2017

Electric Service Specifications

PUBLISHED: 2017

THIS MANUAL SUPERSEDES ALL PRIOR ISSUES AND REVISIONS

PUBLISHED BY SALT RIVER PROJECT

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Engineering_Standards@srpnet.com

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Policy, Procedures & Standards

Engineering_Standards@srpnet.com

POWER LINE SAFETY

OVERHEAD

Arizona Revised Statute 40-360.41-45 and OSHA 1910.333 specify clearances when working near overhead power lines. When planning such work, contact the utility responsible for the lines:

APS…….. (602) 371-7171
City of Mesa…… (480) 644-2266
SRP……. (602) 236-8888

If work is planned closer than allowed above, the utility must be contacted to arrange for the line/equipment to be guarded.

UNDERGROUND

To locate underground facilities before digging, call:

National “One Call” Number…….811
Blue Stake, within Maricopa County…..…. (602) 263-1100
Blue Stake, outside of Maricopa County… (800) 782-5348

Call at least two days, but not more than five working days, prior to excavating. The route of the located facilities will be marked as follows:

Red	Electric
Yellow	Gas
Orange	Communications
Green	Sewer
Blue	Water
Pink	Temporary Survey Markings
White	Proposed Excavations
Purple	Reclaimed Water

Locations are guaranteed to be within two feet on either side of the stake or mark. Depth will not be indicated. Excavation may occur within two feet of the stake or mark as long as it is accomplished in a careful and prudent manner.

Any exposed facilities must be protected from damage. If facilities should be accidentally damaged, leave them exposed and immediately contact the appropriate utility owner.

REVISION LOG

Revisions Previous to 10/20/2023		
Standard Title	**Standard Change**	**Date**
Metering & SES, High Voltage Metering Equipment, 3Ø, 4-Wire 2,400-12,470 Volts	Primary Metering PT Rack Out Switch Revision	01/10/2024
Clearances, Customer Fencing, Equipment or Obstructions Adjacent to SRP	Inconsistent Standards Pages	01/10/2024
General Information – Fault Current Tables	ESS & DDS Fault Current Updates	02/13/2024
Trenching and Conduit – Exposed Service Conduit Specifications	Exposed Conduit	02/14/2024
Clearances – Removeable Bollard	Removable Bollard	02/14/2024
General – Character of Service and Limitations	Meter Totalization Rules Update	03/05/2024
Metering & SES, Residential Only – Pre-Approved SES List 400A (CL320) and Below	Update SES Pre-Approved List Resi. 400A and Below	05/15/2024
Wall-Mounted Pull Section with Cable Terminating Facilities,1-600 Volts, 1200 Amps Maximum	Meter Pack Terminating Lug Requirements	05/23/2024
SES – Underground Meter Box Installation 400-600 Amps Maximum	Change EUSERC Reference in ESS 3-21 Note 8 and 10	05/23/2024
Service Entrance Section Addressing & Identification	Update ESS 9-11 Section F & G	06/04/2024
General – Character of Service and Limitations	Address Requirements for Homes with More Than 1 SES	06/13/2024
Trenching and Conduit – Service Conduit Sizes and Specifications Underground	Service Conduit Sizes	06/14/2024
General – Character of Service and Limitations	Reduce Max SES 3,000A (Perform Change)	07/19/2024
Contractor-Supplied Material, Labeling, SES	Labeling Specifications	08/14/2024
General – Character of Service and Limitations	Master Metered Service Limitations	10/01/2024
Trenching & Conduit – Conduit Sizes and Specifications, Underground	All Inclusive Mule Tape Required, Feeder & Primary	11/04/2024
Metering & SES – Switchboard Pull Section	Revise Standard 9-63, 9-64	11/14/2024
General – Character of Service and Limitations	Clarify Wall Mount SES Specs	12/04/2024
Contractor-Supplied Material – Conduit Stub-Up Form Spacer, 6-3.75" & 1-1" Dia. Holes, 15" X 51"	Intellirupter Padmount	12/04/2024
Transformer Pads – Three-Phase Pad Installation Details	Conduit Stub-Up Template Update	01/08/2025
Metering & SES – Self-Contained Meter Sockets	Review Pre-Approved Solar Base in ESS 9-33	01/08/2025
Trenching and Conduit – Exposed Service Conduit Specifications	Amend Exposed Conduits Specifications	02/04/2025

REVISION LOG

Revisions Previous to 10/20/2023		
Standard Title	**Standard Change**	**Date**
SES - Overhead – Meter Box Installation with Current Transformers 400 Amps Maximum	Remove Standard for EUSERC 314 Use	02/19/2025
SES - Underground – Service and Meter Pedestal, Commercial Appl. Only, 200 A Max	Sealable Compartments	04/15/2025
Metering & SES – Service Entrance Section, Addressing & Identification	SES Identification and Permanent Labels	04/22/2025
General Information, Stand-By Generator or Main-Tie-Main Multiple Services Transfer Switch Req.	Vehicle to X	06/24/2025
Clearances – Service Entrance Section Locations, Heights & Working Space Clearance	Elevated SES, Loading Docks	07/08/2025

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ELECTRIC UTILITY COMPETITION/DEREGULATION
CODE OF CONDUCT

The Arizona Electric Power Competition Act requires that public power companies establish, implement, monitor and improve a system of operations to prevent anti-competitive activities that could result from SRP providing both competitive and non-competitive services to retail electric Customers. A Code of Conduct was established that meets or exceeds the required elements of the Electric Power Competition Act.

The Code of Conduct as applied to the “wires” (non-competitive) portion of the business states:

1. No Customer will receive any preference or will be discriminated against in the provision of any non-competitive service because of the Customer’s choice of supplier for any competitive service.
2. SRP will plan, engineer, construct, operate and maintain its electric distribution system without regard for the commercial origin or ownership of the energy carried by the system. SRP will operate its electric distribution system on the basis of sound utility operating principles and without regard for the commercial origin or ownership of the energy carried by the system.
3. SRP will perform emergency restoration of electric service using sound utility operating principles and without regard for the commercial origin or ownership of the energy carried by the system.
4. SRP will have procedures to limit access to the identity of a Customer’s supplier of electricity, metering or billing services on a need-to-know basis.
5. SRP will apply its standards for distribution service equally to all similarly situated Customers, regardless of the Customer’s supplier of electricity, metering or billing services.
6. SRP will establish service standards for metering and billing services, which apply equally to all similarly situated Customers, regardless of the Customer’s supplier of electricity, metering and billing services.
7. SRP’s standards and procedures relating to noncompetitive services such as contributions-in-aid-of-construction, special facilities charges and service connections and terminations will preclude preferences or discrimination on the basis of the Customer’s choice of supplier of electricity, metering or billing.
8. In processing and resolving Customer complaints about distribution service, SRP will not discriminate against or grant any preference to any Customer due to the Customer’s choice of electricity, metering or billing service provider. SRP may, however, establish different, non-discriminatory, complaint procedures for handling different types of complaints.

The Electric Service Specifications (ESS) is designed to provide Customers and their engineers, architects and contractors with SRP’s general specifications required to obtain service. The ESS is the standard for proper Customer electric installations and connections to SRP’s electric system. IT is not a complete set of rules governing the installation of electrical wiring and equipment, but does provide the Customer with SRP requirements. Application of these standards and SRP inspections based on these standards will be applied to all projects with no consideration to the Customer’s choice of electric service providers.

PURPOSE AND SCOPE, HOW TO USE THIS BOOK, AND NOTICE OF CHANGES

I. Purpose and Scope

A. The Electric Service Specifications (ESS) were created by SRP to present information and general specifications relative to the introduction and use of electricity supplied from its lines.

B. The information and specifications included in the ESS relate to conductors and equipment connecting SRP's electricity supply system to customer premises, as well as other subjects associated with the supply of electricity that are of mutual interest to the customer, architect, engineer and electrical contractor. It is not a complete set of rules governing the installation of electrical wiring and equipment.

II. How to Use This Book

A. Revisions are indicated by red text or graphics.

B. Title blocks are used to hold information about the book, section, and standard and are located at the bottom of the page.

1. "Approval" refers to the engineer responsible for that standard.
2. "Issue Date" is when the standard was originally created.
3. Revision Date ("Rev Date") is the date the standard was last updated. Note that standards are reviewed periodically by the responsible engineer, and if no updates are necessary in that review, the Rev Date will remain unchanged.
4. Revision statements are a summary of the changes made on the page and are located at the top of the title block.
5. If a revision results in the complete removal of a diagram or an entire section of a diagram or a complete section of text, a brief explanation of the removal will be entered in the revision statement location of the title block.
6. Revisions to formatting and corrections to typographical errors and/or page numbers will not be noted as a revision date change, however, it will be indicated in red and entered as a change in the Standards Revision Log.

C. Utilizing SRP Standards

1. When utilizing SRP's standards in design projects, modification of said standards is NOT permitted.
2. Details or images may be extracted and used in design projects when they do not include the title block of the Standard and are not presented as a Standard.

III. Changes to Standards

These SRP Electric Service Specifications are subject to update and modification at any time. Printed copies of this manual are provided as a courtesy, but may not include the most up-to-date standards, references, or requirements.

To access current standards, visit our website: srpnet.com/electric/business/specs/ess.aspx

IV. Contact Information

A. Business and Residential

Electrical Emergencies	**NOTE:** Call 9-1-1 first for medical emergencies Fallen Power Lines, Arcing, Electric Shock, Damage to SRP Facilities	**(602) 236-8811**
Residential	General Information, Billing Inquiries, Power Outages, Maintenance of SRP Facilities, Temporary Disconnect from SRP Facilities, Inspections	**(602) 236-8888**
Business Center	General Information, Billing Inquiries, Municipal Customers, Public Agency Customers, Inspections, Temporary Disconnect from SRP Facilities	**(602) 236-8833**
Spanish	La Linea – servicio en español	**(602) 236-1111**
SRP Water (Irrigation)	Emergencies, Water (Irrigation), Flooding, General Information, Billing Inquiries, Irrigation Orders, Schedule Time Inquiries	**(602) 236-3333**
Location of Underground Facilities	National "Call Before You Dig" Number ("One Call" Office)	**811**
Blue Stake	Within Maricopa County Outside of Maricopa County	**(602) 263-1100** **(800) 782-5348**
SRP EarthWise Solar Energy	Main Line Residential Photovoltaic Residential Solar Water Heaters Commercial Photovoltaic (Solar Initiatives)	**(602) 236-4448** **(602) 236-4661** **(602) 236-4662** **(602) 236-4663**

B. Additional Resources

Graphic Records:	Contract construction companies can request printing services online at srpnet.com/electric/business/graphicrequest.aspx
Shop Drawings:	Customers are required to supply shop drawings for service entrance sections with non-pre-approved meter pedestals (single or double), non-pre-approved 320 amps, and all 400 amps and above. Email shopdraw@srpnet.com (PDF format).
Standards-related questions:	Email Engineering_Standards@srpnet.com
SRP's website:	srpnet.com Residential / Business Electric / Water assistance information.

AREA BUSINESS OFFICE LOCATIONS AND REFERENCES

V. Area Business Office Locations

East Valley Service Center……...7050 E. University Dr., Mesa 85207
Project Administration Building…….…….....1500 N. Mill Ave., Tempe 85281
Pinal County Customer Service Center……....3735 E. Combs Rd., Queen Creek 85242
West Valley Service Center……..…..221 N. 79th Ave., Tolleson 85353

VI. References

There are numerous documents and standards that were used in developing these guidelines. Many of these documents are modified and updated over time; the equipment of an interconnected generator shall conform to the most recent versions of these documents. A partial list of documents used is included below:

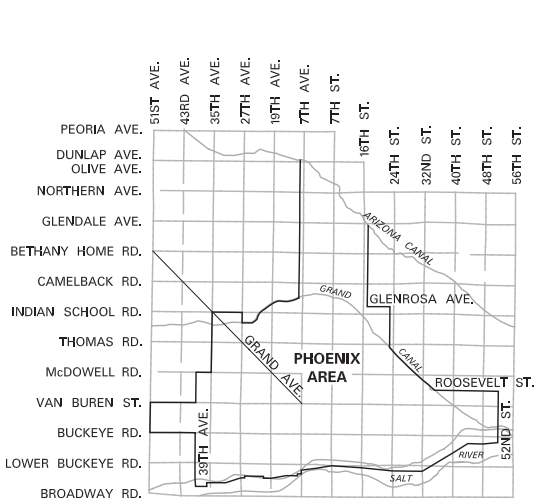
- Electric Utility Service Equipment Requirements Committee (EUSERC) Manual
- Institute of Electrical and Electronics Engineers (IEEE)
- International Building Code (IBC)
- National Electric Code (NEC)
- National Electrical Manufacturers Association (NEMA)
- National Electric Safety Code (NESC)
- Underwriter Laboratories (UL)
- Various state and municipal requirements

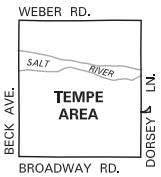
SECTION 1
GENERAL INFORMATION

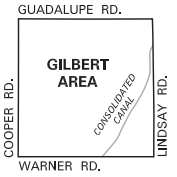
DESCRIPTION **PAGE**

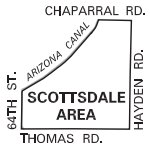
APS Boundaries within the Salt River Project Valley Service Area

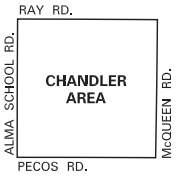
SRP ELECTRIC SERVICE AREA

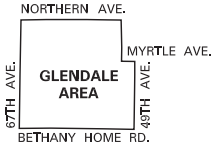


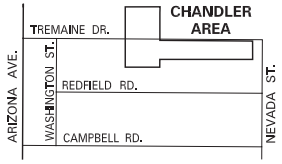


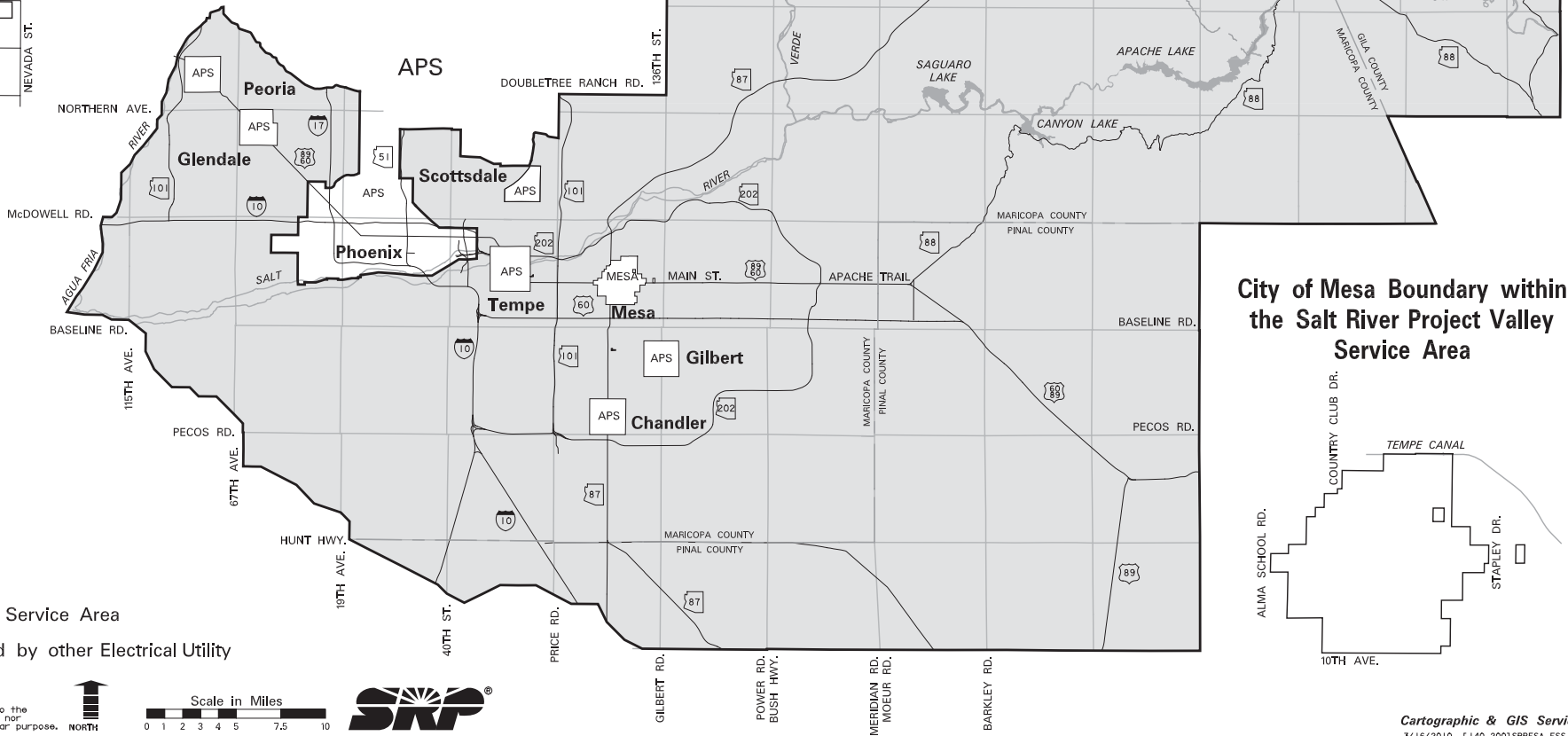












For a project located within SRP's electric service area, the phone numbers listed on page 3 can be called to assist you with your specific needs.

City of Mesa Boundary within the Salt River Project Valley Service Area

LEGEND:

- SRP Power Service Area
- Area served by other Electrical Utility

NORTH

Scale in Miles
0 1 2 3 4 5 7.5 10

SRP®

Cartographic & GIS Services
3/16/2010 [140,200]SRPESA_ESS.DGN

GLOSSARY

The following terms, when used herein, shall have the meaning specified.

1. **Available Interrupting Current (AIC)**: Minimum breaker Fault Current interrupting capability.
2. **All-In-One Service (SES)**: A Service Entrance Section containing at minimum a meter socket compartment and a service disconnect manufactured in the same equipment housing.
3. **American Wire Gauge (AWG)**: The AWG assigns a number to a particular size of wire according to circular mill area to a maximum size of #0000.
4. **Authority Having Jurisdiction (AHJ)**: Governmental agencies and municipalities having responsibility for public safety.
5. **Blue Stake Law**: Arizona Revised Statutes, Chapter 2, Article 6.3, Sections 40-360.21 through 40-360.32.
6. **Building**: A structure that stands alone or is separated from adjoining structures by fire walls (minimum two-hour rated) with all openings therein protected by fire doors. If this definition conflicts with local building codes, the local code definition will prevail.
7. **Campus**: Customer location having multiple Buildings served by multiple SES that is not separated by private or public property or Right-of-Way and must be operated as one integral unit with all accounts in a single common entity name.
8. **Channel**: Pre-manufactured metal framing with compatible fasteners.

9. **Coincident Load**: The total demand placed on SRP's distribution system by the SES under consideration during a 30-minute time interval as recorded in SRP's billing system.
10. **Contributions In Aid Of Construction (CIAC)**: Advance payment from a Customer for the design and construction of new or additional facilities, or enhanced distribution facilities and related Costs, and for other purposes as provided in the Rules and Regulations.
11. **Cost or Expense**: The Cost of all materials and equipment, labor and other definite charges applicable thereto, plus a reasonable percentage for engineering, purchasing, the use of construction equipment and other Costs of a general character, involved in connection with the work to be performed.
12. **Critical Load**: Load that cannot be readily disconnected due to public health and/or safety concerns.
13. **Customer**: Any person receiving electric service from SRP for one or more accounts, including transmission service, distribution service, and ancillary services necessary to deliver and measure electrical energy and power. Where the context requires, the term "Customer" includes an applicant for SRP service.
14. **Customer-Owned Services**: A Service Lateral provided, installed, owned and maintained by the Customer, complying with the Authority Having Jurisdiction, where the Point of Delivery is usually the secondary bushings of the supplying transformer.
15. **Distribution Design**: The SRP group responsible for design of intended electrical facilities.
16. **Distributed Energy Resource (DER):** Independent electricity generating or storage technologies interconnected to SRP's distribution system.

GLOSSARY

The following terms, when used herein, shall have the meaning specified.

17. **Distributed Energy Resource (DER) Generation**: The generation of electricity via a Distributed Energy Resource (photovoltaic systems, wind generation, etc.).
18. **Distributed Energy Resource (DER) Storage**: The storage of electricity either drawn from the grid or from a DER generation source.
19. **Electric Service Specifications (ESS)**: SRP's requirements for wiring, metering, equipment, and other matters as specified in the relevant SRP manual. These standards are also available online at srpnet.com/electric/business/specs/Default.aspx.
20. **Electrical Clearance**: The approval of an electrical installation by the city or county having jurisdiction as an indication of compliance with its standards.
21. **Electronic Marker**: A passive antenna, which is installed over underground facilities that uses an electronic transmitter to allow future location of these facilities.
22. **Electrical Metallic Tubing (EMT)**: A non-flexible, non-corrugated raceway designed specifically for electrical cables. Also commonly called thin-wall.
23. **Electric Utility Service Equipment Requirements Committee (EUSER or EUSERC)**: Organization comprised of utility representatives from the Western Section of the United States, which works to promote the standardization of electric service requirements and the design and engineering of metering and Service Equipment. SRP is a participating member.
24. **Fault Current**: The available short circuit current typically calculated at the Customer's Service Entrance Section (see AIC and Isc).
25. **Factory Built Building:** see Manufactured Building.
26. **Gas**: Any volatile flammable substance capable of being ignited by an electrical spark.
27. **General Public Area**: An area where the general public has free access.
28. **General Service**: Applicable to commercial, business, professional, small industrial, and recreational facilities.
29. **Ground**: A conducting connection between an electrical circuit or equipment and earth, or some conducting body which serves in place of the earth.
30. **Ground Rod**: A Ground electrode (rod) driven into earth to provide a base reference for voltage and a path to Ground for Fault Current.
31. **Handles, Lifting**: Handles attached to meter and Service Equipment panels to aid in the panel removal replacement and open/close operation. They are to be non-folding grasp type, designed to provide full, secure attachment and having the ability to withstand stress of a 75 pound load.
32. **Hand Tools**: Tools used to excavate in a safe and prudent manner. Excavation within a zone identified as containing underground facilities should be performed with reasonable care using hand tools (i.e., hand shovels, vacuum excavation methods, soft digging, pot holing or other non-invasive methods). Hand digging and non-invasive methods are not required for pavement removal.
33. **Hipot**: A dielectric withstanding voltage test, a hipot test stresses the insulation of an electrical assembly by applying a voltage much higher than is usually experienced in normal operation. The purpose of a hipot test is to assure safety and reliability.

GLOSSARY

The following terms, when used herein, shall have the meaning specified.

34. **Instrument Transformer:** A device that is intended to reproduce in its secondary circuit, in a definite and known proportion suitable for utilization in measurement, control, or protective devices, the current (or voltage) of its primary circuit, with its phase relations substantially preserved. Types include: Potential (voltage), Transformers (PT), and Current Transformers (CT).
35. **Isc:** Available utility Fault Current for arc flash study.
36. **Junction Box (J-Box)**: An above ground surface or sub-surface box which houses cable connections. It may be a Customer's Point of Delivery.
37. **kCMIL (kCM):** The size of any wire larger than 4/0 is expressed directly in circular mil area. Example: 250,000 Circular Mils = 250 MCM
38. **Line**: A system of poles, ducts, wires, conduits, cable, equipment, and fixtures used for the transmission and distribution of electricity.
39. **Load**: An end-use device or Customer facility that receives power from the electric system.
40. **Main Line Trench:** Any trench located in road Right-of-Way (by permit), public utility easement or private easement that contains electrical facilities.
41. **Manufactured Building:** Any Building that is of closed construction and is made or assembled in manufacturing facilities on or off the Building site for installation, or for assembly and installation on the Building site, other than manufactured homes, mobile homes, park trailers, or recreational vehicles.
42. **Manufactured Home:** A structure that is transportable in one or more sections and is 2.5 m (8 body ft.) or more in width or 12 m (40 body ft.) or more in length in the traveling mode, or when erected on site is 30m^2 (320 ft^2) or more; which is built on a chassis and designed to be used as a dwelling, with or without a permanent foundation, when connected to the required utilities, including the plumbing, heating, air conditioning, and electrical systems contained therein.
43. **Master Meter (MM) Service:** A single service with a single meter that is used to supply and measure the electrical usage of multiple tenants.
44. **MCM** (Thousand Circular Mills, ALSO KCMIL): *See kCMIL.*
45. **Meter Pedestal**: Self-supported underground Service Entrance Section.
46. **Mobile Home:** For the purposes of the standards and code, see Manufactured Home.
47. **Modification**: Change in ampacity, change in character of service, added Load, relocation or conversion of an existing Service Entrance Section. Distribution Design and the Authority Having Jurisdiction must approve all Modifications. All Modifications must comply with the current Electric Service Specifications and any other applicable standards.
48. **Municipality**: A state, local, or federal government entity, excluding Native American communities.
49. **National Electrical Code (NEC)**: Published by the National Fire Protection Association (NFPA) as NFPA-70, addresses proper electrical systems and equipment installation to protect people and property from hazards arising from the use of electricity in Buildings and structures. SRP considers the NEC to be the minimum acceptable standard. City, county, or Authority Having Jurisdiction requirements that are more stringent shall prevail.
50. **National Electrical Safety Code (NESC)**: The purpose of the NESC is the practical safeguarding of persons during the installation, operation, or maintenance of electric supply and communication lines and associated equipment. It is a nationally accepted code governing utility wiring.

GLOSSARY

The following terms, when used herein, shall have the meaning specified.

51. **Non-Critical Load**: A Load that, if interrupted, will not cause personal injury or property damage, as defined by SRP Design.
52. **Parallel Generation**: Electrical generation equipment that has been approved by SRP to operate interconnected with SRP's electrical system.
53. **Pedestal, Box**: *See Junction Box*.
54. **Permanent Label:** Address/unit number label permanently attached to the Building for long term use in identifying a specific location for service and billing purposes.
55. **Phase Rotation**: A-B-C counterclockwise. For a group of Customers measured at the transformer secondary or for a single Customer measured at the Customer's Service Entrance Section.
56. **Point Of Attachment**: The point at which restraining or anchoring contact is made between SRP's facilities and those of the Customer. This is strictly a mechanical consideration and does not necessarily imply any separation of responsibilities.
57. **Point Of Delivery (POD)**: The location at which SRP's electric facilities make contact with a Customer's Service Equipment. It is the exact point at which the separation of responsibility occurs for the construction, ownership, operation and maintenance of all facilities except metering equipment. SRP will determine the POD in all cases.
58. **Power Leg (Wild Leg)**: The "C" (third) phase of a four-wire delta secondary that is marked "blue with an orange tracer".
59. **Preferred**: Recommended but not required.
60. **Public Agency**: Any organization that is publicly or taxpayer funded.
61. **Public Utility Easement (PUE)**: An easement for overhead or underground utility facilities provided for the use of the public, including water, storm drainage, sewage, electricity and communication, owned and operated by any person, firm, corporation, municipal department, or board duly authorized by state or municipal regulations. Utility or utilities as used herein refer to such person, firms, corporations, departments, or boards.
62. **Public Utility Facility Easement (PUFE)**: An easement for the installation of facilities, underground or overhead, furnished for the use of the public, including electricity, Gas, steam, communication, water, storm drainage, sewage, sidewalks, landscaping, traffic signals, streetlights, flood control, etc., owned and operated by any person, firm, corporation, municipal department, or board duly authorized by state or municipal regulations. Utility or utilities as used herein may also refer to such person, firms, corporations, departments, or boards.
63. **Photovoltaic: PV**
64. **Readily Accessible**: Capable of being reached directly, without obstruction at any time. See also Metering section, Service Entrance Section, Equipment Rooms. Exception: Approved removable bollards.
65. **Right-of-Way (ROW)**: The right to build and operate a utility on land belonging to another.
66. **Salt River Project (SRP)**: Agricultural Improvement and Power District.

GLOSSARY

The following terms, when used herein, shall have the meaning specified.

67. **Sealable**: In the context of electrical equipment, it is a characteristic of being enclosed in a case or cabinet that is furnished with a means of sealing or locking. This ensures that live parts within the equipment cannot be accessed without opening the enclosure by an authorized SRP employee. This includes, but is not limited to, a meter panel cover, meter cabinet, metering compartment, test block or safety socket cover, and the pull section area of a service entrance section.
68. **Securely Attached**: Attached to withstand anticipated Loads not subject to loosening.
69. **Self-Contained Diesel Generator:** An integrated unit utilizing a self-contained diesel fuel tank.
70. **Self-Contained Diesel Tank:** A double-walled tank having an outer envelope capacity of 110% of the inner tank.
71. **Service Connection**: One Service Lateral and its associated Service Entrance Section.
72. **Service Drop**: *Refer to Service Lateral.*
73. **Service Energization**: The connection of a service to a voltage source.
74. **Service Entrance Section (SES)**: The Customer-owned main electrical panel or equipment located at its premises to which the Utility delivers electric energy via a Service Drop or Service Lateral.
75. **Service Equipment**: The necessary electrical facilities, usually consisting of a circuit breaker or switch and fuses, conductors and accessories constituting the main control and cutoff of the delivery of electrical energy to the Customer, and which are installed, owned, and maintained by the Customer.
76. **Service Lateral**: A system of wires, fixtures, equipment, and sometimes poles, or the equivalent ducts, conduits and cables used to deliver electrical energy from the line or distribution transformer to the Point of Delivery.
77. **Service Trench**: The trench on property containing the service to the home or business.
78. **Solar Ready**: A Service Entrance Section panel with a dedicated breaker installed by the manufacturer, allowing the attachment of a Customer's 60 Hz AC solar voltaic feed, via the Customer's utility AC disconnect switch and photovoltaic meter, resulting in a supply side tap configuration.
79. **Temporary Service**: Short-term, non-recurring service of a transitory character, as determined solely by SRP, which may include in its evaluation the speculative character or questionable permanency of the Customer's operations.
80. **Totalized Metering and/or Totalizing**: For billing purposes on the appropriate Price Plan, the measurement of the simultaneous demand and electrical energy of a Customer who receives electric service from more than one Service Entrance Section at a single site or Campus.
81. **Trapped Key Interlock System**: A safety device applied to two operating devices, which prevents them from being simultaneously in a closed position.
82. **Ufer**: A concrete-encased electrode, generally located in the foundation of a Building, used for Grounding the Building.
83. **Underwriters Laboratory (UL)**: An independent laboratory facility for testing all types of electrical equipment.
84. **Weatherhead**: A metal cap on a Customer's Service Entrance Section that protects the connection of SRP's overhead service conductors to the Customer's conductors from adverse weather conditions.
85. **Wild Leg**: *See Power Leg.*

SECTION 1: GENERAL INFORMATION

Customers wanting new meter installations or relocations shall contact the SRP business office for an approved service and meter location prior to proceeding with any electrical installation. By adhering to the following procedure, the Customer will eliminate inconvenience, delays and added fees associated with an incorrect meter location.

I. Required Information

Each Customer desiring new service and/or a change in existing service must make application with SRP. The Customer must provide the following information:

A. General

1. Customer's name (person responsible for paying the bill) and contact information, such as:
   a) Email address
   b) Mailing address
   c) Phone number/fax
2. Copy of the recorded vesting deed (ownership) to the subject property.
3. Service address – street address or route and box.
4. Mailing address, if bills are not to be sent to service address.
5. Site plans and building plans:
   a) Service entrance (amp rating)
   b) Load breakdown
   c) Desired voltage and phase

B. Specific Types of Job Requirements:

1. Commercial
2. Residential
3. Temporary

II. Schedule of Events

A. Customer provides sufficient notice of intent to build.

B. Customer provides required information.

C. SRP preliminary design begins when the Customer provides one full set of adequate drawings. Required information includes:

1. Architectural

2. Electrical
   a) Load calculations
   b) Panel schedule
   c) Proposed meter panel location (subject to SRP approval)
3. Civil plans (identification of flood plains)
4. Landscaping and sprinkler plans – including retention basins
5. Mechanical
6. Fire protection

D. SRP Design Representative verifies the property is located in SRP service territory and will be served by SRP.

E. SRP Design Representative examines SRP maps and field checks job site to determine how to serve the property.

F. If there are conflicts with SRP Water Users Association facilities, SRP Design Representative directs Customer to SRP Water Users Association for resolution.

G. If a Customer has transmission easements or facilities located within their project area, refer the Customer to the Transmission Line Design department.

H. Prepare preliminary design and cost estimates (if applicable).

I. Present Customer with preliminary design and contract with cost (if applicable).

J. Receive signed contract with payment(s) from Customer (if required).

K. Design facilities.

L. SRP specifies trench and equipment locations (if applicable).

M. SRP reviews SES drawings for approval.

N. Customer and SRP, each individually, secure necessary permits, easements, ROW, and electrical SES shop drawings (all panels greater than 225 amps that are not pre-approved) with official street address. Electronic copies (PDF format preferred) need to be sent to shopdraw@srpnet.com.

O. Customer provides property corners and grade stakes (blue top).

P. Customer provides the trench and installs conduit per SRP design (if applicable).

Q. SRP inspects trench and conduit installation and approves it per SRP design (if applicable).

R. SRP releases job to construction.

S. SRP schedules crews for construction of its facilities.

T. SRP inspects meter panel for compliance.

U. Customer obtains electrical clearance from AHJ.

V. Once an account has been established with SRP and clearance has been received from AHJ, the service lateral will be energized and installation of the meter scheduled. SRP must be contacted to provide a meter. The SES must stay in compliance with ESS requirements.

III. Temporary Service

Go to srpnet.com/service/business/tempservice.aspx or call 602-236-0777.

IV. Panel Modifications and/or Repair

Contact both SRP and the AHJ prior to making any panel modifications and/or repair to an existing service entrance section. SRP will reconnect power when both SRP and the AHJ approve all service entrance section modifications.

V. Codes

These specifications are a supplement to the NEC but they are not a substitute for that code or for codes of the AHJ. SRP endorses the jurisdictional authority's right to inspect and insure that the Customer's wiring installations be made in accordance with applicable codes.

VI. Inspections, Approvals and Permits

Refer to the map on page 1-1 and contact information on page 3 for the appropriate SRP business office.

Maricopa County and most cities/towns in SRP's service area have ordinances restricting SRP from energizing the load side of the electrical service to the Customer until the Customer has obtained the necessary permits and until the actual electrical installation has been approved by the AHJ. Therefore, the Customer should determine the requirements of the Building Safety/Building Inspection department of the county or city having jurisdiction before beginning any job subject to inspection by that department. If no jurisdictional authority exists, SRP must receive a certificate in-lieu of electrical clearance, including the license number of the qualified electrical contractor, stating that the facility meets the NEC requirements prior to receiving SRP's electrical service.

Reference copies of the Certificate In-Lieu of Electrical Clearance and the Certificate In-Lieu of Electrical Clearance for Solar Projects are provided on the following pages. Contact SRP Design via the appropriate SRP business office to obtain a copy of these forms.

Certificate In-Lieu of Electrical Clearance

SRP Bill Account Number: **And/or Address:**

Job Name: **Job Number:**

It is a customer's responsibility to ensure that all facilities on the customer's side of the point of delivery for electric service are built and maintained in a safe operating condition. This responsibility includes ensuring that the customer's electrical facilities comply with all relevant construction codes and safety standards. Customers should coordinate this responsibility with their architectural and engineering consultants, construction contractors, or subcontractors, as appropriate, before requesting SRP to energize their electrical systems. A customer's failure to comply with this notice may result in injury or death to persons or damage to property.

Customer's Certification of Readiness

The undersigned customer ("Customer") hereby certifies to SRP and agrees that:

1. This Certificate In-Lieu of Electrical Clearance ("Certificate") is subject to SRP's Rules and Regulations for providing electric service (the "Rules and Regulations"). If this Certificate conflicts with the Rules and Regulations, the provisions of the Rules and Regulations will prevail.
2. Customer has read the foregoing "Important Notice" and fully understands Customer's obligations.
3. Customer has conferred with the party(s) responsible for the design and construction of Customer's facilities, and verified that the electrical systems on Customer's side of the point of delivery are designed, constructed, installed and operational in compliance with all relevant construction and safety codes and standards (including, but not limited to, NFPA 70 or the National Electric Code).
4. Customer assumes full responsibility for any and all damage to property (including, but not limited to, property owned or leased by Customer, SRP and any third party) and death or injury to persons (including, but not limited to, Customer's employees, agents and contractors; SRP's employees, agents and contractors; and any third parties) as a result of conditions on Customer's side of the point of delivery at the service address noted above.
5. Customer hereby releases SRP from liability for any and all damages or injuries that result from the electric service provided by SRP as provided in the Rules and Regulations.
6. In reliance on the representations and agreements in this Certificate, SRP will, subject to the Rules and Regulations, energize electric service to Customer's equipment or facilities after Customer executes this Certificate.
7. The individual signing below is legally authorized to sign this Certificate on behalf of Customer.

Customer's Legal Business Signature: _____

Printed Name: _____ Title: _____

Address: _____ Phone Number: _____

_____ Date: _____

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Certificate of Qualified Electrical Contractor

The undersigned certifies to SRP and agrees that:

1. It has inspected the electrical equipment and facilities of Customer at the Service Address described above and that the equipment and facilities are designed, constructed, installed and operational in compliance with all relevant construction and safety codes and standards.

2. It is qualified to make the representation set forth above.

Please email completed Certificate to the SRP City Clearance Desk at CCDESK@SRPNET.COM.

Contractor/Inspector's Legal Business Signature: _____

Company Name: _____

Printed Name: _____ Title: _____

License #: _____ Date: _____

Address: _____ Phone Number: _____

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Certificate In-Lieu of Electrical Clearance for Distributed Energy Resource (DER) Interconnection Projects

Customer Name: _____

Service Address: _____ **Job Number:** _____

_____ and/or

Job Name: _____ **SRP Bill Account Number:** _____

IMPORTANT NOTICE

It is a Customer's responsibility to ensure that all electrical facilities on the Customer's side of the point of delivery for electric service are built and maintained in a safe operating condition. This responsibility includes ensuring that the Customer's electrical facilities comply with all relevant construction codes and safety standards. Customers should coordinate this responsibility with their architectural and engineering consultants, construction contractors, or subcontractors, as appropriate, before requesting SRP to energize their electrical systems (or, in the case of a distributed energy resource system, to allow interconnection with SRP's electrical distribution system). This Certificate In-Lieu of Electrical Clearance for Distributed Energy Resource (DER) Interconnection Projects (Certificate) must be signed when the governmental authority having jurisdiction has elected to not require a permit or inspection for installation or significant modification to an electrical system on a Customer's property. A CUSTOMER'S FAILURE TO COMPLY WITH RELEVANT CONSTRUCTION CODES AND SAFETY STANDARDS MAY RESULT IN INJURY OR DEATH TO PERSON(S) OR DAMAGE TO PROPERTY.

Customer's Certification of Readiness

The undersigned customer (Customer) hereby certifies to SRP and agrees that:

1. Customer has read the "Important Notice" above and fully understands Customer's obligations.
2. Customer is having a distributed energy resource facility and related equipment (DER Facility) installed at the service address above.
3. Customer understands the governmental authority having jurisdiction, _____, at the present time does not require a permit or inspection for the installation of distributed energy resource systems (including the DER Facility). SRP will not review or inspect Customer's DER Facility to verify compliance with the National Electric Code or other relevant construction codes and safety standards. **It is Customer's responsibility to ensure all relevant construction codes and safety standards are met.**
4. Customer represents to SRP that it has conferred with the party responsible for the design and construction of Customer's DER Facility and verified that the DER Facility has been designed, constructed, installed, and inspected (and will operate) in compliance with all relevant construction and safety codes and standards (including, but not limited to, National Fire Protection Association (NFPA 70) and Section 690 of the National Electric Code).
5. Customer understands that SRP has only inspected the DER Facility to ensure that it will not harm or interfere with SRP's electrical distribution system. **SRP has not inspected or approved any other electrical facilities or conditions at Customer's service address.**
6. Customer must have the party responsible for the design and construction of the Customer's DER Facility sign the Certificate of Qualified Electrical Contractor below.
7. Customer assumes full responsibility for any and all damage to property (including, but not limited to, property owned or leased by Customer, SRP, or any third party) and death or injury to person(s) (including, but not limited to, Customer's employees, agents, and contractors; SRP's employees, agents, and contractors; or any third parties) as a result of the installation and operation of the DER Facility at the service address noted above.

REV DATE: 05-01-2020

8. Customer hereby knowingly and fully releases SRP from any and all claims and liability for any and all damages or injuries that result from conditions on Customer's side of the point of delivery at the service address noted above.

9. In reliance on the representations and agreements in this Certificate, SRP will, subject to SRP's Rules and Regulations (Rules and Regulations), allow interconnection with SRP's electrical distribution system after Customer executes this Certificate, even though the governmental authority having jurisdiction has not reviewed or inspected Customer's DER Facility to ensure compliance with the National Electric Code and other relevant codes and safety standards required by the governmental authority having jurisdiction.

10. SRP's delivery of power and Customer's interconnection with SRP's electrical distribution system are governed by the Rules and Regulations for providing electric service. If this Certificate conflicts with the Rules and Regulations, the provisions of the Rules and Regulations will prevail.

11. For business/commercial Customers, the individual signing below is legally authorized to sign this Certificate on behalf of Customer.

For business/commercial Customers

Authorized Signature: _____

Printed Name: _____ Title: _____

Address: _____ Phone: _____

_____ Date: _____

For residential Customers

Customer Name: _____

Customer Spouse Name: _____

Address: _____ Phone: _____

_____

Customer Signature: _____ Date: _____

Customer Spouse Signature: _____ Date: _____

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Certificate of Qualified Electrical Contractor

The undersigned represents and certifies to SRP and agrees that:

1. It has designed, constructed, installed, and inspected the electrical facilities at the service address described above.
2. The electrical facilities have been designed, constructed, installed, and inspected (and will operate) in compliance with all relevant construction and safety codes and standards.
3. It is qualified to make the representation set forth above.

Please email completed Certificate to the SRP City Clearance Desk at CCDESK@SRPNET.COM.

Contractor's Signature: _____

Printed Name: _____ License Number: _____

Company Name: _____ Title: _____

Address: _____ Phone: _____

_____ Date: _____

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VII. SES Inspection Jurisdiction Principals

Inspection Task	SRP	Local Municipal
General	Inspects for general electrical hazards (i.e., multiple main breakers).	Inspects for general electrical hazards.
Cabinet	Distribution service wiring is housed within a portion of the cabinet designated for electric service from the utility. SRP inspects cabinet to ensure that these conductors can be accessed for maintenance operations purposes and that the sealable section is not penetrated. ESS Sections 2, 3 & 9.	Inspects access to cabinet for Customer wiring within the portion of the cabinet designated for Customer wiring.
Auxiliary Distribution Panels	Does not inspect. However, these panels must not be in conflict with utility easement, operation of the meter or the SRP cable pull section of the cabinet.	Inspects panels to meet local building code requirements.
Landing Lugs and Line-side Bus to Meter (POD)	The Nameplate Rating (amps) defines the design of the distribution service facilities (utility wire, transformers) providing power. This is referred to as the POD. SRP inspects line-side bus and landing lugs for compatibility with the distribution system design. ESS Sections 2, 3 & 9.	Does not inspect source side bus utility service wire landing lugs.
Load-side Bus from Meter to Breaker(s)	Does not inspect	Does inspect
Main Breaker(s) Bus	Does not inspect	Does inspect
Main Breaker(s)	Reviews for compatibility with the source side bus (including interrupting rating). ESS Section 1.	Inspects for compatibility with the load side bus and breaker(s) bus (including interrupting ratings).
Grounding/Bonding	Inspects requirements, which consists of the main bonding jumper, the ground electrode and the hub bonding. ESS Section 8.	Inspects to meet local building code requirements.

