ENTERING AND EXITING THEM BELOW GRADE. WHEN IT IS DECIDED TO INSTALL PLANTS AROUND PAD, CALL MISS UTILITY (1-800-257-7777) BEFORE DIGGING SO THAT UNDERGROUND CABLE LOCATIONS CAN BE DETERMINED.

**CLEARANCES OF PAD-MOUNTED
EQUIPMENT FROM SHRUBS, PLANTS,
AND OTHER OBSTRUCTIONS**



CITY OF HAGERSTOWN, MD
ELECTRIC SYSTEM

DATE: 07-20-23 DRAWN: MWC APPR: JMB

SCALE:
NONE

CONSTRUCTION
STANDARDS

DETAIL:

E-11

BARRIER

EQUIPMENT
FOUNDATION

SEE NOTE 5

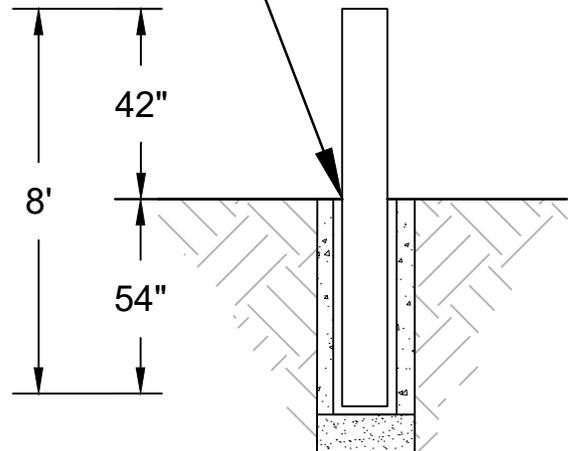
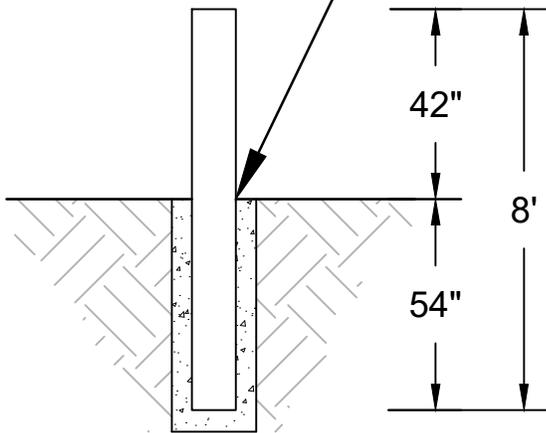
SEE NOTE 4

54"
MAX

PLAN VIEW

SEE NOTE 3

SEE NOTE 7



BARRIER DETAIL

REMOVABLE BARRIER
DETAIL

SEE NOTE 8

NOTES:

1. CONTACT HLD FOR DETAILS BEFORE INSTALLATION.
2. USE BARRIER TO PROTECT EQUIPMENT FROM POSSIBLE DAMAGE FROM VEHICLES.
3. USE 6" RIGID GALVANIZED STEEL CONDUIT, CUT TO 8', AND FILL WITH CONCRETE. ENCASE IN 3" OF CONCRETE, AS SHOWN.
4. THIS DISTANCE MAY BE REDUCED TO 24" PROVIDED CLEARANCES ARE MAINTAINED FOR ITEMS SUCH AS TRANSFORMER RADIATORS AND EQUIPMENT DOOR OPENINGS.
5. PROVIDE CLEARANCE FOR REMOVAL OR REPLACEMENT OF EQUIPMENT. WHEN OVERHEAD OBSTACLES PREVENT REMOVAL OF EQUIPMENT, ONE OR MORE BARRIERS SHALL BE REMOVABLE.
6. WHEN NECESSARY, HEIGHT OF BARRIER ABOVE GROUND MAY BE INCREASED TO PREVENT LARGE VEHICLES FROM STRIKING PAD-MOUNTED EQUIPMENT.
7. FOR REMOVABLE VEHICLE BARRIERS, USE 6" PVC SCHEDULE 40 CONDUIT, CUT TO 54" AND ENCASE IN CONCRETE. INSERT 8' OF 5" GALVANIZED STEEL CONDUIT, WITH CAP, INTO PVC CONDUIT.
8. USE 6" OF COMPACTED STONE OR GRAVEL FOR SUMP.

**VEHICULAR BARRIER FOR
PAD-MOUNTED EQUIPMENT**



CITY OF HAGERSTOWN, MD
ELECTRIC SYSTEM

DATE: 07-20-23

DRAWN: MWC

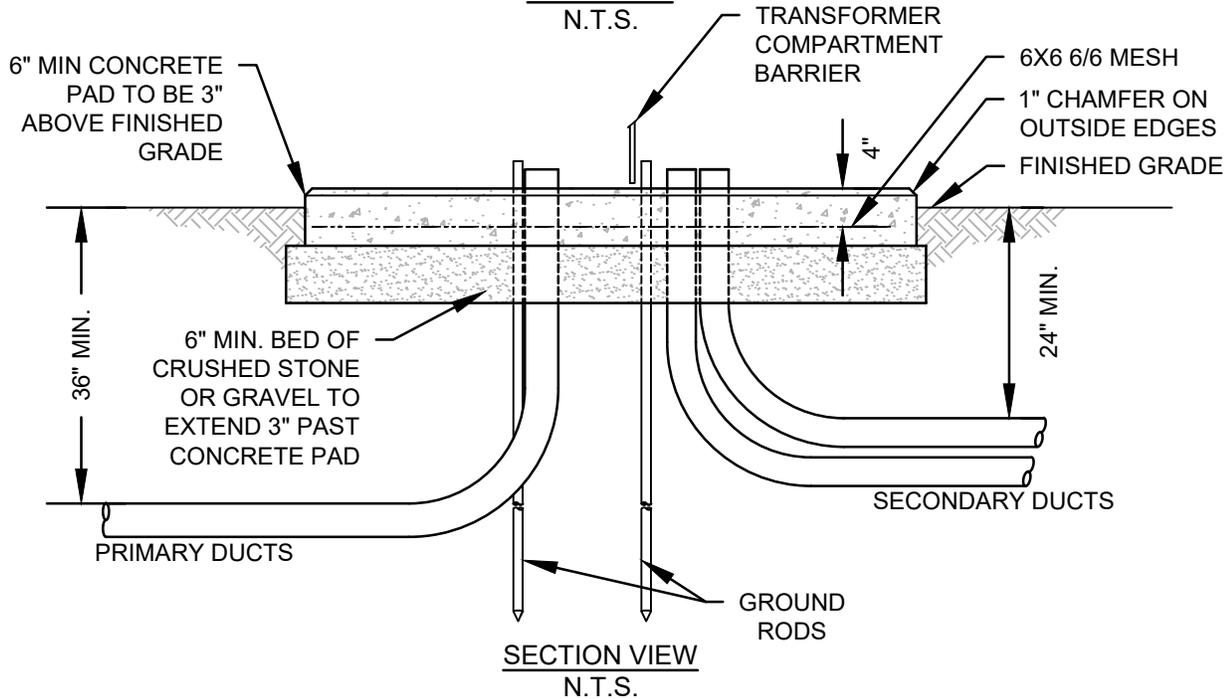
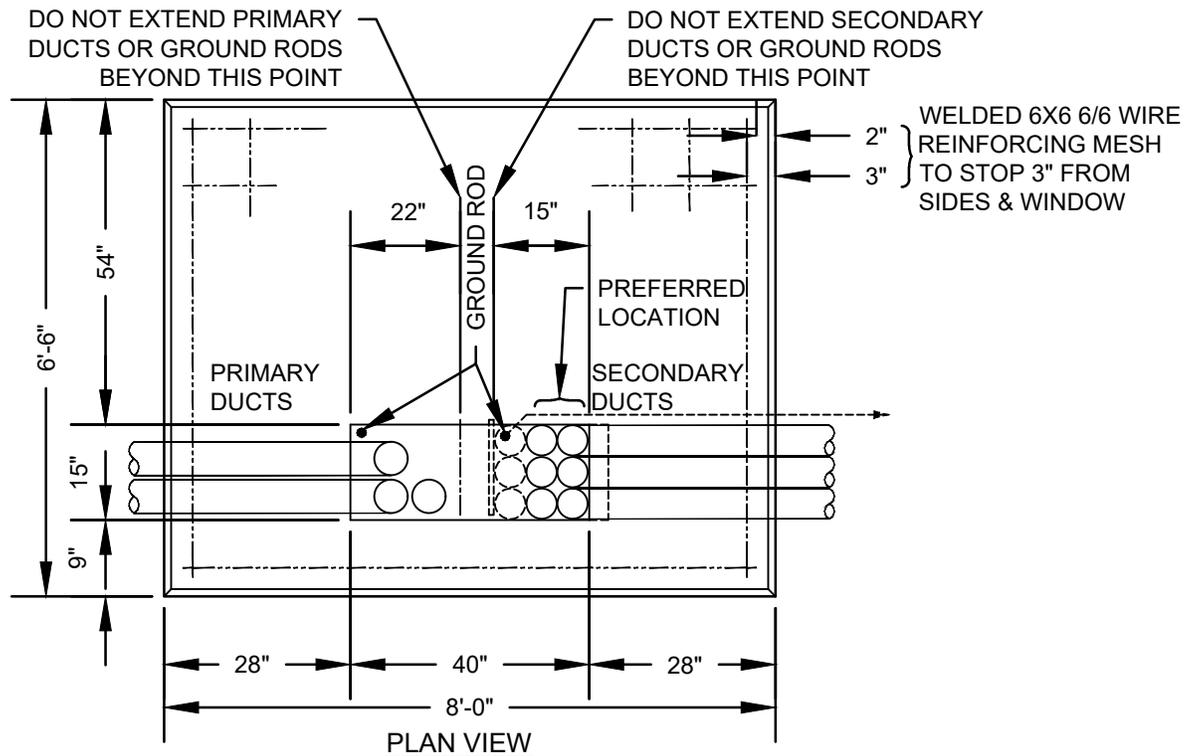
APPR: JMB

SCALE:
NONE

CONSTRUCTION
STANDARDS

DETAIL:

E-12



NOTES:

1. CONTACT HLD FOR DETAILS BEFORE INSTALLATION.
2. CONCRETE SHALL BE 3,000 PSI IN ACCORDANCE WITH **DETAIL E-15**. VOLUME OF CONCRETE IS APPROXIMATELY 1.7 CU YARDS.
3. SECONDARY CONDUITS SHOULD NOT EXTEND MORE THAN 2" ABOVE TOP OF FOUNDATION. PRIMARY CONDUITS SHOULD BE CUT OFF 2" BELOW THE TOP OF FOUNDATION TO ALLOW FOR TERMINATION OF CABLES.
4. EXTEND GROUND RODS 2" ABOVE TOP OF FOUNDATION TO ACCOMMODATE GROUND JUMPER.
5. SEE DETAIL E-10 CLEARANCE FROM BUILDING WALL OR OTHER PARTS OF BUILDING.