Inspect Task	SRP	Local Municipality
Physical Location of SES	Determines and inspects the location of the SES for compatibility with utility ROW service access and clearances. ESS Sections 2, 3, 5 & 9.	May inspect
Meter Socket	Verifies compliance with meter standards and metering height requirements. ESS Section 9.	Does not inspect
Foundation / Mounting	Verifies compliance of the foundation/mounting of the SES. ESS Sections 2 & 3.	Does not inspect
Address / Section Labeling	Verifies the address and meter location including meter identification requirements. ESS Section 9.	May inspect for the address and SES labeling referencing permit.
Customer Electric Supply Wiring to Customer load	Does not inspect	Inspects to meet local building code requirements.
Factory Built Buildings Only: Conductor from SES to Building	Does not inspect	Arizona Department of Housing may inspect.
Shop Drawings (400 Amp Service or larger)	Verifies drawings are in compliance with EUSERC. Performs field inspection of SES to evaluate compliance. ESS Sections 2, 3 & 9.	Does not inspect
Meter / Utility Distribution Equipment Vaults (rooms)	Reviews for compliance with requirements. ESS Section 9.	Reviews requirements.

VIII. Service Entrance Location

SRP reserves the right to determine all service entrance locations. Only authorized SRP personnel of the Distribution Design Department will determine this location.

IX. Tampering

A. The breaking of seals and tampering with meters or unmetered wiring by unauthorized persons is prohibited and subject to penalty charges.

B. Section 13-1602 of the Arizona Revised Statutes prohibits tampering with the property of a utility. Such tampering is a felony if it causes impairment of the function of the utility.

C. In addition to the above, penalties for unauthorized use of unmetered energy may include special service charges for unmetered service, an estimate of consumption based on proper data of available records, and the full cost or expense incurred by SRP to correct the infraction.

X. Responsibility

The Customer has the responsibility to maintain their wiring and equipment in safe operating condition. SRP cannot accept any responsibility for the Customer's wiring and equipment.

NOTE: SRP gives no warranty, expressed or implied, as to the adequacy, safety or other characteristic of any equipment, wiring or device and assumes no responsibility with respect thereto.

XI. Cooperation

It is the sincere desire of SRP to provide and maintain dependable, safe, and satisfactory electric service in a courteous and efficient manner. Cooperation of Customers and their agents is appreciated. It is necessary to provide SRP with information leading to new or increased electric service early in the development of plans to aid the proper scheduling of service. Cooperation of all interested parties and strict adherence to the specifications in the manual will expedite satisfactory electric service.

XII. Enforcement of Specifications

SRP will allow a 45-day grace period prior to enforcing new or revised specifications placed in this ESS book.

EXCEPTION: Hazardous or safety-related requirements resulting in new or revised specifications shall be enforced immediately.

XIII. Appeals

SRP has an appeal process. Contact Customer Services for more information.

XIV. Access to Service Entrance Section/Metering on Customer's Premises

A. The SES/metering, and any other SRP equipment installed on the Customer's premises, shall be readily accessible by SRP's authorized employees or agents at all times. The Customer shall be required to relocate the SES if SRP access is later restricted by any condition (see Section 5 – Clearances and Section 9 – Metering & SES).

B. Electrically operated gates, which do not permit immediate 24-hour access to electric facilities for SRP personnel, could pose a safety hazard. Every existing or proposed electrically operated gate in SRP territory is required to have the approved SRP Restricted Access Switch assembly installed. Customers are responsible for installing the SRP approved switch, which will be wired to the gate controller, on electrically operated gates. The required lock and key switch will be available through SRP after payment for the lock and switch has been received. The switch will be installed by the Customer's gate service company and maintained by the Customer, according to SRP specifications. Customers are also required to provide the means of opening gates from the inside without the use of vehicles to activate the controller. This may require the installation of an additional SRP Restricted Access Switch assembly inside the gate if there is not an unsecured switch available for SRP use.

XV. Tree Trimming

SRP does not prune trees around power lines that run from power poles to homes (on private property), businesses or street lights. In these cases, pruning is the responsibility of the property owner. **Never attempt to prune trees near power lines yourself!** Arizona law places restrictions on tree pruning within 10 feet of a power line. A qualified contractor is required. Private contractors must be qualified per OSHA line clearance standards.

NOTE: All vegetation near conductors, pole to pole (in PUE and/or ROW), must be cleared by SRP. Charges may apply.

XVI. Identification of Employees

SRP employees, authorized to visit the Customer's premises, are furnished with identification, which they will show upon request. This is done to protect the Customer from unauthorized persons representing themselves as SRP employees.

XVII. Rate Schedule

Upon request, SRP Rate Schedules and/or Rules and Regulations are available for examination at any SRP business office or online at srpnet.com.

XVIII. Attachments to SRP Facilities

No attachments are allowed to SRP facilities unless provided by joint use contract.

XIX. SRP Excavations

No joint use with SRP underground facilities unless by joint use contract.

SRP reserves the right to approve all service installations and only authorized personnel of the Distribution Design department will make the determination.

I. Types of Service

A. The following types of service are available based on the classification of use, location and the amount of Load to be served. It is necessary for the Customer to contact the regional Distribution Design department to verify availability of the type of service requested prior to purchasing equipment. Typically, SRP will supply one voltage classification to a Building. Single-phase service in a three-phase service area will depend on availability of capacity as determined by SRP Design.

B. The operation of large flashing signs, welders, arc furnaces, induction heaters, radio and television transmitters, x-ray equipment, reciprocating compressors and similar apparatus having intermittent flow of large currents sometimes interferes with other users of the electric service. The Customer shall consult SRP so that the character of electric service that will be supplied, the corrective equipment needed and other special precautions that must be taken, will be mutually known factors before planning to use such apparatus. The Customer shall be responsible for corrective equipment that may be necessary.

C. The table below outlines the Load limitations for each type of service. These limitations are for total single- and three-phase Loads.

Service Entrance Section (SES) Sizing Limitations

Classification			Overhead Service		Underground Service	
Phase/ Wire	**Voltage (V)**	**Type**	**Min. SES Size (A)**	**Max. SES Size (A)**	**Min. SES Size (A)**	**Max. SES Size (A)**
1 Phase 2 Wire	120 Note 1	General	N/A	N/A	N/A	30
1 Phase 3 Wire	120/240 Note 2	General or Residential	100	800	100	600 Note 3
	120/208 Note 4	General	N/A	N/A	100	100
	240/480	ADOT Lighting Only	N/A	N/A	200	200
3 Phase 4 Wire	120/240 Note 4	General or Residential	100	1200	100	600
	120/208	General or Residential	200	1,600	100	3,000 Notes 5, 6 & 9
	277/480	General	100	600	100	3,000 Notes 5, 6 & 9
	2,400/4,160	General	N/A	N/A	100	400
	7,200/12,470	General	N/A	156 Notes 7 & 8	N/A	156 Note 7

NOTES

1. Installations shall not exceed two branch circuits or two motors rated ½ HP or less, except in the case of special equipment.
2. Installations shall have more than two circuits serving electrical ranges, air conditioners, water heaters, space heating equipment, and a maximum 7 ½ HP motor.

3. **Underground 1Φ residential multi-metered SES may include general services:** Maximum 800 A based on reduced load diversification verified by the Distribution New Business Engineer.
4. Contact Distribution Design for availability.
5. **Underground 3Φ SES served from a pole-mounted transformer bank:** Maximum 800 A, provided that the service riser mold with three 4" conduits can be attached to pole.
6. **Underground 3Φ wall-mounted SES:** Provided that the limited cabinet space the SES size is limited to:
   A. General: Maximum 800 A
   B. Residential multi-metered SES may include general services: Maximum 1200 A, load diversification verified by the Distribution New Business Engineer.
7. 156 A maximum demand on a non-dedicated circuit. Dedicated circuit requires system review. Contact Distribution Design.
8. Overhead metering equipment supplied by SRP.
9. Existing SES (greater than 3,000 A) is permitted to retain the associated transformer sizing and configurations and are not required to conform to current allowable SES sizes for the following purposes: maintenance, modifications, replacements (like-for-like scenarios), and right-sized service installations.

II. Service Laterals

Only one service will be supplied to any Building.

EXCEPTION: Customers whose Load exceeds the SES size limitations, or requires different voltages or emergency facilities (i.e., fire pumps, emergency systems) as outlined in the NEC 230.2, are required to obtain approval from the local municipal AHJ.

III. Additional Service/Meter

Regarding existing services, added Load will be evaluated on a per-Customer basis. Customers with existing wired Buildings or suites adding Load exceeding the existing Service Entrance Section (SES) Load capacity may request an additional service and meter as follows:

A. When a Customer leases an existing Building with the SES equipment already installed, as many meters as the SES can hold (in accordance with local authority) can be requested. The existing SES must reach code design capacity before additional Service Laterals will be provided.

B. Totalized Metering is accomplished by summing the simultaneous demands and energy of multiple meters, as more particularly described in SRP's Rules and Regulations.

A Customer receiving electrical service through multiple SESs at a single site or campus setting may have their meters Totalized and billed an E-60 series price plan through a single account provided all of the following criteria are satisfied:

1. General Requirements:

   a) Customer must satisfy all conditions and requirements for Totalizing in SRP's Rules and Regulations.

b) Customer must provide a written request for Totalizing.

c) Accounts to be Totalized, when combined, must meet the conditions of the appropriate E-60 series plan.

d) Service voltages must be 120/208, 277/480, 2,400/4,160 or 7,200/12,470 three phases, four-wire.

e) For a Customer who operates an electric generation unit on the premises, Customer must comply with all SRP requirements for interconnection, pay all Costs for any additional special metering required to accommodate such service from Totalized service sections, and take service on an applicable price plan for interconnected Customer-owned generation.

2. Single Site (Single Building) Requirements:

a) The Customer must be served by a shared SRP distribution circuit. (When served by a dedicated circuit, apply the requirements for Campus Setting Below.)

b) A single site must only have one Totalized account.

c) The Customer's SES must be within 150 feet of each other.

d) SESs to be Totalized must be the same voltage.

e) The table below specifies, for specific service voltages, the number of services permitted to be Totalized, as well as the minimum Coincidental Load and minimum number of services with a demand of at least 70 percent of the rating of each SES, that must be met:

	Two Services		Three Services		Four Services	
Service Voltage	**# of SES at 70%**	**Coinc. Load (kVA)**	**# of SES at 70%**	**Coinc. Load (kVA)**	**# of SES at 70%**	**Coinc. Load (kVA)**
120/208 V	1	1,300	2	1,950	3	2,600
277/480 V	1	2,550	2	4,500	N/A	N/A
2400/4160 V	1	3,450	2	5,200	N/A	N/A
12,470 V	1	4,050	N/A	N/A	N/A	N/A

f) Multiple services installed at the request of a Customer for purposes of reliability, redundancy, etc., and which do not otherwise qualify based on Coincident Load, will not be Totalized.

3. Campus Setting (Multiple Buildings on the Same or Immediate Adjacent Property) Requirements:

a) Customer's primary feed (not back up) must be served by a dedicated circuit having a signed Enhanced Distribution Service Agreement for dedicated circuits.

b) SESs to be Totalized may be of different voltages.

EXCEPTION: Primary metered (12.47 kV) services cannot be Totalized with SESs of different voltages.

c) SES maximum spacing requirements are not required.

4. The Totalized account may be separated back into multiple accounts, subject to the following conditions:

   a) The Customer must submit a written request to SRP stating the reason for the removal.

   b) The Customer may not be Totalized again for one year from the removal date.

   c) The Customer must meet all terms described herein or as modified by future revisions to this policy.

C. Multiple services/meters shall be identified. Identification means shall be in such a manner as meter 1-3, 2-3, 3-3, etc. See Section 9 – Metering for specifics of the identification tag.

NOTE: For safety reasons, if a Customer has two or more services, none of these services shall be interconnected; this prevents back feed.

D. An existing Master Metered Service is allowed to continue operation, provided it is properly maintained, and their wiring and equipment is in a safe operating condition. An additional Master Meter Service may be allowed to serve the same service address, provided no additional parcels of land are added to the Master Metered Service site.

IV. Starting Currents, Three-Phase Motors

A. In general, across the line starting of three-phase motors is allowed for motors up to 25 HP on 208 or 240 volt systems, and 75 HP on 480 volt systems, provided the motor's locked rotor amps do not exceed code "F", NEC Table 430-251 A and B.

B. Motors larger than those in IV.A. referenced above require SRP Engineering analysis to determine the starting method. The Customer shall supply a starter if one is required. Data required for analysis includes:

1. Location
2. Motor size
3. Code letter
4. Voltage
5. Number of starts per time

C. Starters must conform to latest NEMA standards and the installation must be in accordance with the NEC. Magnetic contactors in full voltage motor starters must have a coil capable of sealing in the contactor at 75% rated voltage. All motors must have three element overload protection, one element in each conductor to the motor.

D. Maximum permissible current values referenced above apply to an installation of a single motor. Starters may be omitted on the smaller motors or a group installation when their omission will not result in a starting current in excess of the allowable starting current of the largest motor of the group.

E. In the case of irrigation installations, SRP requires that all motors greater than 30 HP be served at 480 volts or greater.

V. Polyphase Circuit Balance

The customer is responsible for assuring three-phase Load between phases shall not exceed an imbalance greater than 5% per SRP Rules and Regulations.

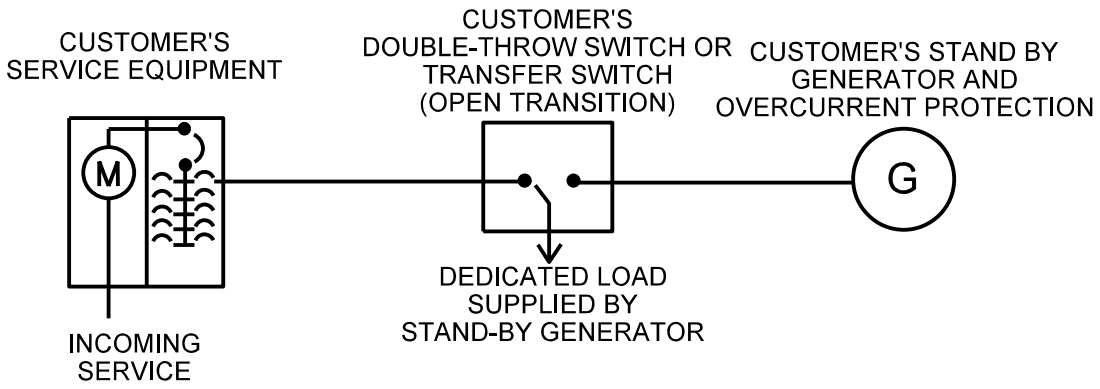
Stand-by generators, alternate supply circuits, or main-tie-main multiple services must not be interconnected in parallel with the SRP electric system due to the risk of hazardous back feed

NOTES

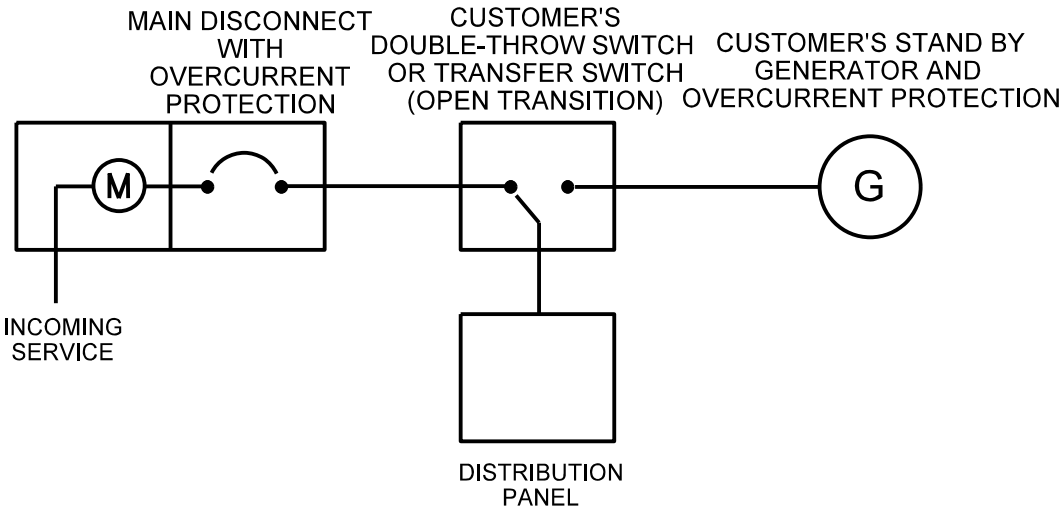
1. To avoid interconnecting the two systems, an open transition (break-before-make) transfer switching scheme is required. The following are approved methods.
   A. Installation of a UL 98 listed double throw safety switch.
   B. Installation of a UL 1008 listed transfer switch specifically designed for that purpose.
   C. Installation of a commercial grade trapped key interlock system. Details must be submitted to SRP for review and approval.
2. For vehicle to everything (V2X) applications, see SRP's Distributed Generation Interconnection Handbook (DGIH) Section 2 - 1.8 Vehicle to Everything (V2X) for the required protection equipment. This includes vehicle to home (V2H) use cases. This handbook is available at srpnet.com
3. Signage shall be permanently affixed to the exterior of the service entrance equipment indicating the location of the on-site power source(s) and the location of the transfer device(s).
   EXAMPLE: See Section 11 - Customer Supplied Materials: On-site Power Source(s) and Transfer Devices(s) Location Sign
4. Customer is responsible to secure and connect all stand-by generation.
5. Installations shall be in accordance with the AHJ. In addition, SRP reserves the right to inspect and approve all installations.
6. For Customer-Owned generation interconnected in parallel with SRP's grid, compliance with SRP's DGIH and a signed interconnection Agreement is required.
7. For all-in-one supply side tap, see Section 9 - Meter Sockets, Equipment Responsibility

EXAMPLE OF NON-PARALLEL CONNECTIONS

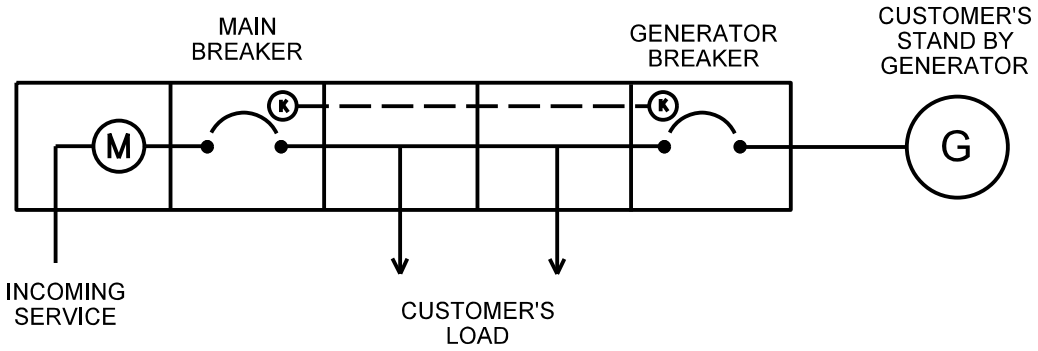
CONNECTION OF STAND-BY GENERATOR SUPPLYING SINGLE OR PARTIAL LOAD



CONNECTION OF STAND-BY GENERATOR SUPPLYING CUSTOMER'S ENTIRE LOAD



CONNECTION OF STAND-BY GENERATOR THROUGH A TRAPPED KEY INTERLOCK SYSTEM



TRAPPED KEY INTERLOCK SYSTEM (MAIN-TIE-MAIN) OF TWO SERVICES

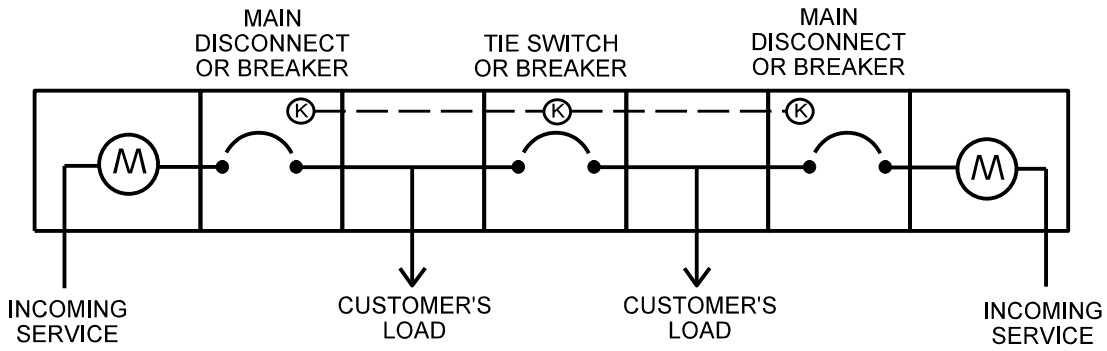


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TABLE 1 – 1Ø RESIDENTIAL (NON-COMMERCIAL) SINGLE OR DOUBLE METER SOCKET SES

SES (A)	Overhead or Underground Service 1Ø 120/240V Transformer		
	Number of Meter Sockets	Minimum SES Bracing (A)	SRP Supplied Fault Current (A)
100	1 or 2	10,000	9,554
125			
150			
200	1 or 2	22,000	21,188
225	1		
400 (320 Class)			

NOTES

1. For the above SES, SRP will size transformer and design secondary/service conductor length to limit the SRP supplied fault current to 9,554A or 21,188A based upon SES size.
2. Refer to Table 2 for residential SES not listed above.

TABLE 2 – 120/240V 1Ø AND 3Ø

SES (A)	Underground Service 1Ø 120/240 V		Overhead Service 1Ø 120/240 V		Underground Service 3Ø 120/240 V (Y-Δ)		Overhead Service 3Ø 120/240 V (Y-Δ)	
	Minimum SES Bracing (A)	SRP Supplied Fault Current (A)	Minimum SES Bracing (A)	SRP Supplied Fault Current (A)	Minimum SES Bracing (A)	SRP Supplied Fault Current (A)	Minimum SES Bracing (A)	SRP Supplied Fault Current (A)
100	10,000 (Note 1)	5,832	10,000 (Note 1)	5,796	10,000	7,431	10,000	7,374
125	22,000 (Note1)	10,871	10,000 (Note 1)	7,830	22,000	12,334	10,000	9,133
150	22,000 (Note1)	11,275	10,000 (Note 1)	7,830	22,000	12,856	10,000	9,133
200	22,000 (Note 1)	12,102	10,000 (Note 1)	9,495	22,000	19,531	22,000	11,936
400	25,000 (Note1)	22,635	22,000 (Note 1)	21,733	35,000	29,355	35,000	28,048
500	35,000	28,437	35,000	26,123	N/A	N/A	N/A	N/A
600	35,000	29,842	35,000	26,123	42,000	39,912	35,000	34,262
800	35,000	30,467	35,000	29,842	N/A	N/A	50,000	48,564
1000	N/A	N/A	N/A	N/A	N/A	N/A	65,000	50,010
1200	N/A	N/A	N/A	N/A	N/A	N/A	65,000	50,010

NOTES

1. See Table 1 for residential (non-commercial) single- or double-meter socket SES 400A (320 class) or less.
2. Fault current values are calculated at the Customer's service equipment based upon the following:
   A. Three-phase system short-circuit capacity of 216,216 kVA.
   B. Single transformer serving a single SES.
   C. Transformer and service conductors sized to serve 100% of the SES.
   D. Minimum transformer impedance.
   E. 25' of service conductor.

   EXCEPTION: Overhead laterals served by copper conductors with three or more conductors per phase are based upon 12' of service conductor.
3. SRP designs may be different than Note 1. Consult with SRP Design before ordering or designing the service entrance equipment.
4. Email DDE@srpnet.com to request fault current data for arc flash studies.

TABLE 3 – 120/208V AND 277/480V 3Ø

SES (A)	Underground Service 3Ø 120/208 V		Overhead Service 3Ø 120/208 V		Underground Service 3Ø 277/480 V		Overhead Service 3Ø 277/480 V	
	Minimum SES Bracing (A)	SRP Supplied Fault Current (A)	Minimum SES Bracing (A)	SRP Supplied Fault Current (A)	Minimum SES Bracing (A)	SRP Supplied Fault Current (A)	Minimum SES Bracing (A)	SRP Supplied Fault Current (A)
100	10,000	9,743	10,000	6,734	10,000	8,459	22,000	10,362
125	22,000	11,067	10,000	6,734	10,000	8,858	22,000	10,362
150	22,000	11,486	10,000	9,645	10,000	8,971	22,000	10,362
200	22,000	12,344	10,000	9,645	22,000	13,229	22,000	14,157
400	22,000	19,179	25,000	22,540	35,000	27,092	35,000	26,521
600	35,000	29,727	35,000	30,159	35,000	28,458	35,000	26,521
800	42,000	38,802	50,000	43,885	35,000	28,693	N/A	N/A
1000	65,000	60,595	65,000	57,118	35,000	28,917	N/A	N/A
1200	65,000	61,998	65,000	62,447	22,000	20,526	N/A	N/A
1600	65,000	63,685	100,000	87,178	35,000	29,593	N/A	N/A
2000	85,000	65,011	N/A	N/A	42,000	38,049	N/A	N/A
2500	50,000	46,176	N/A	N/A	50,000	45,905	N/A	N/A
3000	85,000	67,404	N/A	N/A	50,000	46,072	N/A	N/A
3600*	N/A	N/A	N/A	N/A	65,000	53,431	N/A	N/A
4000*	85,000	68,065	N/A	N/A	N/A	N/A	N/A	N/A

* Reference to only existing SES larger than 3,000 A.

NOTE

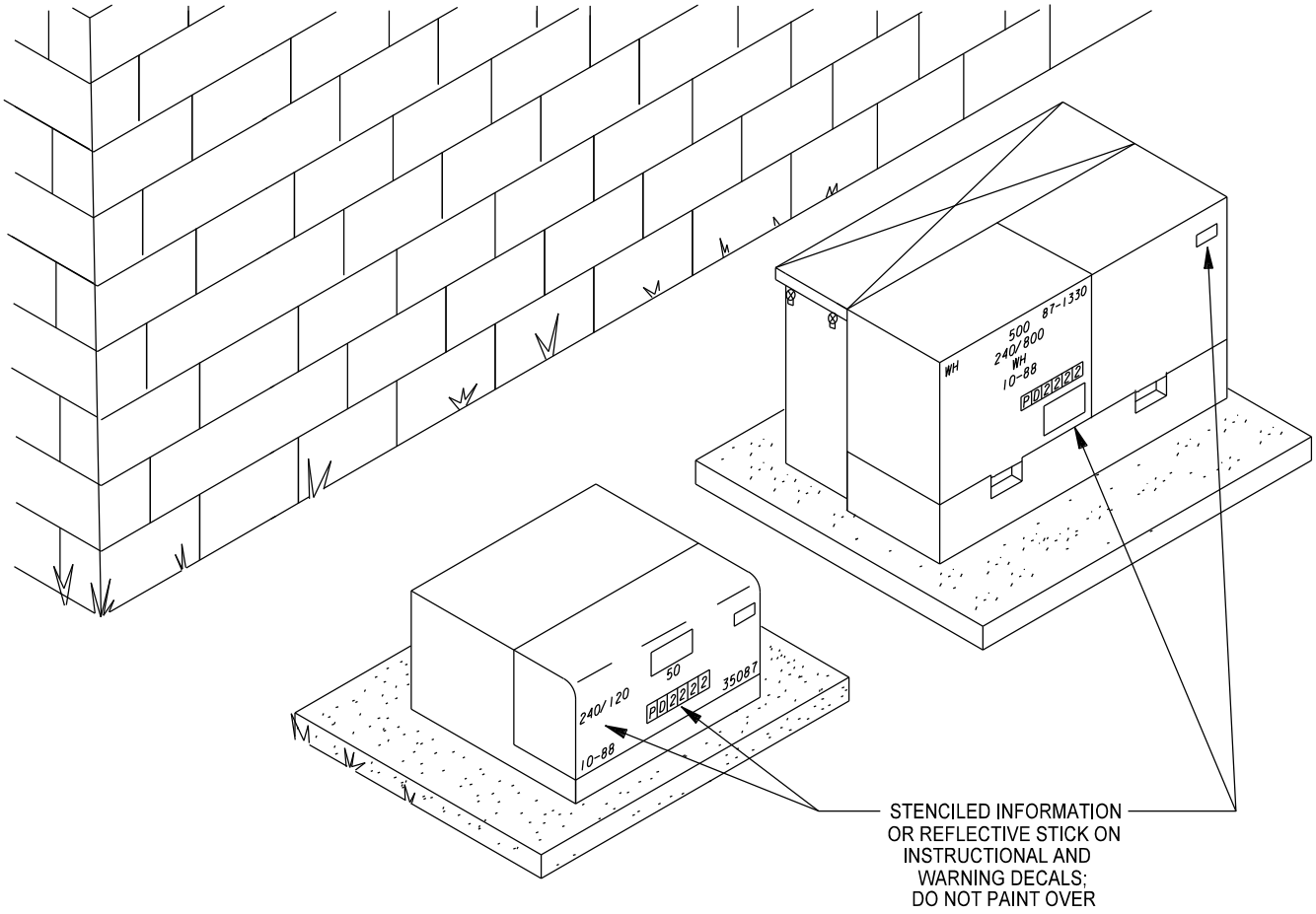
1. See page 1-36 for additional notes.

TABLE 4 – 2400/4160V 3Ø

SES (A)	Underground Service 3Ø 2400/4160 V	
	Minimum SES Bracing (A)	SRP Supplied Fault Current (A)
100	10,000	1,836
200	10,000	3,460
400	10,000	5,793

NOTE

1. See page 1-36 for additional notes.

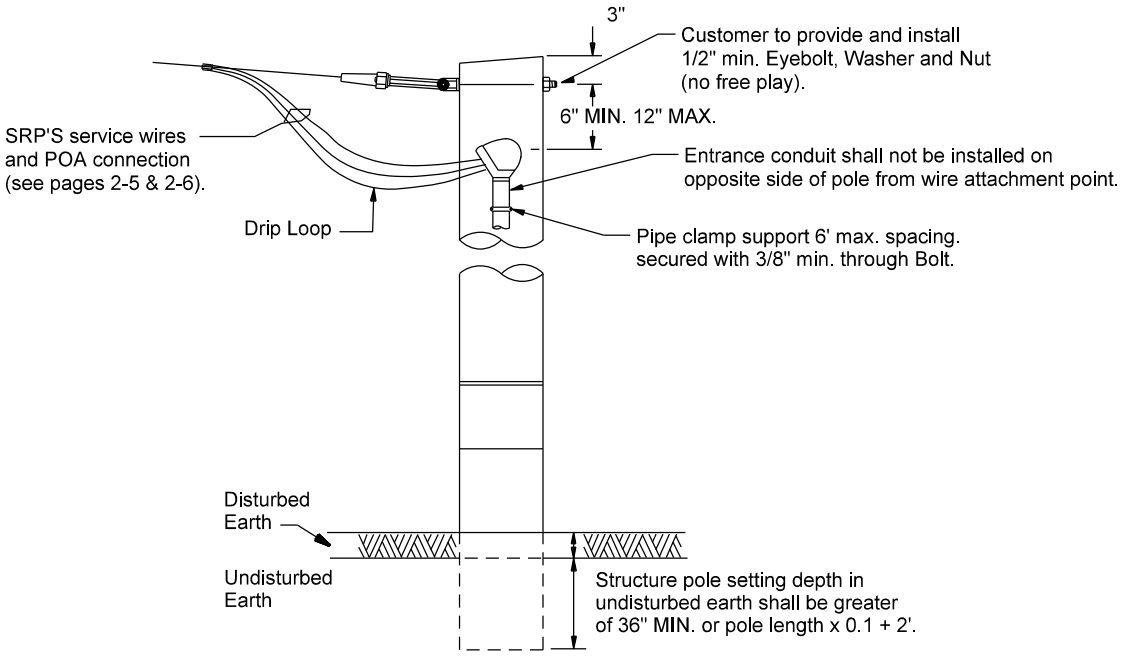


NOTES

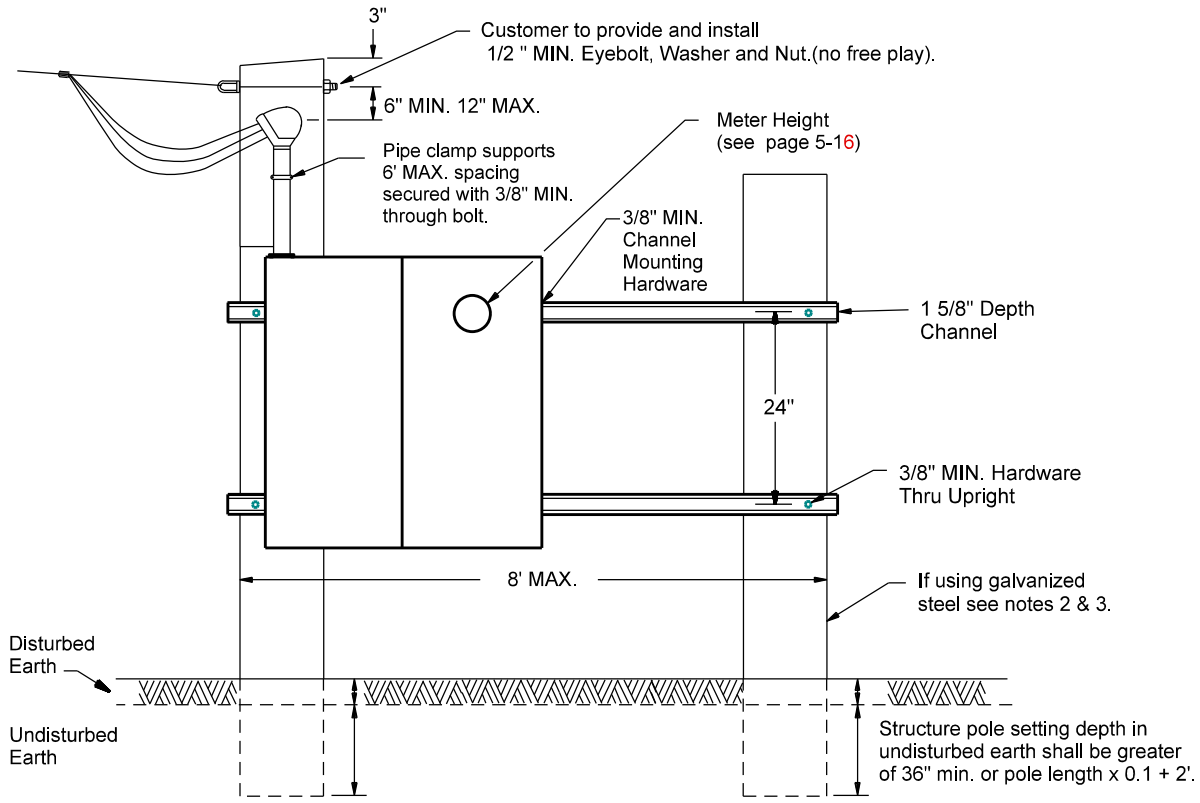
1. At the Customer's request and expense, the Customer may paint pad-mounted equipment such as transformers, switching and fusing cubicles and capacitor enclosures. The Customer shall not paint substation fences or other SRP equipment. The Customer must notify SRP prior to painting SRP equipment by contacting Customer Services. Customer must contact HOA or municipality for color schemes and approval.
2. Do not paint over identifying lettering, numbering, warning signs, handles, locks, pads or sight glass windows.
3. The Customer must maintain the paint condition of equipment they have painted. SRP retains the right to charge Customer full cost of restoring its equipment to acceptable condition (repainting to original SRP color) if:
   A. The Customer fails to comply with these requirements.
   B. The Customer does not maintain their painting of SRP equipment.
4. Color choices used by the Customer shall be complimentary to the surroundings of the equipment. SRP recommends using a water base paint which will not damage the original painted surface.
5. If, for any reason SRP has to replace a piece of pad-mounted equipment that has been painted by a Customer, the new equipment will be standard SRP color. The Customer may paint the replaced equipment according to the instructions on this page.
6. Preparation of SRP equipment is limited to cleaning the surface using a detergent and water. No sanding, power washing or chemical solvents are to be used on the painted surface of the equipment. Concrete pad, adjacent equipment, walls or other objects shall be masked or covered prior to painting.
7. Films, laminates or materials other than described in Note 4 shall not be used.

SECTION 2
SERVICE ENTRANCE SECTION – OVERHEAD

EQUIPMENT MOUNTING STRUCTURE (ONE - UPRIGHT)



EQUIPMENT MOUNTING STRUCTURE (TWO - UPRIGHTS)



Electric Service Specifications SRP® *PROPRIETARY MATERIAL*		PAGE 1 OF 2
	SERVICE ENTRANCE SECTION - OVERHEAD EQUIPMENT MOUNTING STRUCTURE CUSTOMER	ISSUE DATE: 04/15/86 REV. DATE: 08/09/12 APPROVAL:W.LARAMIE
	2-1	8509E6.DGN

EQUIPMENT MOUNTING STRUCTURE – CUSTOMER

I. Service Pole Location

A. Only authorized SRP personnel of the Distribution Design Department will determine the Customer's service structure location.

B. Meter panels and attachments shall be mounted on Customer-owned poles.

C. The Customer's overhead POA shall not be placed closer than 10' horizontally from any SRP facility (poles, lines). There must be 36" minimum radial separation from the side of electrical equipment to the nearest gas facility vent.

II. Permanent Installation

A. The Customer must provide, install and maintain a solid, one-piece construction mounting structure. SRP prefers that service cable be attached to commercially-treated sawn lumber (IBC Section 2303.1.1).

B. If mounting structure is commercially-treated sawn lumber, it must be set solidly in place and not be subject to eventual loosening. The sawn lumber must be at least 8" x 8" and set in concrete, except that commercially-treated wood poles of at least 8" in diameter are acceptable and may be set directly in undisturbed earth with compacted backfill.

C. The structure not attached to the service cable may be schedule 40 galvanized steel, minimum 3" in diameter, 10' length maximum. The post shall be set in concrete 36" deep, taped completely below ground to 6" above final grade.

D. All-Steel Structures: The structure to which the service cable is attached shall be minimum 4" schedule 40, set in concrete and wrapped with a UL-approved PVC tape overlapped a minimum of half the tape width, to at least 6" above finished grade.

III. Temporary Installation

A. For temporary service, a 6" x 6" treated timber in compacted earth can be used.

B. Schedule 40 steel pipe, 3" diameter or larger, may be used instead of wood timber. The pipe must be set in concrete and wrapped with a UL-approved PVC tape overlapped a minimum of half the tape width, to at least 6" above finished grade.

NOTE: The excavation for the structure shall be no less than 4" more than the outside dimension of the pole/post.

IV. Pole Height Requirements

A. SRP's Distribution Design Department shall advise pole height requirements based on conductor, span length and crossing area. See pages 5-5 and 5-6.

V. Grounding Requirements

A. Grounding shall comply with NEC or AHJ. See pages 8-1 and 8-2.

OVERHEAD INSTALLATION

I. General Requirements

A. The Customer installs, owns and maintains the service entrance equipment in accordance with SRP's applicable rates and extension rules and requirements. There are no exceptions. Distribution panel or switch box must be approved by a recognized testing laboratory and comply with all local, city and/or NEC.

B. All-in-one equipment shall be utilized for all new installations. For existing meter socket change-out, refer to Section 9 - Overhead / Underground Service, Die-Cast and Square-Base Sockets.

C. Overhead service entrance conductor requirements exceeding 800 amps, or exceeding two 750 MCM conductors per phase, shall be bus bar (bus duct) construction.

D. SRP's service drop will terminate at the first point of contact on the building or structure supporting the service entrance equipment. The point of service drop attachment on a building shall be located on the exterior wall facing the direction determined by Distribution Design.

E. The Customer's point of attachment must be strong enough to support the service drop (typically 600 lbs. tension) and high enough to provide Code clearance for the service drop and drip loop above the underlying areas, including the roof. Service cable 350 MCM and above, customer shall provide and install a sagger bracket. See Section 11 - Overhead Sagger Bracket Installation

F. Where the service conduit riser is used as a mast for supporting the service drop, it shall be continuous rigid steel or intermediate conduit (no EMT) and without any couplings or fittings above the brace that would be subject to strain by the service drop. If a coupling is necessary, it shall be threaded and located below a brace.

G. For connection to SRP's service drop wires, the Customer's service entrance conductors shall extend at least 18" beyond the service head for a single service riser and 30" for multiple service risers. A maximum of three service riser conduits, spaced no more than 12" apart, may be served from one overhead service drop. If the service riser conductors are to be paralleled, they shall be paralleled in separate conduits with one conductor of each phase and neutral in each conduit (phases and neutral conductor in each pipe).

H. No foreign attachments shall be permitted on a service riser conduit.

I. The neutral or grounded conductor shall be identified at both ends with white color tape. On three-phase four-wire, 120/240-volt delta installation, the power leg shall be permanently identified at the ends; "blue with orange tracer" colored tape (see Section 9 – Metering & SES). The Customer's wires shall be one continuous run to the meter socket terminals.

J. SES equipment may be constructed for overhead, underground, or the combination. When constructed as combined, if the top connection bus extends below the meter socket, a yellow caution label (2" X 3" minimum) shall be installed below the ends of this bus reading "CAUTION: BUS ENERGIZED AT ALL TIMES". The service riser conductors shall be connected to the top lugs.

II. Residential and Temporary

This chart is provided for reference only. Verify that the AHJ accepts these sizes.

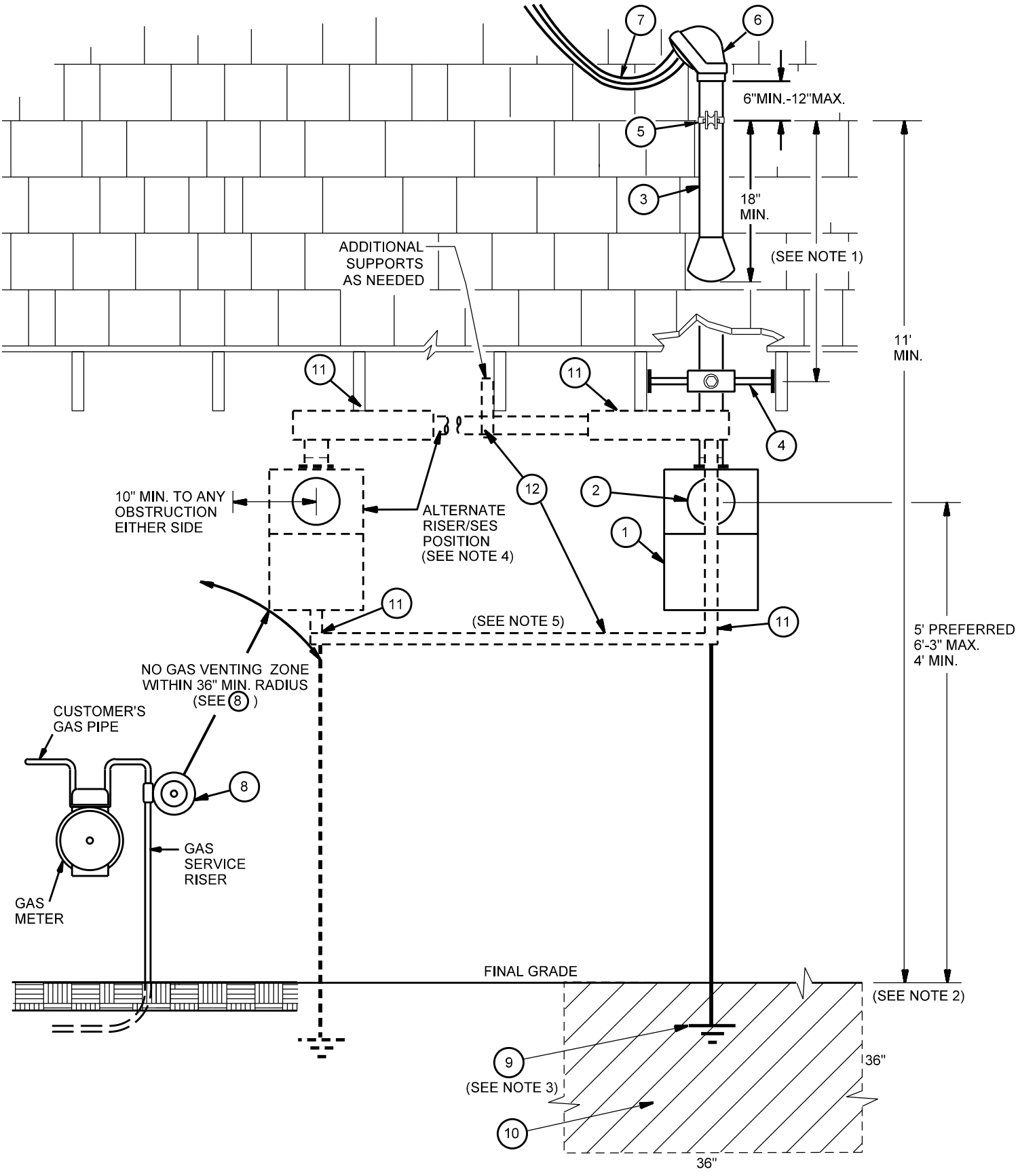
RECOMMENDED CONDUIT AND COPPER WIRE SIZE FOR RISERS ON OVERHEAD SINGLE-PHASE SERVICES				
Nominal Service Ampacity	**Max. Load (kW)**	**Phase Wire Size**	**Riser Conduit Size**	**Number of Wires**
60	12	#6	1 1/2" min.	3
100	20	#2	1 1/2" min.	3
150	30	#1	2" min.	3
200/225	40	3/0	2 1/2" min.	3
320	65	350MCM	3”	3
400	81	500MCM	4”	3
		2 – 3/0	2 – 2 1/2"	6
600	122	2 – 350MCM	2 – 3"	6

NEC Table 310-16, 114 -122 °F ambient: Recommended wire size is based on 80% service ampacity.

A. All wire sizes apply to copper conductors with insulation rated 90 °C in dry and damp or wet locations.

B. The neutral size shall be the same as the phase wire. For ‘Residential Only’, it may be one size less.

C. If insulated wire is used for ground or bonding, the insulation shall be green.



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	SERVICE ENTRANCE SECTION-OVERHEAD OVERHEAD INSTALLATION	ISSUE DATE: 04/15/89 REV. DATE: 03/12/13 APPROVAL: W/LARAMIE
	2-5	8509E15.DGN

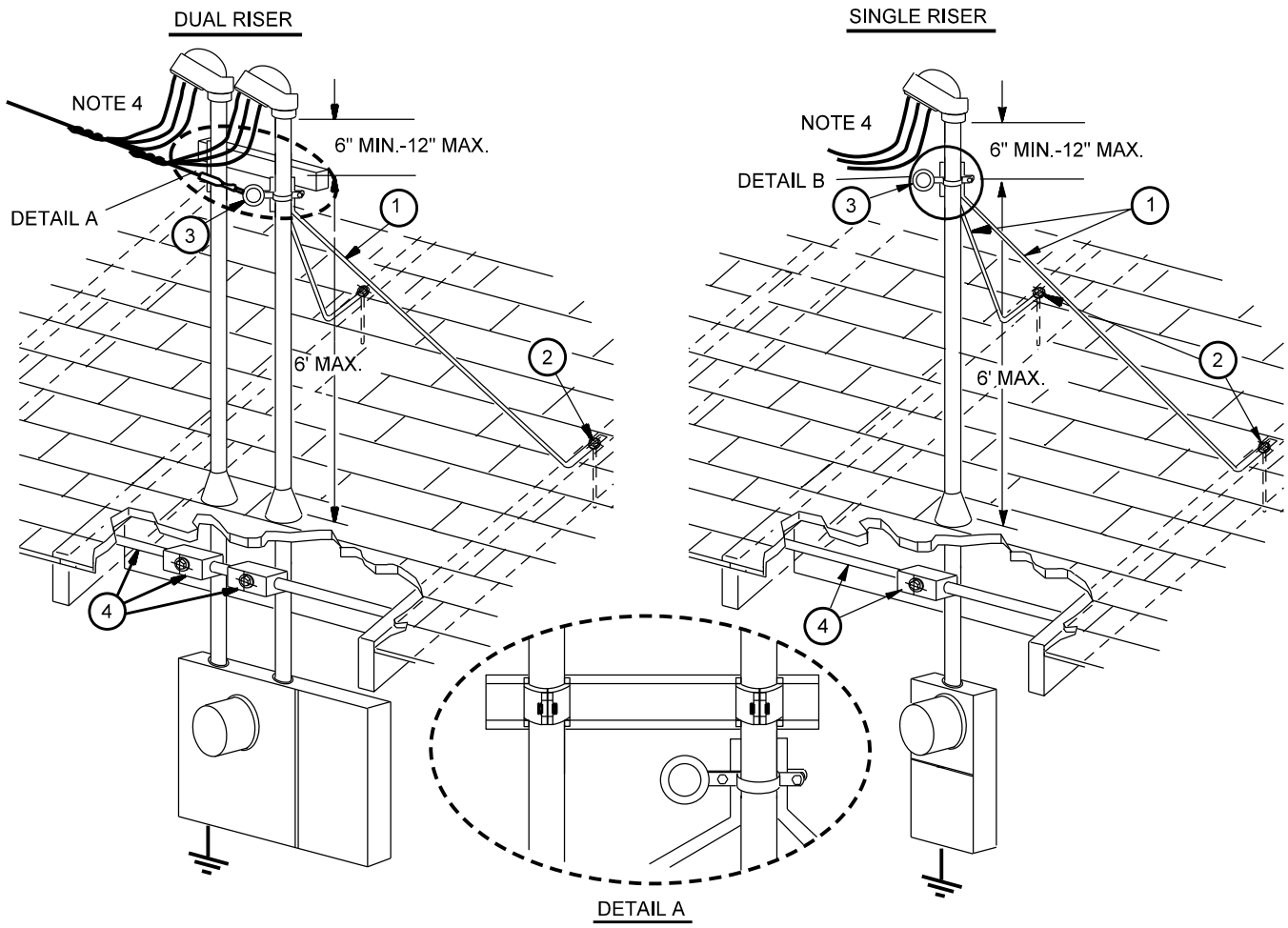
Overhead Service Entrance Installation

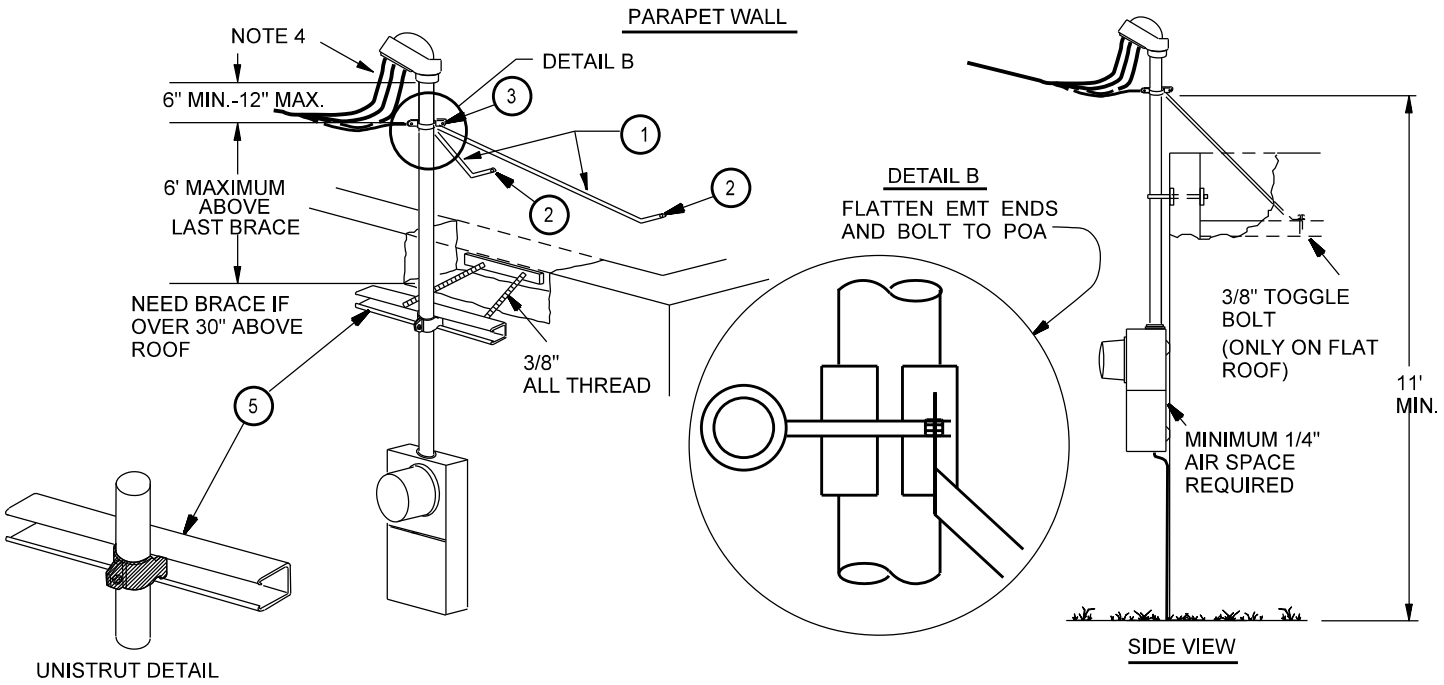
LEGEND

1. All-in-one meter panel assembly. A ¼" air space is required back of panel to wall.
2. SRP Meter
3. Steel riser
4. Manufactured riser brace (always required), eave support to be rigid conduit. Sheetrock screws, nails or similar fastening devices are not permitted. Full-thread #10 screws, 1" long or longer are acceptable (see page 2-9).
5. Clamp, point of attachment.
6. Weatherhead.
7. Customer-installed wire, minimum 18", and neutral to be marked with white vinyl tape.
8. Gas company regulator or vent – no venting allowed within 36" minimum radius to SES (#1), gutters or elbows (#11), and conduit (#12).
9. Service entrance grounding.
10. Permanent, level, clear working area – hashed area projects vertically up 6'-6" or the height of the SES, whichever is higher.
11. Sealable gutter or rigid or intermediate elbows.
12. Rigid or Intermediate metallic conduit.

NOTES

1. Additional riser bracing is required if the distance from the point of the last brace to the point of attachment is greater than 26" for 1 ½" pipe or 36" for 2" or larger pipe. See page 2-7 and 2-8 for bracing requirements.
2. See page 5-5 thru 5-6, 5-16 and 5-17 for clearance and height requirements.
3. See page 8-1 and 8-2 for bonding and grounding requirements.
4. Alternate riser position requires prior approval from Distribution Design. The "no gas venting zone" around this location applies.
5. An underground all-in-one meter panel assembly may be used at the alternate location, provided the extended riser is completely exposed, visible, at least 6" above final grade and securely attached to the exterior wall, in addition to complying with all of the above requirements. POD is at the weatherhead connections.





Electric Service Specifications SRP® PROPRIETARY MATERIAL		PAGE 1 OF 3
	SERVICE ENTRANCE SECTION-OVERHEAD OVERHEAD INSTALLATION SINGLE AND DUAL RISER	ISSUE DATE: 04/15/89 REV. DATE: 10/31/14 APPROVAL: S.DURAN
	2-7	8509E328.DGN

OVERHEAD INSTALLATION
SINGLE AND DUAL RISER

Overhead Service Entrance – Additional Riser Bracing

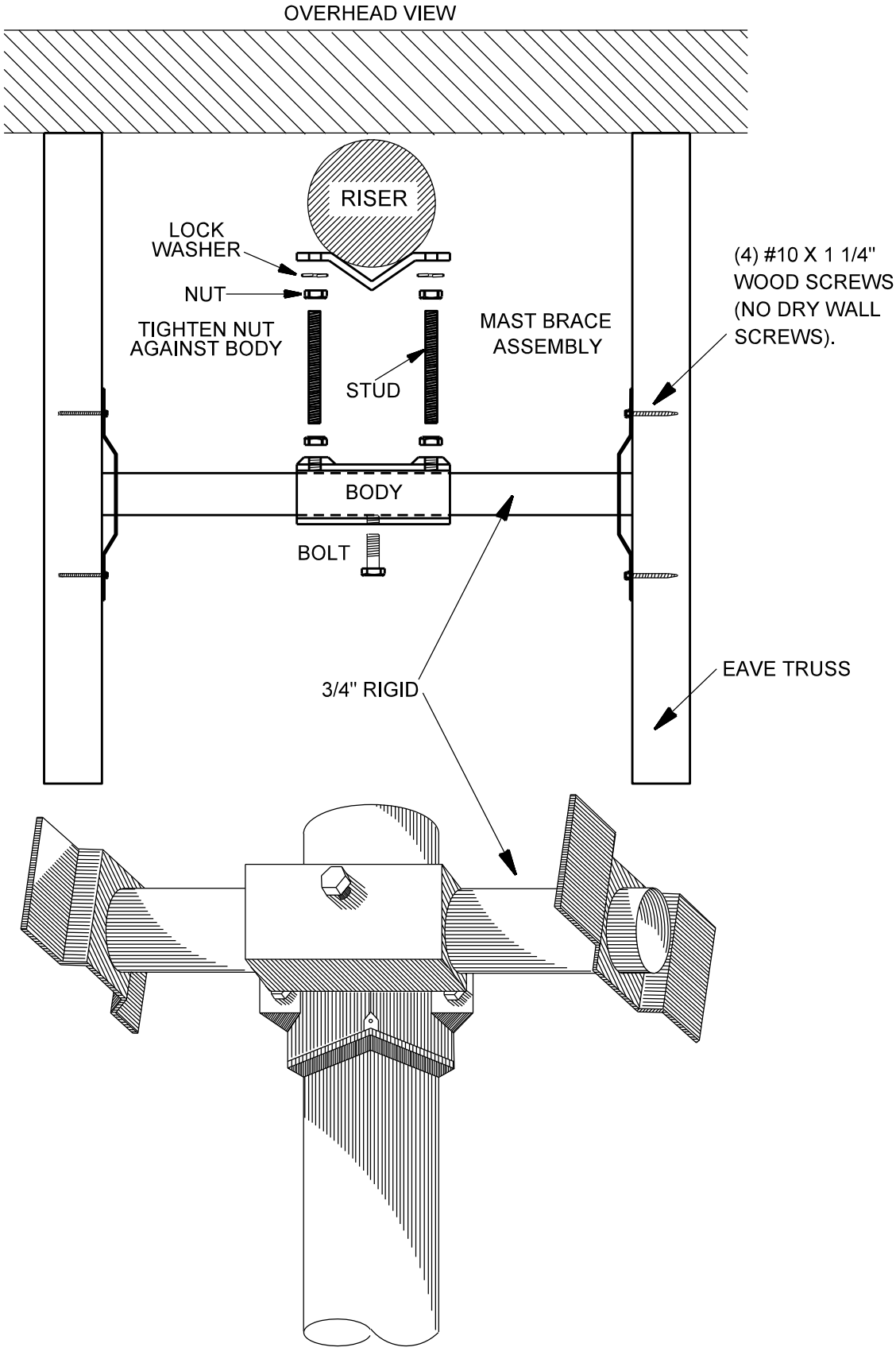
LEGEND

1. Mast braces, see Note 2.
2. Mast brace bolts through rafters.
3. Point of attachment clamp (two braces per attachment clamp).
4. Manufactured riser brace (always required). Eave support to be ¾" rigid steel pipe (see Note 5 for parapet wall installation). Sheetrock screws, nails or similar fastening devices are not permitted. Full-thread #10 screws, 1" long or longer, are acceptable (see page 2-9).
5. Service Mast Anchor (always required). 1 $^{5}/_{8}$" heavy duty metal channel with 1 $^{5}/_{8}$" metal backing plate and rigid pipe clamps (see Note 5 for parapet wall installation), with $^{3}/_{8}$" bolts or all-thread.

NOTES

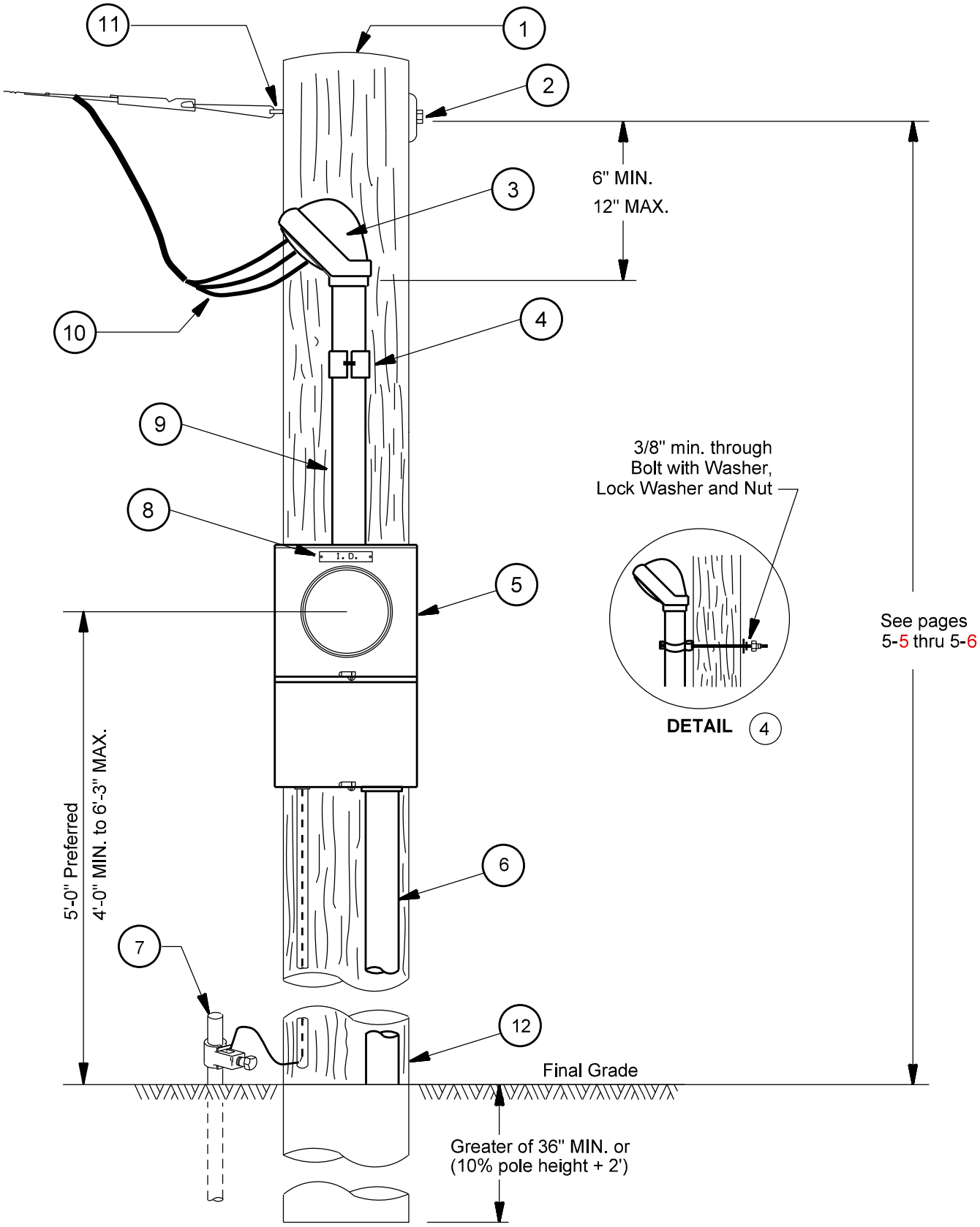
1. 8' service masts are acceptable if approved by the Designer in writing and if there is access for a bucket truck.
2. Additional bracing consists of two galvanized steel members installed at approximately a 90° spread and opposite the load from the service drop. Minimum brace size shall be ¾" rigid galvanized steel pipe or 1 ¼" x 1 ¼" x $^{1}/_{8}$" galvanized steel angle.
   EXCEPTION (residential only): braces may be ¾" EMT.
3. Mast braces shall be solidly fastened to the roof support structure (beams or rafters) using $^{3}/_{8}$" minimum galvanized bolts, nuts, flat washers and lock washers and shall be bolted to the point of attachment. Lag screws, nails or similar fastening devices are NOT permitted.
   A. Commercially manufactured anchor plates may be used instead, provided they are capable of withstanding the forces described on page 2-3 and are installed per manufacturer's instructions.
   B. Permanent sealing of the roof penetration shall not be done until SRP has completed the new service connection. The person installing the service mast braces is responsible for determining the load-bearing capability of the roof and for sealing any roof penetrations. Any SRP inspection is solely for the purpose of insuring the structural integrity of the service mast bracing.
4. When the service mast is 6' above the roof, the Customer's wire shall extend a minimum of 30" from the weatherhead.
5. Parapet wall installation only: SRP inspector must approve alternate anchor method when installation on parapet walls does not allow this bracing.
6. See pages 5-4 thru 5-5 and 5-9 thru 5-17 for clearance, height and access requirements.

All below-roof requirements are shown on pages 2-5 and 2-6.



Electric Service Specifications SRP® PROPRIETARY MATERIAL		PAGE 3 OF 3
	SERVICE ENTRANCE SECTION-OVERHEAD OVERHEAD INSTALLATION SINGLE AND DUAL RISER	ISSUE DATE: 05/28/08 REV. DATE: 11/13/12 APPROVAL: W.LARAMIE
	2-9	8509E330.DGN

OVERHEAD SERVICE POLE



Electric Service Specifications SRP® PROPRIETARY MATERIAL		PAGE 1 OF 2
	SERVICE ENTRANCE SECTION - OVERHEAD OVERHEAD SERVICE POLE	ISSUE DATE: 03/15/01 REV. DATE: 02/22/13 APPROVAL:W.LARAMIE
	2-10	8509E338.DGN

OVERHEAD SERVICE POLE

LEGEND

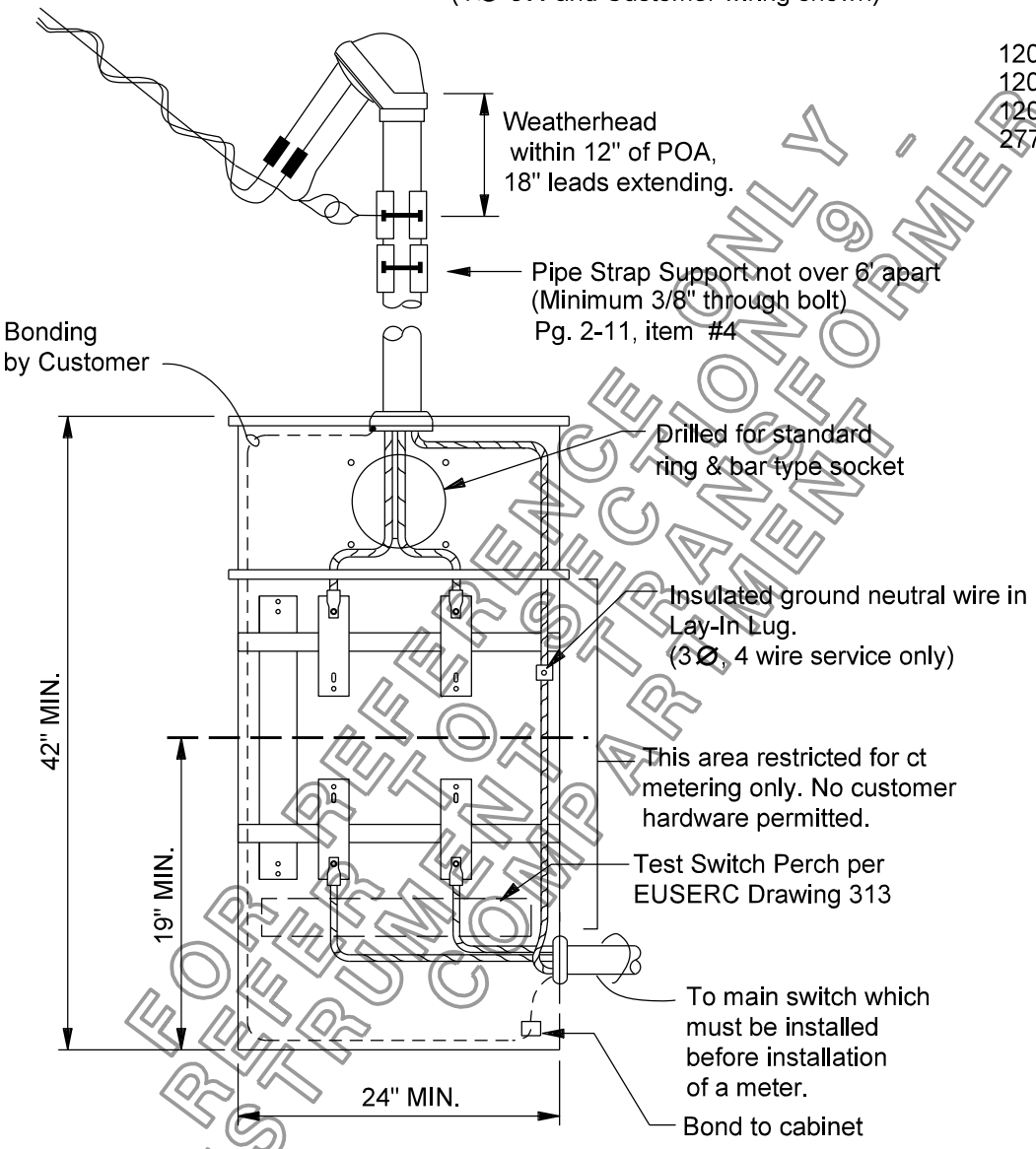
1. Mounting structure, Customer-owned and furnished (see pages 2-1 and 2-2 for dimensional information).
2. Eye bolt ½" minimum. Eye bolt, flat washer, structure, flat washer, lock washer and nut; installed in this sequence through structure.
3. Weatherhead.
4. Pipe hanger clamp, maximum 6' spacing ($^3/_8$" minimum through bolt w/washer, lock washer, nut), or unistrut and clamps.
5. Meter panel assembly securely fastened to pole with $^3/_8$" minimum through bolt with washer, lock washer, and nut. **Lag screws or nails are not acceptable.**
6. Underground conduit to Customer load.
7. Grounding assembly (ground rod, clamp, ground wire to meter panel and molding).
8. Identification tag (metal, pop riveted to meter panel, see page 9-10). Address must be permanently attached to SES pole and pedestal application.
9. Where the service conduit riser is used as a mast for supporting the service drop, it shall be rigid steel or intermediate metal conduit (no EMT) and contain no coupling or fittings that would be subject to strain by the service drop (see page 2-5).
10. Customer service conductor 18" minimum lead from weatherhead (see page 2-5).
11. SRP service point of attachment height is 12' minimum. Additional attachment height may be necessary to provide required clearance. See pages 5-5 thru 5-6 for clearance requirements.
12. Setting depth – see page 2-1.

NOTE

This equipment must be a minimum of 36" from any gas facility vent and a minimum of 10' from any overhead facility.

(1Ø 3W and Customer wiring shown)

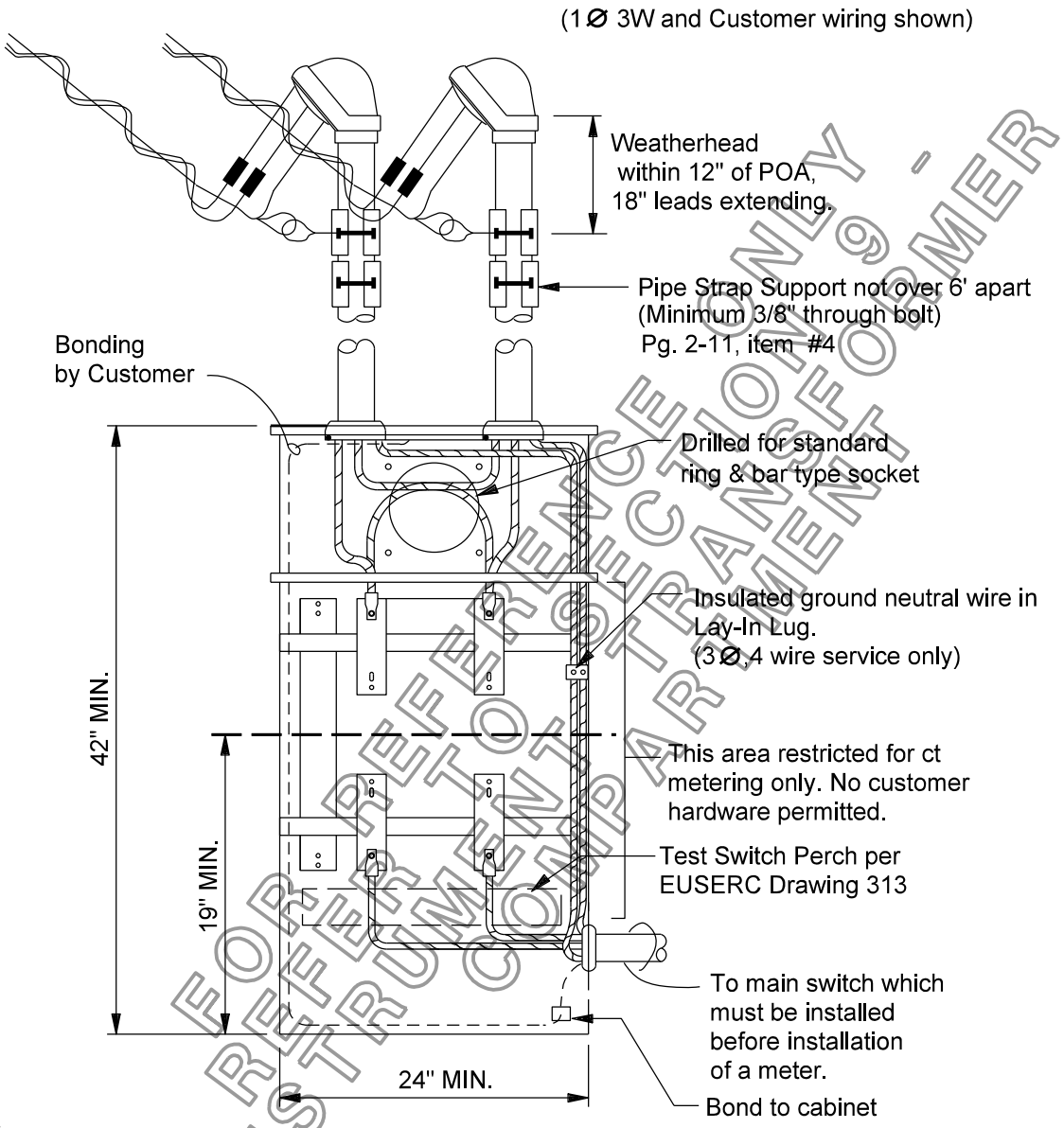
Application:
120/240 V. 1Ø 3 W
120/240 V. 3Ø 4 W
120/208 V. 3Ø 4 W
277/480 V. 3Ø 4 W



NOTES

1. Current transformers and test switch installed by SRP.
2. Current transformer and test switch mounting base drawings per EUSERC drawing 313.
3. Wire and conduit sized per AHJ requirements (See table on page 2-4 for reference only).
4. Contact SRP Design for service conductor point of attachment (POA) height. POA shall have a minimum rating of 600 lbs. tension.
5. Overhead sagger bracket, if required, provided and installed by Customer. See Contractor-Supplied Material for approved brackets.
6. Cabinet shall have a sealable cover with two lifting handles and a plate reading "DO NOT BREAK SEALS, NO FUSES INSIDE."
7. No connection shall be made in the instrument transformer box to supply any other meter and not more than one load circuit shall leave the transformer box.
8. Submit electronic copies of the plans (PDF format preferred) for all proposed SES to shopdraw@srpnet.com for approval prior to construction of the service section. Drawings must be labeled with the Customer's name, job address, SRP job number or account number, and contractor's name and contact number.

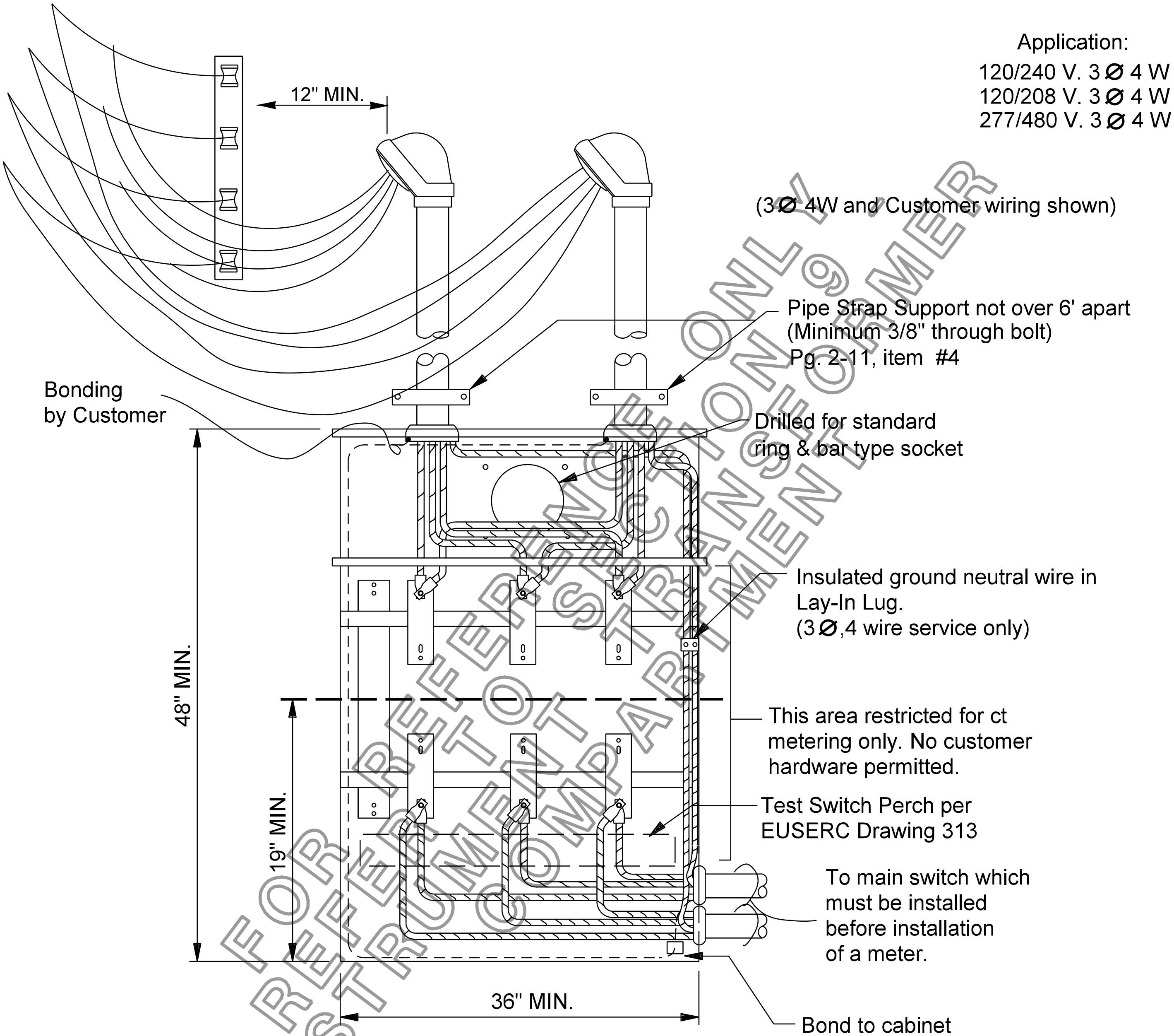
Electric Service Specifications SRP® PROPRIETARY MATERIAL	REV: SRP NO LONGER ACCEPTS EUSERC 313 AND 314	
	SERVICE ENTRANCE SECTION - OVERHEAD METER BOX INSTALLATION WITH CURRENT TRANSFORMERS 400 AMPS MAXIMUM	ISSUE DATE: 04/15/86 REV. DATE: 02/19/25 APPROVAL: J. ROBBINS
	2-12	8509E393.DGN



NOTES

1. Current transformers and test switch installed by SRP.
2. Current transformer and test switch mounting base drawings per EUSERC drawing 313.
3. Wire and conduit sized per AHJ requirements (See table on page 2-4 for reference only).
4. Contact SRP Design for service conductor point of attachment (POA) height. POA shall have a minimum rating of 600 lbs. tension.
5. Overhead sagger bracket, if required, provided and installed by Customer. See Contractor-Supplied Material for approved brackets.
6. Cabinet shall have a sealable cover with two lifting handles and a plate reading "DO NOT BREAK SEALS, NO FUSES INSIDE."
7. No connection shall be made in the instrument transformer box to supply any other meter and not more than one load circuit shall leave the transformer box.
8. Submit electronic copies of the plans (PDF format preferred) for all proposed SES to shopdraw@srpnet.com for approval prior to construction of the service section. Drawings must be labeled with the Customer's name, job address, SRP job number or account number, and contractor's name and contact number.

Electric Service Specifications SRP® PROPRIETARY MATERIAL	REV: SRP NO LONGER ACCEPTS EUSERC 313 AND 314	
	SERVICE ENTRANCE SECTION - OVERHEAD METER BOX INSTALLATION WITH CURRENT TRANSFORMERS 600 - 800 AMPS SINGLE PHASE	ISSUE DATE: 03/10/20 REV. DATE: 02/19/25 APPROVAL: J. ROBBINS
	2-13	8509E394.DGN



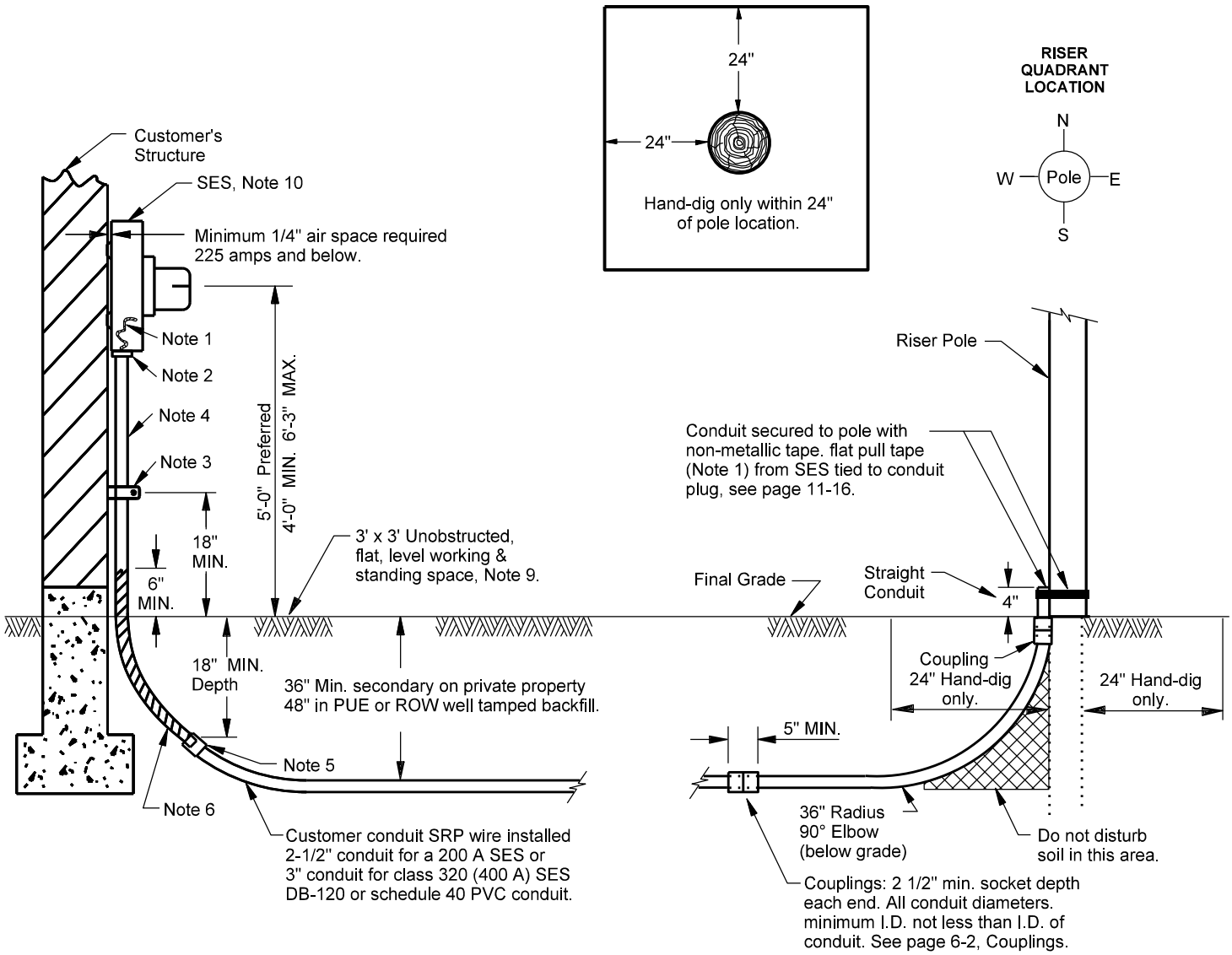
NOTES

1. Current transformers and test switch installed by SRP.
2. Current transformer and test switch mounting base drawings per EUSERC drawing 313.
3. Wire and conduit sized per AHJ requirements (See table on page 2-4 for reference only).
4. Contact SRP Design for service conductor point of attachment (POA) height. POA shall have a minimum rating of 600 lbs. tension.
5. Overhead sagger bracket, if required, provided and installed by Customer. See Contractor-Supplied Material for approved brackets.
6. Cabinet shall have a sealable cover with two lifting handles and a plate reading "DO NOT BREAK SEALS, NO FUSES INSIDE."
7. No connection shall be made in the instrument transformer box to supply any other meter and not more than one load circuit shall leave the transformer box.
8. Submit electronic copies of the plans (PDF format preferred) for all proposed SES to shopdraw@srpnet.com for approval prior to construction of the service section. Drawings must be labeled with the Customer's name, job address, SRP job number or account number, and contractor's name and contact number.