**THREE PHASE TRANSFORMER PAD
75KVA - 500KVA**

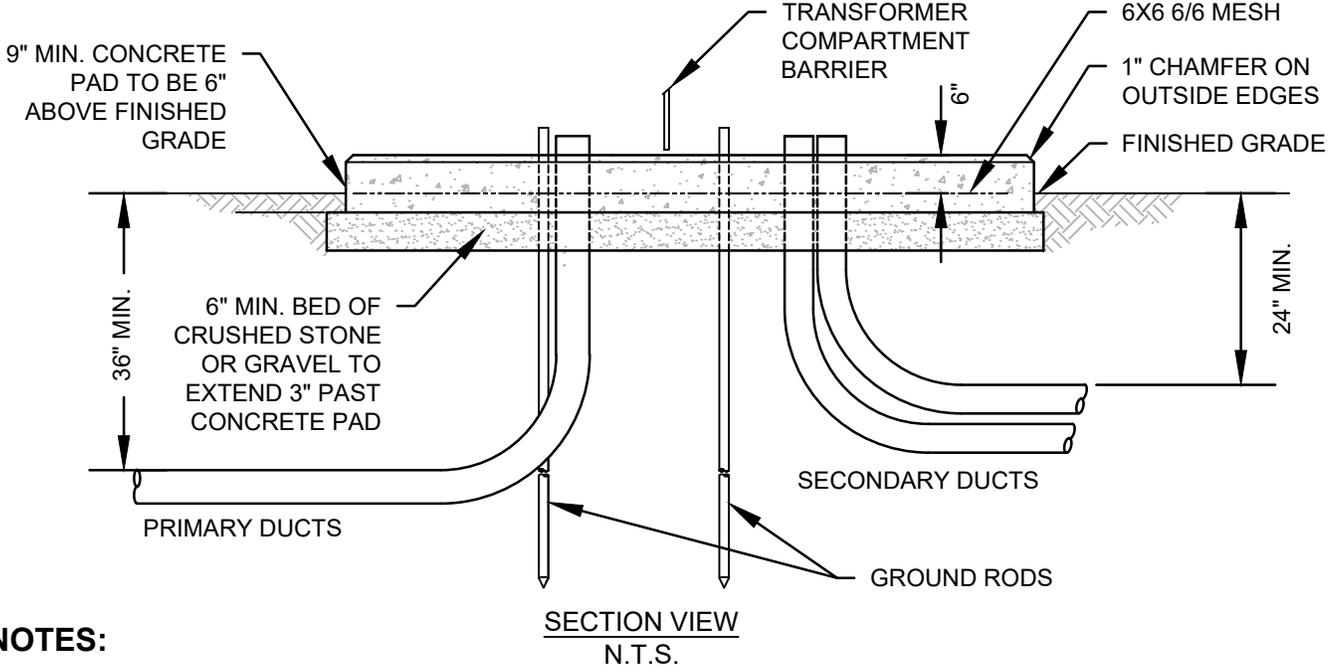
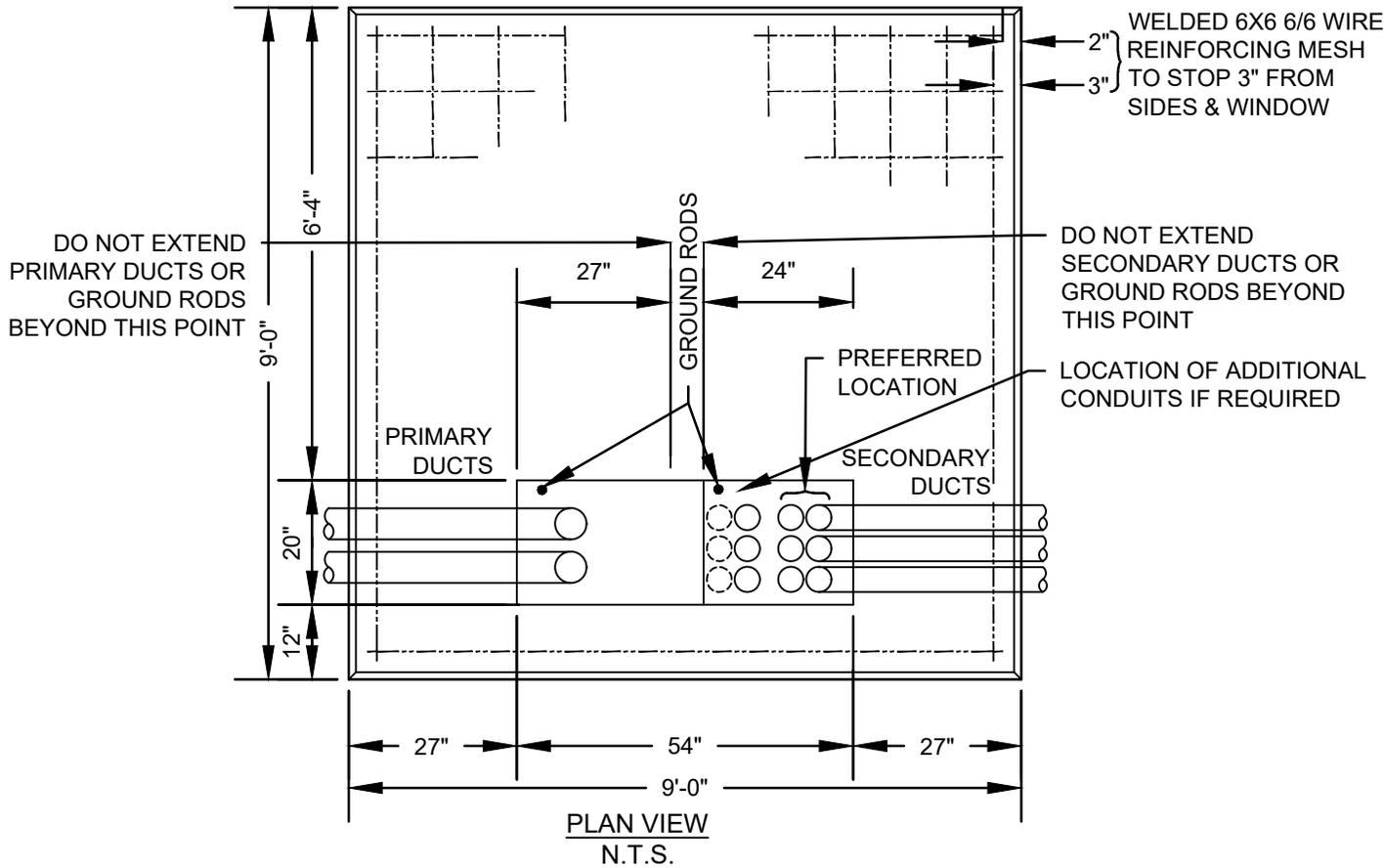


CITY OF HAGERSTOWN, MD
ELECTRIC SYSTEM

DATE: 07-20-23 DRAWN: ACS APPR: JMB

SCALE: NONE CONSTRUCTION STANDARDS

DETAIL: **E-13**



NOTES:

1. CONTACT HLD FOR DETAILS BEFORE INSTALLATION.
2. CONCRETE SHALL BE 3,000 PSI IN ACCORDANCE WITH **DETAIL E-15**. VOLUME OF CONCRETE IS APPROXIMATELY 1.7 CU YARDS.
3. SECONDARY CONDUITS SHOULD NOT EXTEND MORE THAN 2" ABOVE TOP OF FOUNDATION. PRIMARY CONDUITS SHOULD BE CUT OFF 2" BELOW THE TOP OF FOUNDATION TO ALLOW FOR TERMINATION OF CABLES
4. EXTEND GROUND RODS 2" ABOVE TOP OF FOUNDATION TO ACCOMMODATE GROUND JUMPER.
5. SEE DETAIL E-10 CLEARANCE FROM BUILDING WALL OR OTHER PARTS OF BUILDING.

**THREE PHASE TRANSFORMER PAD
SPECIFICATIONS 500KVA - 1000KVA**

 CITY OF HAGERSTOWN, MD
ELECTRIC SYSTEM

DATE: 07-20-23		DRAWN: ACS		APPR: JMB	
SCALE: NONE		CONSTRUCTION STANDARDS		DETAIL: E-14	

1. INSTALL ALL CONDUITS BEFORE PLACING PAD; CONDUITS SHOULD NOT BE PLACED UNDER SECTIONS OF PAD SUPPORTING TRANSFORMER SO THAT ORIGINAL GROUND WILL NOT BE DISTURBED.
2. CONDUIT SHALL BE SCHEDULE 40, SCHEDULE 80, OR GALVANIZED STEEL.
3. BACKFILL SHALL BE CLEAN GRANULAR SOIL, FREE OF LARGE STONES AND PERISHABLE MATERIAL. ALL BACKFILL SHALL BE SPREAD AND COMPACTED IN MAXIMUM LAYERS OF 8".
4. THOROUGHLY COMPACT CRUSHED STONE OR GRAVEL.
5. CONCRETE PAD MAY BE POURED IN PLACE OR MAY BE PRECAST.
6. TO PREVENT WATER MIGRATION FROM CONCRETE WHEN POURING, PLACE WATERPROOF MEMBRANE ON CRUSHED STONE OR GRAVEL BEFORE POURING CONCRETE.
7. REINFORCING WIRE MESH SHALL CONFORM TO ASTM DESIGNATION A185.
8. CEMENT TO BE I OR I-A AND MEETING ASTM DESIGNATIONS C-150 AND C-175 RESPECTIVELY.
9. CONCRETE TO DEVELOP 3000 PSI AT 28 DAYS AGE, CONTAIN MINIMUM OF 5.5 BAGS OF CEMENT, AND CONFORM TO ATSM DESIGNATION C-94. 14 DAYS MINIMUM DRYING TIME BEFORE TRANSFORMER IS SET.
10. IF CONDUIT EXTENDS INTO BUILDING, IT SHALL BE SEALED (PER NEC) AT BUILDING END TO PREVENT GAS FROM ENTERING THROUGH THE CONDUIT.
11. WHERE DAMAGE TO TRANSFORMER BY VEHICLES IS POSSIBLE, TRANSFORMER SHALL BE PROTECTED BY APPROPRIATE BARRIER SHOWN IN **DETAIL 12**.

PAD-MOUNTED TRANSFORMER GENERAL NOTES



CITY OF HAGERSTOWN, MD
ELECTRIC SYSTEM

DATE: 07-20-23 DRAWN: MWC APPR: JMB

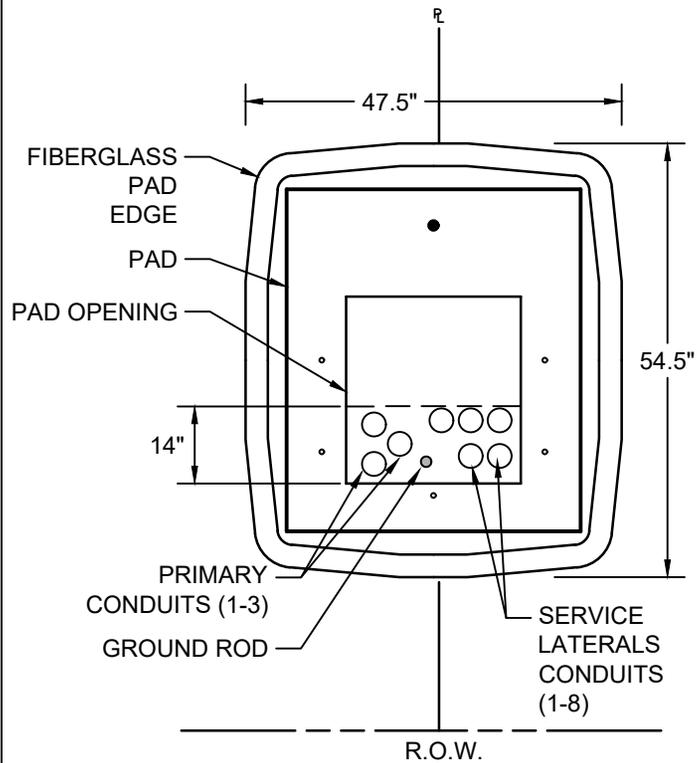
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CONSTRUCTION
STANDARDS

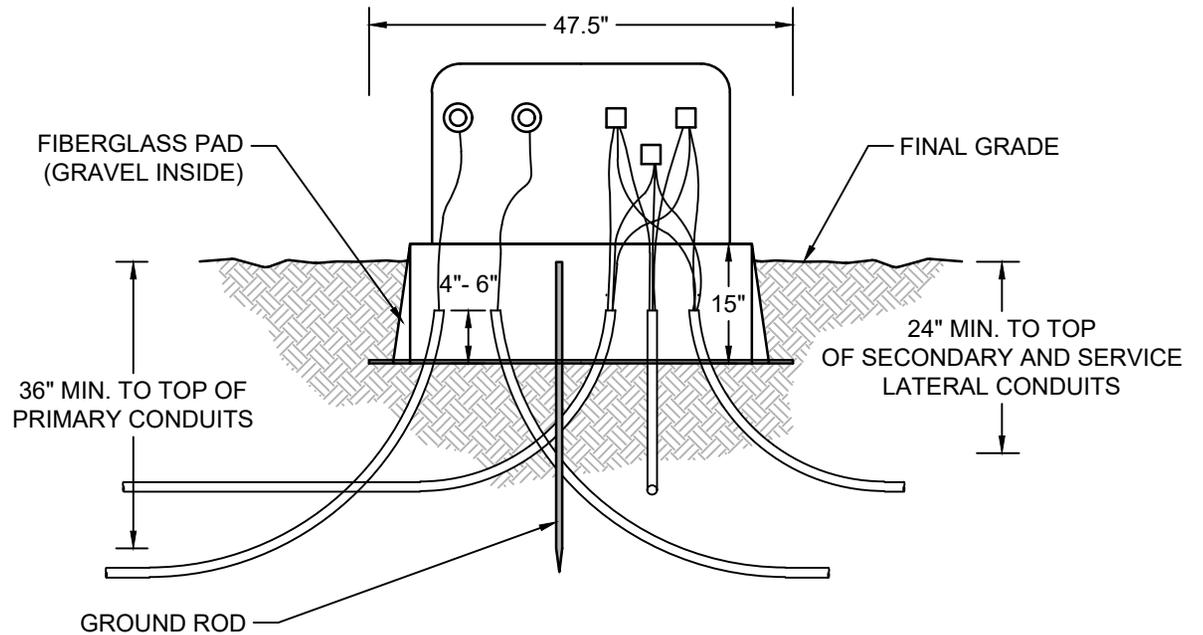
DETAIL:

E-15

PLAN VIEW DETAIL



ELEVATION DETAIL



NOTES:

1. CONTACT HLD FOR DETAILS BEFORE INSATALLATION.
2. PRIMARY CONDUITS ARE LOCATED ON THE LEFT SIDE OF THE SLEEVE OPENING.
3. SERVICE LATERAL CONDUITS ARE LOCATED ON THE RIGHT SIDE OF THE SLEEVE OPENING.
4. ELEVATION VIEW IS FROM THE STREET SIDE OF THE TRANSFORMER.
5. CUSTOMER IS RESPONSIBLE FOR SITE PREPARATION (GRAVEL, CONDUIT, ETC.)
6. CUSTOMER TO OBTAIN TRANSFORMER GROUND SLEEVE FROM HLD FOR INSTALLATION