Electric Service Specifications	REV: SRP NO LONGER ACCEPTS EUSERC 313 AND 314	
SRP®	SERVICE ENTRANCE SECTION - OVERHEAD METER BOX INSTALLATION WITH CURRENT TRANSFORMERS 800 AMPS MAXIMUM THREE PHASE	ISSUE DATE: 03/10/20 REV. DATE: 02/19/25 APPROVAL: J. ROBBINS
PROPRIETARY MATERIAL	2-14	8509E395.DGN

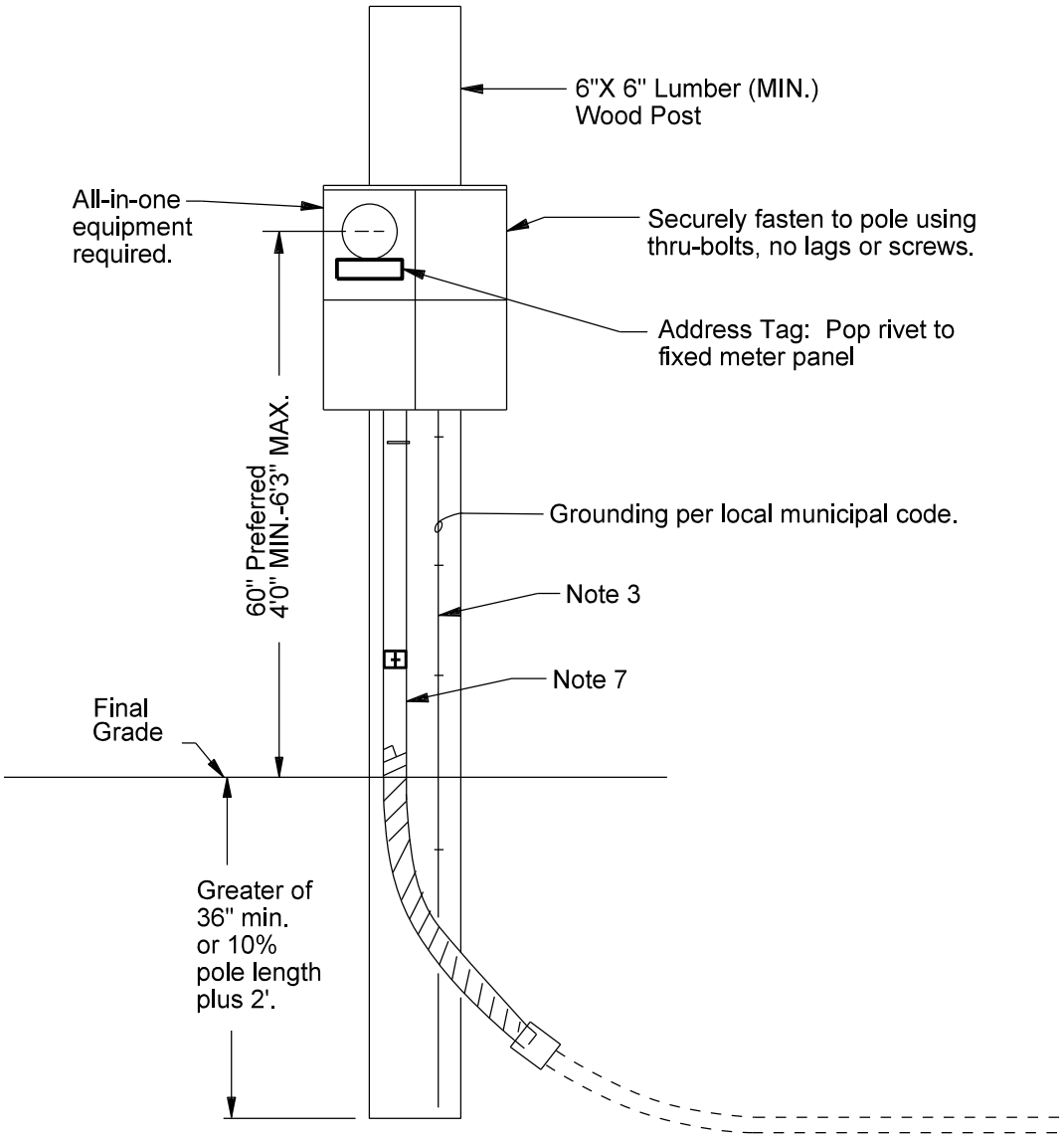
SECTION 3
SERVICE ENTRANCE SECTION – UNDERGROUND

SECTION 3
SERVICE ENTRANCE SECTION – UNDERGROUND



NOTES

1. Customer to install approved 2,500 pound, continuous (no tied pieces), non-conductive, pre-lubricated, flat pull tape. Pull tape shall be free moving and not glued to conduit. Approved suppliers are listed in Section 11 - Contractor-Supplied Material.
2. Service riser and nipples shall be bonded unless self-bonding hubs are used.
3. Riser to be plumb and fastened securely using threaded fasteners and clamps designed for the purpose. Back of clamp shall be flush mounted to wall or wall projection. Clamps fastened to wood post with 3/8" minimum through bolts or studs (frame type) and/or masonry (block type) walls with threaded fasteners, size 1/4" X 2" lag screws (sheet rock screws are not acceptable). Bracket not required if the riser is installed in stem wall for semi-flush mount SES.
4. Riser conduit diameter shall match Customer conduit, and be rigid steel, intermediate metal conduit, or approved fiberglass. Metal conduits installed underground shall be wrapped with a UL-approved PVC tape overlapped a minimum half the tape width to at least 6" above finished grade. Shall comply with NEC 230.50 "Protection Against Physical Damage".
5. The service conduit riser shall be continuous rigid steel or intermediate conduit (no EMT). If a coupling is necessary, it shall be a threaded coupling only; compression couplings shall not be used.
6. Sweeps and bends shall be 36" radius.
7. Riser transition coupling shall be threaded PVC for steel risers or PVC slip couplings for fiberglass risers.
8. No type of reducer is allowed except at the pull section of the meter panel. Refer to page 6-3, Reducer at Pull Section.
9. Refer to page 5-4, Joint Trench with Gas.
10. See page 9-1 for meter accessibility and location requirements. See page 5-16 for meter workspace requirements.



NOTES

1. Customer (or Customer's electrical contractor) shall install a temporary SES, as directed by the Distribution Design.
2. Maintain 36" radial clearance, as illustrated on page 5-16, from side of electrical equipment to nearest gas facility vent.
3. Greater depth may be required to stabilize pole. Pole must be stabilized.
4. Conduit installed in public utility easement and ROW. Conduit at 4' minimum cover.
5. Continuous, non-conductive, flat, 2,500 lb, pre-lubricated tape (free moving and not glued to conduit) shall be installed in conduit - string or rope is not acceptable.
6. SRP will provide, install and remove temporary service conductors. Temporary service must be removed from conduit prior to installation of permanent service.
7. All requirements on page 3-1, Service Riser Requirements, apply.
8. For meter post type installations, see page 3-9, Meter Posts.
9. For other types, contact SRP's Distribution Design department.

Construction power may be provided from a permanent SES at a single-family dwelling, one of the permanent separate SES's at a multiplex dwelling (if a multi-meter SES is used, see apartment complex requirements), and a separate SES house panel at an apartment complex.

An AHJ Clearance and successful SRP inspection of the SES is required. Not all municipalities allow this.

I. Requirements

A. SRP transformer(s) must be energized.

B. The following structural requirements shall be met:

1. The form to be used for the stem wall or slab must be installed on final grade at the location of the SES.
2. The SES uprights shall be installed adjacent to this form, so the resulting wall materials will be flush.
3. The uprights shall be installed in 12" diameter sonotubes, extending 24" below final grade and filled with 2500 psi minimum strength, or class C concrete per Mag section 725.
4. The uprights shall be tied into the house structure upon completion of the wall.

C. Main breaker shall be installed.

D. All requirements for permanent service (meter height above final grade, distance from front corner, fastening requirements, conduit size and type and 2,500 lb. continuous, non-conductive, flat pull tape installed, etc.) shall apply.

E. The site address shall be permanently affixed to the meter cover panel. See Section 9 – Metering & SES, Service Entrance Section, Addressing and Identification.

F. Early power at an apartment complex has the following additional requirements:

1. A separate SES for the permanent house panel shall be located within five feet of the multi-meter SES location and fed directly from the SRP transformer.
2. The house panel contains the required safety socket.
3. The receptacle or tap for early power must be located on the Customer's side of the SES and NOT at the bottom of SRP's sealed safety socket.
4. Disconnects shall be clearly labeled for the house panel and the multi-meter panel.

II. Process

A. Customer must meet all requirements prior to initiating the request for service.

B. Customer to call Residential Customer Services (see Contact Information):

1. Request early power service.
2. Specify the address.

3. Specify the party to be billed for electric service.
4. Sign contract.
5. Verify municipal clearance has been obtained.

C. Customer to advise SRP when the residential account is to be transferred.

III. Additional Information

A. A mobilization fee will be assessed to the Customer if, upon a second attempt, the electric service crew cannot install service. Check with the Distribution New Business Division for current fees.

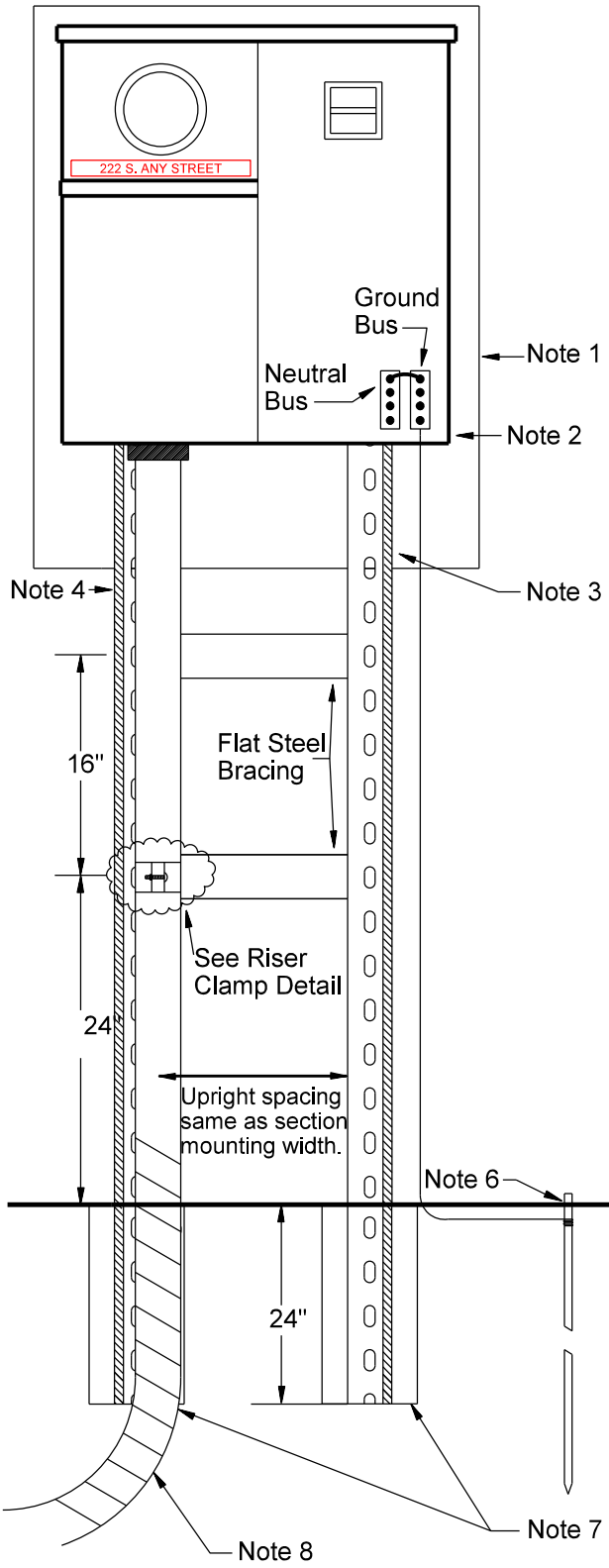
B. A fee will be assessed to the Customer if the meter is damaged during use. Check with Residential Customer Services for current fees.

C. SRP will not be liable for any malfunction of, or damage to, the Customer's equipment resulting from failure of SRP's equipment.

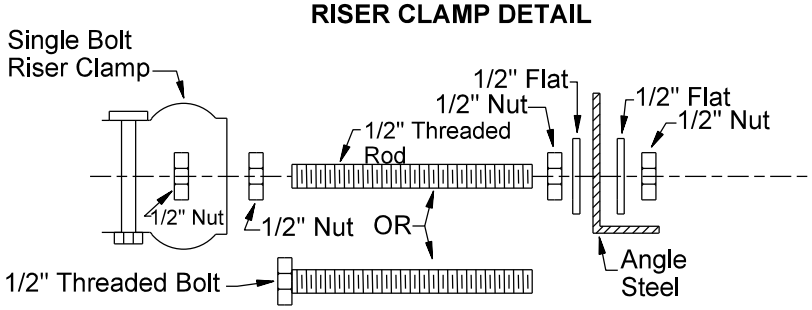
D. The load-side bus will be energized upon setting the meter if clearance from the AHJ has been obtained.

E. When SRP installs the meter, a warning decal will be placed on the interior breaker panel cover of the service section and a lock installed on the breaker panel. When Customer removes this lock, the Customer assumes all responsibility for the service section.

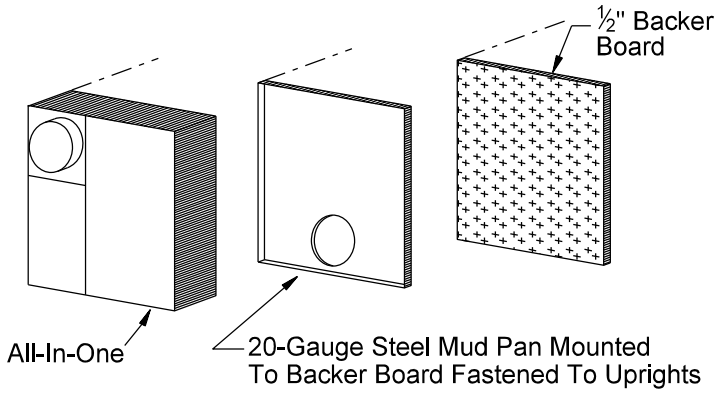
F. Contact Residential Customer Services if there are any questions concerning this process.



RISER CLAMP DETAIL



PANEL BACKING DETAIL

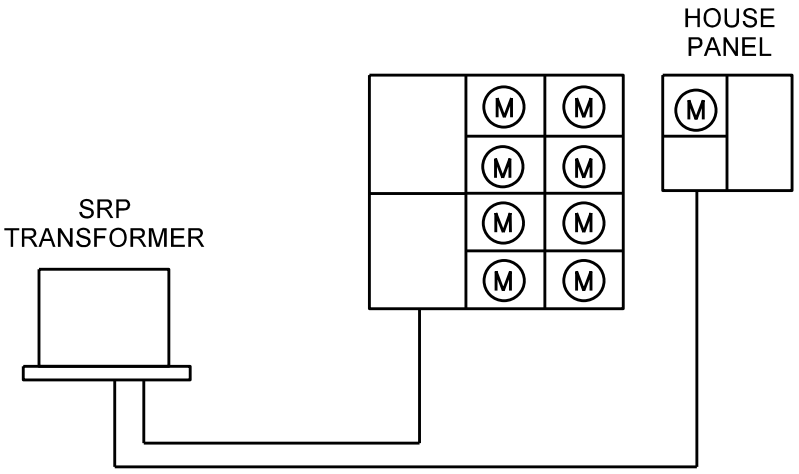


NOTES

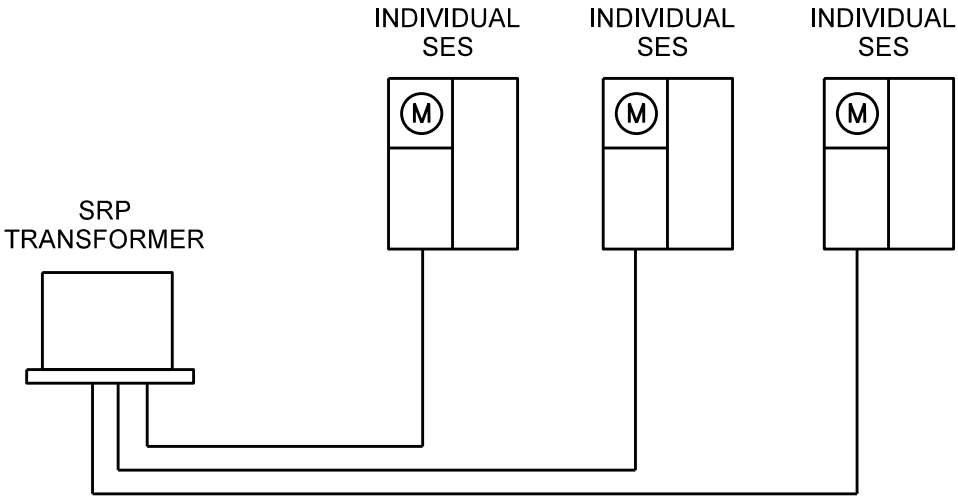
1. BACKER BOARD WITH VAPOR BARRIER AND GALVANIZED MUD PAN (SEE DETAIL).
2. CONNECT GROUND AND NEUTRAL BUS.
3. UPRIGHTS TO BE 12-GUAGE (2.6MM) ANGLE STEEL 1 5/8" X 3 1/8" GALVANIZED OR STRUCTURAL STUDS 3 1/2" WEB, 1 5/8" FLANGE, 12-GUAGE GALVANIZED BRACES ATTACHED USING THREADED FASTENERS.
4. RISER SHALL BE INSTALLLED IN LINE WITH UPRIGHT.
5. UPRIGHT SPACING SAME AS SECTION MOUNTING WIDTH.
6. APPROVED GROUNDING ELECTRODE: LOCAL MUNICIPAL CODES SHALL PREVAIL. IF NO LOCAL CODE EXISTS, USE NEC BONDING/GROUNDING REQUIREMENTS; SEE NEC 250-50 FOR GROUNDING ELECTRODE SYSTEMS.
7. UPRIGHTS INSTALLED IN MINIMUM 12" DIAMETER SONOTUBES AT FINAL GRADE EXTENDING 24" BELOW GRADE. TUBES TO BE FILLED WITH 2500 PSI MINIMUM STRENGTH OR CLASS C CONCRETE PER MAG SECTION 725.
8. CONDUIT RISER: ALL REQUIREMENTS ON ESS 3-1, SERVICE RISER REQUIREMENTS APPLY.
9. THE SITE ADDRESS SHALL BE PERMANENTLY AFFIXED TO THE METER COVER PANEL. SEE SECTION 9 - METERING & SES, SERVICE ENTRANCE SECTION, ADDRESSING AND IDENTIFICATION

Electric Service Specifications SRP® PROPRIETARY MATERIAL	REV: SPECIFIED THE METER COVER PANEL AS THE LOCATION FOR THE PERMANENT ADDRESS LABEL.	
	SES - UNDERGROUND PERMANENT RESIDENTIAL SECTION USED FOR EARLY POWER 320 CLASS MAXIMUM	ISSUE DATE: 11/01/07 REV. DATE: 06/13/24 APPROVAL: J. ROBBINS
	3-5	8509E297.DGN

MULTI-FAMILY BUILDING WITH MULTI-METERED SES AND HOUSE PANEL
NOTE 1



MULTI-FAMILY BUILDING WITH INDIVIDUAL SERVICE ENTRANCE SECTIONS
NOTE 2



NOTES

1. A MULTI-FAMILY BUILDING HAVING A MULTI-METERED SES MAY REQUEST EARLY POWER FOR CONSTRUCTION USING A SEPARATELY SERVED HOUSE PANEL AS SHOWN ABOVE.
2. A MULTI-FAMILY BUILDING HAVING INDIVIDUAL SES's, MAY REQUEST EARLY POWER FOR CONSTRUCTION USING ONE SES ONLY.
3. PRIOR TO SETTING AND ENERGIZING THE REMAINING METERS ON MULTI-FAMILY PROJECTS, ELECTRICAL CONTINUITY FROM THE SES TO ALL OF THE OTHER UNITS SHALL BE VERIFIED BY SRP.
4. SEE CONSTRUCTION DETAILS ON PAGE 3-5.

GENERAL INFORMATION FOR UNDERGROUND INSTALLATION

I. The Customer installs, owns and maintains the SES and riser in accordance with SRP's applicable rates and extension rules and requirements – there are no exceptions. Facilities beyond the POD must comply with all local, city and/or NEC. SRP utilizes the EUSERC specifications for SES.

II. Prior to the installation of the service conduit, the Customer shall obtain SRP approval of the SES location. The Customer installs service conduit from an SRP-approved POD to the Customer's SES equipment. The Customer is responsible for the conduit system until service conductors are installed.

III. The SRP service lateral will be installed only after SRP and the AHJ approve the installation. Trenching and conduit must be inspected prior to backfill.

IV. No meter may be installed until an application for service is made.

V. Customer-Owned Service

A. The POD for a Customer-owned service is usually the secondary bushings of the transformer. The Customer assumes all responsibility to supply, install, own and maintain these cables. Cables, conduits and support facilities located on the load side of the POD must comply with the requirements of the AHJ.

1. Because the service cables are Customer-owned, installed and maintained, the ESS requirements relating to access to the pull section are waived, however access requirements to the transformer and all other requirements for meter rooms apply.
2. SRP can supply and install the cable connectors at the POD provided the cables are 750 MCM aluminum or copper using concentric or compressed stranding. Any other wire size will require the Customer to supply and install standard NEMA two-hole connectors. An SRP representative must be present when cable connectors are installed to verify height and orientation to the transformer secondary bushings.
3. The proposed size and number of cables are to be reviewed and approved for ampacity under the anticipated operating conditions encountered in a desert environment by the AHJ.
4. The Customer shall identify the ends of each cable in the transformer with colored tape as follows: A phase = Red, B phase = Yellow, C phase = Blue.

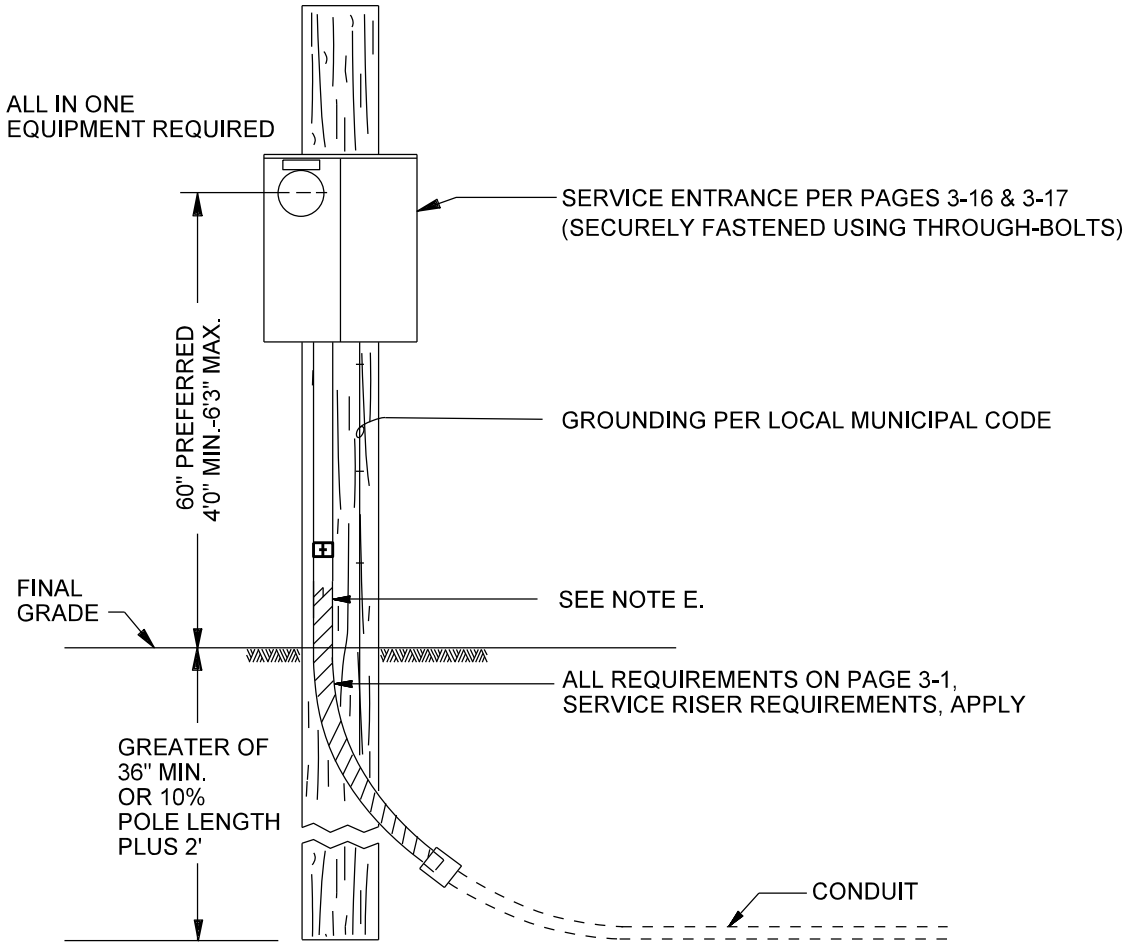
VI. Excavations

A. Contact SRP Design for trenching requirements.

B. See page 6-4 for Customer excavation limits.

VII. Conduit and Riser Requirements – See page 6-1 for conduit and riser requirements.

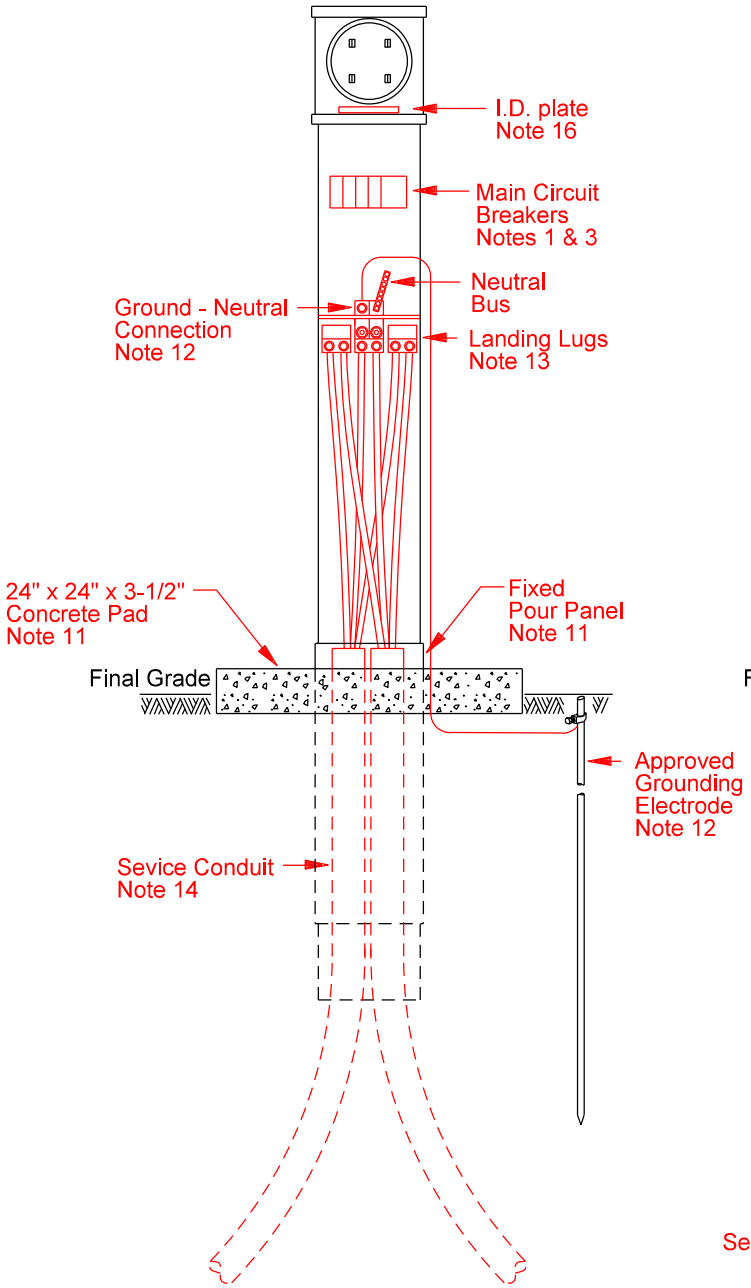
VIII. Clearance Requirements – See Section 5 for clearance requirements.



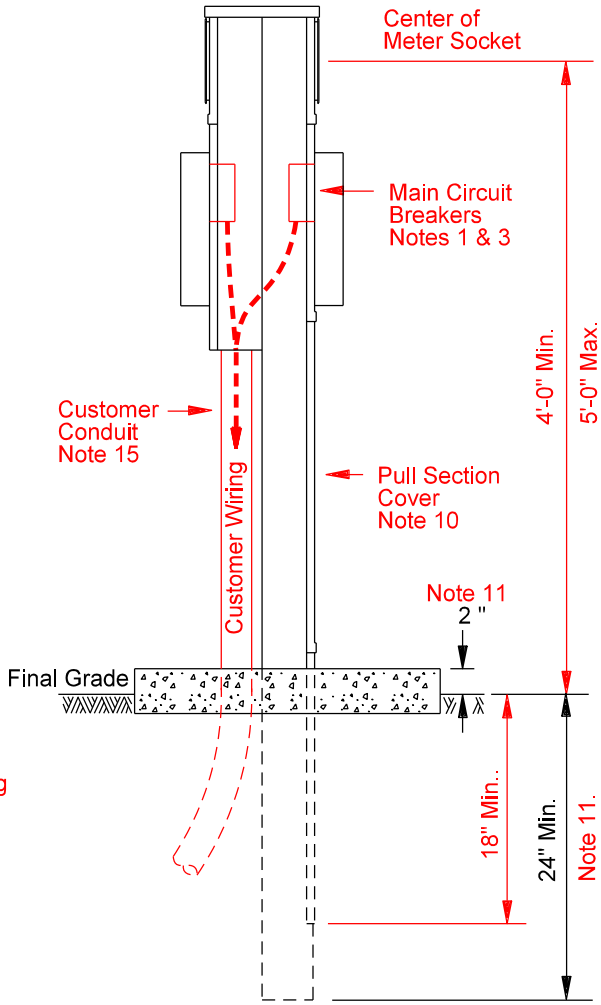
NOTES

1. General Requirements
   A. SRP reserves the right to determine the Customer's service pole location, and only authorized SRP personnel of the Distribution Design department will determine this location.
   B. Do not mount SES and Customer attachments on SRP facilities (see page 2-1).
   C. Maintain a minimum 36" radial separation from the side of the SES to the nearest gas facility vent.
   D. Grounding shall comply with the NEC or local inspection agency.
   E. All detached services require an address tag. Refer to page 9-10 & 11 for I.D. tags.
2. SES Requirements
   A. The height to the center of the meter is preferred to be 5' (4' min, 6'-3" max.).

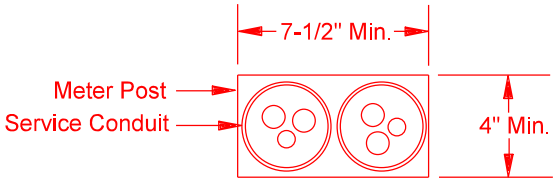
FRONT VIEW
(SINGLE OR DOUBLE METER)



SIDE VIEW
(DOUBLE METER)



PLAN VIEW - LOOP FEED
Note 4



PLAN VIEW - RADIAL FEED
Note 4

Electric Service Specifications SRP® PROPRIETARY MATERIAL	REV: UPDATED ILLUSTRATION ADDED NEW PLAN VIEW FOR RADIAL FEED	PAGE 1 OF 3
	SES - UNDERGROUND 120/240 V METER POST - SINGLE OR DOUBLE METER 100 A MIN. OR 200 A MAX. PER METER	ISSUE DATE: 04/15/86 REV. DATE: 09/12/23 APPROVAL: J. ROBBINS
	3-9	8509E7.DGN

NOTES (Reference EUSERC Drawing 307)

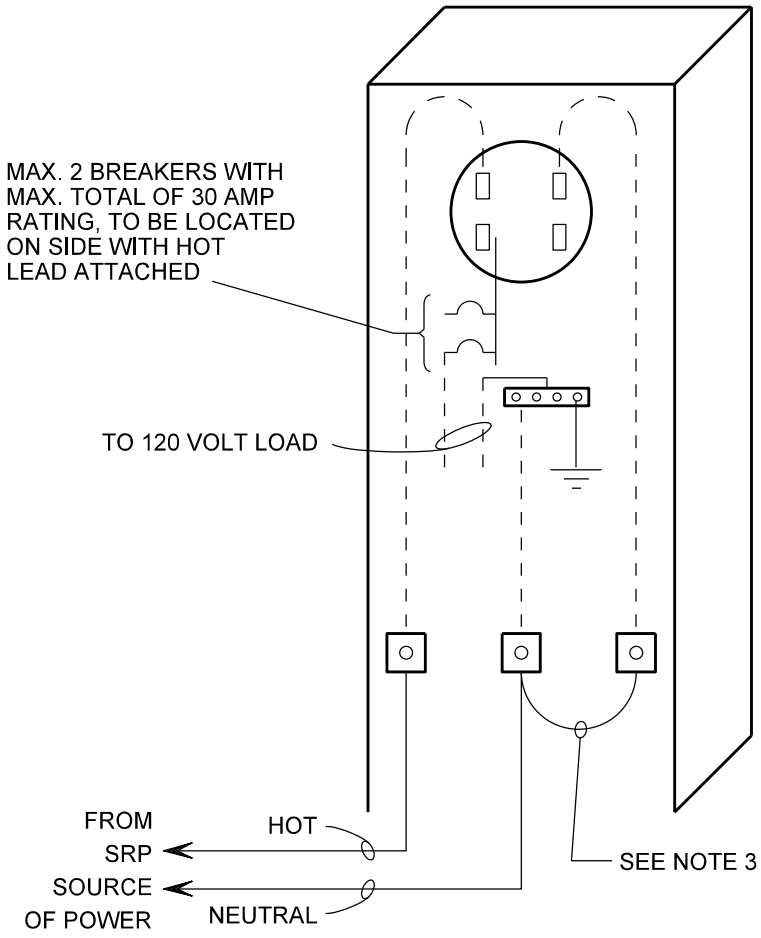
GENERAL

1. The Customer is responsible for the installation of the meter post and conduit, located per SRP design. Customer shall meet the requirements set by the AHJ. Prior to SES passing SRP inspection and obtaining a clearance from the AHJ, the main breaker(s) shall be installed.
2. Posts shall be factory-wired from the service terminating landing lugs to the meter socket in a separate or barriered raceway. Posts shall have a minimum rating of 100 amps and maximum rating of 200 amps. Double meter posts shall have a maximum rating of 200 amps per side.
3. Main circuit breaker(s) shall be rated for the available fault current. Contact SRP Distribution Design for available fault current. Circuit breakers must be installed prior to meter installation.
4. The minimum inside dimension of the meter post shall be 4" x 7-1/2" on the open (meter) side.
5. The meter panel shall be provided with a sealing ring and the socket shall be rigidly mounted on a support and attached to the meter panel. All panels shall be sealable.
6. Outside finish of the post shall be corrosion resistance.
7. See Section 9 - Metering & SES Pre-Approved Meter Sections, Meter Pedestals for approved meter posts. If post is not listed, submit electronic copies of the plans (PDF format preferred) for all proposed SESs to shopdraw@srpnet.com for approval prior to construction of the service section. Drawings must be labeled with the Customer's name, job address, SRP job number, and contractor's name and contact number.
8. Any modification must be approved by Distribution Design and the AHJ. No modification is permitted for temporary service.
9. For special application only (120 volt, 2 wire, 30 amp): Service requirements are the same as listed here and the total ampacity of the breakers shall not to exceed 30 amps, with no more than two breakers. No other breakers, switches or receptacles are allowed in the breaker panel (see page 3-11).

INSTALLATION

10. The pulling and terminating section shall be accessible from either the front or rear of the post. A 3' minimum clearance is required in each direction. The radial clearance from the side of electric service to the nearest gas facility vent is 36". See Section 5 - Clearances - Service Entrance Sections.
11. The minimum depth of the post in the ground shall be 24". Post shall be centered in a poured 24" x 24" x 3-1/2" concrete pad with the top 2" above final grade. The fixed pour panel shall extend 2" to 6" above the top of pad and 18" minimum below the top of pad.
12. Grounding and bonding shall comply with the NEC and AHJ requirements.
13. Termination for service conductors shall be UL-listed copper or aluminum mechanical lugs accepting two sets of conductors, mounted a minimum of 18" and a maximum of 48" above top of the fixed pour panel. Landing lugs must accommodate #2 through 350 MCM conductor. Lugs may be in-line or staggered. Meter socket and service lateral conductors shall be independently connected at the landing lugs.
14. Unless otherwise noted on the construction print, Customer shall provide and install a 2-1/2" elbow (36" radius) and conduit. If SRP conductor will be looped in and out of the post, install two 3" elbows (36" radius) and conduit (as needed). A 2,500 lb continuous non-conductive flat pulling tape is required in conduit (free moving and not glued to conduit).
15. Customer conduit shall be installed and located in an area where access to the pulling and terminating section(s) is not restricted.
16. Each meter location must be identified with the permanent space number. The tag shall be attached to a permanent part of the post and not to removable cover or lid. See Section 9 - Metering & SES - Service Entrance Section, Addressing & Identification for additional requirements.

WIRING DIAGRAM FOR 120 VOLT 2-WIRE SERVICE



FOR SPECIAL APPLICATIONS ONLY

(120 VOLT, 2-WIRE, 30 AMP TOTAL MAX.)

NOTES

1. Service requirements are the same as listed on page 3-9 & 3-10. The maximum rating of an individual breaker, or the sum of two max. breakers, shall not exceed 30 amps. No other breakers, switches, or receptacles will be allowed in the breaker panel.
2. SRP may specify use of a meter post as described on page 3-13 through 3-15 for areas where protection from water or vandalism is needed, as determined by SRP.
3. SRP will install the neutral jumper.

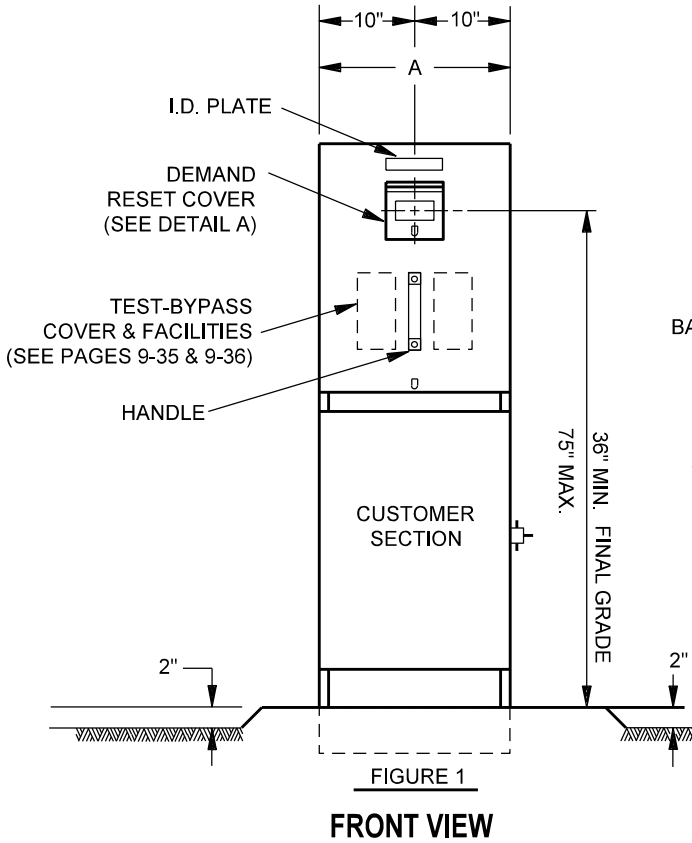


FIGURE 1

FRONT VIEW

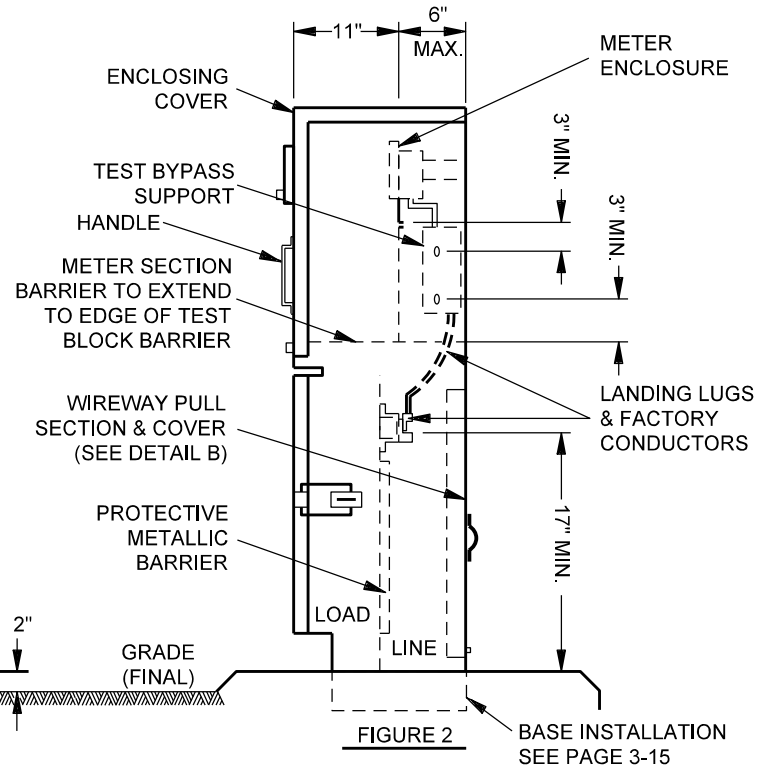
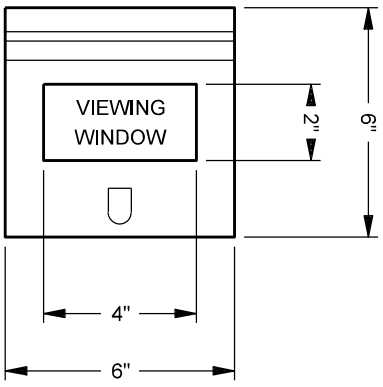


FIGURE 2

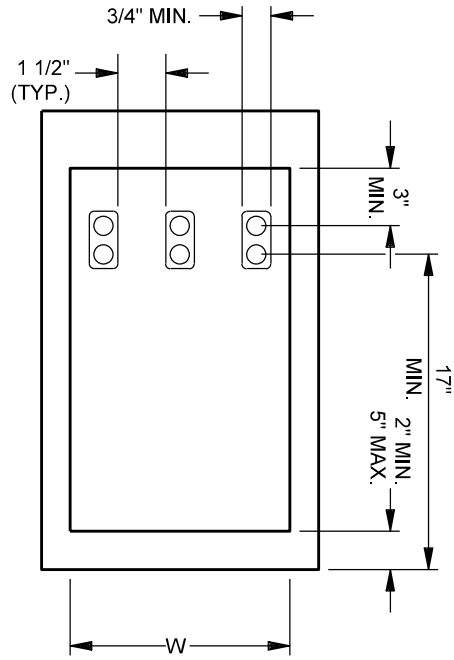
SIDE VIEW

NOTE: ALL DIMENSIONS ARE MINIMUM.



DETAIL A

DEMAND RESET COVER



DETAIL B

WIREWAY PULL SECTION

Electric Service Specifications SRP® PROPRIETARY MATERIAL		PAGE 1 OF 3
	SES - UNDERGROUND SERVICE AND METER PEDESTAL COMMERCIAL APPLICATION ONLY 200 AMPS MAXIMUM	ISSUE DATE: 04/15/86 REV. DATE: 08/22/12 APPROVAL: W.LARAMIE
	3-13	8509E54.DGN

Minimum Dimensions		
Service	"W"	"A"
1 ⌀	10 1/2"	20"
3 ⌀	12 1/2"	20"

NOTES

1. Meter pedestal must be SRP approved. The complete enclosing cover shall not exceed 25 lbs.
2. The meter shall be enclosed and the enclosing cover shall meet the following conditions: The cover shall be hinged (allowing the top and front to be rotated up and back exposing the metering compartment) and have a handle. When the metering compartment side panels are attached to and lift back with the hinged cover, the "A" dimension does not apply. The lifting force required to open the cover shall not exceed 25 lbs.
3. All utility compartments shall be sealable.
4. Circuit breakers shall be rated for the available fault current. Contact SRP Distribution Design for available fault current. Circuit breakers must be installed prior to meter installation.
5. Service conductors are to be terminated on pressure-type CU-AL listed lugs sized for #6 - 250 MCM cable. Insulated cable or bus shall be installed between landing lugs and test-bypass.
6. The meter panel shall be provided with a sealing ring and the socket shall be rigidly mounted on a support and attached to the meter panel.
7. Internal equipment shall be secured in place. Any exposed fasteners shall be tamper resistant.
8. A protective metal barrier (16 gauge minimum) shall be installed between the utility wireway and Customer distribution section. A minimum 1/4" clearance shall be maintained between the protective barrier and the Customer section.
9. Test-bypass blocks with rigid insulating barriers shall be furnished, installed, and wired or bussed to the meter socket. Connection sequence is line-load left to right. Each line and load position shall be clearly identified at 3/4" minimum block letter labeling.
10. See page 3-15 for installation procedure.
11. You may have to order this type of pedestal - check with your electrical supplier.
12. GAS LINE CLEARANCE: Maintain a 36" minimum radial clearance, as illustrated on page 5-15, between electric service equipment and any gas vent.

SECTION 3: SES - UNDERGROUND

I. Installation Procedure and Instructions

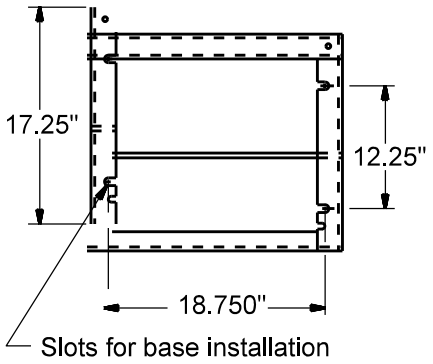
A. The Customer or Developer shall be responsible for the installation of the meter pedestal and conduit, per SRP Design.

B. The Customer shall install conduit:
1. Conduit shall be 2-1/2" diameter PVC.
2. Sweeps and bends shall be 36" radius.
3. PVC conduit shall extend 2" minimum above pad.