SINGLE PHASE TRANSFORMER GROUND SLEEVE 25-167 KVA



CITY OF HAGERSTOWN, MD
ELECTRIC SYSTEM

DATE: 12-01-23

DRAWN: ACS

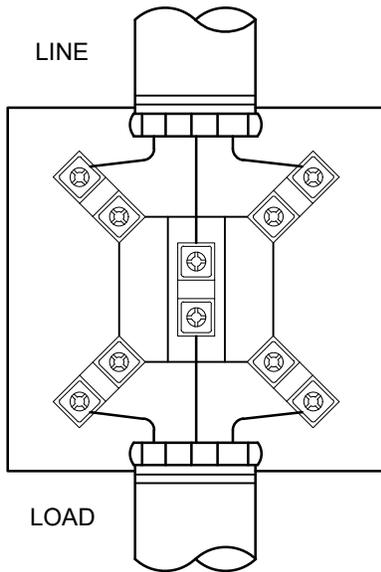
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SCALE:
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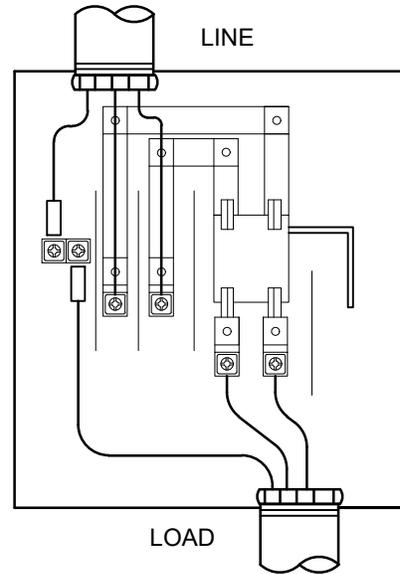
CONSTRUCTION
STANDARDS

DETAIL:

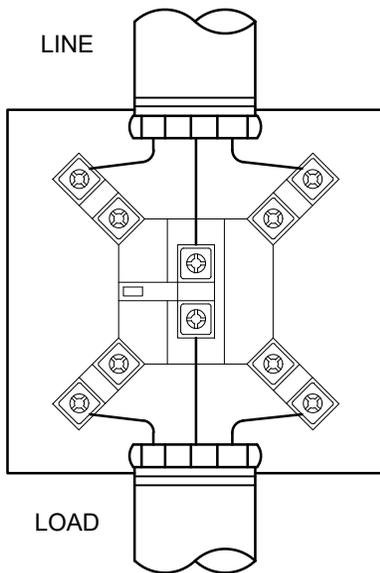
E-16



120/240 VOLT
3 WIRE
SINGLE-PHASE
100 AND 200 AMP



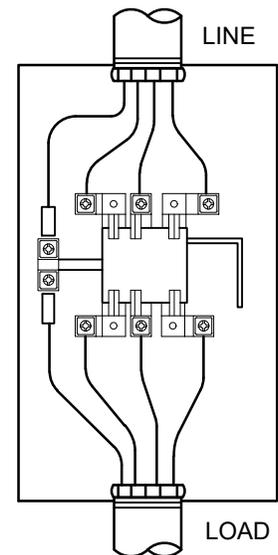
120/240 VOLT
3 WIRE
SINGLE-PHASE
320 AMP



120/208 VOLT
3 WIRE
SINGLE-PHASE
100 AND 200 AMP

120/208 VOLT SINGLE-PHASE
(NETWORK) METER SOCKETS
REQUIRE FIFTH TERMINAL (JAW)
MOUNTED IN 9 O'CLOCK POSITION

* PUT HIGH PHASE OF 240/120
VOLT DELTA ON RIGHT JAW OF
METER SOCKET



208/120 VOLT
240/120 VOLT*
480Y/277 VOLT
4 WIRE
THREE PHASE
200/320 AMP

NOTES:

1. ALL 100 & 200 AMP SHALL BE RINGLESS BY-PASS HORN TYPE.

**SELF-CONTAINED
METER SOCKET CONNECTIONS
(OVERHEAD ONLY)**



CITY OF HAGERSTOWN, MD
ELECTRIC SYSTEM

DATE: 11-01-23

DRAWN: MWC

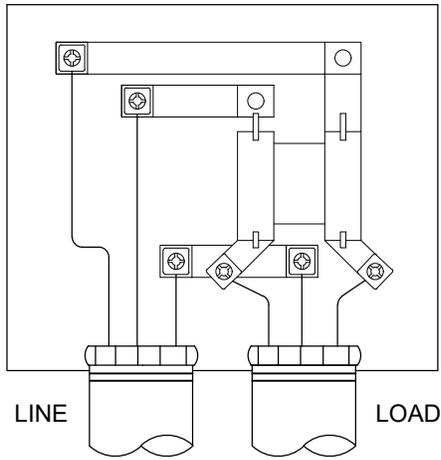
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SCALE:
NONE

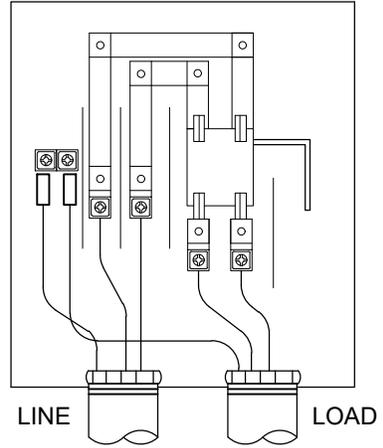
CONSTRUCTION
STANDARDS

DETAIL:

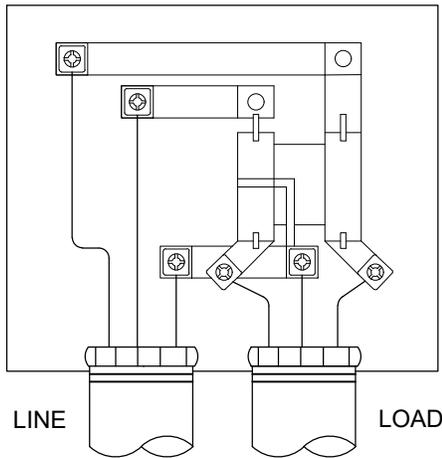
E-17A



120/240 VOLT
3 WIRE
SINGLE-PHASE
200 AMP



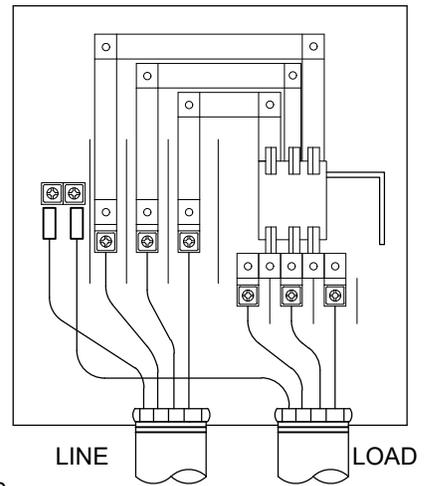
120/240 VOLT
3 WIRE
SINGLE-PHASE
320 AMP



120/208 VOLT
3 WIRE
SINGLE-PHASE
(NETWORK)
200 AMP

120/208 VOLT SINGLE-PHASE
(NETWORK) METER SOCKETS
REQUIRE FIFTH TERMINAL (JAW)
MOUNTED IN 9 O'CLOCK POSITION

* PUT HIGH PHASE OF 240/120
VOLT DELTA ON RIGHT JAW OF
METER SOCKET



208/120 VOLT
240/120 VOLT*
480Y/277 VOLT
4 WIRE
THREE PHASE
320 AMP

NOTES:

1. ALL 200 AMP SHALL BE RINGLESS BY-PASS HORN TYPE.

**SELF-CONTAINED
METER SOCKET CONNECTIONS
(UNDERGROUND ONLY)**



CITY OF HAGERSTOWN, MD
ELECTRIC SYSTEM

DATE: 07-20-23

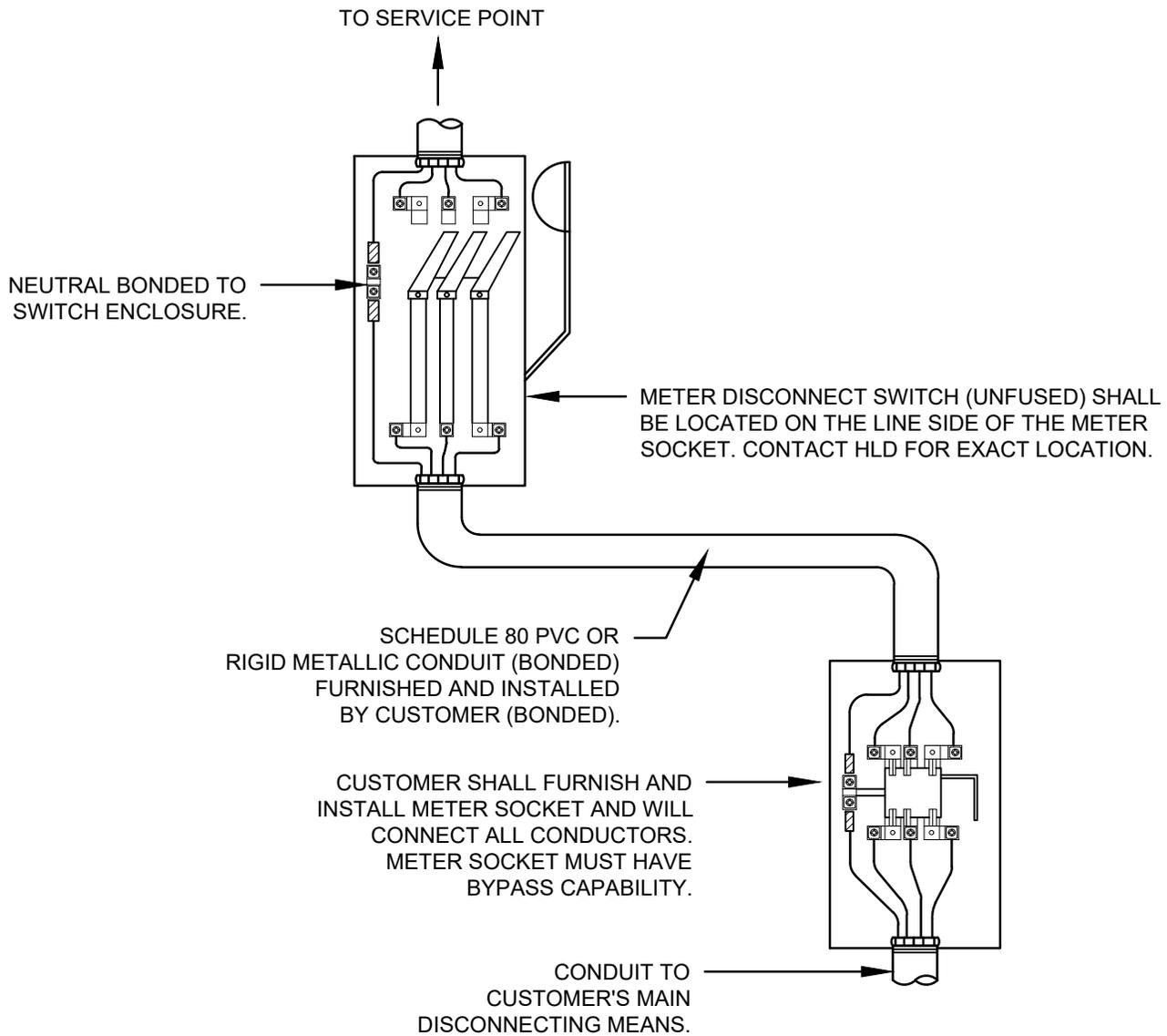
DRAWN: MWC

APPR: JMB

SCALE:
NONE

CONSTRUCTION
STANDARDS

DETAIL:
E-17B



NOTES:

1. CONTACT HLD FOR DETAILS BEFORE INSTALLATION.

**SELF-CONTAINED METER
480Y/277 VOLT,
3-PHASE, 4-WIRE**



CITY OF HAGERSTOWN, MD
ELECTRIC SYSTEM

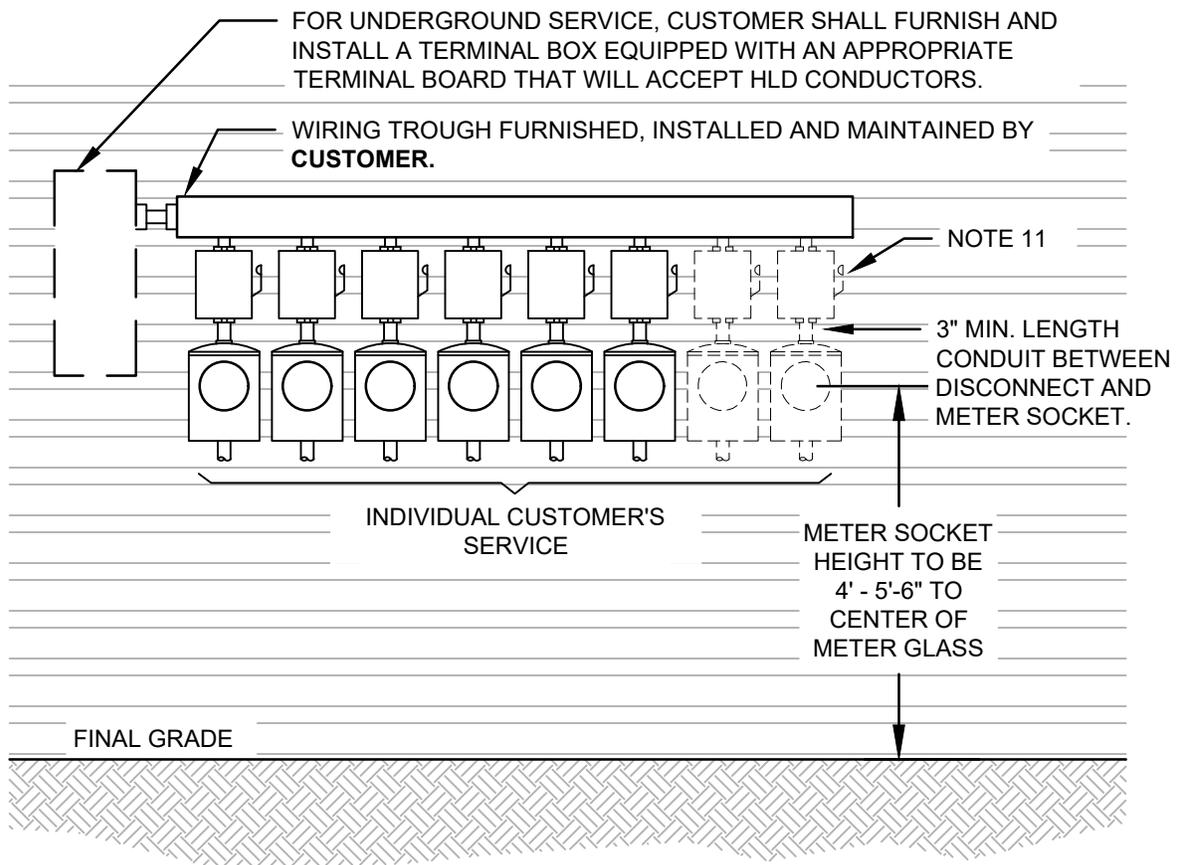
DATE: 07-20-23 DRAWN: MWC APPR: JMB

SCALE:
NONE

CONSTRUCTION
STANDARDS

DETAIL:

E-18



NOTES:

1. CONTACT HLD FOR DETAILS BEFORE INSTALLATION.
2. CUSTOMER SHALL CONSULT WITH HLD FOR POINT OF ATTACHMENT OF SERVICE DROP, METERING LOCATION, AND PROPOSED SERVICE ENTRANCE FACILITIES PRIOR TO PROCEEDING WITH INSTALLATION.
3. ALL CUSTOMER WORK SHALL BE COMPLETED AND INSPECTIONS OBTAINED BEFORE HLD WILL PROVIDE SERVICE.
4. CUSTOMER SHALL BE RESPONSIBLE FOR PROVIDING, INSTALLING, AND CONNECTING ALL SERVICE ENTRANCE WIRING FROM TERMINAL BOX TO METER SOCKETS AND ALSO FOR INSURING THAT TERMINAL BOX HAS PROPER NUMBER, SIZE, AND TYPE OF TERMINALS TO ACCEPT HLD SERVICE.
5. CUSTOMER SHALL FURNISH AND INSTALL ALL METER SOCKETS AND CONNECT ALL CONDUCTORS IN METER SOCKET. CUSTOMER SHALL PERMANENTLY AND CLEARLY LABEL EACH METER SOCKET TO SHOW AREA/ADDRESS SERVED.
6. METERED CONDUCTORS SHALL NOT BE INSTALLED IN WIRING TROUGHS.
7. WHEN SERVICE ENTRANCE CONSISTS OF MORE THAN ONE SET OF CONDUCTORS, INDIVIDUAL LOADS SHALL BE CONNECTED TO BE BALANCED AMONG ALL SETS OF CONDUCTORS.
8. WIRING TROUGHS, MAIN SERVICE DISCONNECT AND TERMINAL BOX SHALL BE SEALABLE AND SHALL ALSO BE WEATHERPROOF.
9. INHIBITOR COMPOUND SHALL BE USED ON ALL ALUMINUM WIRE TERMINATIONS.
10. METER DISCONNECT SWITCH (UNFUSED) SHALL BE LOCATED ON THE LINE SIDE OF EACH METER SOCKET.

**MULTIPLE METER
480Y/277 VOLT**



CITY OF HAGERSTOWN, MD
ELECTRIC SYSTEM

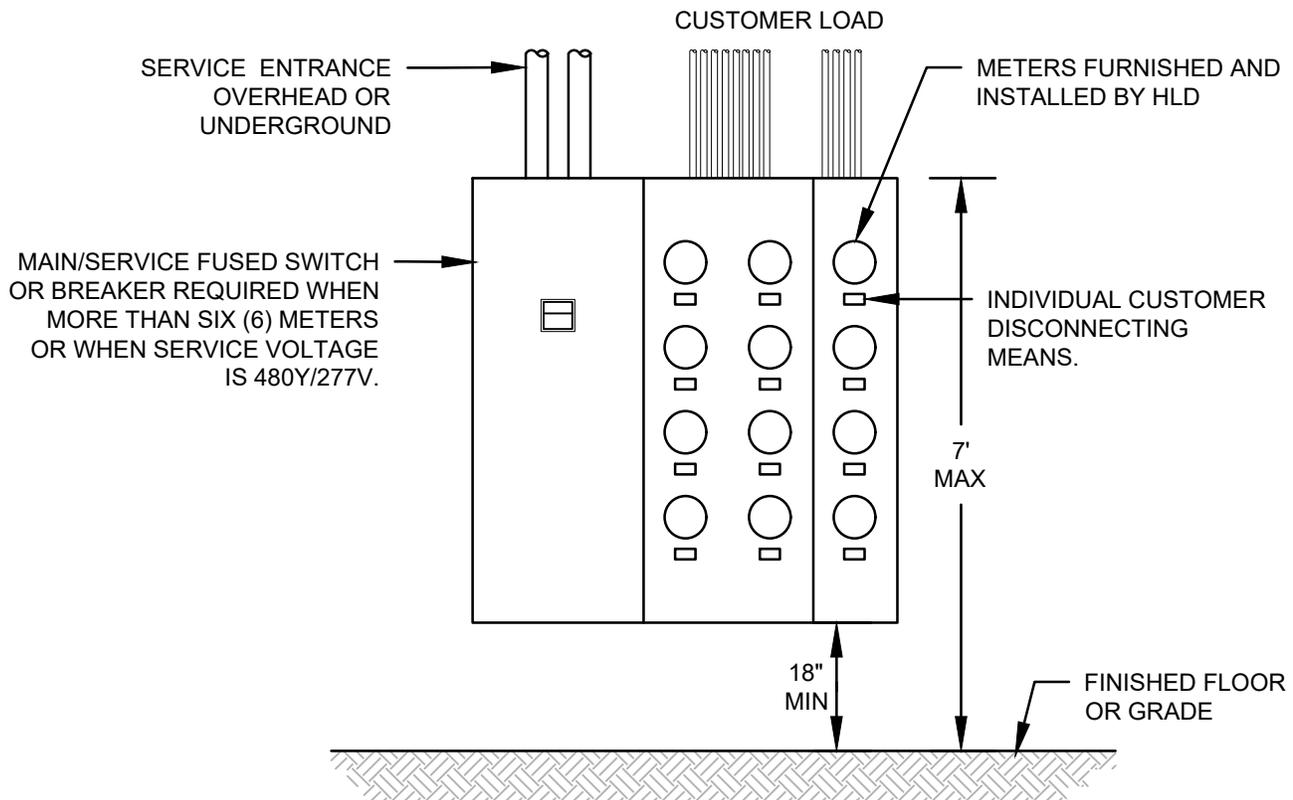
DATE: 07-20-23 DRAWN: MWC APPR: JMB

SCALE:
NONE

CONSTRUCTION
STANDARDS

DETAIL:

E-19



NOTES:

1. CONTACT HLD FOR DETAILS BEFORE INSTALLATION.
2. CUSTOMER SHALL CONSULT WITH HLD FOR POINT OF ATTACHMENT, METERING LOCATION, AND PROPOSED SERVICE ENTRANCE FACILITIES PRIOR TO PROCEEDING WITH INSTALLATION.
3. ALL CUSTOMER WORK SHALL BE COMPLETED AND INSPECTIONS OBTAINED BEFORE HLD WILL PROVIDE SERVICE.
4. CUSTOMER SHALL FURNISH, INSTALL, AND CONNECT SEALABLE MULTIPLE METERING EQUIPMENT FOR OVERHEAD SERVICE. CUSTOMER SHALL FURNISH AND CONNECT SERVICE ENTRANCE CONDUCTORS. FOR UNDERGROUND SERVICE, HLD WILL EXTEND ITS UNDERGROUND CONDUCTORS TO MAIN LUGS IN CUSTOMER METER STACK AND MAKE CONNECTIONS.

**PRE-ASSEMBLED
MULTIPLE METER STACK**



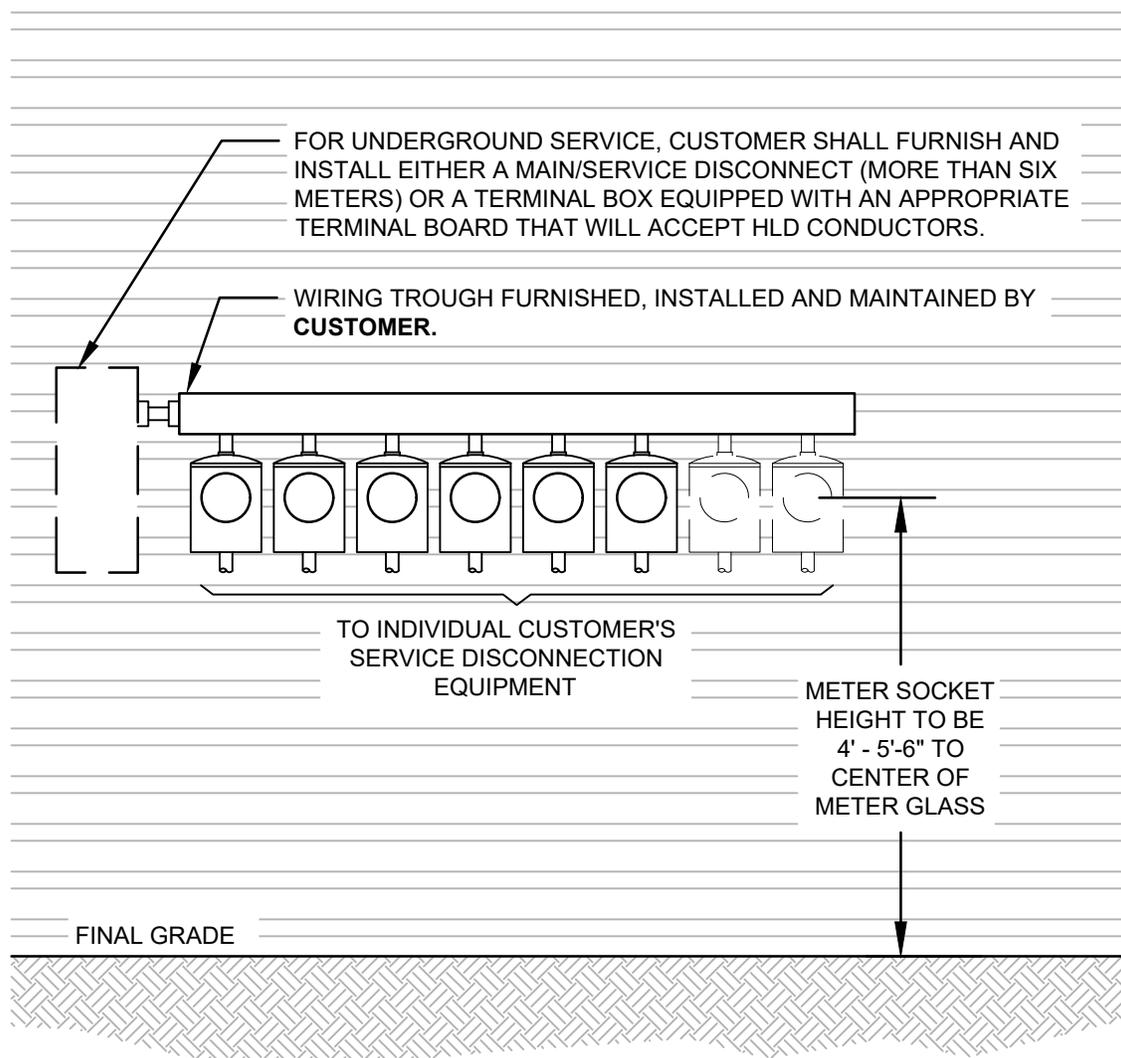
CITY OF HAGERSTOWN, MD
ELECTRIC SYSTEM

DATE: 07-20-23 DRAWN: MWC APPR: JMB

SCALE:
NONE

CONSTRUCTION
STANDARDS

DETAIL:
E-20



NOTES:

1. CUSTOMER SHALL CONSULT WITH HLD FOR POINT OF ATTACHMENT OF SERVICE DROP, METERING LOCATION, AND PROPOSED SERVICE ENTRANCE FACILITIES PRIOR TO PROCEEDING WITH INSTALLATION.
2. ALL CUSTOMER WORK SHALL BE COMPLETED AND INSPECTIONS OBTAINED BEFORE HLD WILL PROVIDE SERVICE.
3. CUSTOMER SHALL FURNISH AND INSTALL ALL METER SOCKETS AND CONNECT ALL CONDUCTORS IN METER SOCKETS.
4. CUSTOMER SHALL PERMANENTLY AND CLEARLY LABEL EACH METER SOCKET TO SHOW AREA/ADDRESS SERVED.
5. METERED CONDUCTORS SHALL NOT BE INSTALLED IN WIRING TROUGHS.
6. WHEN SERVICE ENTRANCE CONSISTS OF MORE THAN ONE SET OF CONDUCTORS, INDIVIDUAL LOADS SHALL BE CONNECTED TO BE BALANCED AMONG ALL SETS OF CONDUCTORS.
7. WIRING TROUGHS, MAIN SERVICE DISCONNECT AND TERMINAL BOX SHALL BE SEALABLE AND SHALL ALSO BE WEATHERPROOF WHEN INSTALLED OUTDOORS.
8. INHIBITOR COMPOUND SHALL BE USED ON ALL ALUMINUM WIRE TERMINATIONS.