C. Clearances between meter pedestal and other utilities shall conform to applicable codes and/or regulations.

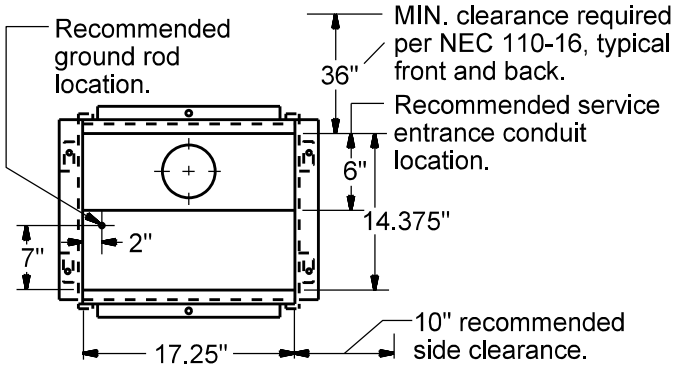
D. The Developer or their contractors will then:
1. Backfill around the conduit, with the pedestal base in place, pour the concrete pad as specified by the manufacturer, but not to be less than 24" x 24" x 6" (see base detail below). The final grade or ground line shall be approximately 2" below the top of the pad.
2. Install and connect a copper grounding conductor, #4 AWG minimum, from a metallic system water pipe or grounding electrode to the grounding lug per applicable code.
3. Anchor the meter pedestal to the pad and place address identification per pages 9-9 and 9-10.

Bottom View

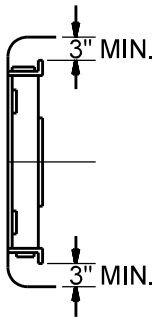


No components shown

Top View

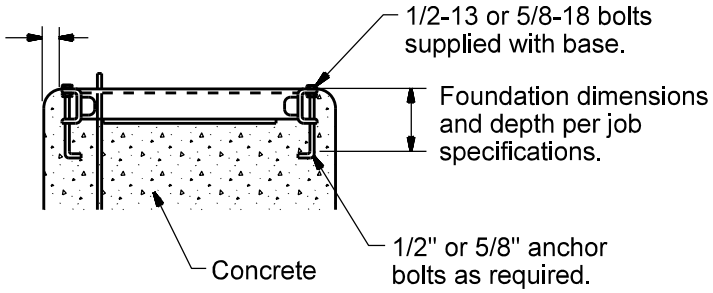


Side View

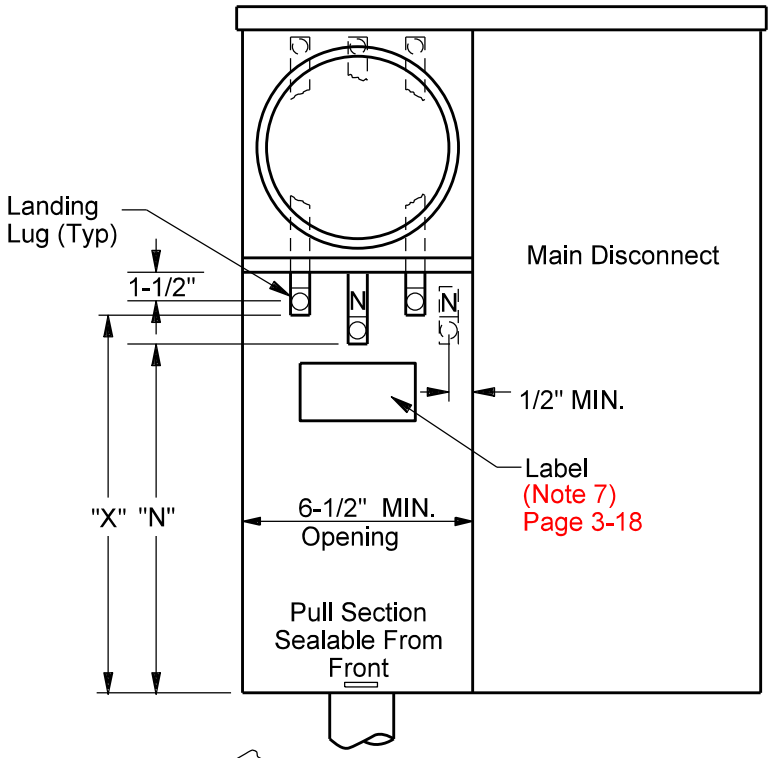


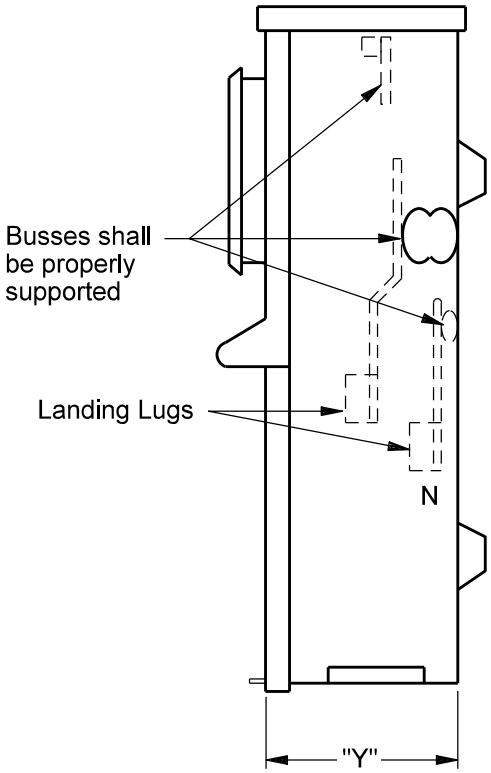
Front View
Base Detail

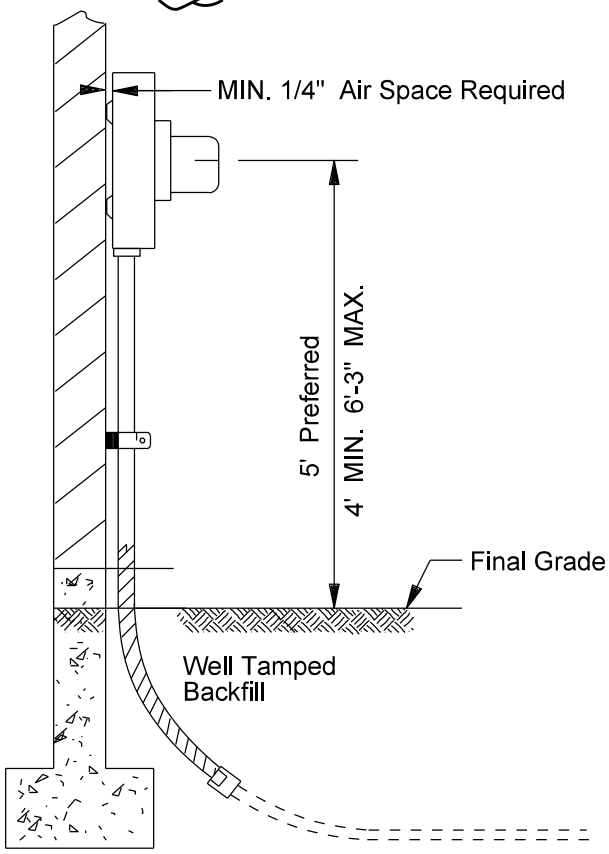
Top of SES base plate shall be same grade as the top of foundation.



RESIDENTIAL ALL-IN -ONE SURFACE MOUNT 225 AMPS MAXIMUM

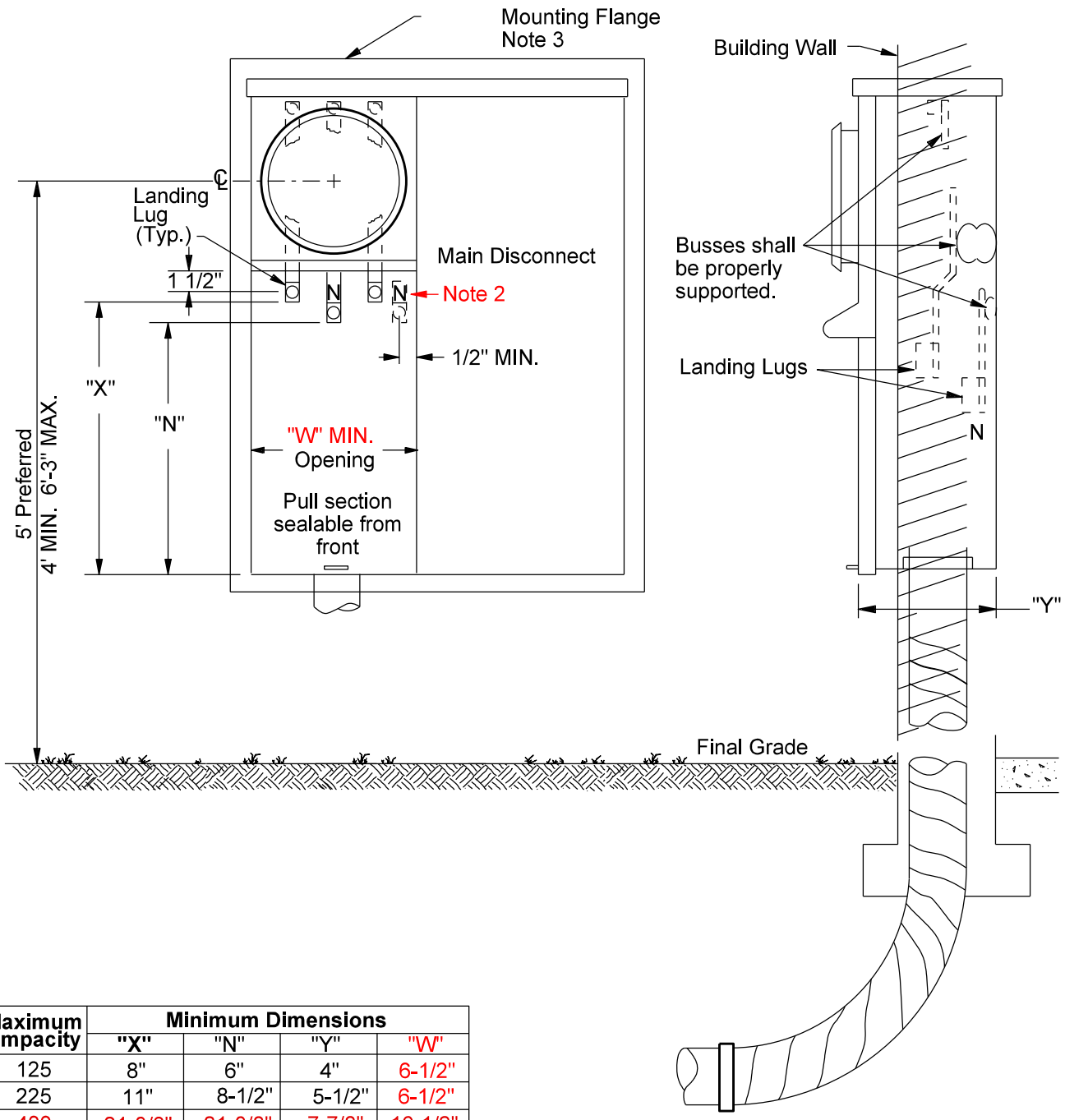






Maximum Ampacity	Minimum Dimensions		
	"X"	"N"	"Y"
125	8"	6"	4"
225	11"	8-1/2"	5"

RESIDENTIAL ALL-IN-ONE, SEMI-FLUSH 400 AMPS MAXIMUM 320 CLASS



Maximum Ampacity	Minimum Dimensions			
	"X"	"N"	"Y"	"W"
125	8"	6"	4"	6-1/2"
225	11"	8-1/2"	5-1/2"	6-1/2"
400	21-3/8"	21-3/8"	7-7/8"	10-1/2"

NOTES

1. Service entrance to be installed per page 3-18.
2. See page 3-20 for service entrance sections rated 400 A (Class 320).
3. Install service equipment to allow removal of front panels without damge to this equipment or the building.
4. Not for overhead use.

RESIDENTIAL ALL-IN-ONE
SURFACE OR SEMI-FLUSH MOUNT

NOTES

1. All-in-one equipment shall be utilized for all new installations.

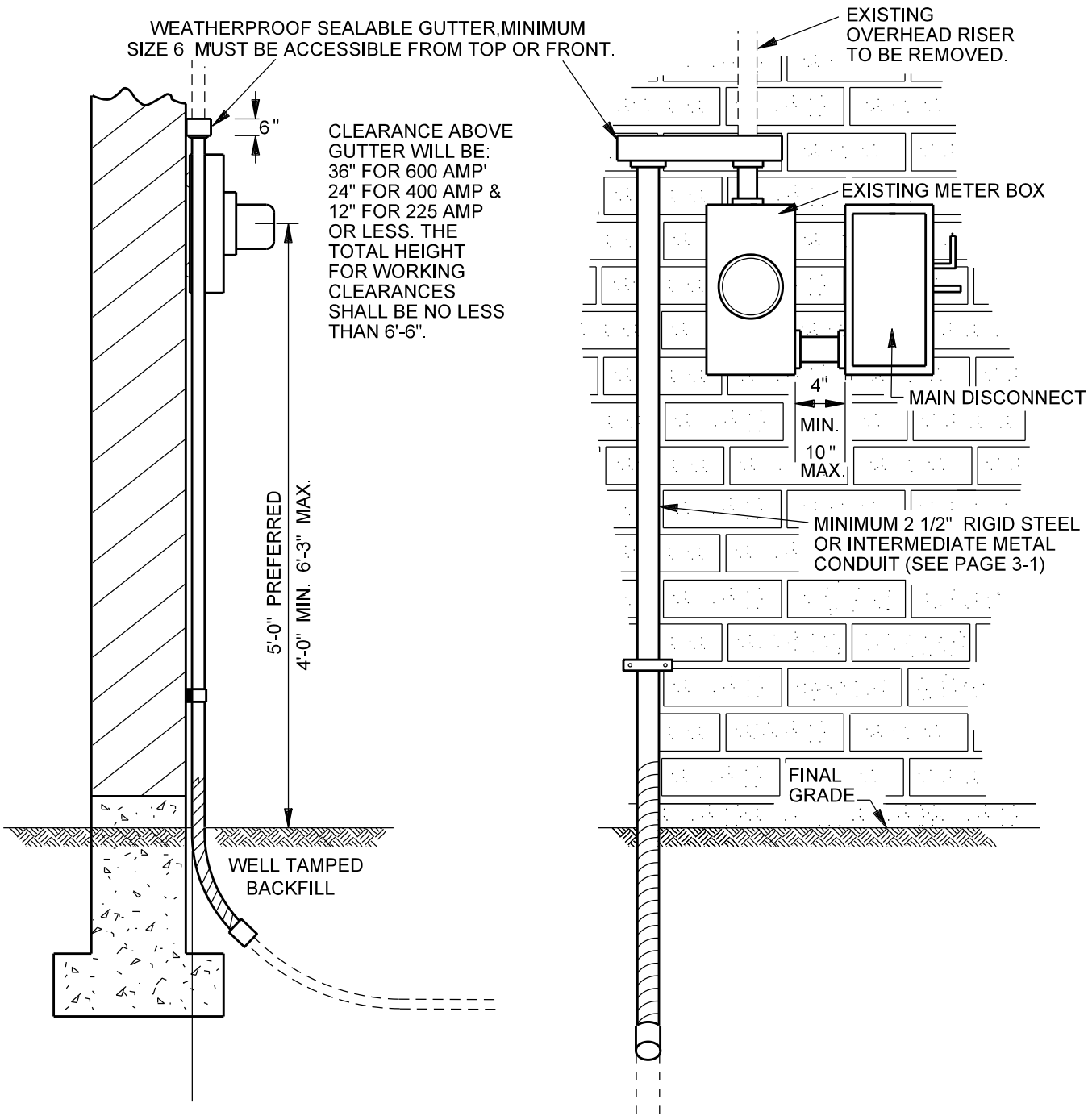
   EXCEPTIONS: For existing meter socket change-out, refer to Section 9 - Overhead / Underground Service, Die-Cast and Square-Base Sockets.

   A two-piece meter section may also be utilized when converting from an overhead to underground service. Service conductors entering from the top of the SES shall be terminated on the top lugs. Service conductors entering from the bottom of the SES shall be terminated on an extended bus below the meter socket.

2. All requirements on page 3-1, Service Riser Requirements, apply.
3. Landing lugs in pull section shall be CU/AL rated.
4. Neutral may be on side, middle or staggered, but not more than 2 ½" below hot bus terminals. If insulated from enclosure, provide a bonding screw or jumper.
5. A minimum radial clearance of 1 ½" shall be provided between hot bus terminals and ground or neutral surfaces.
6. Service lateral conductors shall be connected to the line side of meter socket by SRP. Service conductors shall be terminated on an extended bus below the meter socket.

   EXCEPTION: For two-piece SES, service conductors may be terminated at the top if the line side lugs are located at the top of the meter section.

7. This equipment may be constructed for overhead, underground or a combination of both applications. When constructed as an overhead/underground device, a yellow caution label (2" x 3" minimum) that reads, "CAUTION: BUS ENERGIZED AT ALL TIMES" shall be installed below the terminations in the pull section.
8. Service riser conduit shall enter the bottom of pull section.
9. The Customer shall provide SRP approved conduit to J-box or source of feed as specified by SRP. Customer should also check with telephone and cable companies for their requirements (see page 5-4).
10. Bonding, per code, shall be installed prior to installation of underground service conductors.
11. There must be 36" radial clearance, as illustrated on page 5-15, from side of electrical equipment to nearest gas facility vent.
12. See pages 9-11 through 9-15 for meter socket arrangement.
13. See page 3-17 for semi-flush panel installation.



NOTES

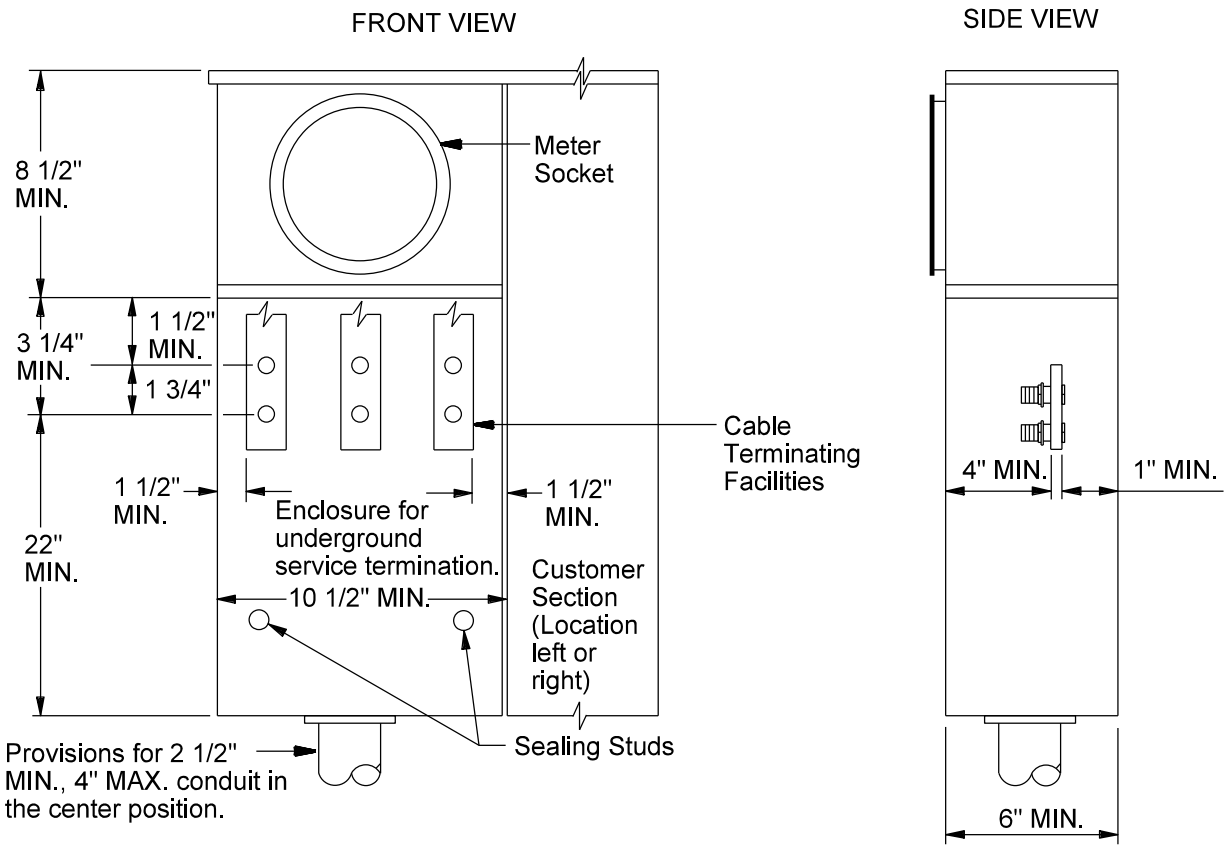
1. The Customer shall be responsible for modification of the service entrance from overhead to underground, as shown on this drawing and as approved by the AHJ.

2. All requirements on page 3-1, Service Riser Requirements, apply.

3. Maintain 36" of radial clearance from side of electrical equipment to nearest gas facility vent. See page 5-15 for example showing gas line clearance.

RESIDENTIAL UNDERGROUND / OVERHEAD 1Ø ONLY, SURFACE MOUNT 400 AMPS MAXIMUM CLASS 320 ONLY

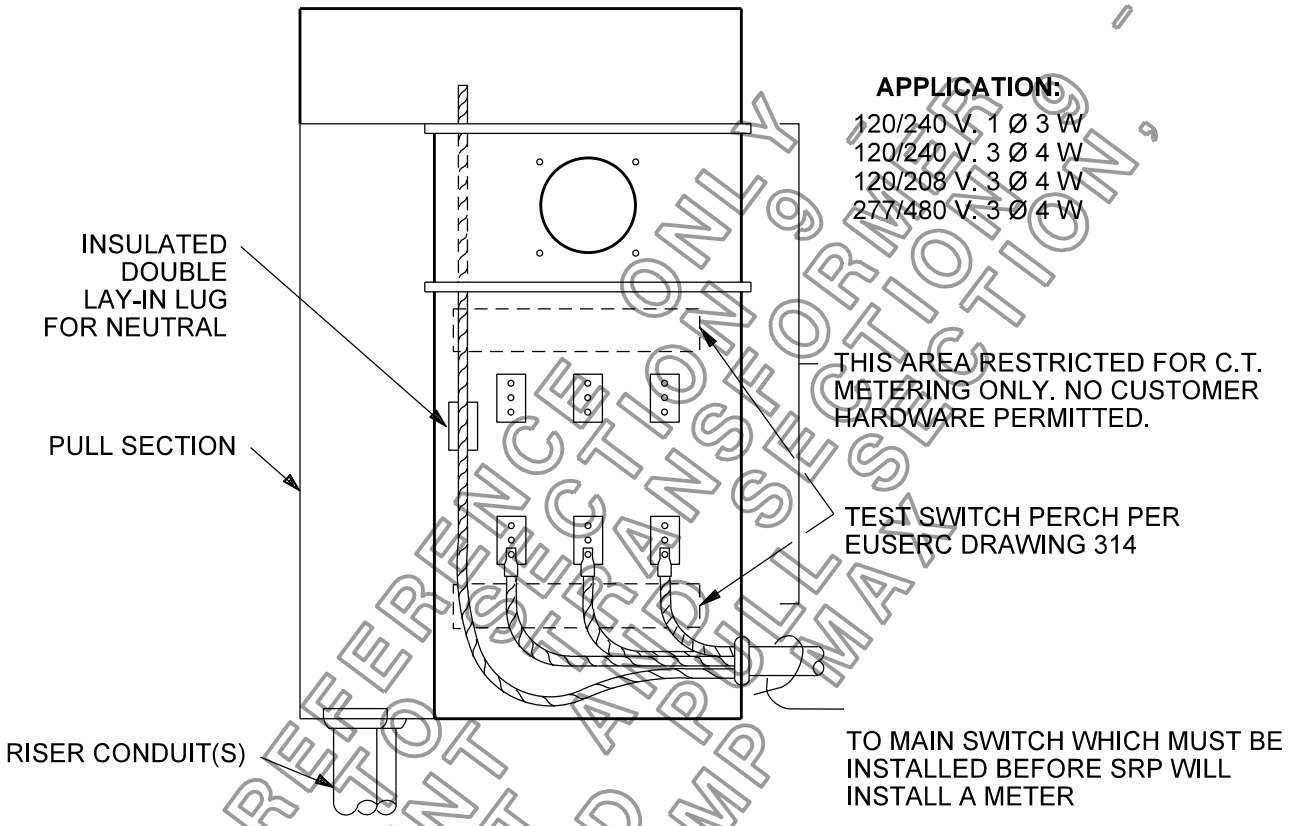
FIG. 1, Single Position
Service Terminations Per Page 9-58



NOTES (Reference EUSERC Drawing 302A)

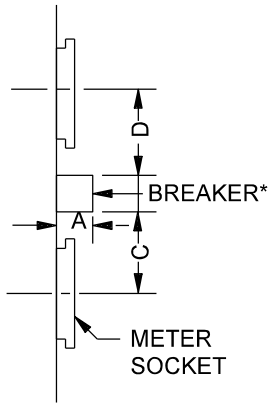
1. This drawing is for combination equipment for service termination, metering and distribution feeder breakers.
2. The meter socket to be listed by UL under UL Standard 414 for the acceptance of a class 320 self-contained meter. The sealable cover for the service termination and meter mounting device shall be of the ring type having a padlock provision.
3. Customer-owned wiring extended from the distribution section (branch circuits) shall not pass through any section sealed by SRP.
4. See pages 9-65 and 9-66 for minimum clearances for terminations and for bus and bolt details, as shown above.
5. The pull section/meter cover shall be independent of any service equipment cover.
6. Pull section covers shall be removable, sealable, and provided with two lifting handles and limited to a maximum size of 9 sq. ft. in area. Sealing provisions shall consist of two drilled stud and wing nut assemblies at the bottom of the pull section.
7. This type of service is applicable only for residential 1Ø service.
8. Submit electronic copies of the plans (PDF format preferred) for all proposed SES, 400 amp or larger, to shopdraw@srpnet.com for approval prior to construction of the service section. Drawings must be labeled with the Customer's name, job address, SRP job number or account number, and contractors name and contact number.
9. See page 3-17 for semi-flush panel installation.
10. Both main service disconnects shall be installed prior to meter installation.

(3 Ø 4 W AND CUSTOMER WIRING SHOWN)



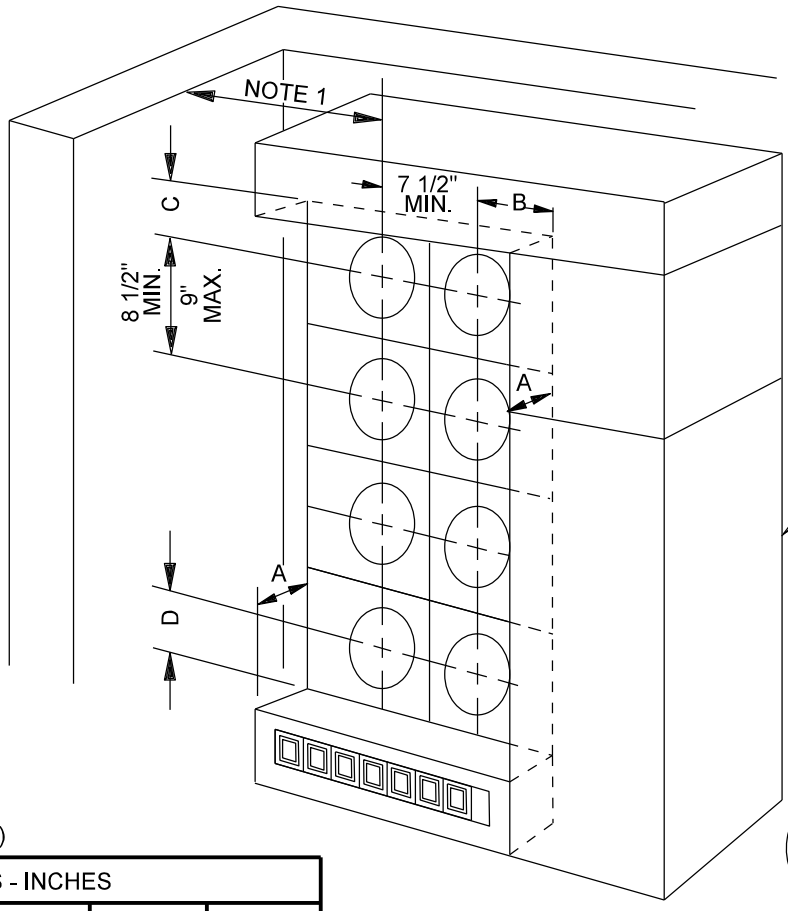
NOTES

1. SRP FURNISHES AND INSTALLS THE CURRENT TRANSFORMERS AND TEST SWITCH.
2. CURRENT TRANSFORMER MOUNTING BASE, SEE EUSERC DRAWING 314, NOTE 5.
3. FOR METERING ENCLOSURE DIMENSIONS AND TEST SWITCH PERCH, SEE EUSERC DRAWING 314 FOR 400 TO 600 AMPS.
4. CABINET SHALL HAVE A SEALABLE COVER WITH TWO LIFTING HANDLES AND A PLATE READING "DO NOT BREAK SEALS, NO FUSES INSIDE."
5. ALL REQUIREMENTS IN SECTION 3 FOR SERVICE RISER REQUIREMENTS, APPLY.
6. TO DETERMINE SERVICE RISER CONDUIT SIZE, REFER TO SECTION 6 FOR SERVICE CONDUIT SIZES AND SPECIFICATIONS UNDERGROUND.
7. SERVICE ENTRANCE CONDUCTORS SHALL ENTER TOP OF CURRENT TRANSFORMER COMPARTMENT. LOAD CONDUCTORS MUST EXIT BELOW THE LOAD TERMINALS OF THE CURRENT TRANSFORMER.
8. SERVICE ENTRANCE SHALL BE INSTALLED IN ACCORDANCE WITH PAGES IN SECTION 3 FOR 'RESIDENTIAL ALL-IN-ONE, SEMI-FLUSH, 400 AMPS MAXIMUM 320 CLASS' AND 'RESIDENTIAL ALL-IN-ONE, SURFACE OR SEMI-FLUSH MOUNT'.
9. NEUTRAL SHALL BE OF CODE SIZE AND EXTEND INTO METERING ENCLOSURE PULL SECTION BY 24" FOR CONNECTION BY SRP.
10. NO CONNECTIONS SHALL BE MADE IN THE INSTRUMENT TRANSFORMER BOX TO SUPPLY ANY OTHER METER, AND NOT MORE THAN ONE LOAD CIRCUT SHALL LEAVE THE TRANFORMER BOX.
11. LINE AND LOAD CONDUCTORS SHALL NOT BE LOCATED IN THE SAME PULL SECTION.
12. CABINET SHALL BE INSTALLED IN A SURFACE-MOUNTED MANNER, CANNOT BE RECESSED OR EMBEDDED.
13. SUBMIT ELECTRONIC COPIES OF THE PLANS (PDF FORMAT PREFERRED) TO SHOPDRAW@SRPNET.COM FOR APPROVAL PRIOR TO CONSTRUCTION OF THE SERVICE SECTION. DRAWINGS MUST BE LABELED WITH THE CUSTOMER'S NAME, JOB ADDRESS, SRP JOB NUMBER OR ACCOUNT NUMBER, AND CONTRACTOR'S NAME AND CONTACT PHONE NUMBER.



SIDE VIEW
DETAIL

*Alternate Breaker Position
Below Meter Socket
See Side View Detail
For Clearance Dimension



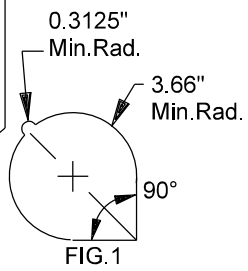


FIG.1

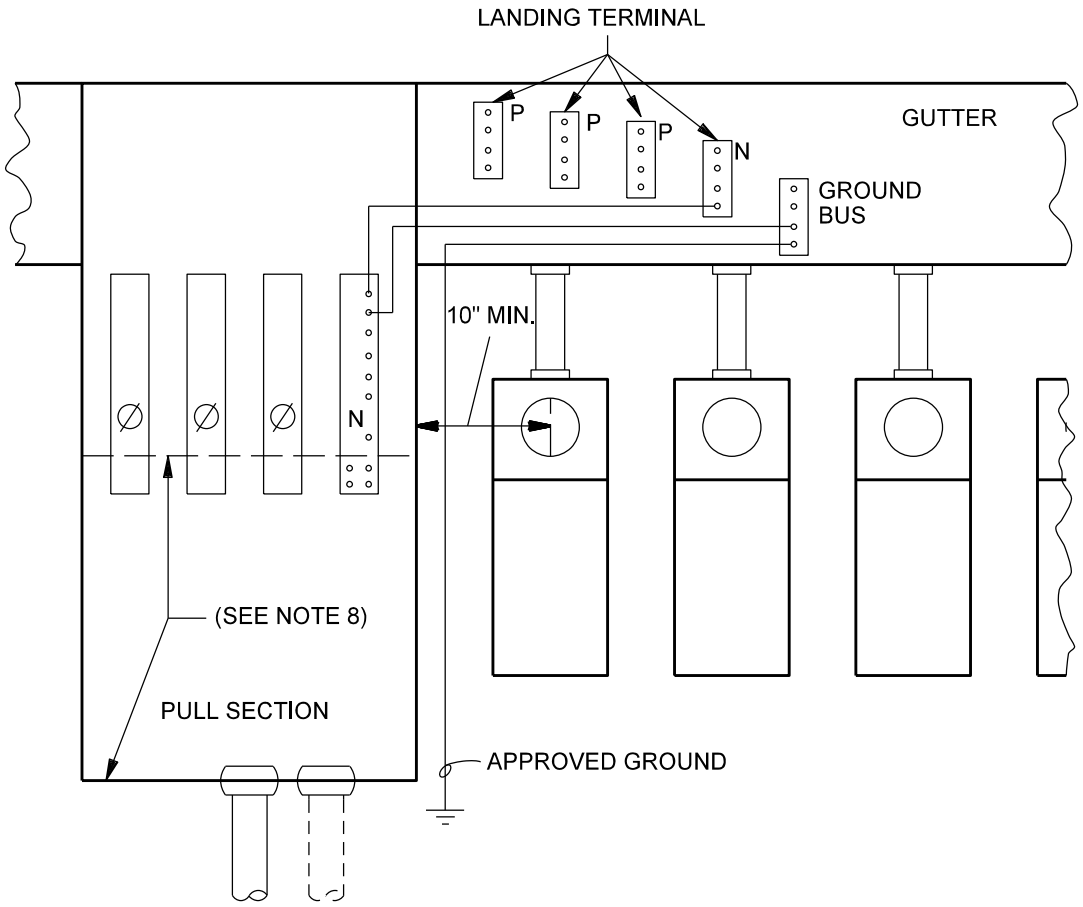
METER CUTOUT DETAIL

(Reference EUSERC Drawing 353)

DIMENSIONS - INCHES			
"A" (Protrusions)	"B" Min.	"C" Min.	"D" Min.
0 (no protrusion)	3 3/4"	4"	4 3/4"
Greater than 0" to 1 1/8"	4 1/4"	4"	4 3/4"
Greater than 1 1/8" to 2"	4 1/4"	4 1/4"	6 1/4"
Greater than 2" to 4"	6 1/4"	4 1/4"	8"
Greater than 4" to 11" Max.	6 1/4"	10"	8"

NOTES

1. Where an adjustment wall or other obstruction extends more than 11" perpendicular from the face of the meter panel, provide a 10" minimum dimension to the meter socket axis. For obstructions extending 11" or less from the meter panel, the side clearance shall conform to that of Dimension B.
2. Panel cover shall be removable to provide access to the Customer's equipment with the utility's meter and tamper proof sealing rings in place. When there is more than one meter socket per panel, the minimum meter cutout opening shall apply (See Fig. 1). Do not place more than two sockets on any removable cover.
3. Dimension B shall be increased by the amount that the main switch door, including operating handle, reduces the clearance when opened 90°
4. Removable pull section covers shall not exceed six square feet in area.
5. Separate distribution conductors from metering compartment with a barrier.
6. Grounding shall comply with NEC or AHJ.
7. Main breaker(s) shall be installed before SRP will install meters.
8. Main disconnect is required if exceeding six meters and/or disconnects.
9. All meters shall adhere to a height range of 4' to 6'-3".
10. SUBMIT ELECTRONIC COPIES OF THE PLANS (PDF FORMAT PREFERRED) FOR ALL PROPOSED SES TO shopdraw@srpnet.com FOR APPROVAL PRIOR TO CONSTRUCTION OF THE SERVICE SECTION. Drawings must be labeled with the Customer's name, job address, SRP job number or account number, and contractor's name and contact number.



NOTES

1. All requirements on page 3-1, Service Riser Requirements, apply.
2. Neutral terminal must be insulated from enclosure.
3. Bonding (per code), shall be installed prior to installation of underground service conductors.
4. Service neutral shall be connected to uninsulated ground bus in auxiliary gutter with main bonding jumper supplied by manufacturer. SEC. NEC. 384.60 (C)
5. All meters and disconnects shall be 6" above or below gutter. Riser shall not extend beyond gutter.
6. Only one neutral conductor and only one ground conductor shall terminate in the gutter from each meter service switch.
7. Terminate branch circuit neutral conductors and branch circuit ground conductors in each service switch box.
8. This area of the pull section is for SRP service conductors. Pull box and gutters shall be sealed by SRP.
9. A minimum of one meter must be installed at the time service is energized. The main breaker must be installed before SRP will set a meter.
10. Submit electronic copies of the plans (PDF format preferred) for all proposed SES to shopdraw@srpnet.com for approval prior to construction of the service section. Drawings must be labeled with the Customer's name, job address, SRP job number or account number, and contractor's name and contact number.
11. The service equipment shall be braced for the total available fault current.
12. A main disconnect is required if exceeding six meters and/or disconnects.
13. See page 6-1, 9-60 and 9-61 for number and size of conduits and terminating positions. Depth of the pull section must accommodate the required conduits.
14. All meters shall adhere to a height range of 4' to 6'-3".

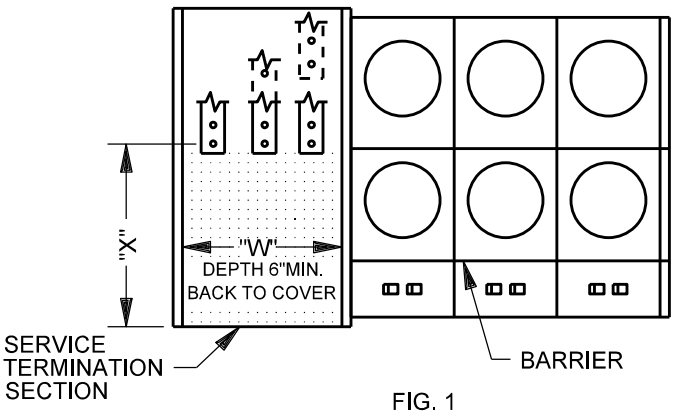


FIG. 1

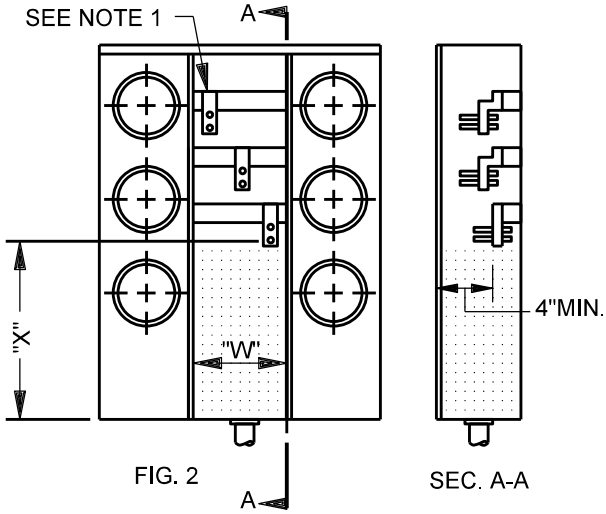
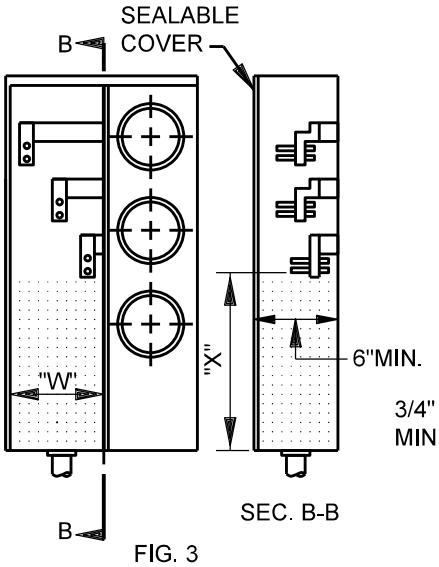


FIG. 2

SEC. A-A



SEC. B-B

FIG. 3

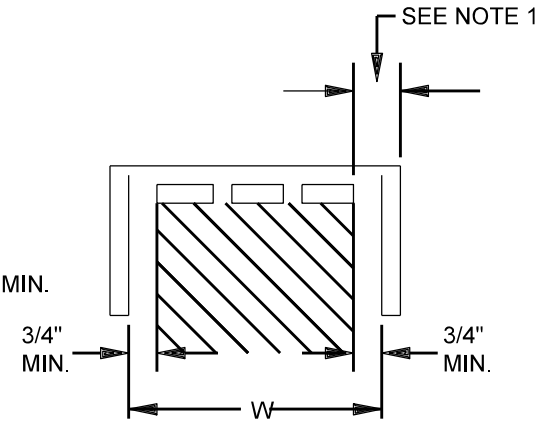


FIG. 4

TOP VIEW

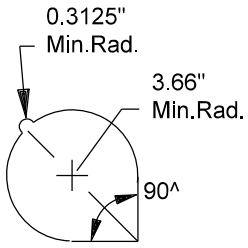


FIG. 5

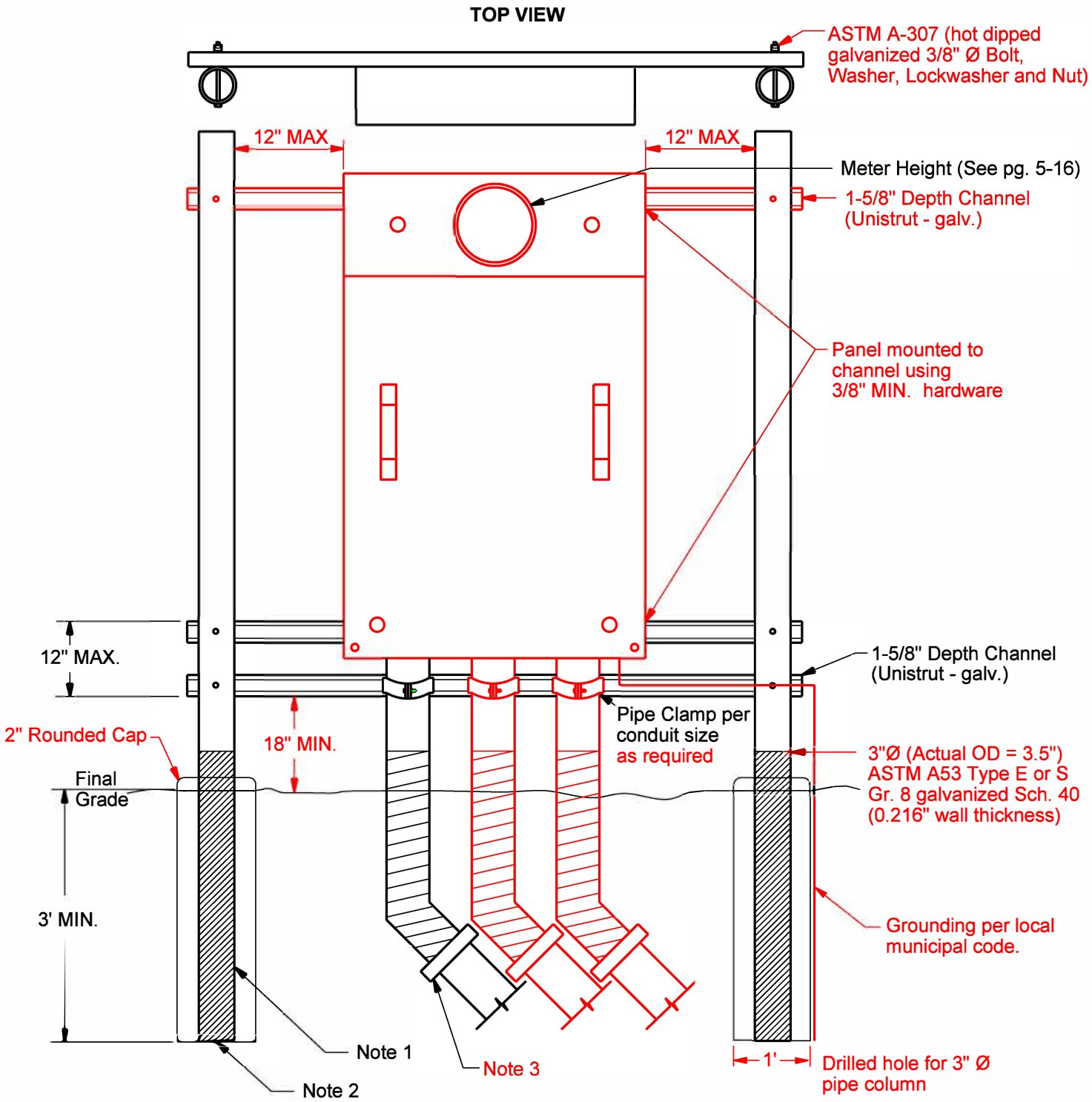
METER CUTOUT DETAIL

SERVICE	"W" DIMENSION
3 WIRE	10 1/2"MIN.

EQUIPMENT RATING	"X" DIMENSION
0-200 AMPS	18"MIN.
201-600 AMPS	22"MIN.

NOTES

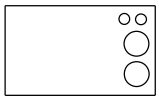
1. Refer to pages 6-1, 9-60 and 9-61 for size of service supply conduits and type of lugs. The depth of the section shall be such that it will accommodate the required conduits.
2. Provide a minimum radial clearance of 1 1/2" between hot bus terminals and grounded or neutral surfaces.
3. The pull section cover shall be independent of any service equipment other than the pull section.
4. Provide two lifting handles on pull section covers.
5. Pull section covers shall be sealable, consisting of two drilled stud and wing nut assemblies on opposite sides of the panel. All securing screws shall be captive.
6. Submit electronic copies of the plans (pdf format preferred) for all proposed SES to shopdraw @srpnet.com for approval prior to construction of the service section. Drawings must be labeled with Customer's name, job address, SRP job number or account number, and contractor's name and contact number.
7. Service supply conductors may cross over horizontal busing provided the horizontal busing is (a) barriered, or (b) fully insulated. The shaded space (shown on drawing) which has dimension "X" high by "W" wide is maintained for service supply conductors only.
8. Grounding shall comply with NEC or the AHJ.
9. All meters shall adhere to a height range of 4' to 6'-3".



NOTES

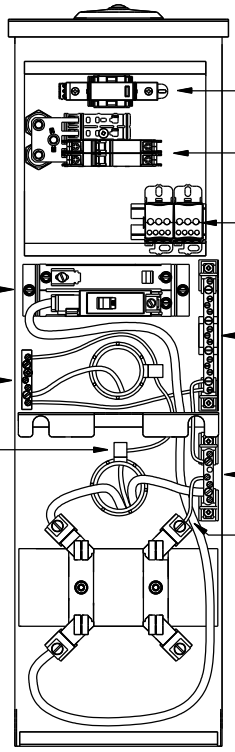
1. Metal conduit installed underground shall be wrapped with a UL approved PVC tape, minimum 1/2" overlap, to at least 6" above final grade.
2. 2500 PSI strength MIN. or Class C concrete per MAG Section 725
3. See pages 3-1 and 6-1 for conduit number and size.

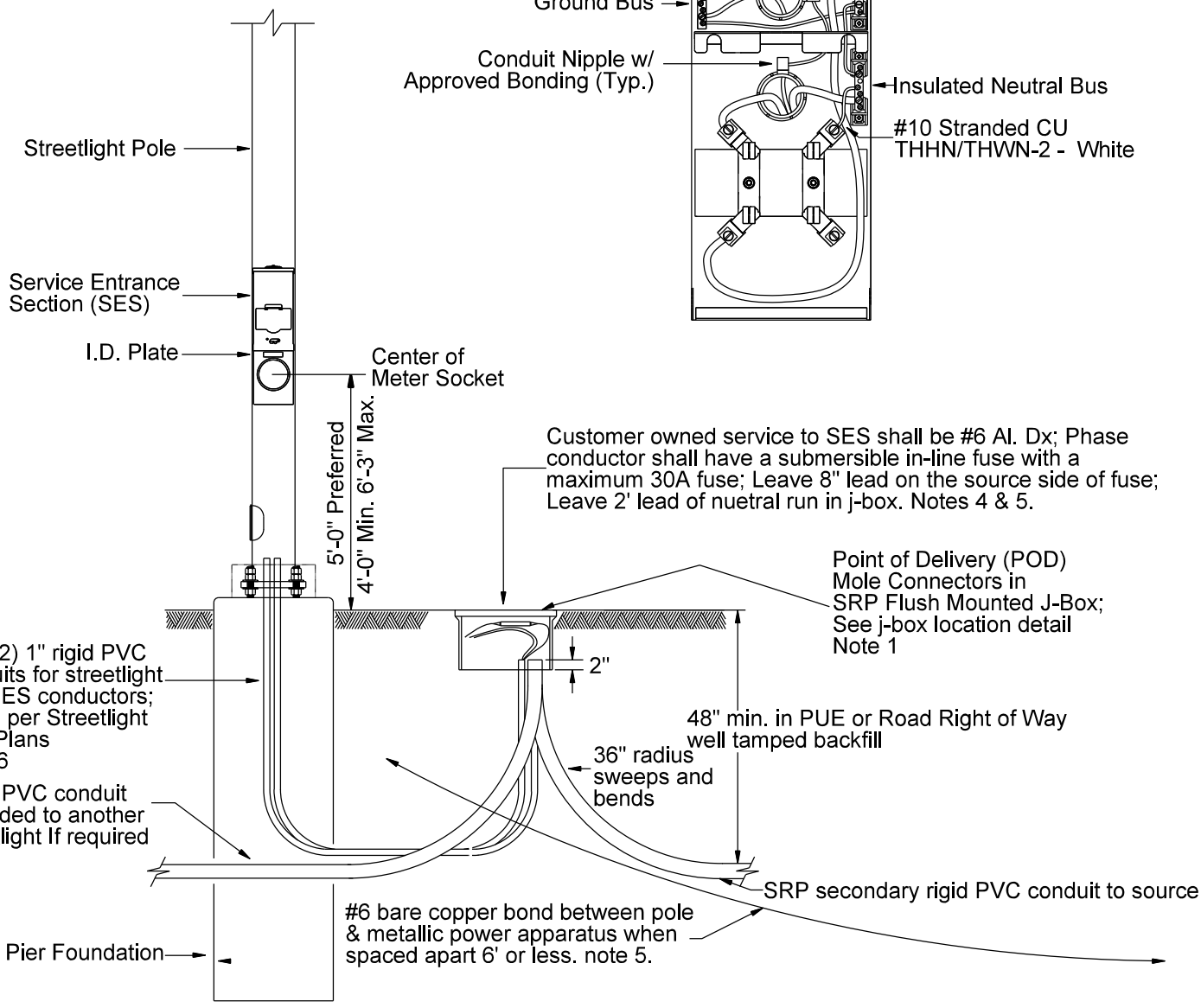
J-BOX TOP VIEW



Stub up conduit to one side of j-box and arrange as shown.

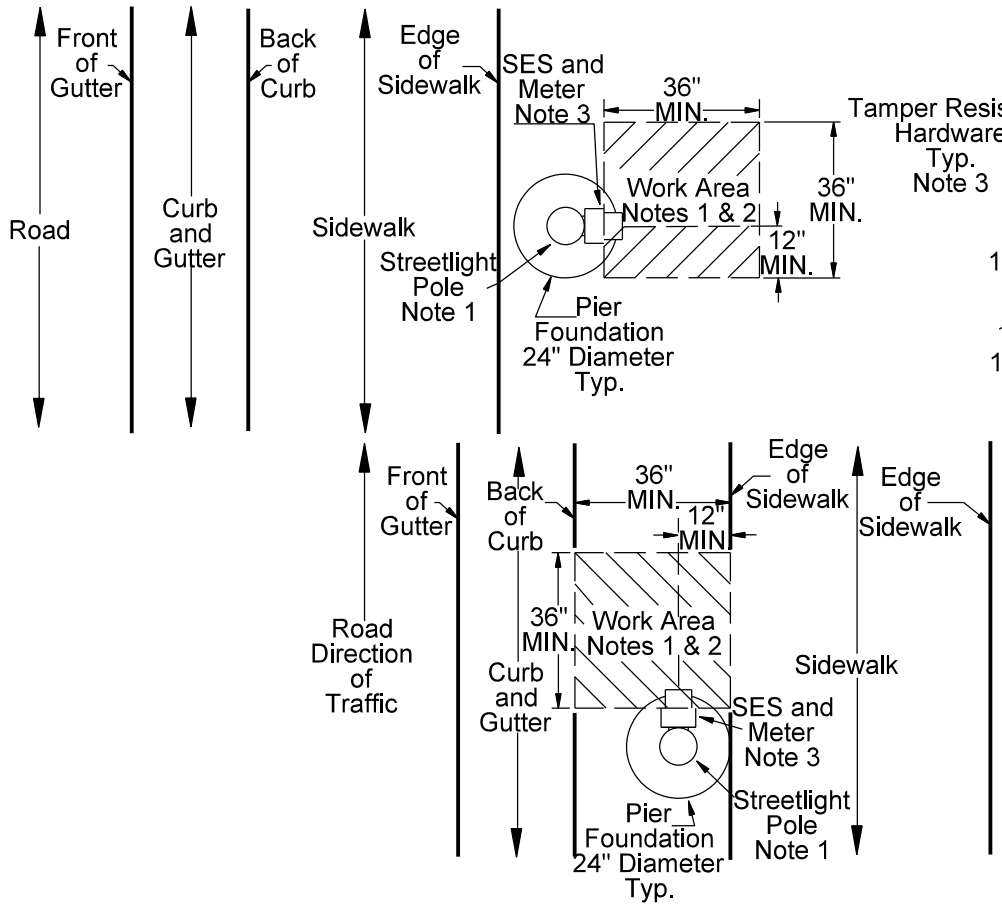
SES FRONT VIEW



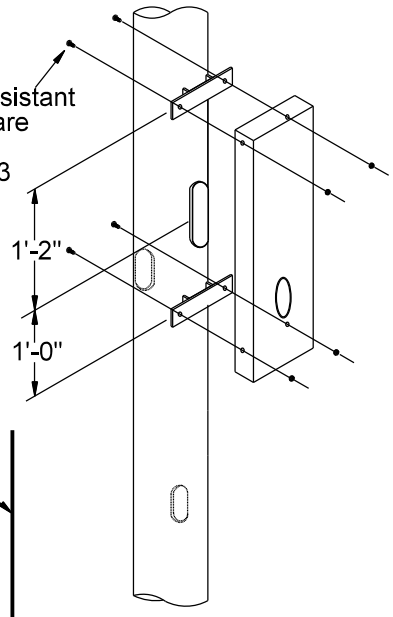


Electric Service Specifications SRP® PROPRIETARY MATERIAL		PAGE 1 OF 2
	SES - UNDERGROUND SMALL CELL SERVICE ON MUNICIPAL STREETLIGHT POLE 30 AMPS MAXIMUM	ISSUE DATE: 09/15/21 REV. DATE: APPROVAL: J. LUERA
	3-26	8509E398.DGN

SES MOUNTING ORIENTATION AND WORK AREA



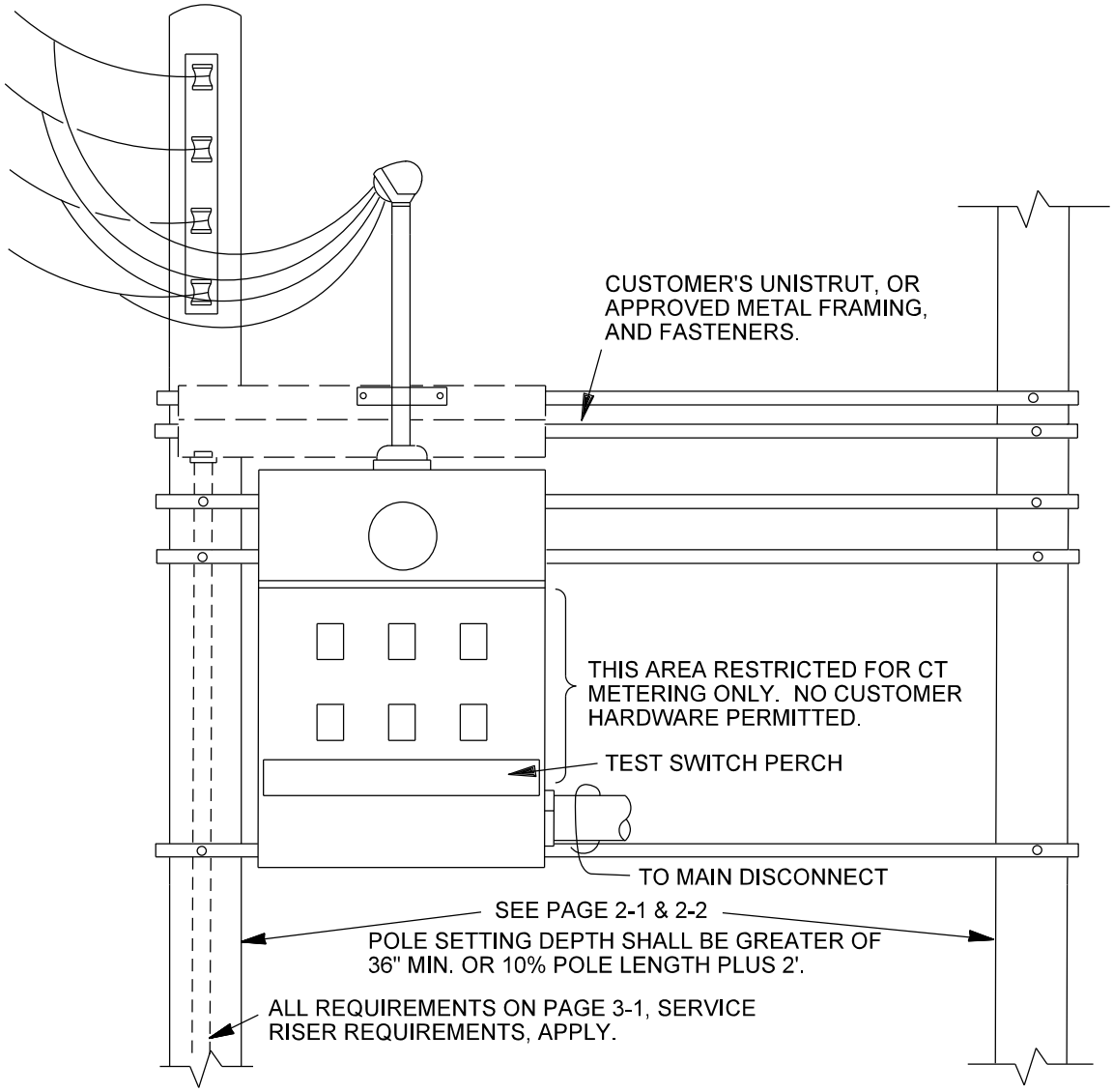
SES ATTACHMENT TO POLE



NOTES

1. See page 4-8 for locating pole and junction box (j-box). J-boxes mounted flush with grade may be in the SES work area.
2. An unobstructive work area shall be in road right of way, public utility easement, or private easement. Work area shall not extend into a sidewalk, past the back of curb, or into a driveable path. When a driveable path excluding a single family residence drive way is directly behind the work area, it shall be no closer than 60" from the front of the SES. One edge of work area to center of meter socket may be no less than 12".
3. SES shall be mounted to pole using tamper resistant hardware. SES shall be located on the field side of the pole perpendicular with the road (preferred location if work space is available) or parallel with the road and the pole is between the work area and oncoming traffic. SES shall not be mounted on a pole within roadway median.
4. Customer to install all conduit, j-box, #6 bare copper, and #6 Al Dx services per SRP design. Approved suppliers are listed in section 11 - Contractor Supplied Materials.
5. Customer shall bond SES neutral and pole to pole grounding system per Municipality requirements. When pole and any metallic power apparatus is spaced 6' or less, the pole and apparatus shall be bonded using #6 bare copper.
6. Contact Municipality for their specific streetlight conduit requirements. When the Municipality (i.e. City of Mesa) installs a separate j-box and feed for the streetlights, the designated streetlight conduit from the pole will run to that j-box..
7. Point of delivery (POD) is at the load side of SRP mole connectors in flush mounted j-box. Customer to install service conductors from j-box to SES. SRP to make final connection of the SES service conductors to mole connectors.
8. Municipality or their responsible party to install streetlight conductors from light pole to j-box. Unless by special agreement, SRP to make final connection of the streetlight conductors to mole connectors in j-box.
9. Customer shall meet the requirements set by the Municipality or Authority Having Jurisdiction. Prior to SES passing SRP inspection and obtaining a city clearance, breakers shall be installed and electrically connected.

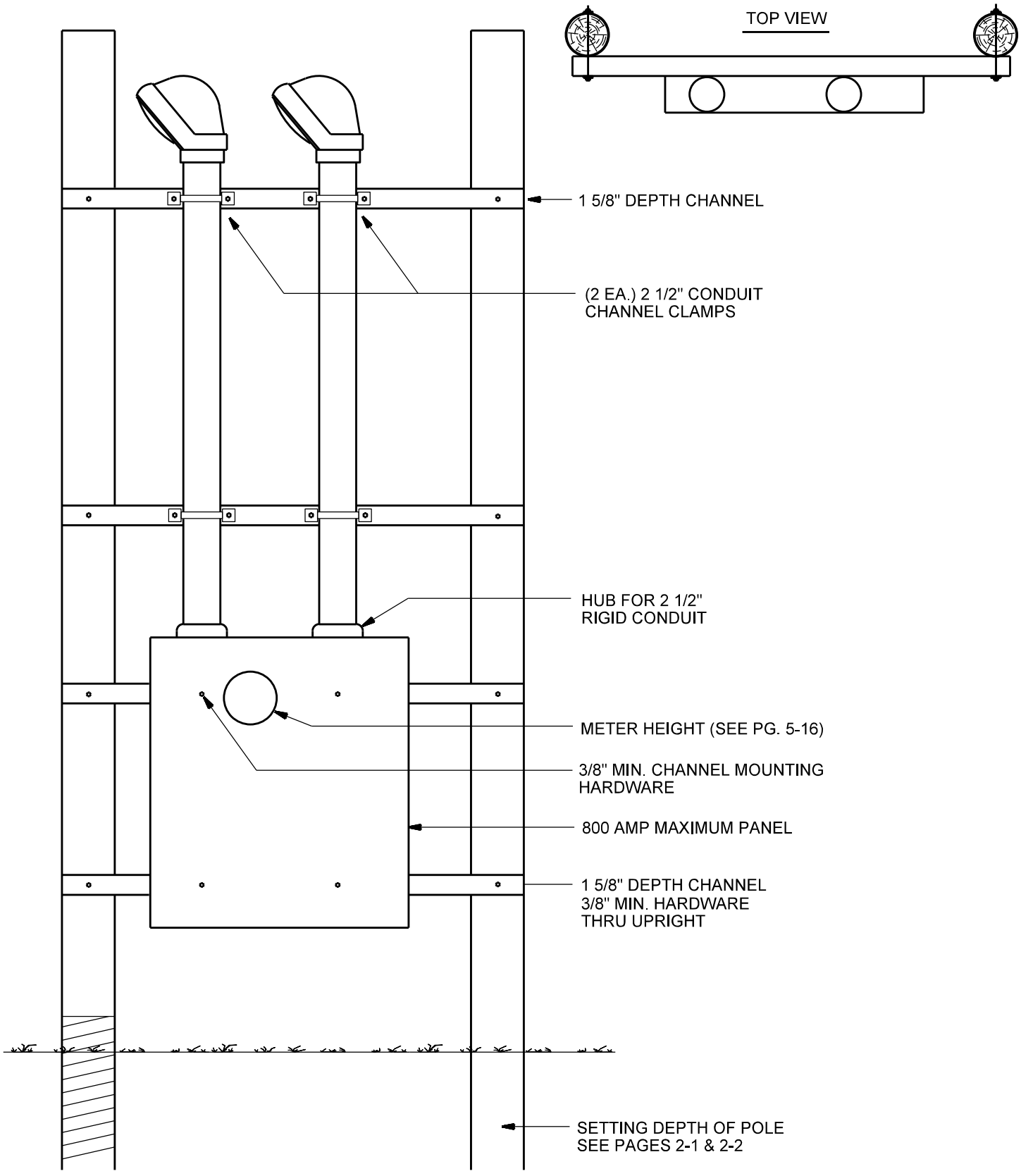
SECTION 4
COMMERCIAL – TYPES OF SERVICE

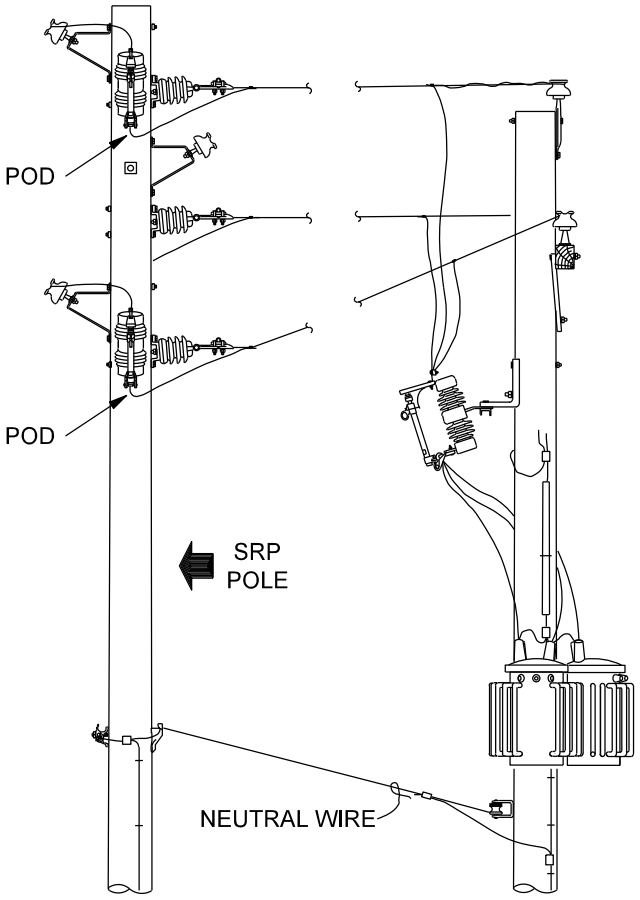


NOTES

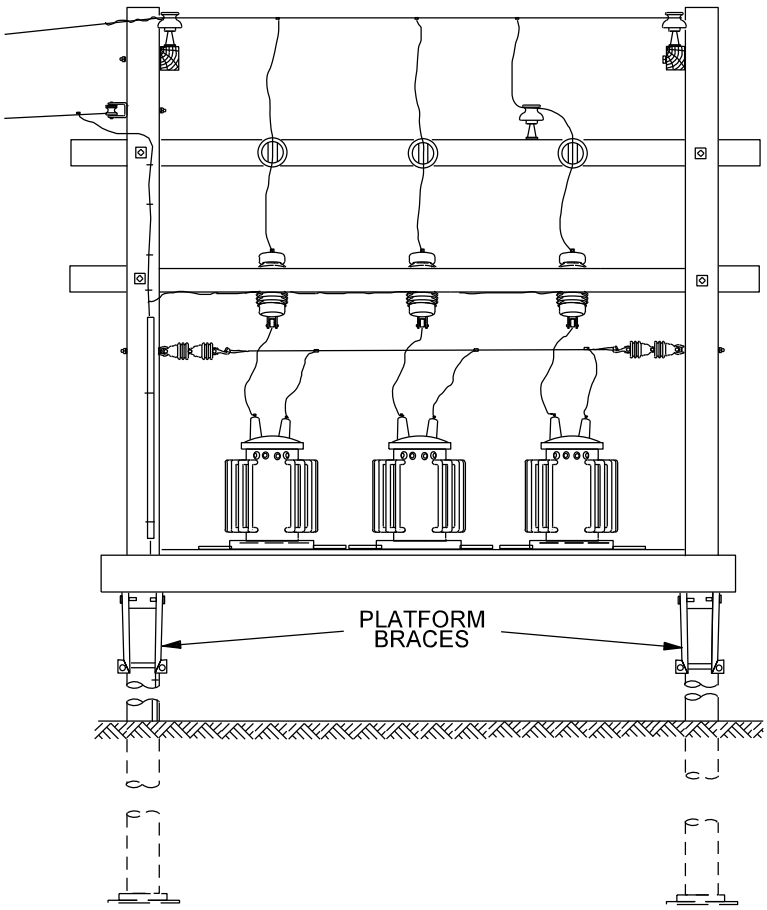
1. General Requirements
   - A. SRP reserves the right to determine the Customer's service pole location and only authorized SRP personnel of Distribution Design will determine this location.
   - B. SRP Distribution Design shall advise Customer Services of pole height requirements based on conductor, span length and areas crossed.
   - C. Do not mount SES or Customer attachments on SRP facilities (see page 2-1).
   - D. The Customer's overhead POA shall not be placed within 10' of an SRP pole or SRP's closest line.
   - E. There must be 36" minimum radial separation, as illustrated on page 5-15, from the side of electrical equipment to the nearest gas facility vent.
   - F. Grounding shall comply with the NEC or AHJ.

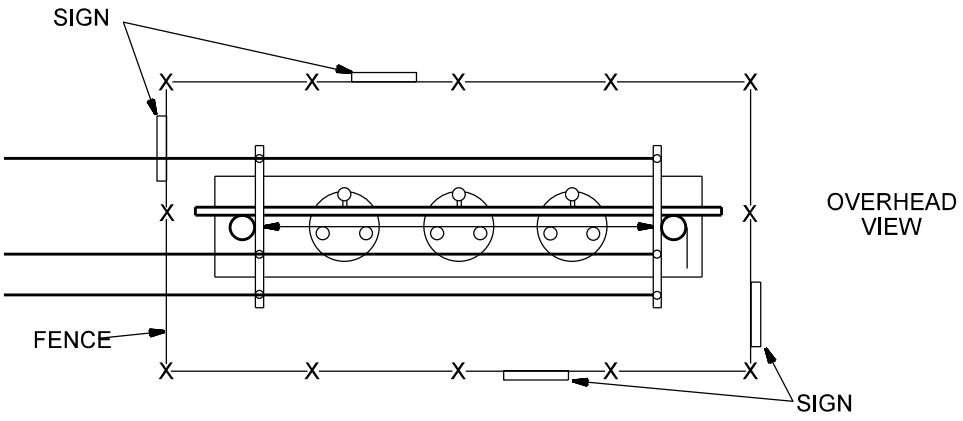
2. SES Requirements
   - A. The height to the center of the meter shall be 5' (4' min. - 6'-3" max.).
   - B. Do not cut service neutral conductor in meter socket and current transformer enclosure.
   - C. The neutral conductor shall extend into the Customer's service equipment.
   - D. No connections shall be made in the instrument transformer box to supply any other meter. No more than one load circuit shall leave the instrument transformer box.


TOP VIEW
1 5/8" DEPTH CHANNEL
(2 EA.) 2 1/2" CONDUIT
CHANNEL CLAMPS
HUB FOR 2 1/2"
RIGID CONDUIT
METER HEIGHT (SEE PG. 5-16)
3/8" MIN. CHANNEL MOUNTING
HARDWARE
800 AMP MAXIMUM PANEL
1 5/8" DEPTH CHANNEL
3/8" MIN. HARDWARE
THRU UPRIGHT
SETTING DEPTH OF POLE
SEE PAGES 2-1 & 2-2



COMPLETE FACILITY BY CUSTOMER; STRUCTURE, TRANSFORMERS, PHASE WIRE, NEUTRAL AND JUMPERS





OVERHEAD VIEW

Electric Service Specifications SRP® PROPRIETARY MATERIAL		Page 1 of 3
	COMMERCIAL - TYPES OF SERVICE WELL SITE REQUIREMENTS OVERHEAD PRIMARY SERVICE CUSTOMER-OWNED TRANSFORMERS	ISSUE DATE: 03/01/01 REV. DATE: 08/15/12 APPROVAL: W.LARAMIE
	4-3	8509E13.DGN

WELL SITE REQUIREMENTS - OVERHEAD PRIMARY SERVICE
CUSTOMER - OWNED TRANSFORMER

I. General Requirements

A. Drawings shown are for illustrative purposes only.

B. Customer shall install a 4 wire metered type SES.

C. The phase and neutral wires shall be a minimum of #2 AWG or the equivalent.

D. The minimum vertical clearance at mid-span above final grade shall be: Phase 25'; Neutral 18' at maximum operating temperature.

E. New or upgraded Customer-installed transformers shall be designed and wired to accommodate SRP installed 4-wire metering. Transformer secondary wiring will be grounded WYE.

F. POD will be the load side of the SRP primary disconnects.

II. Customer-Provided Fencing

A. Fencing will be required when:

1. The platform or bottom of the transformers is less than 14' above final grade.
2. The platform braces extend to less than 10' above final grade.

B. Fencing shall consist of:

1. Chain-link fabric a minimum of 7' in height.
2. Three strands of barbed wire or the equivalent shall be above the chain link.
3. No part of the fence shall be closer than 5', measured in any direction from any live parts or any pole.
4. At least one "DANGER HIGH VOLTAGE INSIDE" sign shall be permanently attached to the outside of each side of the fence (lettering shall be a minimum 3/4" block letters - see sign specification on page 9-3, note III.G as appropriate).
5. Fence shall be effectively grounded as per the NEC.

III. Customer Responsibilities

A. Customer will provide, install, own and maintain (excluding SRP owned meters and instrument transformers) to the POD.

B. Customer fuse devices may not be "grasshopper" type holders.

C. Customer is responsible for lightning protection.

D. Customer primary voltage protective devices shall be rated for 10,000 amps interrupting.

E. Phase and neutral wires shall be 10' longer than the distance to the SRP pole to allow for SRP connection.

F. Obtain AHJ approval.

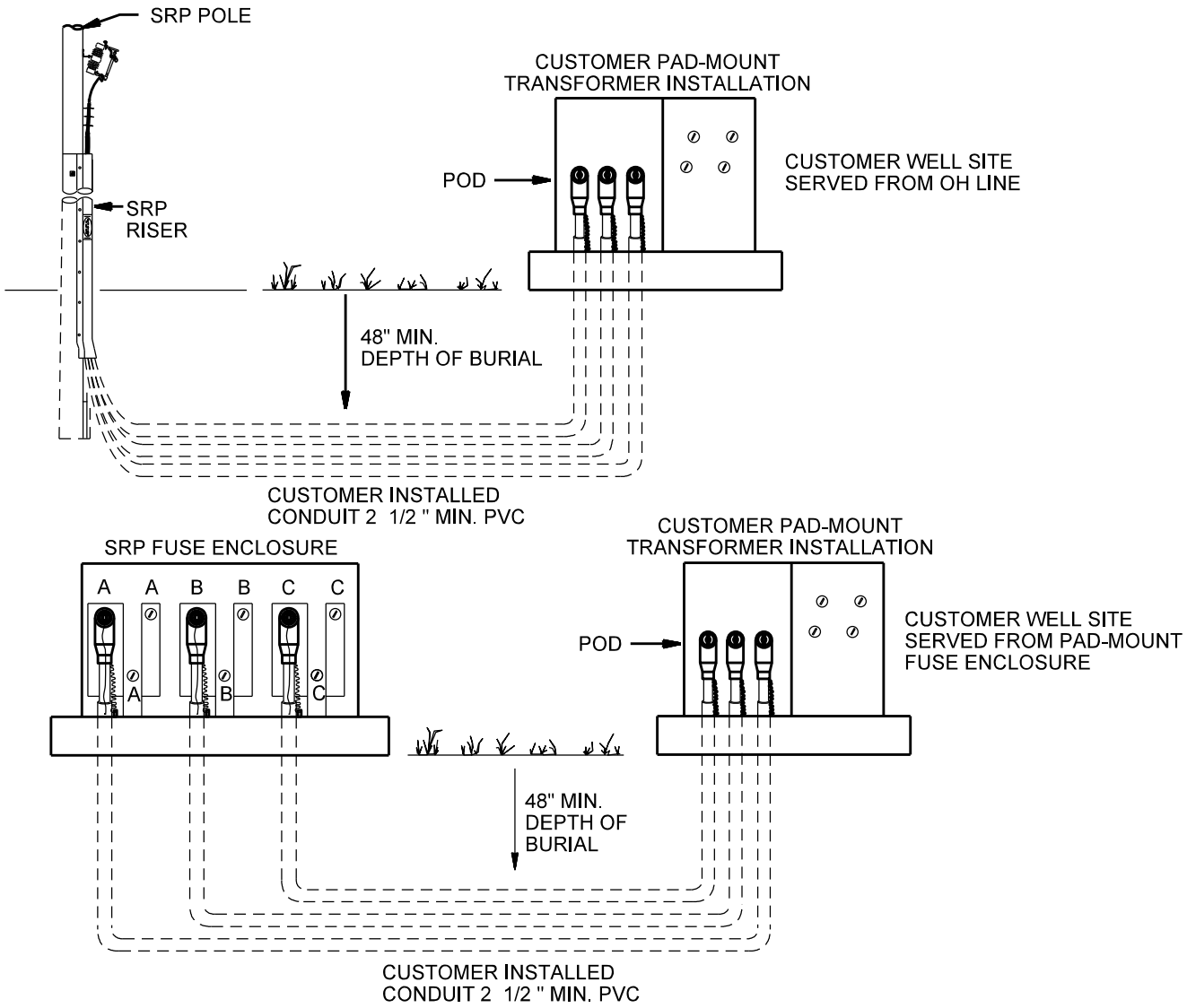
G. Minimum 10' separation from Customer's equipment to any SRP facility including lines.

IV. SRP Responsibilities

A. SRP will provide disconnect switches and dead end insulators at the POD on an SRP pole.

B. SRP will make all connections to SRP lines and provide service up to the POD.

C. The metering and instrument transformers shall be installed in the Customer's SES by SRP and will be owned and maintained by SRP.



NOTES

1. A fence shall be installed around the well site when the Customer's transformer and other facilities are not secure from unauthorized access (ANSI C57.12.28, NEC and NESC).
2. Fencing, when required, shall consist of chain link type fence a minimum of 7' in height with a minimum of three strands of barbed wire above the chain link. No part of the fence shall be less than 5' from any live parts on the transformer(s), bare conductor or any pole. At least one "DANGER - HIGH VOLTAGE" sign shall be on each side of the fence (lettering shall be minimum 1" block letters). The fence shall be effectively grounded. A 12' wide gate shall be provided that allows for direct vehicle access and working clearance for the transformer. 24/7 SRP access shall be provided.
3. SRP will provide and install riser, fuse enclosure (or other source equipment), cable and cable terminations from source to Customer's transformer. Additional charges for these facilities will apply.
4. Customer must provide and install overcurrent protection for their equipment.
5. Four-wire metering will be required.
6. Customer shall obtain AHJ approval.
7. The Customer will provide and install the transformer and all conduit to the source.
8. Customer shall provide transformer data so SRP can determine size of overcurrent protecting fuses at the source and determine transformer cable terminations.
9. Transformer shall be a dead-front pad-mount design, radially fed.
10. A gang-operated, three-pole, single-throw, oil-immersed sectionalizing switch shall be provided in the high voltage compartment of the transformer to energize or de-energize the primary windings. Switch operation shall be by spring action and independent of operator speed. Switch shall be clearly and permanently labeled ON/OFF.

CUSTOMER-OWNED STREETLIGHTS

I. The developer or the AHJ must provide SRP with a city-approved lighting plan for the project. The developer will stake the light pole and J-box locations per the approved plan.

II. The developer will install the J-box, conduit, ground rod, light pole and all components per the SRP standards as shown on the following pages.

III. The responsible party who installs the light pole will also install the wire from the street light pole to the J-box.

IV. Unless by special agreement, SRP makes the final connection of the wire in the J-box.

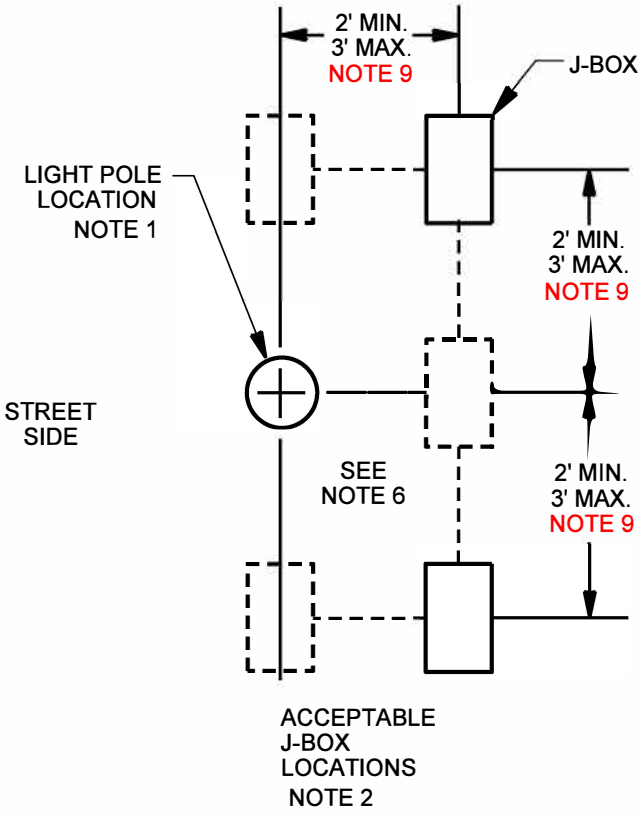
V. Public lights are unmetered services. Unmetered services are only allowed for:

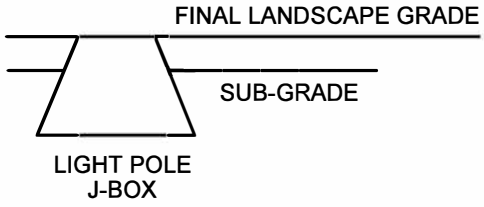
A. An outdoor luminaire controlled only by a photocell with turn on light level of 1.0 foot candle (+/- 0.25fc) and turn off light level of 1.5 foot candle (+/- 0.5fc).

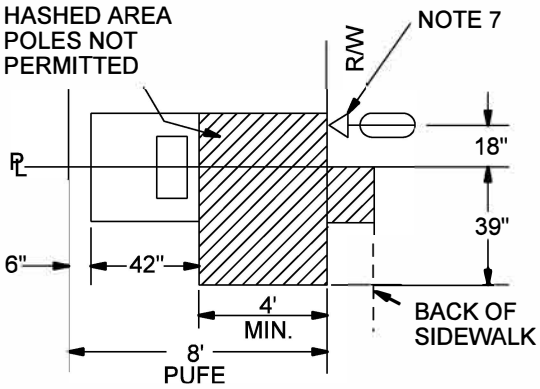
B. Lighting loads served from a controller controlled only by a photocell with the operating levels per #I.

C. Contracted loads served from an SRP light pole service, at the top of the pole, such as a Wi-Fi device. SRP reserves the right to decide, on an individual basis, if these will be allowed. Engineering must be contacted to determine the feasibility, based on but not limited to, the pole's strength and ability to support the added weight and wind load, the pole/arm/luminaire configuration, visual esthetics, electrical concerns and maintenance concerns.

When an unmetered load is converted to operate outside these stated guidelines, the Customer shall assume the entire cost to convert to a metered load. Variable lighting must be metered. If not metered, no allowance for cost savings is available. Additional charges to meter would apply, including but not limited to, metering equipment, trenching, conduit and cable costs.



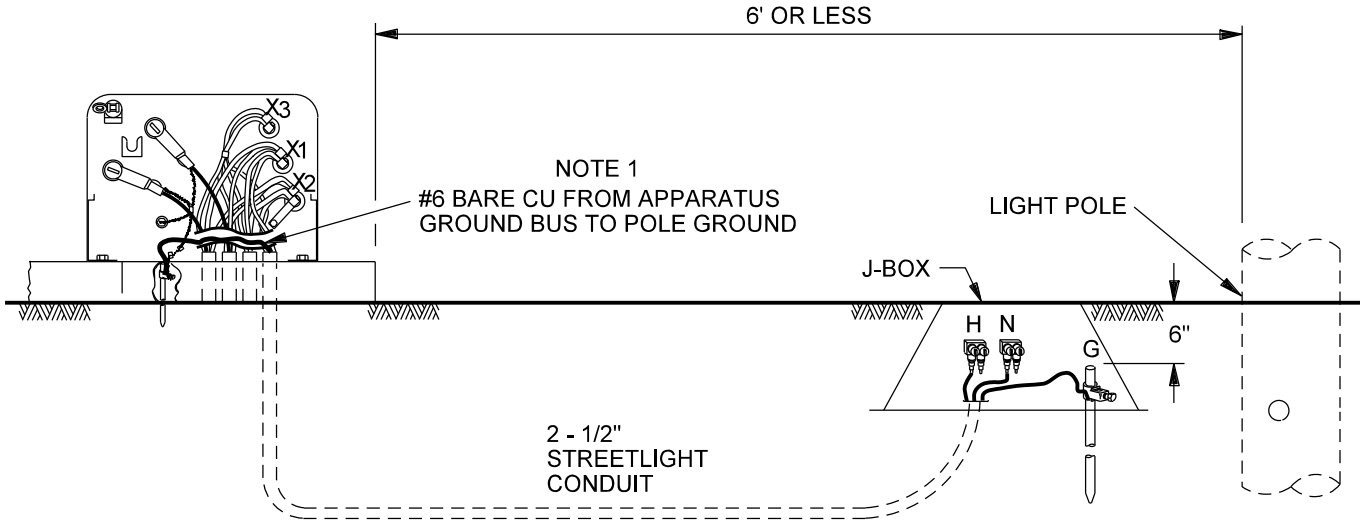




NOTES

1. Customer to stake light per approved municipal plan.
2. Grade stake to be within 2' of j-box location. customer to stake j-box location. Avoid conflict with sidewalk, landscaping, etc.
3. Ground rod to be installed for each street light location per standards on page 4-9.
4. See sonotube installation detail, page 4-9, if applicable.
5. #6 bare copper ground wire to be attached from grounding lug on street light pole to ground rod in j-box.
6. J-box may be positioned behind the pole, except in the cities of Chandler and Gilbert.
7. See light poles in Proximity of Metallic Apparatus, Bonding, page 4-8.
8. When pole is within 6' of a transformer, a #6 CU bond shall be installed from the transformer ground to the ground rod in the j-box.
9. For municipal owned streetlight relocations, the distance from j-box to streetlight may be increased to 15'.

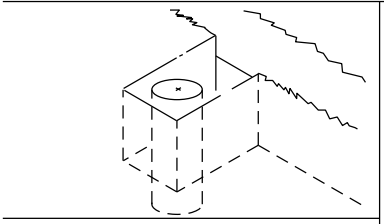
Electric Service Specifications SRP® PROPRIETARY MATERIAL	REV. ADDED NOTE 9	
	COMMERCIAL - TYPES OF SERVICE STREETLIGHT POLE AND J-BOX LOCATION DETAILS	ISSUE DATE: 11/29/04 REV. DATE: 5/18/20 APPROVAL: J. Luera
	4-8	8509E157.DGN

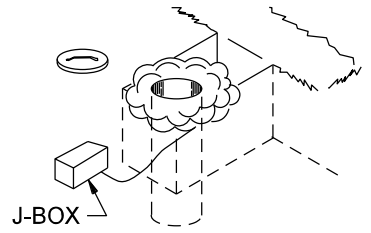


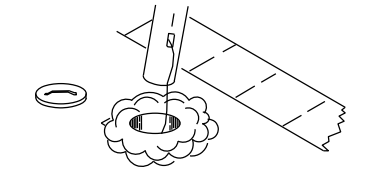
NOTES

1. Bonding shall be provided between all above ground metallic power and communications apparatus (pedestals, terminals, apparatus cases, transformer cases, metal poles, etc.) that are separated by a distance of 6' or less.