**MULTIPLE METER
240 OR VOLTS OR LESS**



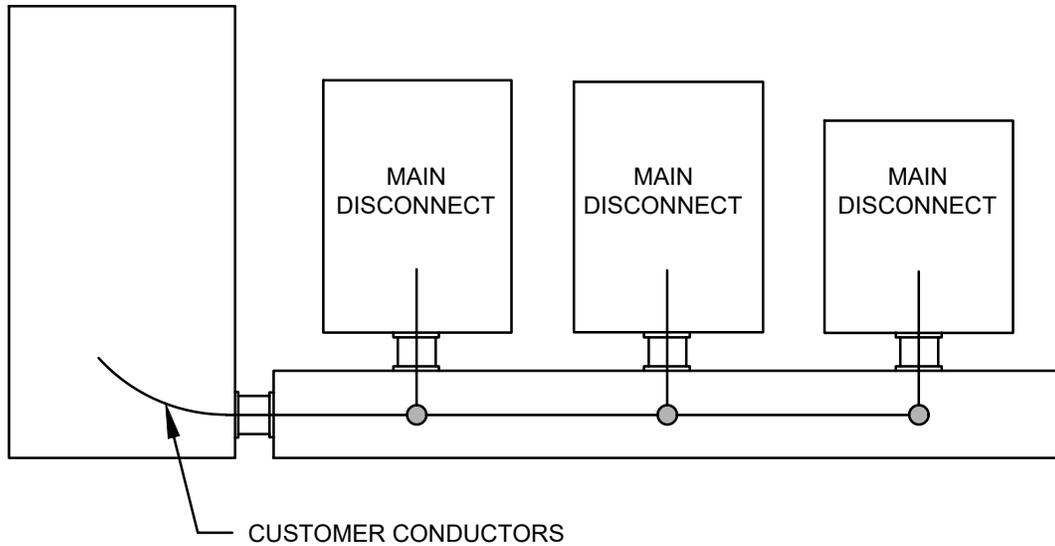
CITY OF HAGERSTOWN, MD
ELECTRIC SYSTEM

DATE: 07-20-23 DRAWN: ACS APPR: JMB

SCALE:
NONE

CONSTRUCTION
STANDARDS

DETAIL:
E-21



NOTES:

1. CONTACT HLD FOR DETAILS BEFORE INSTALLATION.
2. CUSTOMER'S LOAD CONDUCTORS SHALL EXTEND INTO METERING TRANSFORMER CABINET AT LEAST 48 INCHES.
3. HLD WILL FURNISH SUITABLE CONNECTORS AND CONNECT ITS UNDERGROUND CONDUCTORS AND CUSTOMER'S CONDUCTORS TO METERING TRANSFORMERS WITHIN CABINET.
4. WHEN OVERHEAD SERVICE IS PROVIDED, CUSTOMER SHALL FURNISH ALL SERVICE ENTRANCE CONDUCTORS.

**WIRING TROUGH
INSTALLATION WITH METERING
TRANSFORMER CABINET**



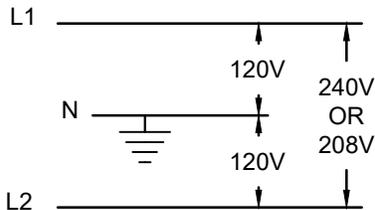
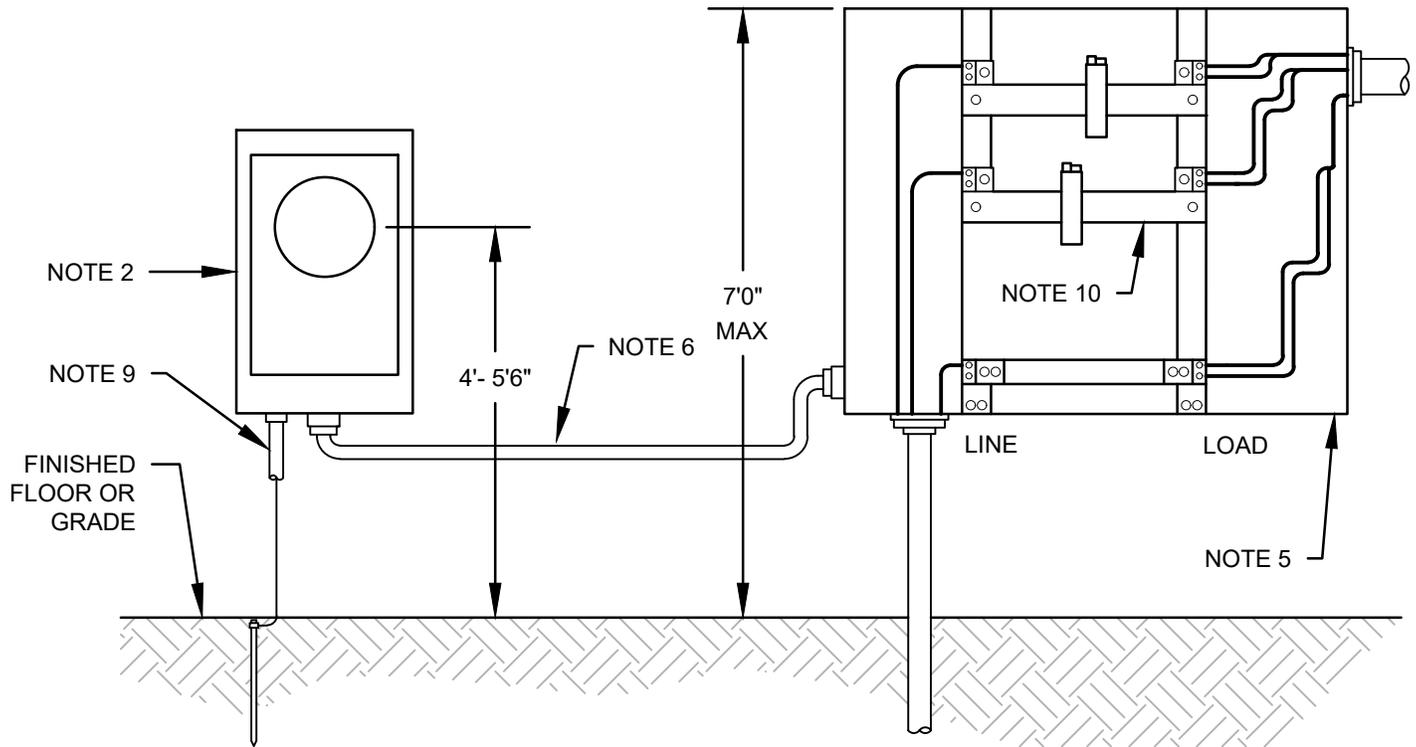
CITY OF HAGERSTOWN, MD
ELECTRIC SYSTEM

DATE: 07-20-23 DRAWN: MWC APPR: JMB

SCALE:
NONE

CONSTRUCTION
STANDARDS

DETAIL:
E-22



APPROXIMATE CABINET SIZE	
CAPACITY	DIMENSIONS
400-1200 A	40"X40"X15"

NOTES:

1. CONTACT HLD FOR DETAILS BEFORE INSTALLATION.
2. METER SOCKET SHALL BE SUPPLIED BY HLD AND INSTALLED BY THE CUSTOMER ON EXTERIOR OF BUILDING.
3. CLEAR SPACE OF AT LEAST 36"X36", FREE FROM OBSTRUCTIONS AND IN LOCATION SUITABLE FOR METER MOUNTING SHALL BE PROVIDED.
4. MAINTAIN 3 FOOT CLEAR WORKING SPACE IN FRONT OF CABINET.
5. CABINET-MOUNT METERING PACKAGE SUPPLIED BY CUSTOMER, INSTALLED BY CUSTOMER, AFTER APPROVAL BY HLD.
6. 1-1/4" IMC OR RIGID METALLIC CONDUIT FOR RUNNING METER CABLE TO METER SOCKET (30' MAX CABLE LENGTH) FURNISHED AND INSTALLED BY CUSTOMER.
7. INHIBITOR COMPOUND SHALL BE USED ON ALL ALUMINUM WIRE TERMINATIONS.
8. CONDUIT FOR METER CABLE SHALL ENTER METER CABINET AT THE BOTTOM OR WITHIN 16 INCHES FROM THE BOTTOM ON THE SIDE OF THE CABINET.
9. CUSTOMER TO FURNISH AND INSTALL 8' GROUND ROD WITH A #6 COPPER GROUND WIRE CONNECTED TO SOCKET GROUND LUG. PROTECT WIRE WITH NON-METALLIC CONDUIT.
10. COPPER BUS BAR, SIZE BASED ON AMPERAGE.

**TRANSFORMER-RATED METERING
CABINET-MOUNT SINGLE PHASE, 3-WIRE,
120/240 VOLT OR 120/208 VOLT**



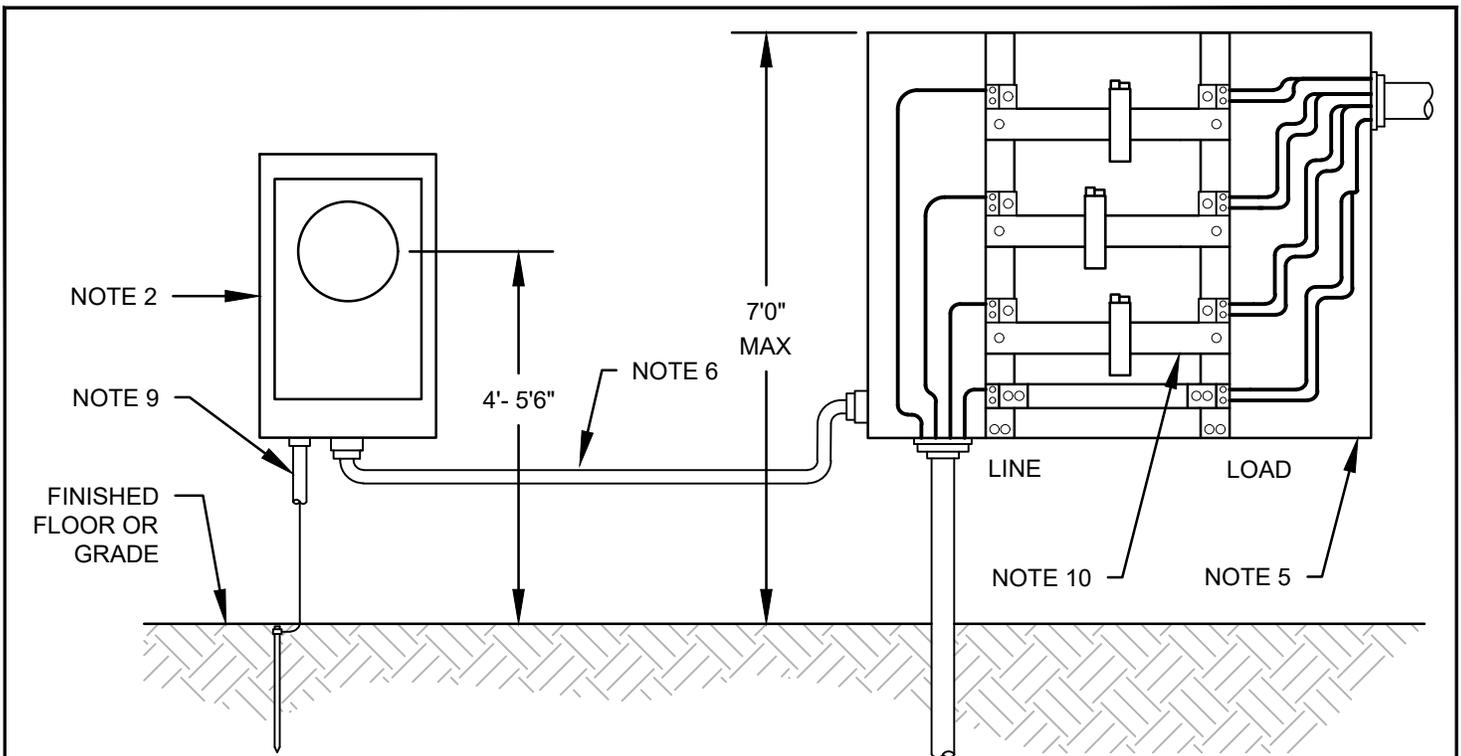
CITY OF HAGERSTOWN, MD
ELECTRIC SYSTEM

DATE: 07-24-23 DRAWN: MWC APPR: JMB

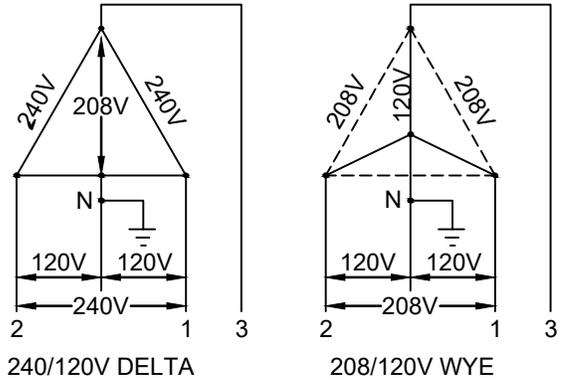
SCALE:
NONE

CONSTRUCTION
STANDARDS

DETAIL:
E-23



HIGH PHASE *



* HIGH PHASE CONDUCTOR(S) TO BE COLOR CODED ORANGE, TAGGED, OR IDENTIFIED BY SOME OTHER MEANS.