2. The pad-mounted 1∅ transformer above shows where conduit exists between apparatus and j-box. if no conduit exists, as would be the case with a switch, capacitor, etc., the #6 bare copper bond wire may be direct buried (minimum depth 24").





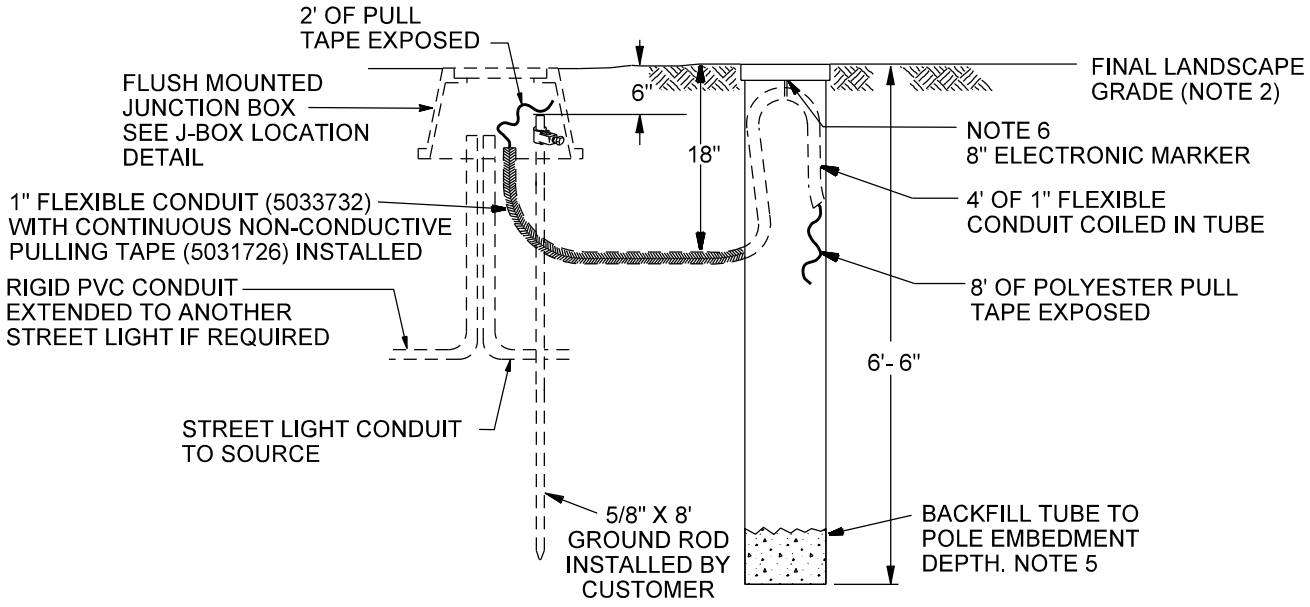


SONOTUBE INSTALLATION

1. Dig hole for tube in street light stub-out trench.
2. Install tube flush to final landscape grade.
3. As the tube is being installed, the flexible duct from the j-box should be inserted into the tube through the cable entrance hole. Do not make sharp bends in this duct. Coil 4' of flexible duct inside (shown below).
4. Compact the tube backfill by tamping the earth firm.
5. Backfill the inside of the tube with native soil to pole embedment depth.
6. Secure the electronic marker to the lid with the tie provided and place lid on the tube.
7. SRP locator will mark the lid location through blue stake notice.

POLE INSTALLATION IN TUBE

8. Light installer digs down to lid, removes lid, pulls duct from tube.
9. End of duct is inserted through light pole cable access hole and pushed up to hand hole as light pole is lowered into tube.
10. The pole has a 3/4" red tape band to mark the final landscape grade embedment depth. This tape should be at final landscape grade.
11. Pole is held securely vertical in center of tube while backfilling with pole set foam.
12. If the pole is fiberglass, place the collar around the base. The collar should lay flat on the ground at final landscape grade. Remove excess sonotube to achieve this.



Electric Service Specifications SRP® *PROPRIETARY MATERIAL*	COMMERCIAL - TYPES OF SERVICE LIGHT POLE INSTALLATION TUBE	ISSUE DATE: 11/29/04 REV. DATE: 09/23/2013 APPROVAL: W.LARAMIE
	4-10	8509E159.DGN

SECTION 5
CLEARANCES

JOINT TRENCH

ALLOWED JOINT TRENCH INSTALLATIONS WITH SRP DISTRIBUTION

SRP Conductor Type	Telco and CATV	Natural Gas	Water and/or Sewer (Note 1)	SRP Communication
Services	Yes	Yes Residential Subdivisions only	No (See Note 1A & 1B)	Yes
Service, Secondary and #2 Primary	Yes	Yes Residential Subdivisions only	No (See 1B)	Yes
Service, Secondary, #2 and 4/0 Primary	Yes	Yes Commercial Private Property Only (not in PUE)	No (See 1B)	Yes
Feeder	Yes	No (See Note 5)	No (See 1B)	Yes

NOTES

1. Joint trench shall not contain water and/or sewer lines with SRP electric facilities.

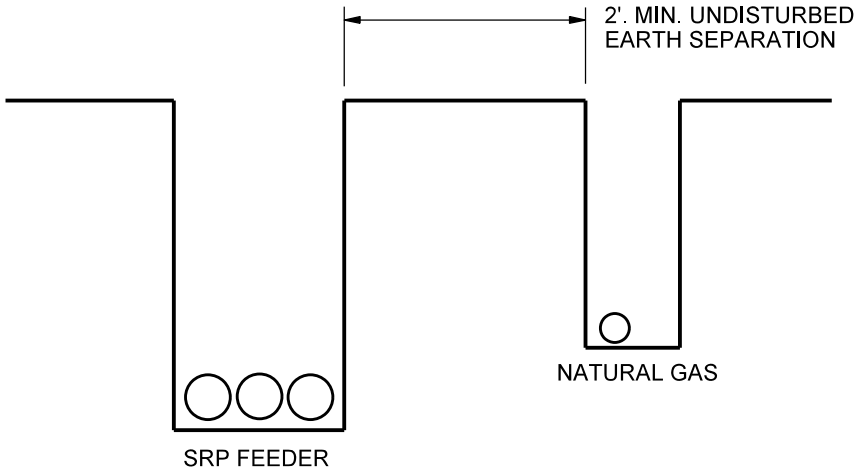
   Exception:

   A. In single family residential subdivisions, water service is permitted in a joint trench with SRP service conduit from the PUE to the service entrance section working space. Water lines shall maintain minimum 12” separation (radial) from the SRP service conduit.
   B. Unless trenching is in solid rock and supplemental protection is provided for the SRP facility, minimum 2500 psi concrete no load (weight) transferred between facilities.

2. SRP Electric and SRP Communications facilities shall be at the bottom of the trench.
3. All joint trench locations shall have a maximum backfill soil density per ASTM D698, at or near optimum moisture (see pages 6-19 through 6-20). Mechanical compaction is not allowed within 6” of electric conduit.
4. Joint trench width shall not exceed 30”.
5. Joint use trench with feeder is not allowed because it presents an obstacle to future feeder access. The following acceptable alternatives will be allowed:

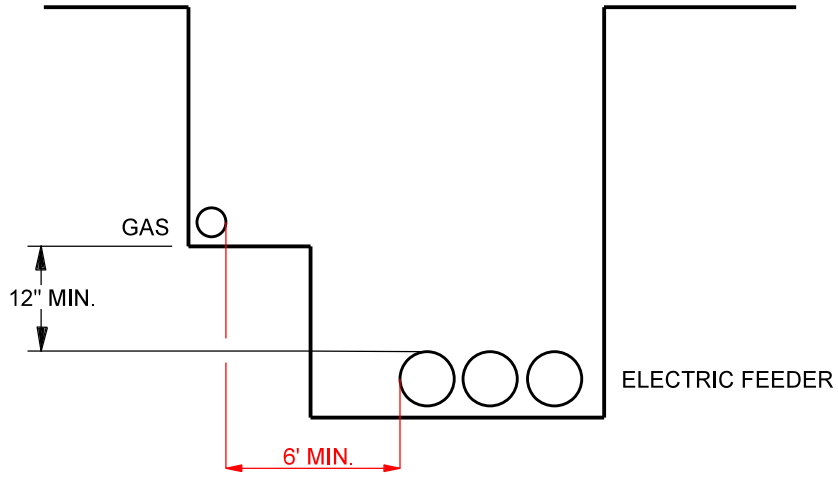
   A. A separate feeder and gas trench with a minimum of 2’ of undisturbed earth between the two trenches.
   B. A shelf-type trench with a minimum horizontal clearance of 6’ and a minimum vertical clearance of 12” between the feeder and gas.

SEPARATE TRENCH



JOINT TRENCH FEEDER WITH GAS

(SHELF OR STEP-TYPE TRENCH)

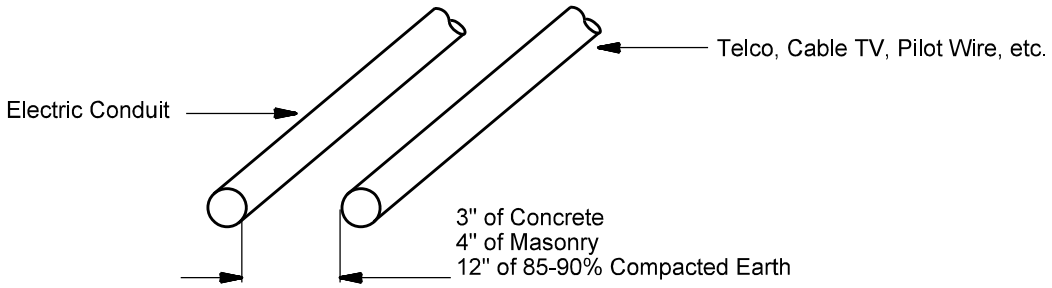


NOTE: See Page 5-1, NOTE 5.

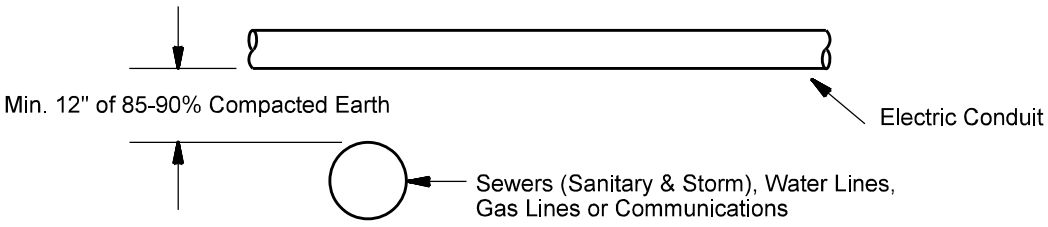
Electric Service Specifications SRP® *PROPRIETARY MATERIAL*	REV: UPDATED JOINT TRENCH DRAWING	
	CLEARANCES JOINT TRENCH FEEDER & GAS	ISSUE DATE: 11/12/10 REV. DATE: 08/10/21 APPROVAL: K. MacFadyen
	5-2	8509E317.DGN

NOTES

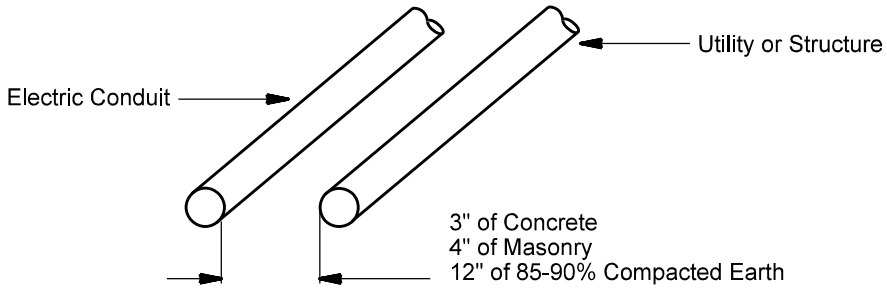
1. Minimum vertical or horizontal separations between electric conduit systems and communications conduit systems (NESC Rule 320B2):



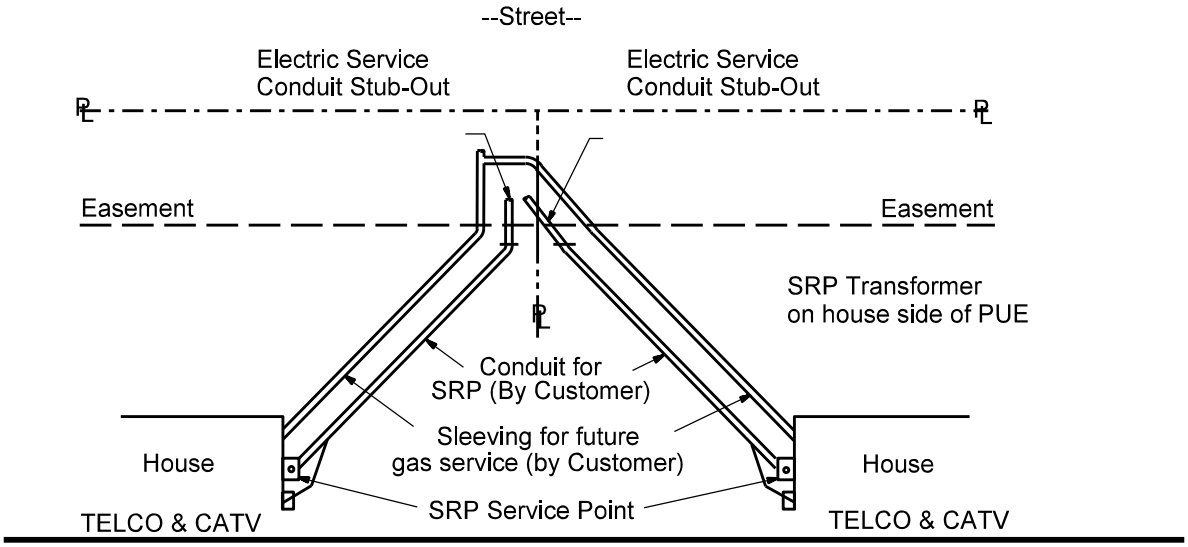
2. Minimum clearance between an electric conduit system and other existing underground structures or utilities (Note 4):

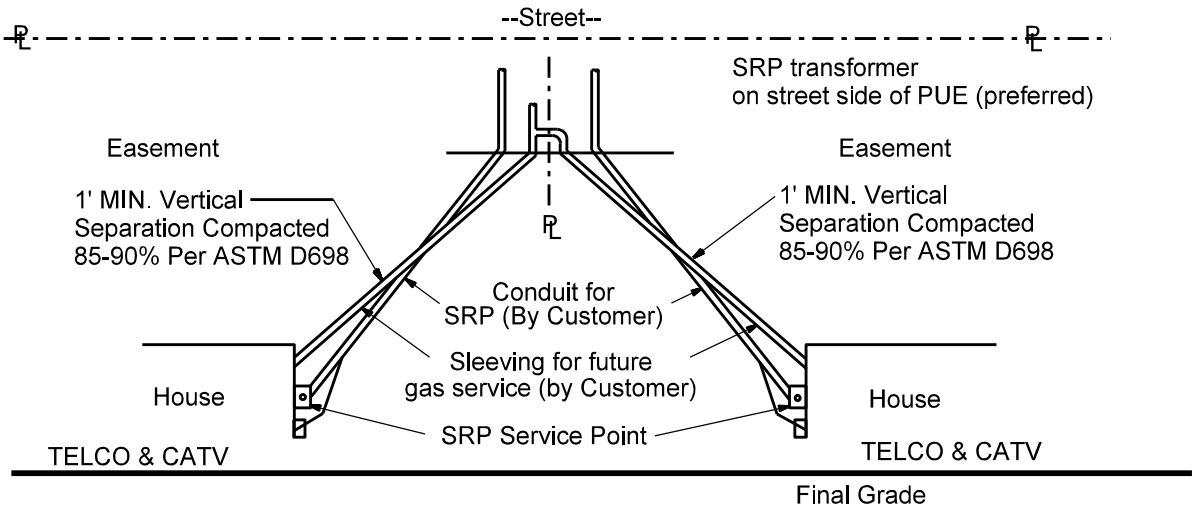


3. Horizontal clearance for parallel structures (NESC Rule 320B):



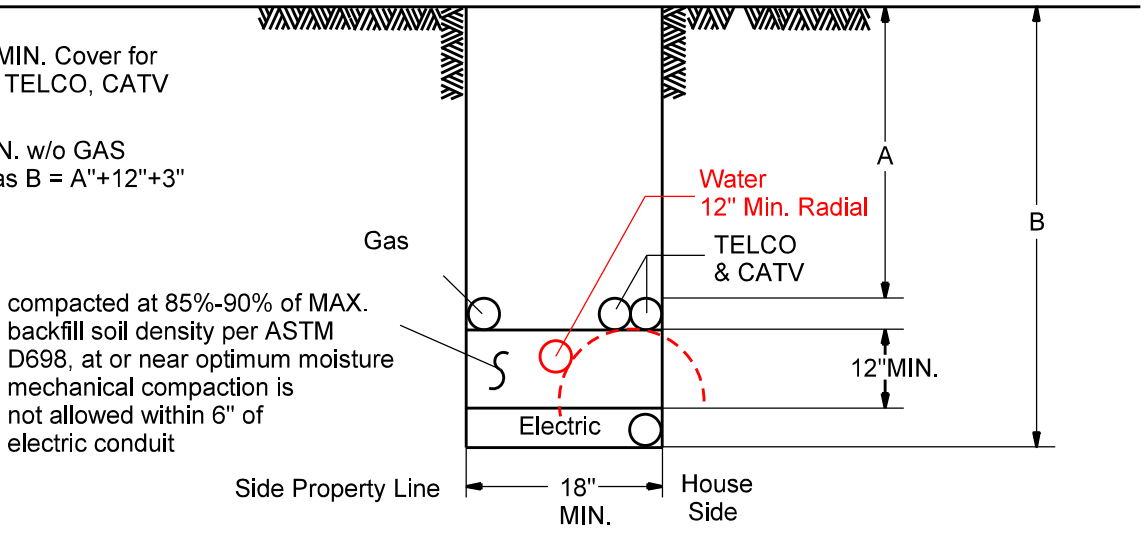
4. An alternative to 12" of 85-90% compacted earth is a rigid support for the upper structure to prevent it from transferring any direct load to lower structure.
5. Conduit should be installed as far as practical from a water main to protect it from being undermined if the main breaks.
6. Municipals and other utilities may have additional requirements.





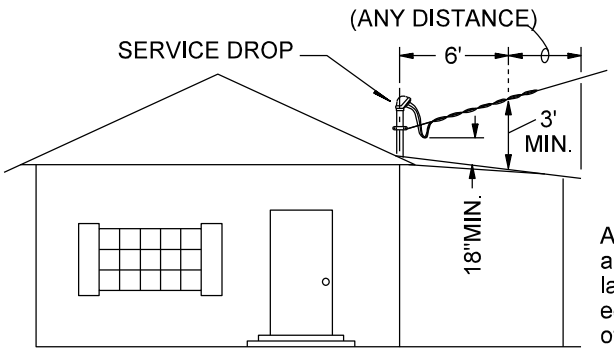
A. Verify MIN. Cover for GAS & TELCO, CATV

B. 39" MIN. w/o GAS
with Gas B = A"+12"+3"

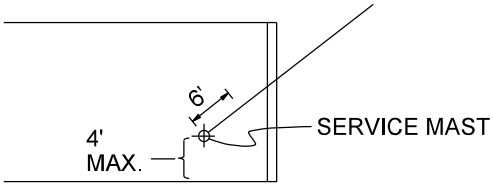


Electric Service Specifications SRP® *PROPRIETARY MATERIAL*	REV. ADDED WATER LOCATION	
	CLEARANCES CONDUIT STUB-OUT TO RESIDENCE JOINT TRENCH	ISSUE DATE: 02/11/05 REV. DATE: 04/21/20 APPROVAL: J. Luera
	5-4	8509E160.DGN

CLEARANCE OF SERVICE DROPS

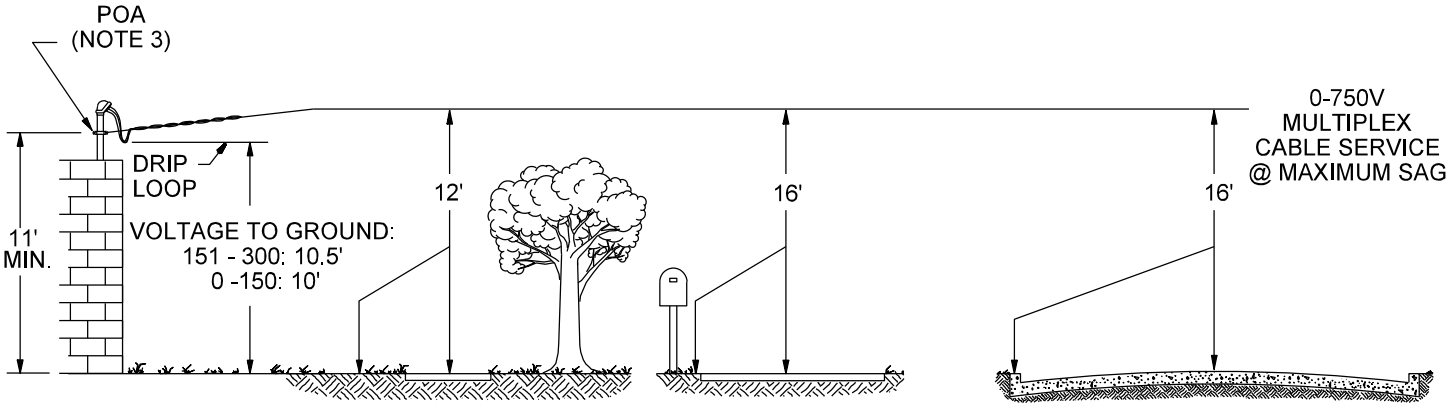


ROOF NOT READILY ACCESSIBLE



TOP VIEW

Applicable for triplex cable and a thru-the-roof mast only. Roof is not readily accessible to pedestrians (no doorway, ramp, stairway or permanently mounted ladder). The mast is located a maximum horizontal distance of 4' from roof edge. The minimum clearance of the cable above the roof within a 6' radius of the mast may be 18". Beyond the 6' radius, the minimum clearance of the cable above the roof may be 3'.



AREAS ACCESSIBLE TO PEDESTRIANS ONLY, WHERE MOBILE UNITS EXCEEDING 8' IN HEIGHT ARE PROHIBITED.

EXCEPTION
FOR VOLTAGES TO GROUND OF:
151V - 300V, 10.5'
0 - 150V, 10'

DRIVEWAYS, PARKING LOTS AND ALLEYS

EXCEPTION
RESIDENTIAL DRIVEWAYS
FOR VOLTAGES TO GROUND OF:
151V - 300V, 12.5'
0 - 150V, 12'

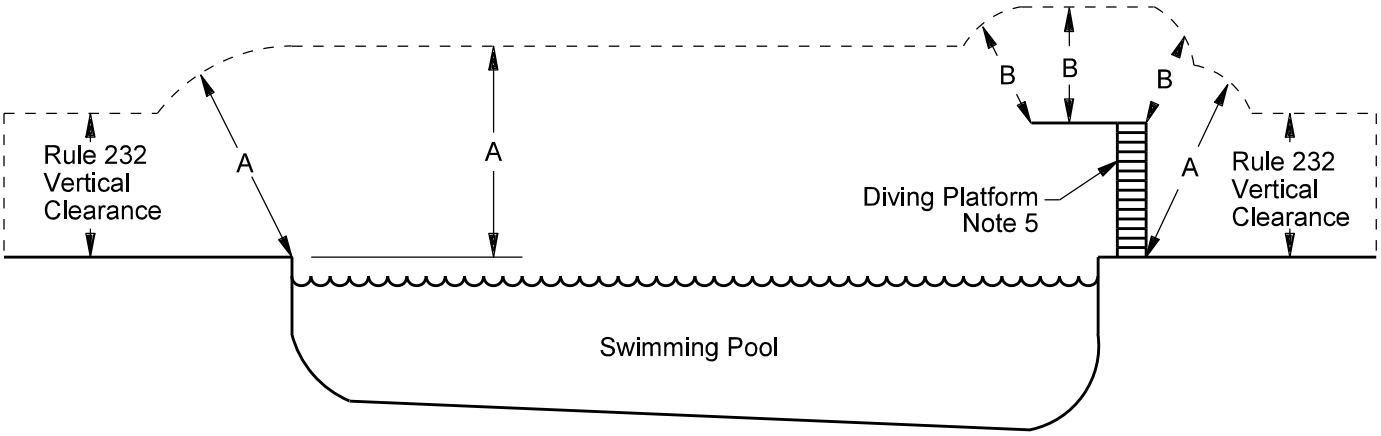
WITHIN THE PUBLIC R/W OF URBAN OR RURAL ROADS AND STREETS

-ALSO-
COMMERCIAL AREAS,FARM LAND, ORCHARDS,GRAZING LAND & FORESTS THAT MAY BE TRAVERSED BY TRUCK TRAFFIC OR OTHER VEHICLES EXCEEDING 8' IN HEIGHT.

NOTES

1. Clearance from building openings (NESC Art. 234 c): Conductors shall have a minimum horizontal clearance of 5' from windows, doors, porches, fire escapes or similar locations.
2. Clearance from SRP overhead poles and lines: Customer's overhead POA shall not be placed within 10' of any SRP pole and must not be located within 10' of SRP's line.
3. POA shall be 11' minimum above ground but electrical clearances my require the POA to be higher. Contact SRP Design representative to determine actual required POA height.
4. Upper drawing: NESC Rule 234C3; lower drawing: NESC Rule 232.
5. The AHJ may have more stringent requirements for facilities under their jurisdiction.

SWIMMING POOL CLEARANCES FROM UTILITY OWNED, OPERATED AND MAINTAINED SUPPLY LINES AND SERVICE DROPS (NESC Rule 234E)

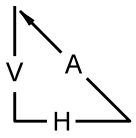


Clearance Dimensions (Feet)

DIMENSION	GROUNDED GUYS & NEUTRALS 0-22 kV UNGROUNDED GUYS EXPOSED TO 0-300 V	MPX CABLE 0-750 V UNGROUNDED GUYS EXPOSED TO 300-750 V	OPEN WIRE 0-750 V	UNDERGROUNDED GUYS EXPOSED TO 750 V-22 kV	OPEN WIRE 750 V-22 kV	69 kV
"A"	22 Note 2	22.5 Note 2	23	24.5	25	26
"B"	14 Note 2	14.5 Note 2	15	16.5	17	18

NOTES

1. All voltages are phase to ground, except 69 kv, which is phase to phase with conductor at maximum operating temperature of 212°F for distribution and 167°C for transmission, final sag.
2. Does not apply when conductors are more than 10' horizontally from edge of pool or diving platform.
3. Minimum clearances must be maintained from neighboring services.
4. Avoid crossing over pools whenever possible.
5. To determine the minimum clearance over a diving platform, use the larger of:
   - Dimension "A" from table
   - Dimension "B" plus the diving platform height
6. To calculate the vertical clearance with a given "A" or "B" dimension and a horizontal distance from an edge:

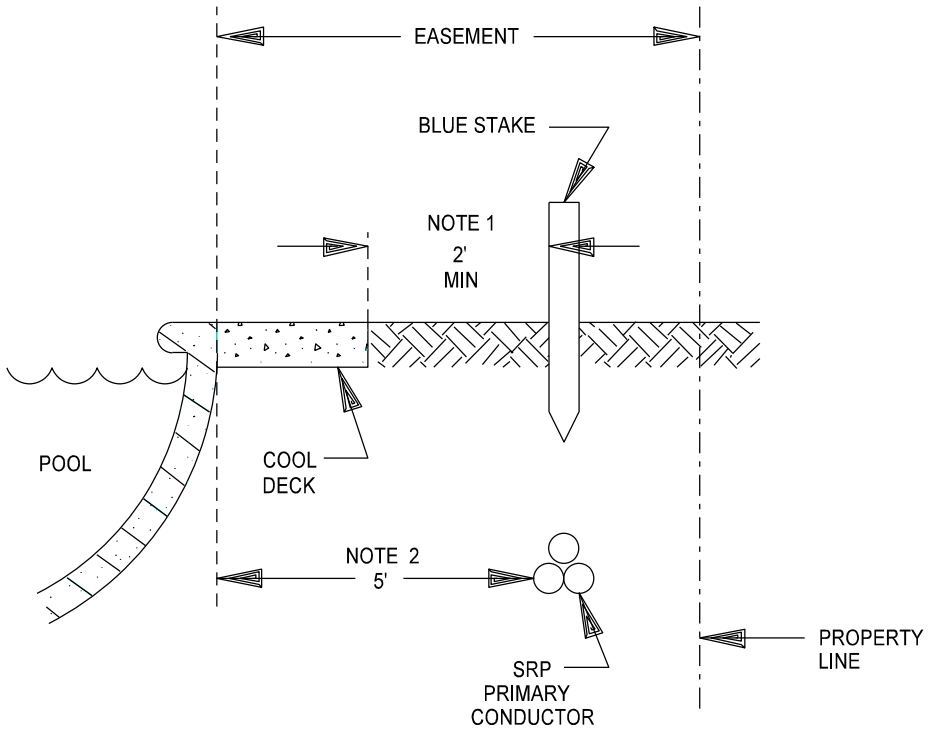


$$V = \sqrt{A^2 - H^2}$$

7. Contact local municipality for additional clearance requirements which may prevail.

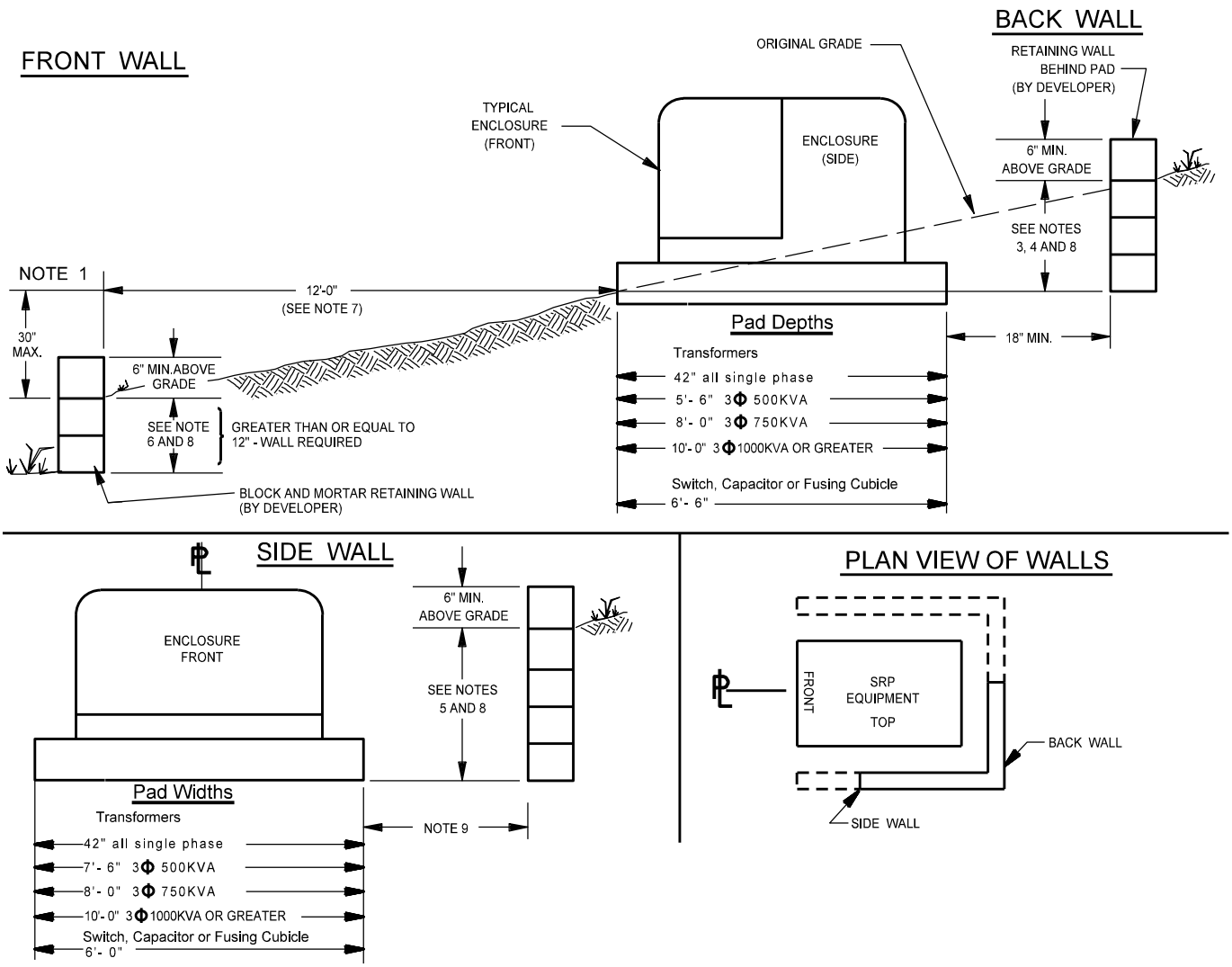
Electric Service Specifications SRP® PROPRIETARY MATERIAL	REV. UPDATED TABLE AND REFORMATTED	
	CLEARANCES SWIMMING POOL OVERHEAD LINE CLEARANCES	ISSUE DATE: 04/15/86 REV. DATE: 06/28/18 APPROVAL: N.SABBAH
	5-6	8509E82.DGN

Rear Lot Easement Where Facilities Exist



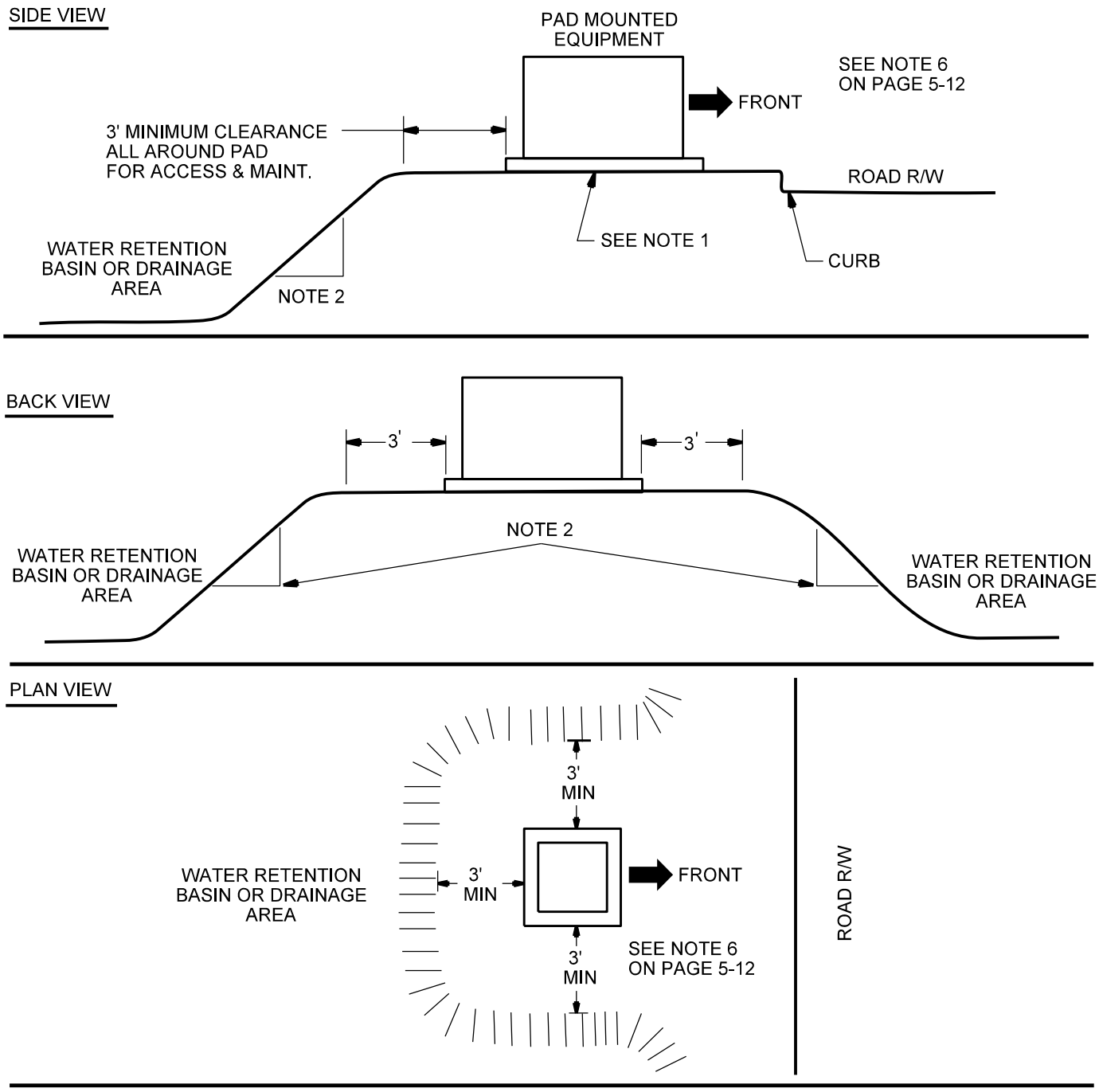
NOTES

1. Cool decking may encroach to within 2' of the staked location of SRP underground facilities.
2. The swimming pool and auxiliary equipment, above or below grade, shall not be installed within 5' of direct buried cable. If facilities are in conduit, a separation of 2' is required.
3. Contact Land Rights Management to request permission to encroach on an SRP easement or log onto srpnet.com/about/land/secure/Land Department/EasementEncroachment.aspx to access the online form.



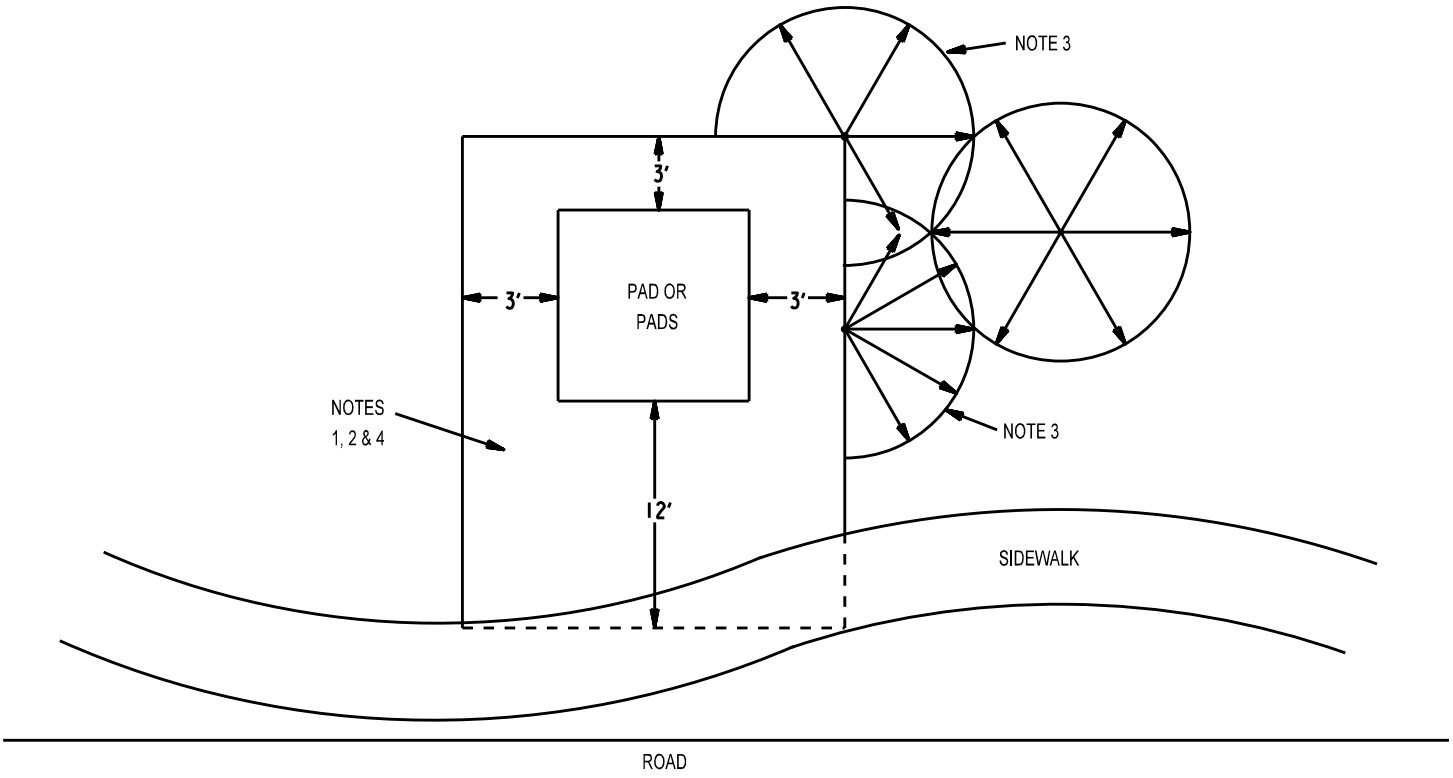
NOTES

1. When it becomes necessary to notch-out or fill a slope to install an enclosure, the cleared area should be of sufficient size to accommodate the enclosure and shorings. Slope in front of enclosure shall not be greater than 30" in 12'. All grading is to be done by developer.
2. Area under and behind pad must be level and compacted. See compaction requirements on page 6-20.
3. A back retaining wall is required when the change in ground elevation is 12" or more at any point, 18" or less behind the pad.
4. A side retaining wall is required when the change in ground elevation is 18" or more at any point, 18" or less behind the pad.
5. A side retaining wall is required when the change in ground elevation is 12" or more at any point, 18" or less to the side of the pad.
6. A front retaining wall is required when the change in ground elevation is 12" or more at any point, 12' or less in front of the pad.
7. This dimension may be 4' if measured from curb. Slope in front of enclosure shall not be greater than 10" in 4'.
8. Developer shall install guardrail per the AHJ.
9. 3' minimum on all equipment EXCEPT 1Ø transformers. On 1Ø transformers, 18" minimum allowed for fire and retention walls.
10. See Dry Landscape Requirements on page 5-8.



NOTES

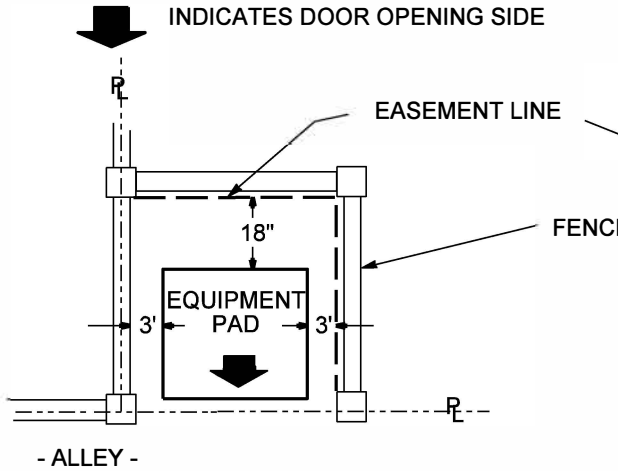
1. The customer shall provide SRP a geotechnical report of the area confirming compliance with SRP's compaction requirements. All fill material shall be native compacted fill and in compliance with the geotechnical report. See top of page 6-20.
2. The maximum slope per SRP requirements is 3 horizontal to 1 vertical. If steeper, submit a set of engineered calculations showing a slope stability analysis or a retaining wall design to Policy, Procedures & Standards for approval.