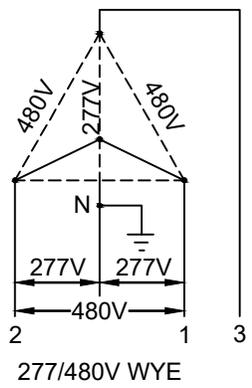
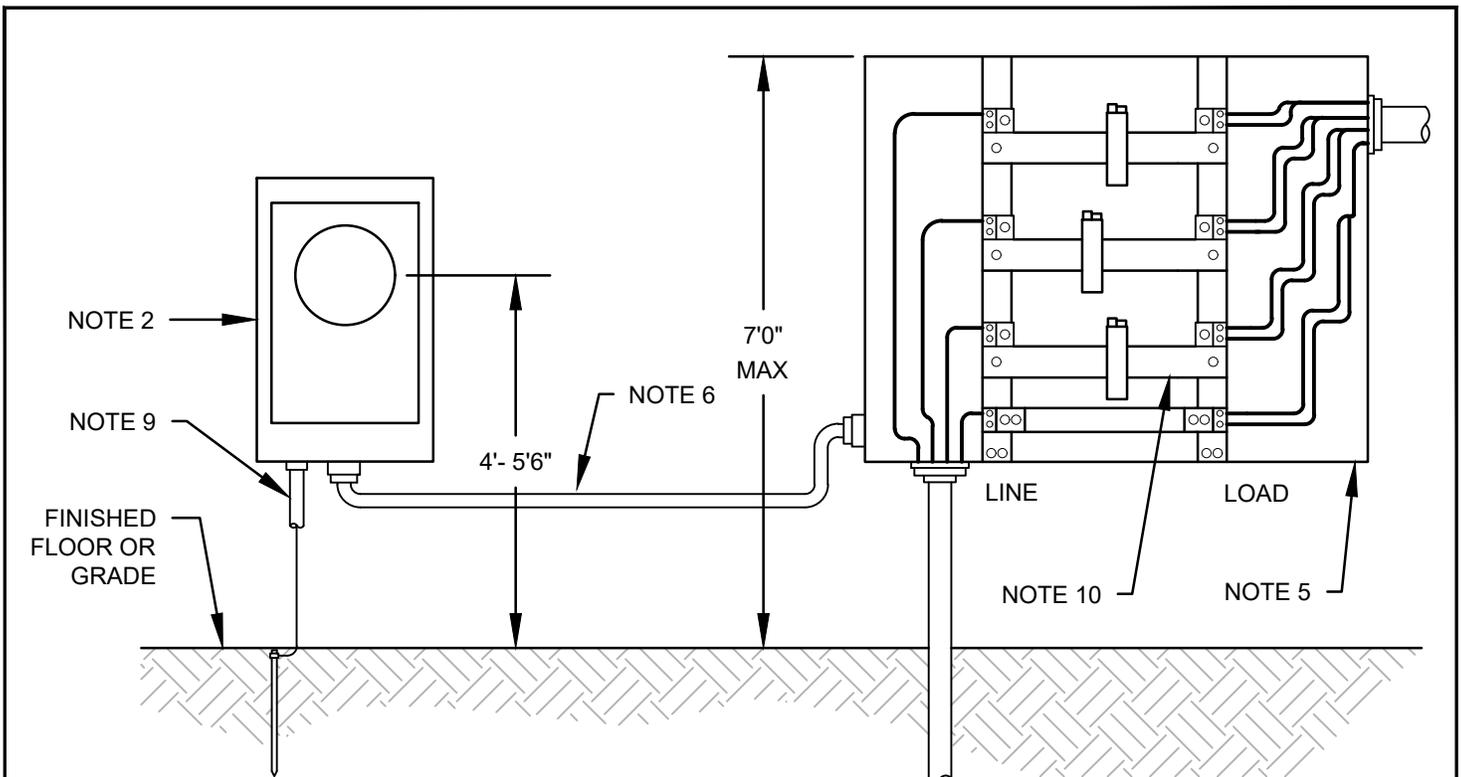
APPROXIMATE CABINET SIZES	
CAPACITY	DIMENSIONS
400-1200 A	40"X40"X15"
1500-2000 A	50"X63"X15"

NOTES:

1. CONTACT HLD FOR DETAILS BEFORE INSTALLATION.
2. METER SOCKET SHALL BE SUPPLIED BY HLD AND INSTALLED BY CUSTOMER ON EXTERIOR OF BUILDING.
3. CLEAR SPACE OF AT LEAST 36"X36", FREE FROM OBSTRUCTIONS AND IN LOCATION SUITABLE FOR METER MOUNTING SHALL BE PROVIDED.
4. MAINTAIN 3 FOOT CLEAR WORKING SPACE IN FRONT OF CABINET.
5. CABINET-MOUNT METERING PACKAGE SUPPLIED BY CUSTOMER, INSTALLED BY CUSTOMER AFTER APPROVAL BY HLD.
6. 1-1/4" IMC OR RIGID METALLIC CONDUIT FOR RUNNING METER CABLE TO METER SOCKET (30' MAX CABLE LENGTH) FURNISHED AND INSTALLED BY CUSTOMER.
7. INHIBITOR COMPOUND SHALL BE USED ON ALL ALUMINUM WIRE TERMINATIONS.
8. CONDUIT FOR METER CABLE SHALL ENTER METER CABINET AT THE BOTTOM OR WITHIN 16 INCHES FROM THE BOTTOM ON THE SIDE OF THE CABINET.
9. CUSTOMER TO FURNISH AND INSTALL 8' GROUND ROD WITH A #6 COPPER GROUND WIRE CONNECTED TO SOCKET GROUND LUG. PROTECT WIRE WITH NOT-METALLIC CONDUIT
10. COPPER BUS BAR, SIZE BASED ON AMPERAGE.

**TRANSFORMER-RATED METERING
CABINET-MOUNT 240/120 VOLT
DELTA OR 208/120 VOLT**

		CITY OF HAGERSTOWN, MD ELECTRIC SYSTEM	
DATE: 07-24-23		DRAWN: MWC APPR: JMB	
SCALE: NONE	CONSTRUCTION STANDARDS	DETAIL: E-24	



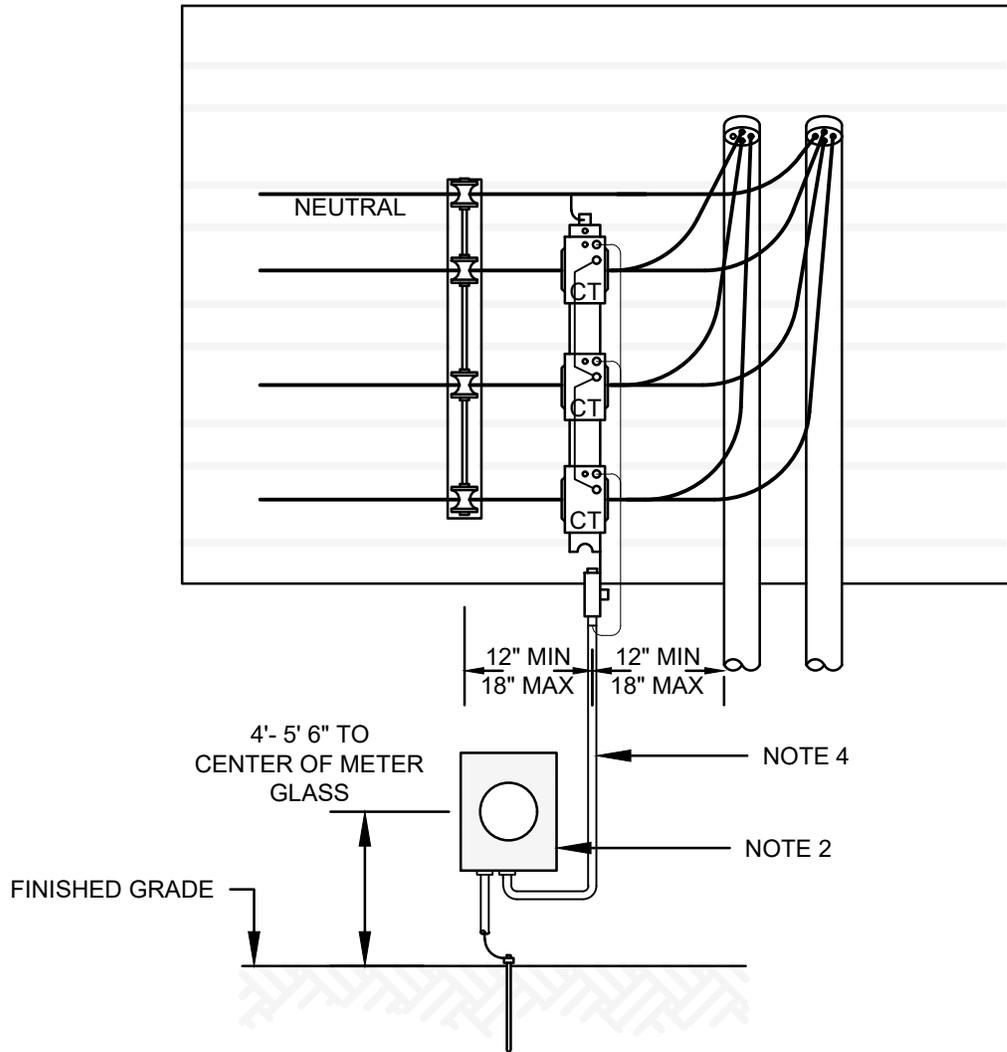
APPROXIMATE CABINET SIZES	
CAPACITY	DIMENSIONS
400-1200 A	40"X40"X15"
1500-2000 A	50"X63"X15"

NOTES:

1. CONTACT HLD FOR DETAILS BEFORE INSTALLATION.
2. METER SOCKET SHALL BE SUPPLIED BY HLD AND INSTALLED BY CUSTOMER ON EXTERIOR OF BUILDING.
3. CLEAR SPACE OF AT LEAST 36"X36", FREE FROM OBSTRUCTIONS AND IN LOCATION SUITABLE FOR METER MOUNTING SHALL BE PROVIDED.
4. MAINTAIN 3 FOOT CLEAR WORKING SPACE IN FRONT OF CABINET.
5. CABINET-MOUNT METERING PACKAGE SUPPLIED BY CUSTOMER, INSTALLED BY CUSTOMER AFTER APPROVAL BY HLD.
6. 1-1/4" IMC OR RIGID METALLIC CONDUIT FOR RUNNING METER CABLE TO METER SOCKET (30' MAX CABLE LENGTH) FURNISHED AND INSTALLED BY CUSTOMER.
7. INHIBITOR COMPOUND SHALL BE USED ON ALL ALUMINUM WIRE TERMINATIONS.
8. CONDUIT FOR METER CABLE SHALL ENTER METER CABINET AT THE BOTTOM OR WITHIN 16 INCHES FROM THE BOTTOM ON THE SIDE OF THE CABINET.
9. CUSTOMER TO FURNISH AND INSTALL 8' GROUND ROD WITH A #6 COPPER GROUND WIRE CONNECTED TO SOCKET GROUND LUG. PROTECT WIRE WITH NOT-METALLIC CONDUIT
10. COPPER BUS BAR, SIZE BASED ON AMPERAGE.

**TRANSFORMER-RATED
METERING CABINET-MOUNT
480/277 VOLT**

 Hagerstown Light Department	CITY OF HAGERSTOWN, MD ELECTRIC SYSTEM
DATE: 07-24-23	DRAWN: MWC APPR: JMB
SCALE: NONE	CONSTRUCTION STANDARDS
DETAIL: E-25	



NOTES:

1. CONTACT HLD FOR DETAILS BEFORE INSTALLATION.
2. METERING TRANSFORMER PACKAGE FURNISHED AND INSTALLED BY HLD AND PAID FOR BY THE CUSTOMER. NUMBER OF CURRENT TRANSFORMERS WILL VARY WITH SERVICE TYPE.
3. INHIBITOR COMPOUND SHALL BE USED ON ALL ALUMINUM WIRE TERMINATIONS.
4. 1-1/4" IMC OR RIGID METALLIC CONDUIT FURNISHED AND INSTALLED BY CUSTOMER. METER CABLE FURNISHED AND INSTALLED BY HLD.
5. CUSTOMER TO FURNISH AND INSTALL 8' GROUND ROD WITH #6 COPPER GROUND WIRE CONNECTED TO SOCKET GROUND LUG. PROTECT WIRE WITH NON-METALLIC CONDUIT.

**CT METERING
600 VOLTS OR LESS -
OUTDOOR OVERHEAD**



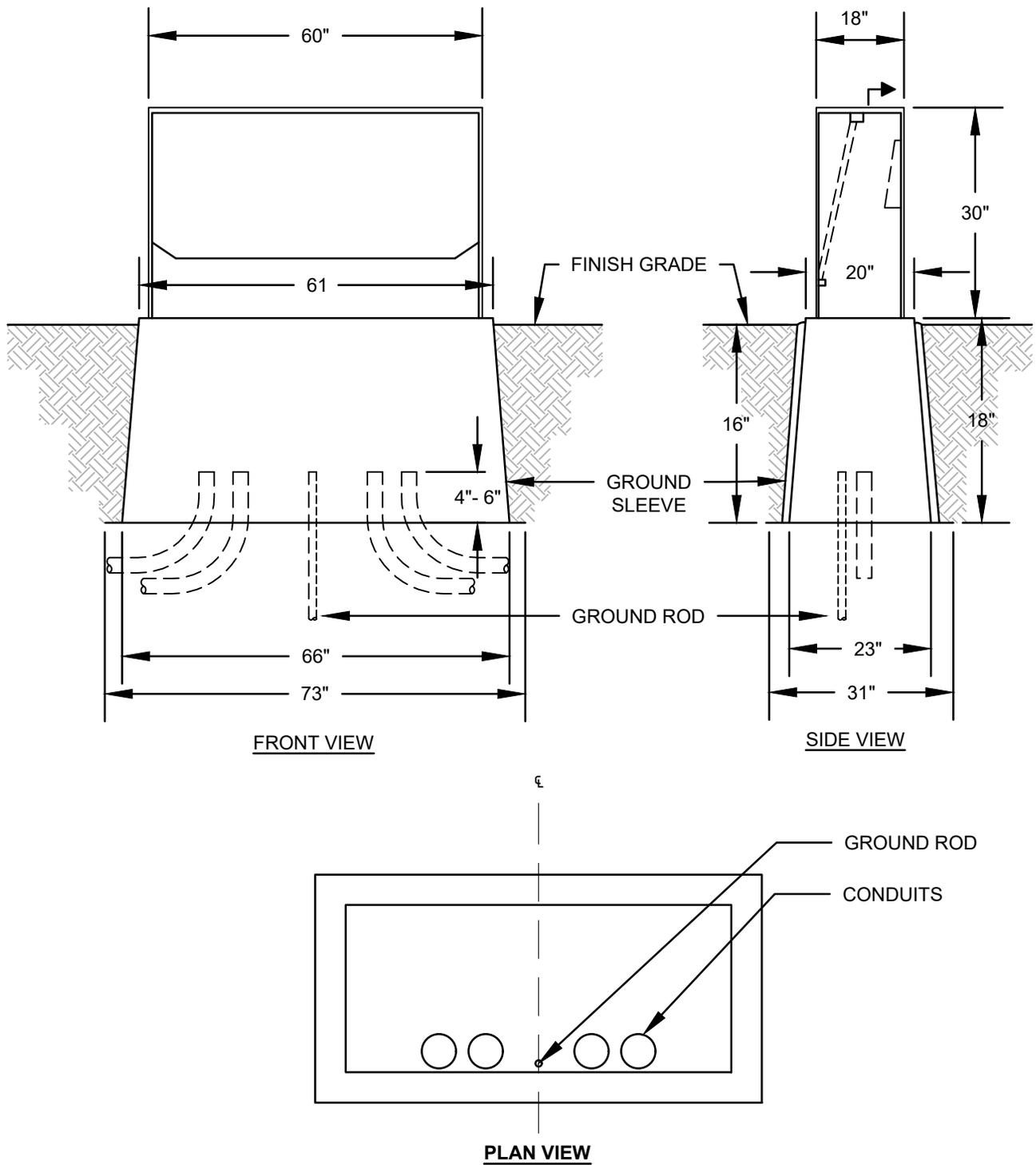
CITY OF HAGERSTOWN, MD
ELECTRIC SYSTEM

DATE: 07-20-23 DRAWN: MWC APPR: JMB

SCALE:
NONE

CONSTRUCTION
STANDARDS

DETAIL:
E-26



NOTES:

1. CONTACT HLD FOR DETAILS BEFORE INSTALLATION.
2. CONTACT HLD TO OBTAIN GROUND SLEEVE FOR INSTALLATION.
3. CUSTOMER IS REQUIRED TO SEEK APPROVAL FROM HLD AFTER INSTALLATION OF GROUND SLEEVE.
4. IF LOCATED IN HIGH TRAFFIC AREA, CUSTOMER IS REQUIRED TO INSTALL TRAFFIC PROTECTION DEVICES, SEE **DETAIL E-12.**

**JUNCTION COMPARTMENT
INSTALLATION
3-PHASE**



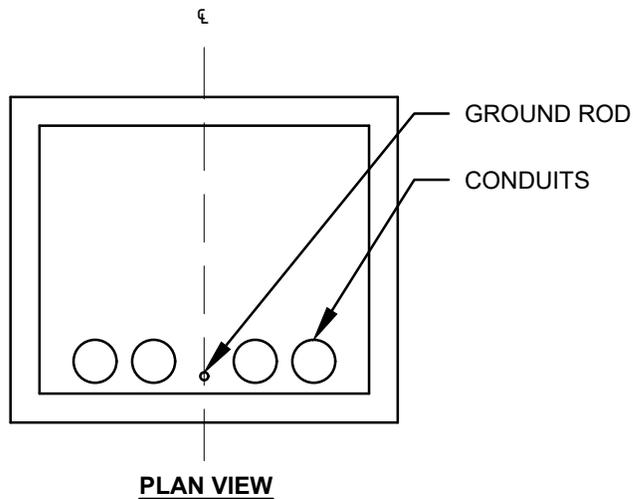
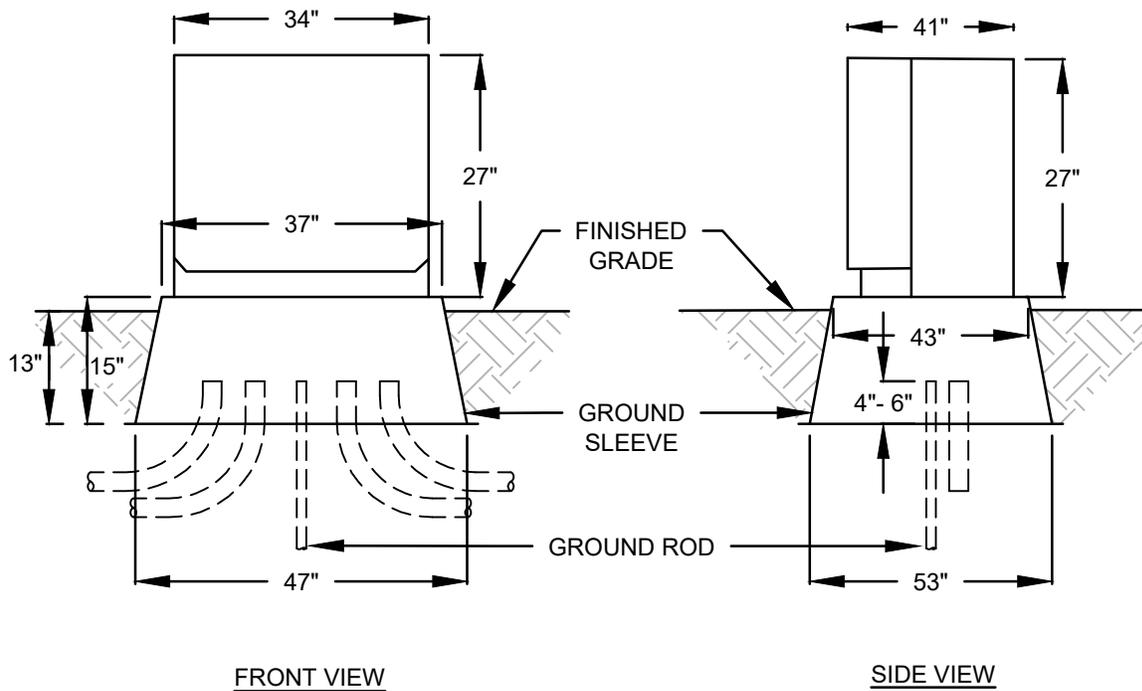
CITY OF HAGERSTOWN, MD
ELECTRIC SYSTEM

DATE: 07-20-23 DRAWN: MWC APPR: JMB

SCALE:
NONE

CONSTRUCTION
STANDARDS

DETAIL:
E-27



NOTES:

1. CONTACT HLD FOR DETAILS BEFORE INSTALLATION.
2. CONTACT HLD TO OBTAIN GROUND SLEEVE FOR INSTALLATION.
3. CUSTOMER IS REQUIRED TO SEEK APPROVAL FROM HLD AFTER INSTALLATION OF GROUND SLEEVE.
4. IF LOCATED IN HIGH TRAFFIC AREA, CUSTOMER IS REQUIRED TO INSTALL TRAFFIC PROTECTION DEVICES, SEE **DETAIL E-12.**

**JUNCTION COMPARTMENT
INSTALLATION
1-PHASE**



CITY OF HAGERSTOWN, MD
ELECTRIC SYSTEM

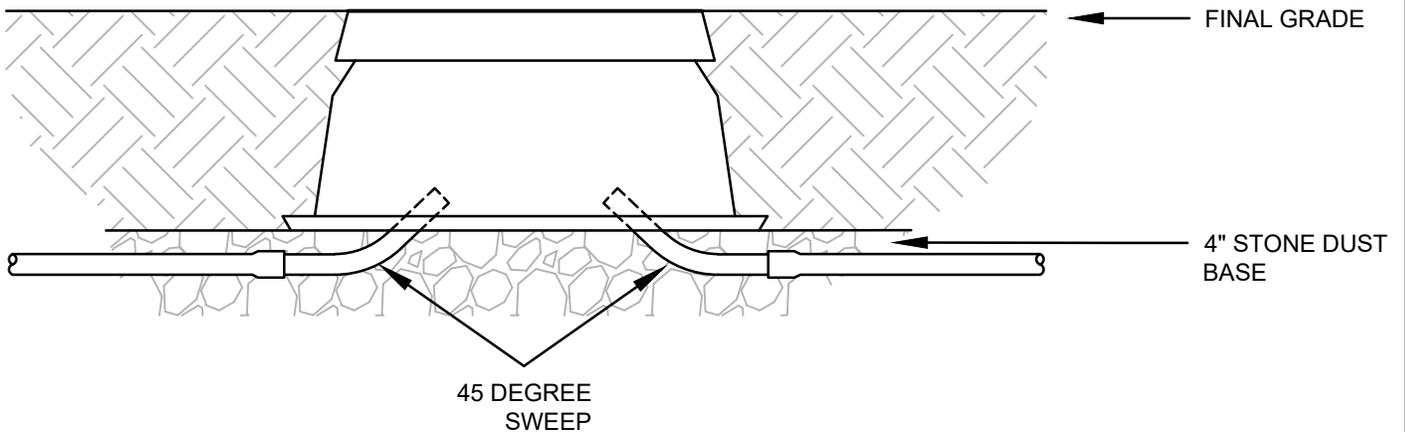
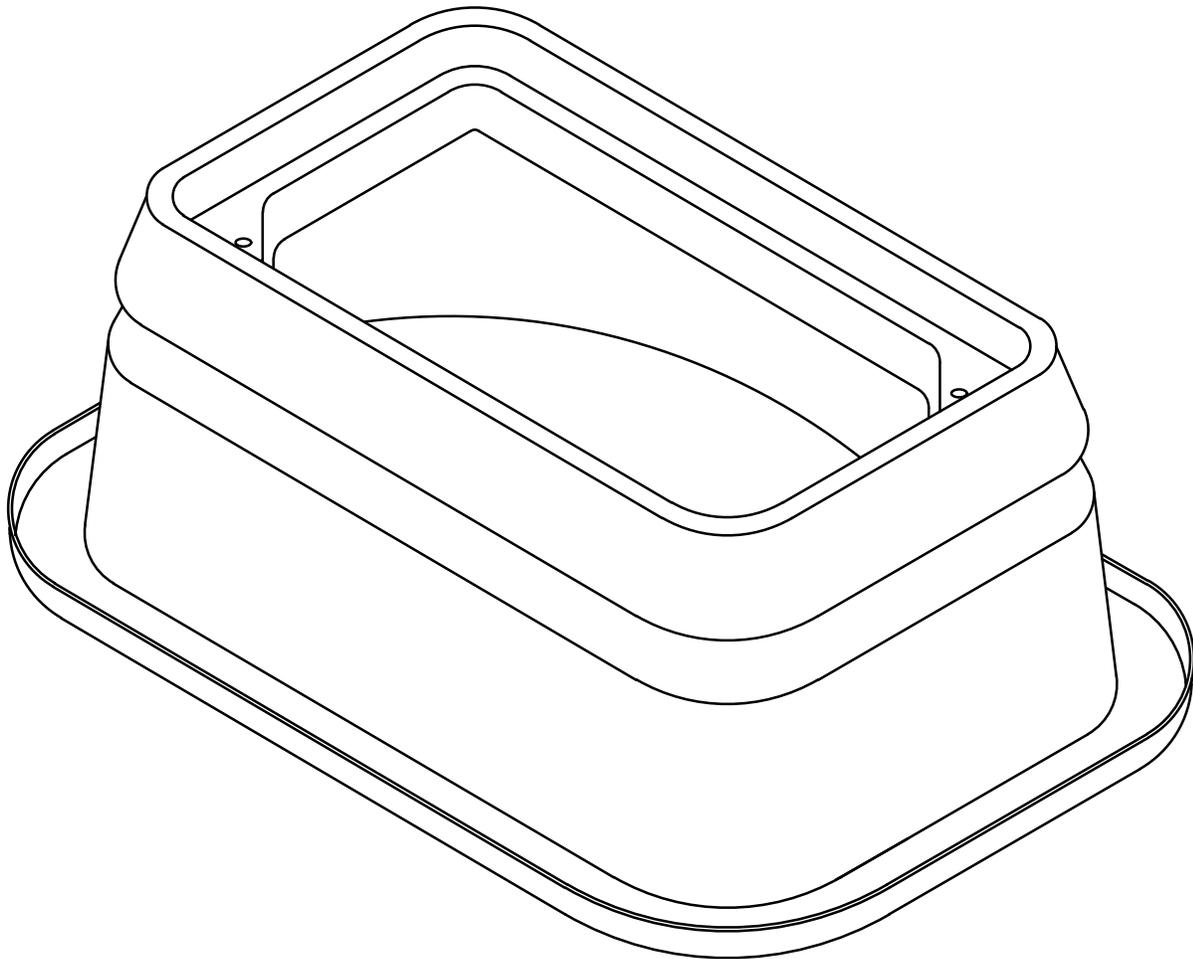
DATE: 07-20-23 DRAWN: MWC APPR: JMB

SCALE:
NONE

CONSTRUCTION
STANDARDS

DETAIL:

E-28



NOTES:

1. CONTACT HLD FOR DETAILS BEFORE INSTALLATION.
2. SPEC IS NOT INTENDED TO REPRESENT INSTALLATION WHERE HANDHOLE WOULD BE SUBJECTED TO TRAFFIC LOADS.
3. WHEN HANDHOLE IS TO BE INSTALLED IN AN AREA WHERE DRAINAGE IS POOR, PROVIDE 12" OF LOOSE CRUSHED STONE UNDER THE BOX IN PLACE OF ONLY 4".

HAND-HOLE TYPICAL



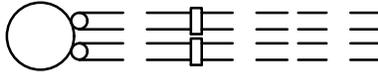
CITY OF HAGERSTOWN, MD
ELECTRIC SYSTEM

DATE: 07-20-23 DRAWN: MWC APPR: JMB

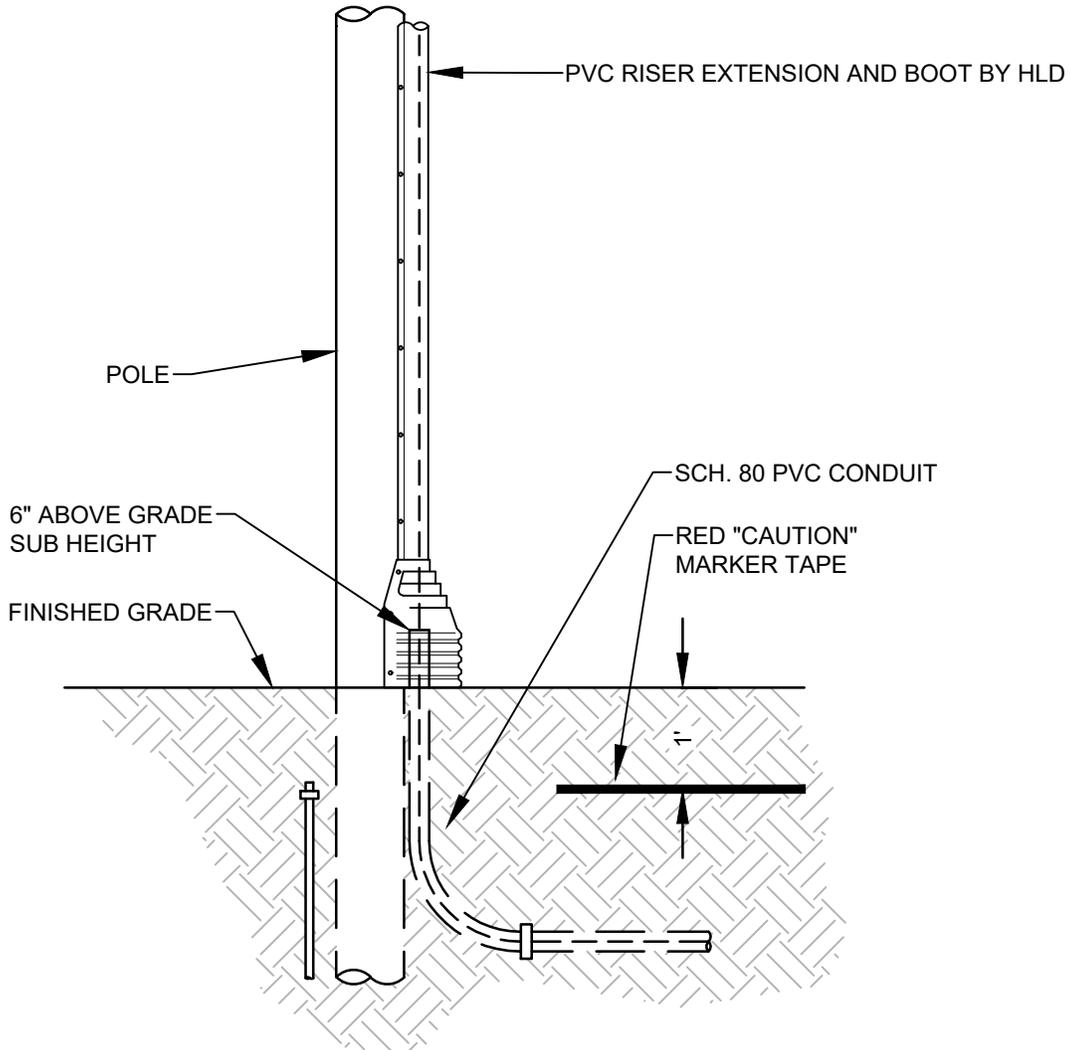
SCALE:
NONE

CONSTRUCTION
STANDARDS

DETAIL:
E-29



PLAN VIEW



SECTION VIEW

NOTES:

1. CONTACT HLD FOR DETAIL BEFORE INSTALLATION.
2. BEFORE TRENCHING CUSTOMER SHALL OBTAIN FROM HLD THE SIDE OF THE POLE UPON WHICH TO LOCATE THE RISERS.
3. MINIMUM COVER OVER CONDUITS: 24" FOR 600 VOLT CIRCUITS, 36" FOR 4,160-13,800 VOLT CIRCUITS.
4. IF POLE IS LOCATED IN SIDEWALK CONCRETE, PROPER "BOXING" OF CONCRETE AROUND POLE AND RISERS IS REQUIRED, SEE HLD SPEC.
5. ALL SPARE CONDUITS ARE TO BE CAPPED.

**RISER
SPECIFICATION**



CITY OF HAGERSTOWN, MD
ELECTRIC SYSTEM

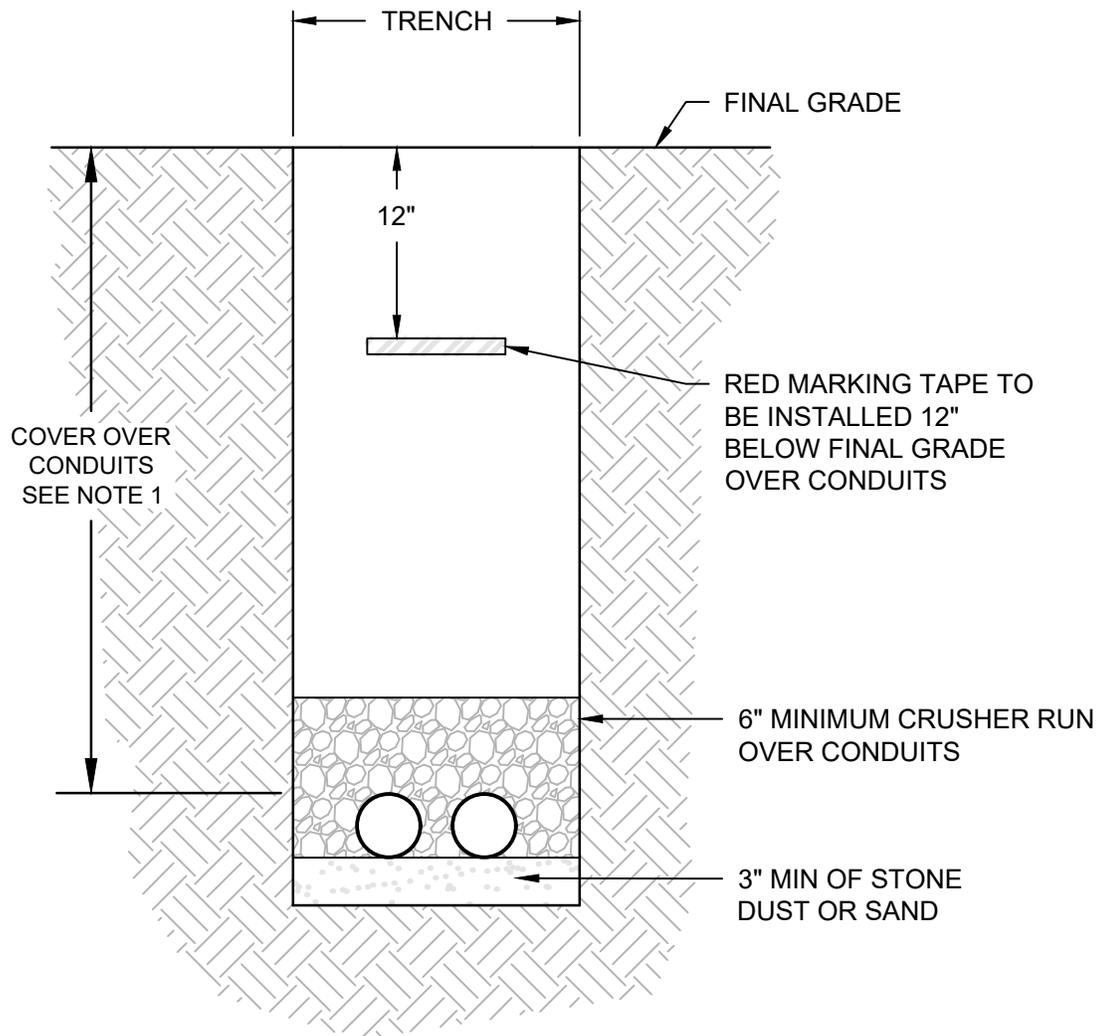
DATE: 07-20-23 DRAWN: MWC APPR: JMB

SCALE:
NONE

CONSTRUCTION
STANDARDS

DETAIL:

E-30



NOTES:

1. MINIMUM COVER IS 24" FOR 600 VOLT CIRCUITS, 36" MINIMUM COVER FOR 4160-13,800 VOLT CIRCUITS.
2. BACKFILL TO BE COMPACTED IN 6" LAYERS TO AVOID SETTLING.
3. IT IS PERMISSIBLE TO INCORPORATE COMMUNICATIONS CONDUITS IN TRENCH WITH HLD CONDUITS PROVIDED A 12" HORIZONTAL OR VERTICAL SEPARATION IS MAINTAINED.
4. CONDUITS USED FOR ROAD CROSSING SHOULD BE OF SCHEDULE 80 THICKNESS, INCLUDING A SPARE.

**TRENCHING SPECS
WITHOUT CONCRETE**



CITY OF HAGERSTOWN, MD
ELECTRIC SYSTEM

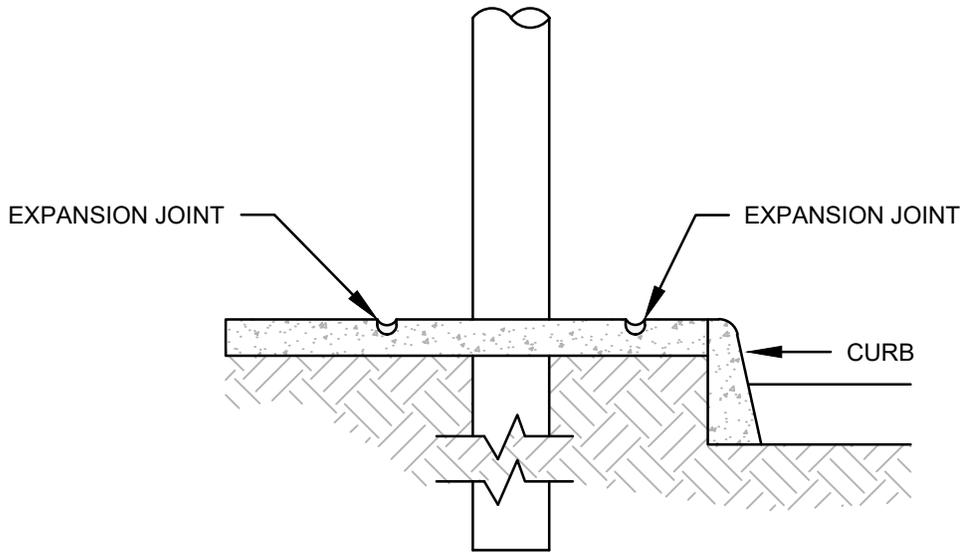
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SCALE:
NONE

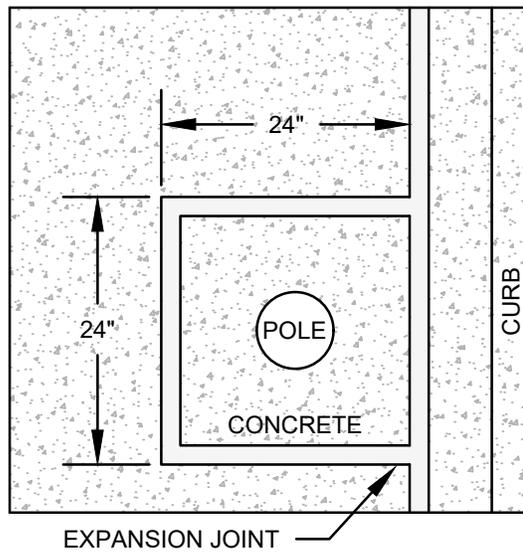
CONSTRUCTION
STANDARDS

DETAIL:

E-31



SECTION VIEW



PLAN VIEW

NOTES:

1. CONTACT HLD FOR DETAILS BEFORE INSTALLATION.
2. A 2-FOOT SQUARE WITH EXPANSION JOINTS SHALL EXIST AROUND EACH POLE WHEN A NEW SIDEWALK IS INSTALLED OR AN EXISTING SIDEWALK IS RENOVATED.
3. EXPANSION JOINTS SHALL BE SELF-SEALING ASPHALT OR EXPANSION FABRIC, 1/2"x6"x24"

**POLE IN
SIDEWALK AREA**



CITY OF HAGERSTOWN, MD
ELECTRIC SYSTEM

DATE: 07-20-23 DRAWN: MWC APPR: JMB

SCALE:
NONE

CONSTRUCTION
STANDARDS

DETAIL:

E-32