NOTES

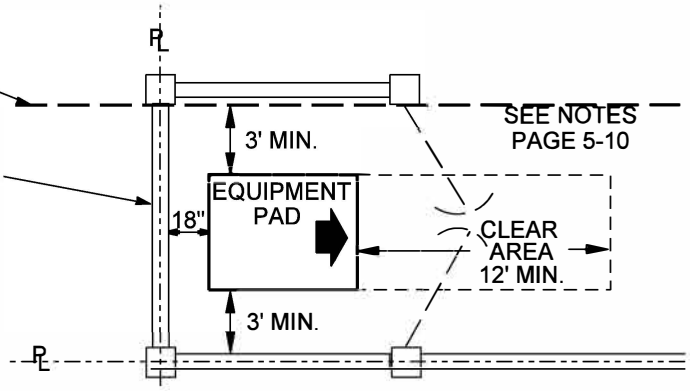
1. Easement grantor shall maintain a clear area that extends 3' from and around all edges of all transformer pads and other equipment pads and a clear operational area that extends 12' immediately in front of all transformer and other equipment openings. Do not place obstructions, trees, shrubs, fixtures or permanent structures within aforementioned areas. Easement documents may supersede these requirements.
2. This same clear area shall be dry landscaped.
3. Direct sprinkler heads away from pad-mounted equipment, as shown above. Sprinkler heads shall not spray on pad-mounted equipment or dry landscaped area around equipment.
4. Dry landscape surface may be native soil, concrete, asphalt pavement or crushed granite or gravel with a maximum particle size no greater than 1".
5. A border curb is required if SRP installs the landscape.

DETAIL 1



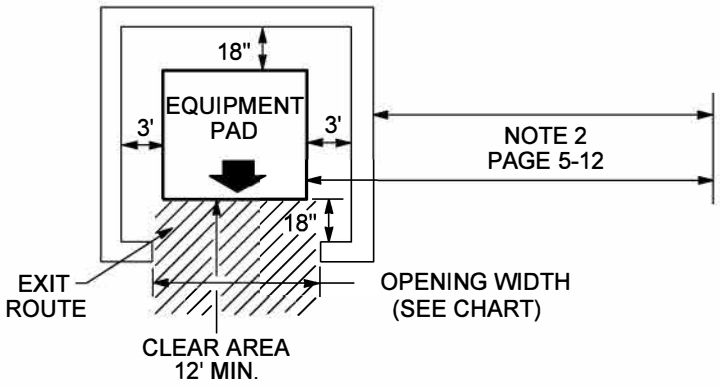
PAD MOUNTED TRANSFORMER OR OTHER EQUIPMENT IN ALLEY

DETAIL 2



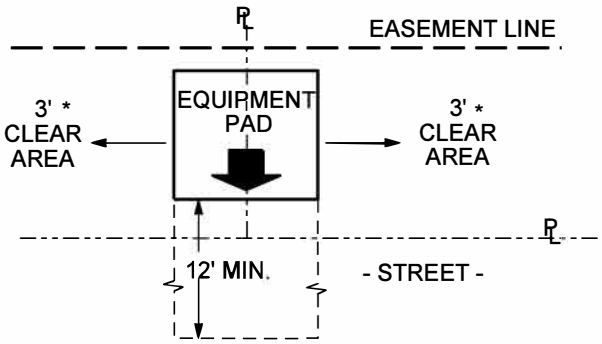
PAD MOUNTED TRANSFORMER OR OTHER EQUIPMENT IN BACK LOT UTILITY EASEMENT

DETAIL 3



EQUIPMENT ENCLOSERS IN COMMERCIAL AREAS

DETAIL 4



PAD MOUNTED TRANSFORMER OR OTHER EQUIPMENT IN FRONT OR SIDE LOT EASEMENT
* MAY BE 18" FOR FIRE OR RETENTION WALLS AROUND TRANSFORMERS ONLY.

NOTES

The distances shown around equipment pads shall be totally unobstructed. These distances also apply to poles & structures in overhead areas.
EXCEPTION: No pole or structure shall be totally enclosed by a wall or fence with an access gate (upper right diagram not allowed in overhead areas).

TYPE OF EQUIPMENT	MINIMUM OPENING WIDTH
All Except 3Ø Transformers Below	6 1/2'
150 - 500 kVA Transformers	10'
750 - 1,000 kVA Transformers	12'
1,500 - 2,500 kVA Transformers	12'

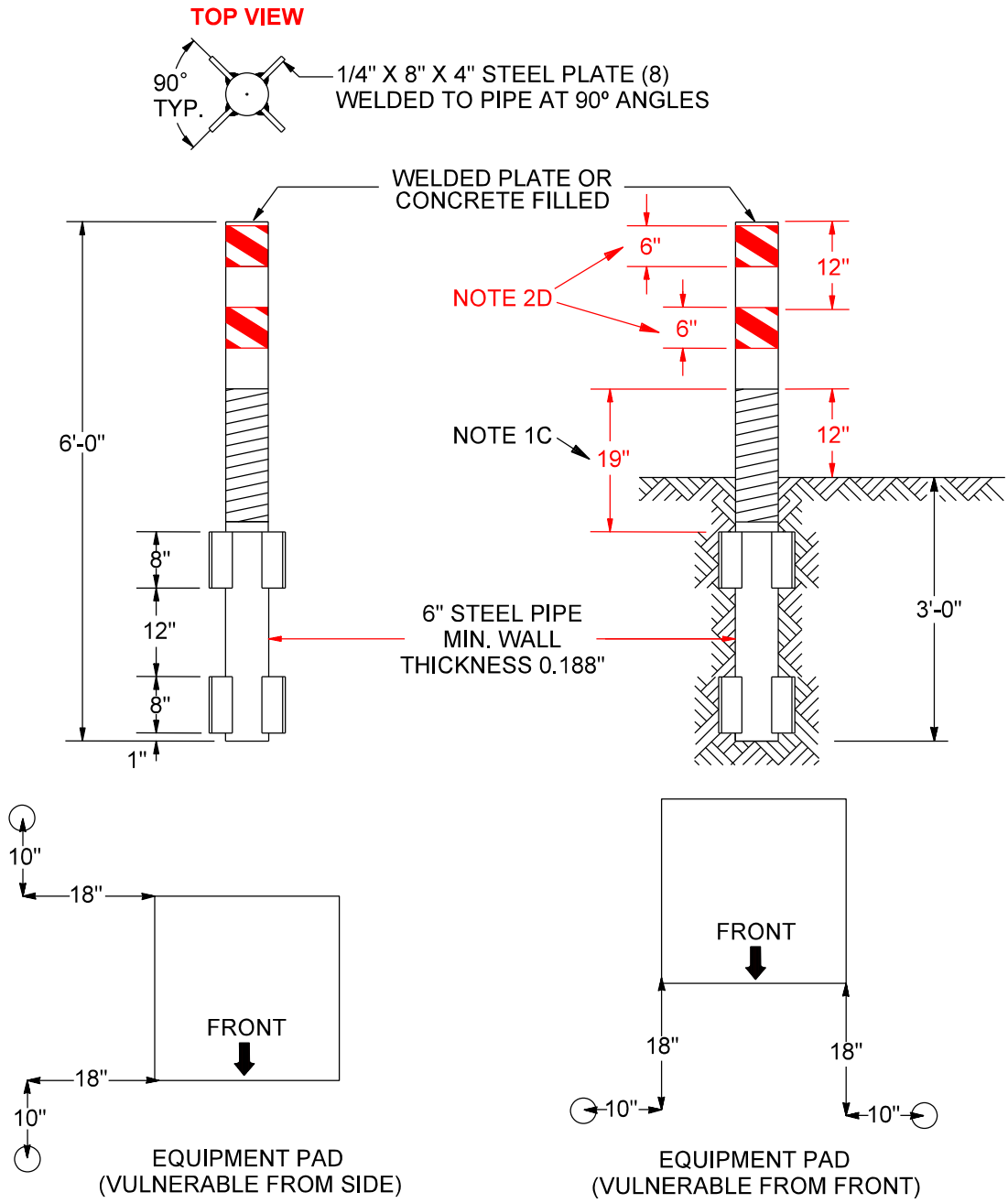
CUSTOMER FENCING, EQUIPMENT OR OBSTRUCTION ADJACENT TO SRP EQUIPMENT INSTALLATIONS

NOTES

1. Do not build fence, gateposts or support structures inside easement lines (except on property lines in back lot easements).
2. No building addition, building overhang or structure shall be built closer than the minimum limits shown in Section 5 – Clearances, SRP Pad-Mounted Equipment, Pad Separation from a Building, from the edge of any equipment pad, unless approved in writing by SRP.
3. There shall be no roof or covering over any pad-mounted equipment.
4. A gate, the full width of the opening (per the table on the previous page), is permissible across the front of equipment. The gate may be of solid material if a 6" clearance for ventilation is maintained between bottom of gate and ground level. The gate is allowed to be lower than 6" if constructed of mesh, bar, louver or similar ventilating material. Gate must be open at least 90° for full opening width access and must be free of locks that would inhibit access by utility personnel. Customer must furnish any gate.
5. If a solid gate is installed on an enclosure around a transformer, then ventilation openings shall be provided on two opposite sides (space under the gate may count as one of them). The openings shall be located near the bottom of the enclosure with the following minimum area for airflow.

Transformer Rating Vent Opening (each side)	
2,000 and 2,500 kVA	625 sq. inches
1,000 and 1,500 kVA	375 sq. inches
500 and 750 kVA	190 sq. inches
225 and 300 kVA	80 sq. inches
Up to 150 kVA	40 sq. inches

6. No obstruction, including but not limited to, fences, trees, shrubs or other similar large vegetation and large rocks, shall be permitted within 12' of the opening side of equipment. The sides of all transformers and equipment require at least 3' of clearance from the edge of the pad to any obstruction (EXCEPTION: Detail 4 in Section 5 – Clearances, Customer Fencing, Equipment or Obstructions Adjacent to SRP Equipment Installations) and 18" from the back. For front or side lot easements the easement line defines the clearance to the back of pad-mounted equipment.
7. When gates are in the maximum open position, the exit path shall be a minimum 24" wide perpendicular to the opening and a minimum of 6' from the equipment pad. The exit path shall be directly away from the opening side of the pad-mounted equipment.
8. Maintain a level dry area 3' around, and 12' in front of all pad-mounted equipment (see Section 5 – Clearances, Dry Landscape, Controlled Area Detail).
9. Clearances to non-SRP equipment, see Section 5 – Clearance, Clear Area for Customer Equipment, Adjacent to Transformer.

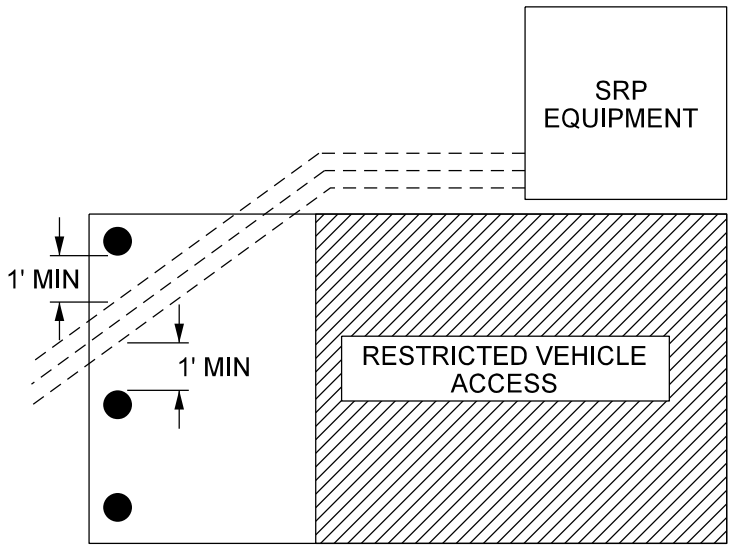


STEEL GUARD POST INSTALLATION

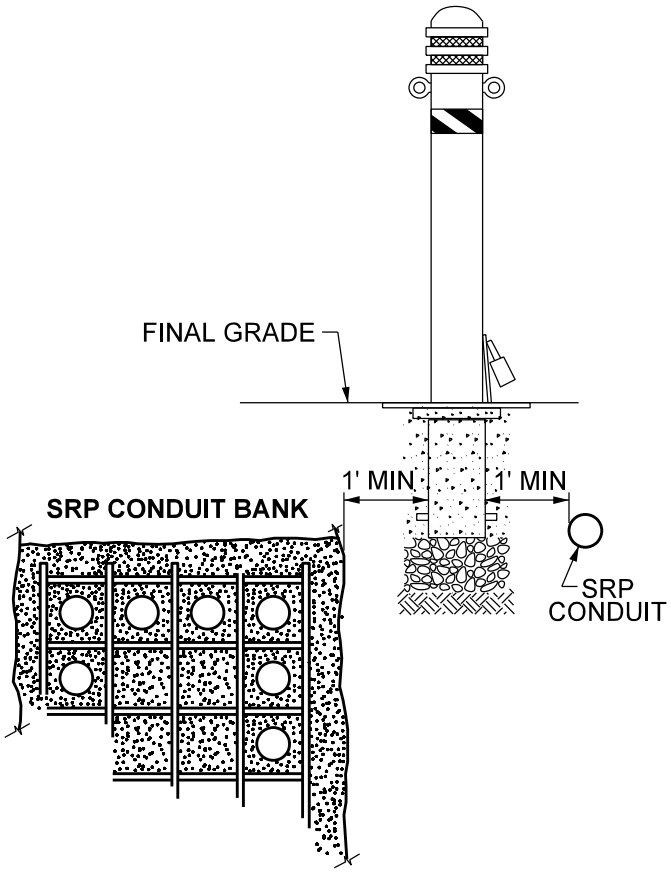
NOTES

1. Material & Construction Specification
   - A. Surface to be coated will receive a commercial sandblast cleaning pretreatment immediately prior to coating.
   - B. Paint, zinc metal spray of 5.0 mils., or hot dip galvanize are acceptable coatings.
   - C. UL-approved pipe wrap tape installed per diagram with a minimum overlap of half the tape width.
2. Installation (See page 11-25 for approved suppliers.)
   - A. Guard post to be installed where necessary to protect pad-mounted equipment. Do not install guard post in an area that would restrict access to the equipment. Protect each side exposed to vehicular access.
   - B. Backfill with concrete (MAG A - 1" Min. 3,000psi) or backfill with native soil and compact to 95% density.
   - C. Guard posts shall allow for unrestricted operation of doors.
   - D. Apply 3" reflective tape (yellow and black) 6" at height locations per diagram.

Electric Service Specifications SRP® PROPRIETARY MATERIAL	REV: UPDATE ILLUSTRATION AND UPDATE NOTE 1(C)	
	CLEARANCES CUSTOMER FENCING, EQUIPMENT OR OBSTRUCTIONS ADJACENT TO SRP STEEL GUARD POST INSTALLATION	ISSUE DATE: 04/15/86 REV. DATE: 06/01/23 APPROVAL: J.ROBBINS
	5-13	8509E121.DGN



TOP VIEW



PROFILE VIEW

LEGEND

- REMOVEABLE BOLLARD
- CONDUIT

NOTES

1. CUSTOMER USE OF REMOVABLE BOLLARDS AS A:
   A. VEHICLE DETERRENCE, BUT WHICH ALLOWS SRP VEHICLE(S) READY ACCESS TO SRP EQUIPMENT.
   B. MEANS TO MAINTAIN AN UNOBSTRUCTED WORK SPACE AND ACCESS TO AND AROUND AN SES.

2. CUSTOMER SHALL PROVIDE SITE DRAWINGS INDICATING THE USE OF REMOVABLE BOLLARD(S) FOR REVIEW AND APPROVAL BY DISTRIBUTION DESIGN DEPARTMENT.

3. CUSTOMER SHALL OWN, INSTALL, AND MAINTAIN REMOVABLE BOLLARD(S).

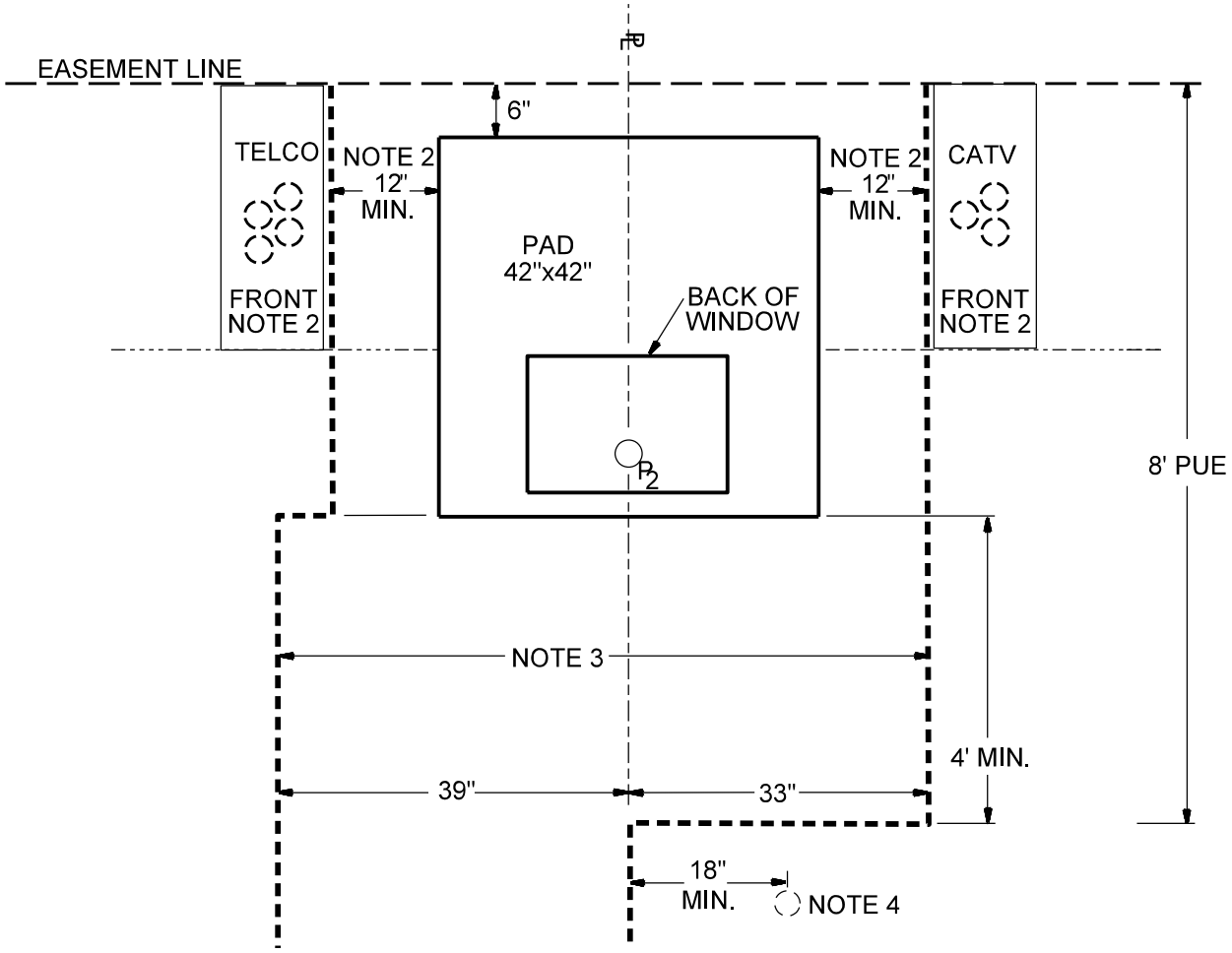
4. USE OF REMOVABLE BOLLARDS TO PROTECT SRP EQUIPMENT IS PROHIBITED. REFER TO SECTION 5 FOR INFORMATION ON PERMANENT STEEL GUARD POSTS.

5. INSTALLATION ABOVE SRP UNDERGROUND FACILITIES ARE PROHIBITED.

6. MAINTAIN A MINIMUM 1' HORIZONTAL CLEARANCE FROM EDGE OF REMOVABLE BOLLARD TO EDGE OF SRP'S UNDERGROUND FACILITIES.

7. SHALL HAVE A LOCKING MECHANISM COMPATIBLE WITH SRP LOCK (MATERIAL ID# 5014608). SUBMIT REQUEST FOR A LOCK TO DISTRIBUTION DESIGN DEPARTMENT.

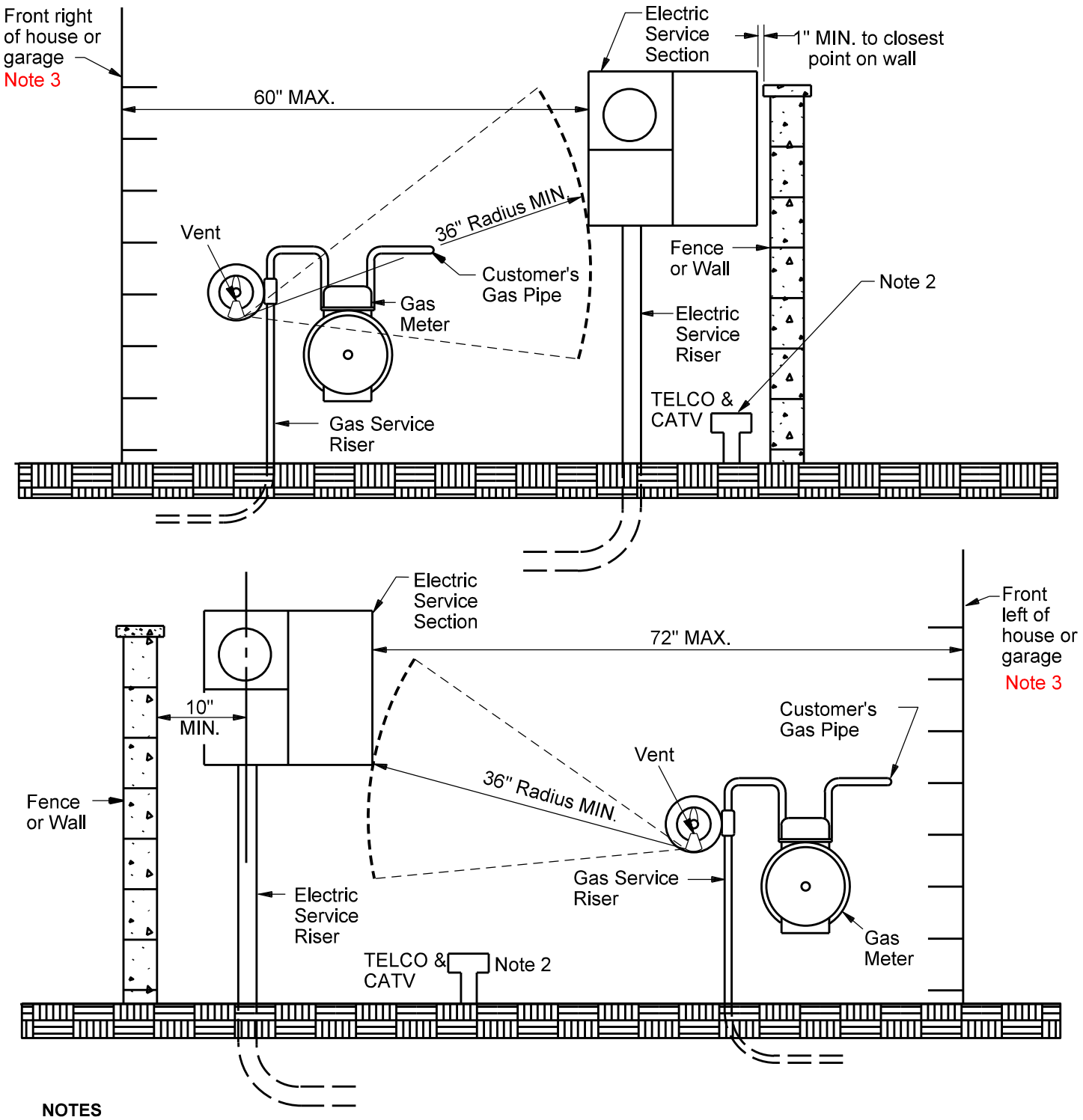
8. REFER TO SECTION 11-CUSTOMER SUPPLIED MATERIAL REMOVABLE BOLLARD FOR MATERIAL SPECIFICATIONS AND APPROVED SUPPLIER.



NOTES

1. ALL MEASUREMENTS ARE WITH RESPECT TO THE P2 PRIMARY CONDUIT CENTER.
2. THIS 12" MINIMUM DIMENSION DESCRIBES THE SPACE REQUIREMENT BETWEEN THE SRP PAD AND THE TELCO OR CATV PEDESTAL. WHEN STUBBING UP TELCO OR CATV CONDUIT ALLOW ADDITIONAL SPACE TO INSURE THE TELCO OR CATV PEDESTAL DOES NOT ENTER THE 12 INCH MINIMUM SPACE REQUIREMENT AND THAT THE FRONT OF EITHER PEDESTAL LANDS BEHIND THE BACK OF THE TRANSFORMER WINDOW.
3. NO TELCO OR CATV PEDESTALS, WATER BOXES, POLES, PERMANENT OBSTRUCTIONS OR TRIPPIN HAZARDS BETWEEN LINES. CLEAR AREA IS FROM PUE (HOUSE SIDE) TO STREET OR 12 FEET MAX IN FRONT OF PAD.
4. GAS TO ALWAYS BE ON STREET SIDE.
5. IF A LIGHT POLE OR OTHER UTILITY IS REQUIRED IN THIS AREA, IT IS PREFERRED THAT IT BE INSTALLED A MINIMUM OF 18" FROM THE PROPERTY LINE.
6. REFER TO DESIGN FOR TRANSFORMER PAD LOCATION WITHIN PUE.

Electric Service Specifications SRP® *PROPRIETARY MATERIAL*	CLEARANCES CLEAR AREA FOR CUSTOMER EQUIPMENT ADJACENT TO TRANSFORMER	ISSUE DATE: 03/08/89 REV. DATE: 02/23/17 APPROVAL: N. SABBAH
	5-15	8509E48.DGN

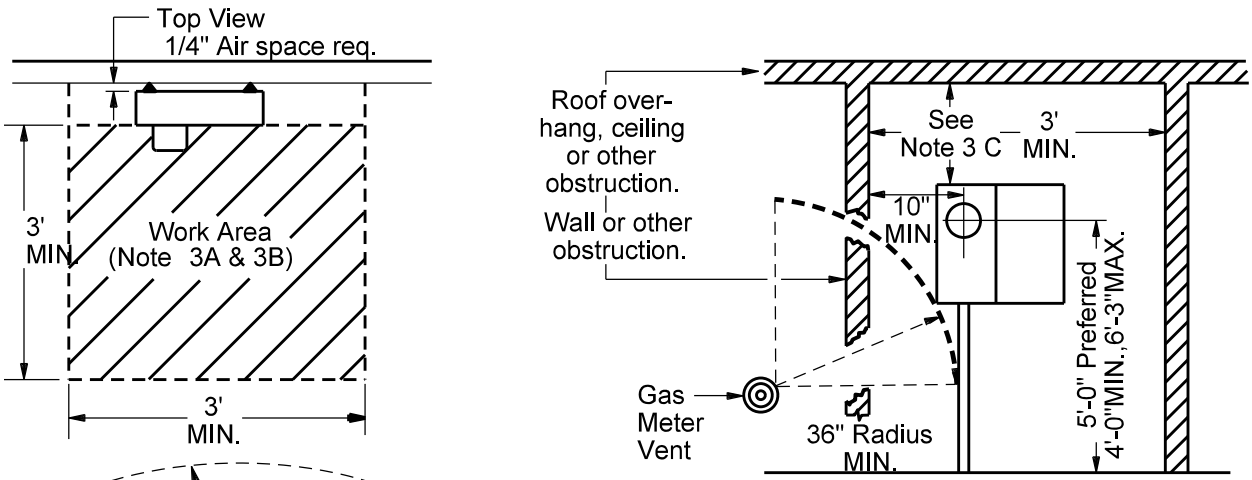


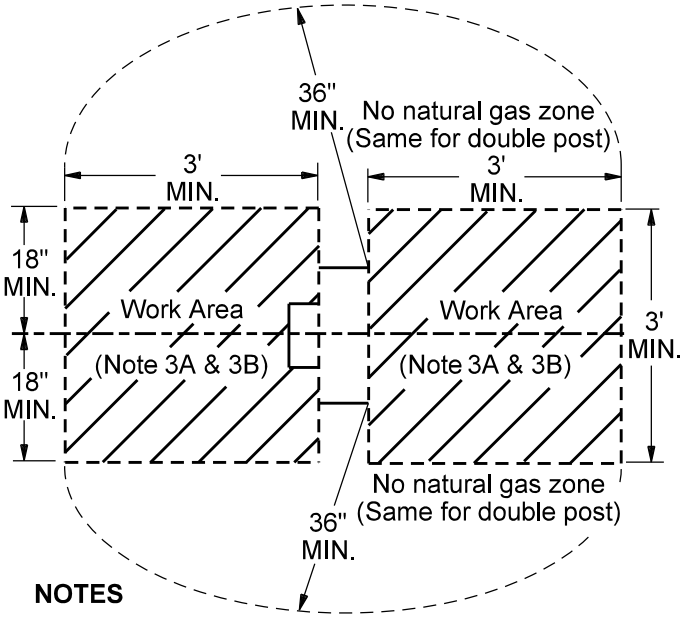
NOTES

1. SES must be readily accessible. See "readily accessible" in the glossary of this book.
2. If non-vented gas lines and TELCO & CATV facilities or water spigots are installed within the 3 square feet working space of the SES, to avoid a trip hazard they shall not extend beyond the front panel of the SES.
3. Exception: If the primary construction is in the backyard or alley the SES may remain in the backyard.

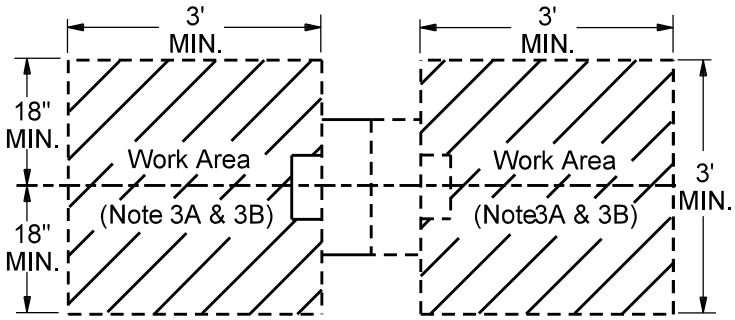
Electric Service Specifications SRP® PROPRIETARY MATERIAL	REV: ADDED NOTE 3	Page 1 of 3
	CLEARANCES SERVICE ENTRANCE SECTION (SES) EQUIPMENT LOCATIONS	ISSUE DATE: 04/15/86 REV. DATE: 10/01/20 APPROVAL: J. Luera
	5-16	8509E126.DGN

ON STRUCTURE





ON METER POST
TOP VIEW



DOUBLE POST

NOTES

1. All heights are measured from the standing surface to the centerline of the meter.
2. When meters are mounted outdoors, the minimum height of the center of the meter shall not be less than 4' and the maximum height shall not exceed 6'- 3" from final grade. The preferred height is 5' from final grade.
3. WORK SPACE (SRP REQUIREMENTS):
   To permit safe and easy access to SES installations:
   A. Customers shall provide an unobstructed, flat, and level working and standing space in front of all SES equipment.
   B. This space shall be entirely on the Customer's property and readily accessible.
   C. The surrounding area shall be level or graded away from the work space, with a maximum slope 1V:12H, to maintain a clear and safe route for personnel to access and exit the SES.
   D. For elevated concrete pads, the step height to pavement/grade shall not exceed 7.5 inches in height for the entire length.
   E. Workspace will be minimum 5' from the edge of drivable path.
   F. Clear vertical space will be minimum 42" for 320 amps to 800 amps service, and 12" for 225 amps (or less) service. The total height for working clearances shall be no less than 6'-6".
4. GUARD POSTS
   The Customer will furnish, install and maintain, or make a contribution in aid of construction to SRP (at SRP's option) for permanent guard posts to provide protection where the working space is exposed to vehicles or hazardous conditions. The determination of need, type, size and location of guard posts is at the sole discretion of SRP.

NOTES

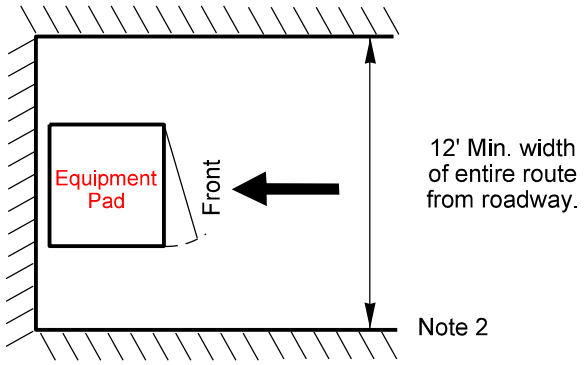
1. Typical of new construction, when SRP conducts electrical panel inspections, the location of the vent is unknown because it has yet to be installed. In this case, it is the responsibility of the gas company, as the last utility in, to comply with the Arizona Corporation Commission (ACC) requirement. This condition shall not be cause to fail an installation.

2. If the natural gas vent is installed when SRP conducts electrical panel inspections, the distance shall be measured. If the distance does not comply with the ACC requirement, the gas company shall be notified of the violation. This condition shall not be the cause to fail an installation.

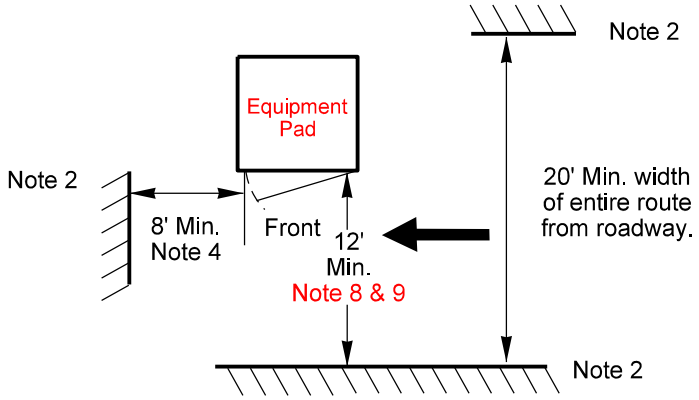
   NOTE: The gas company has 90 days to comply with the ACC requirement.

3. Gas equipment shall not be within the SES workspace, see "Heights & Workspace Clearance".

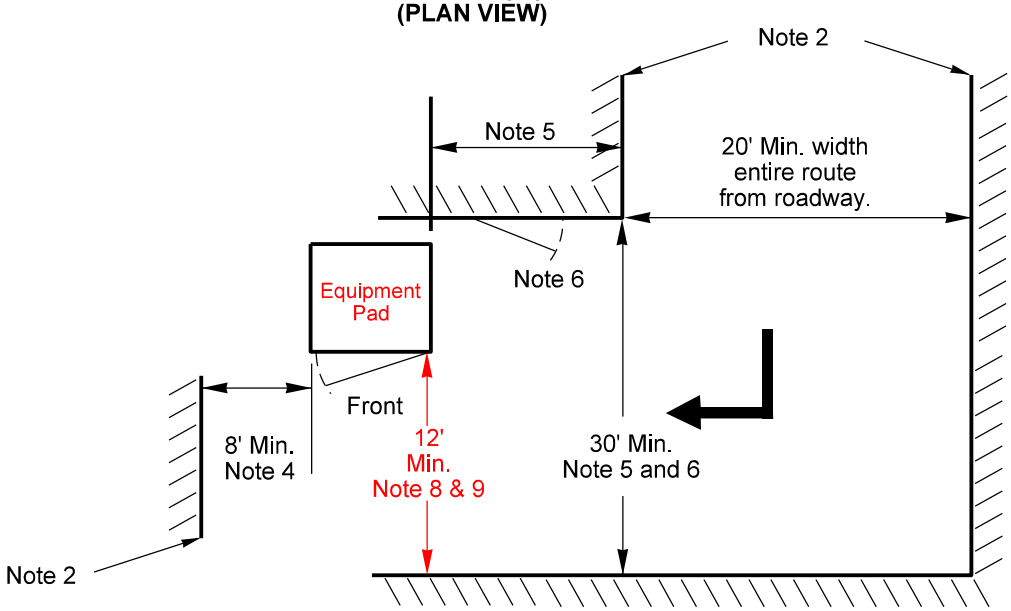
Pad-Mounted Facility, Commercial SES, Meter Room or Vault with One-Way Direct (straight) Access to the Front of the Equipment or Access Door (PLAN VIEW)



Pad-Mounted Facility, Commercial SES, Meter Room or Vault with a One-Way Direct (straight) Access to the Front from the Side of the Equipment or Access Door (PLAN VIEW)

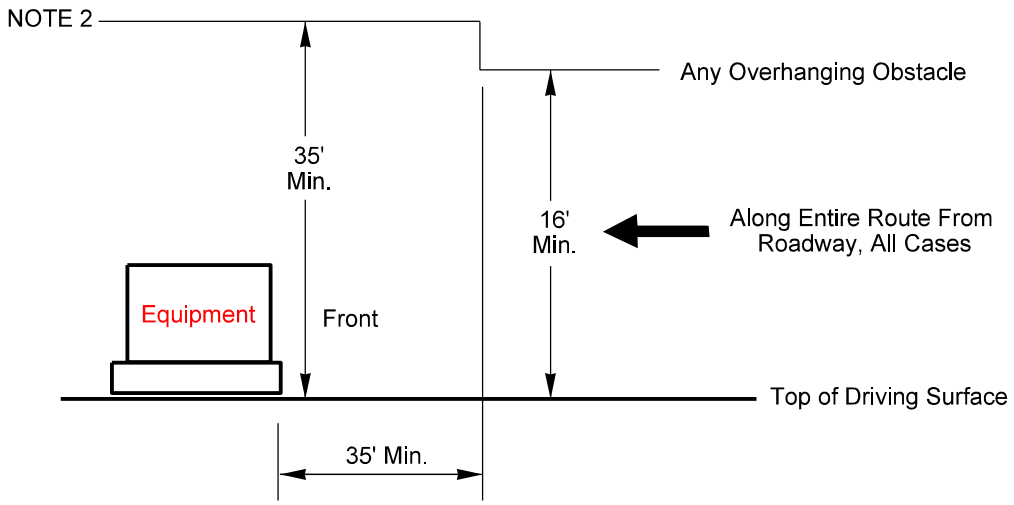


Pad-Mounted Facility, Commercial SES, Meter Room or Vault with One-Way Indirect (requiring a turn) Access to the Front from the Side of Equipment or Access Door (PLAN VIEW)



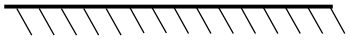
Electric Service Specifications SRP® PROPRIETARY MATERIAL	REV: INCLUDE NOTE 8 & 9	PAGE 1 OF 2
	CLEARANCES VEHICLE ACCESS REQUIREMENTS PAD-MOUNTED FACILITIES & 1Ø TRANSFORMERS	ISSUE DATE: 02/09/11 REV. DATE: 02/01/23 APPROVAL: J. Robbins
	5-19	8509E319.DGN

Pad-Mounted Facilities Access Height Clearance Requirements
(PROFILE VIEW)



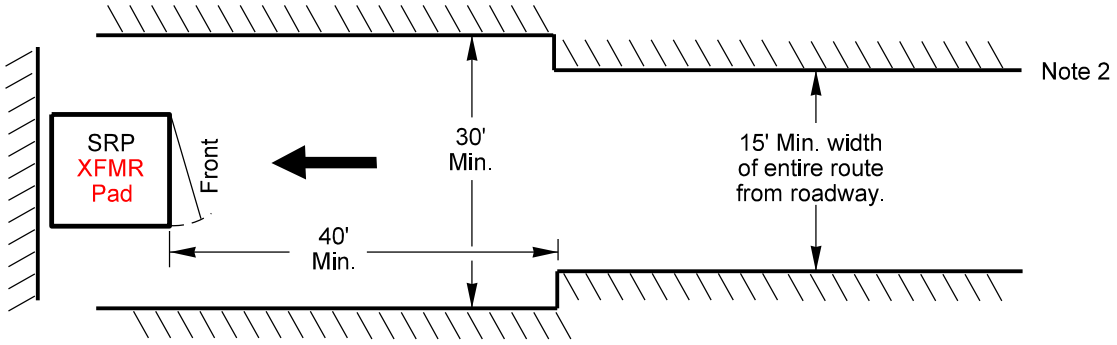
NOTES

1. These required access dimensions are in addition to the electrical clearance standards. See SRP's Electric Clearance Standards.
2. The Boundary of Traveled Way is any permanent obstacle to vehicle access; (i.e., building, fence, Customer equipment, landscape, ditch, curb, guard post, etc.).

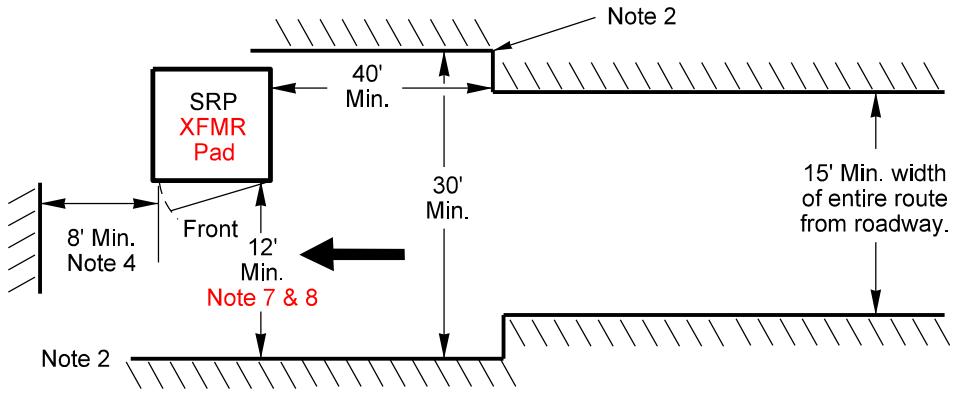
Boundary of Traveled Way 

3. If proposed access route is different than any of the ones shown in these details, consult SRP Distribution Design.
4. 8' minimum clear space is required for backing and positioning beyond the equipment.
5. If SRP pad is over 40' beyond corner of turn, the width of the Traveled Way may be reduced from 30' to 20'.
6. For meter room or vault doors, the width of the Traveled Way may be reduced from 30' to 20'.
7. There are additional access requirements for vaults with hatches. Consult SRP Distribution Design.
8. When a commercial SES/meter room and the SRP transformer share the same Traveled Way, increase distance to 24'.
9. If guard posts are to be installed to protect equipment, the width of the Traveled Way shall be measured from the outside edge of guard post.

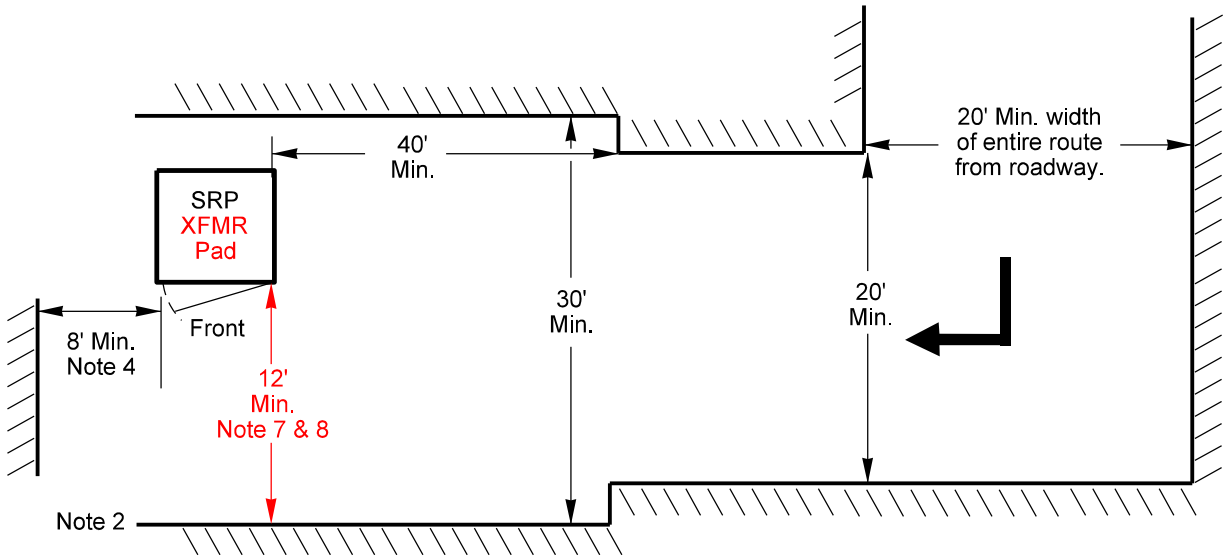
One-Way Direct (straight) Access to the Front of the Transformer
(PLAN VIEW)



One-Way Direct (straight) Access to the Front from the Side of the Transformer
(PLAN VIEW)

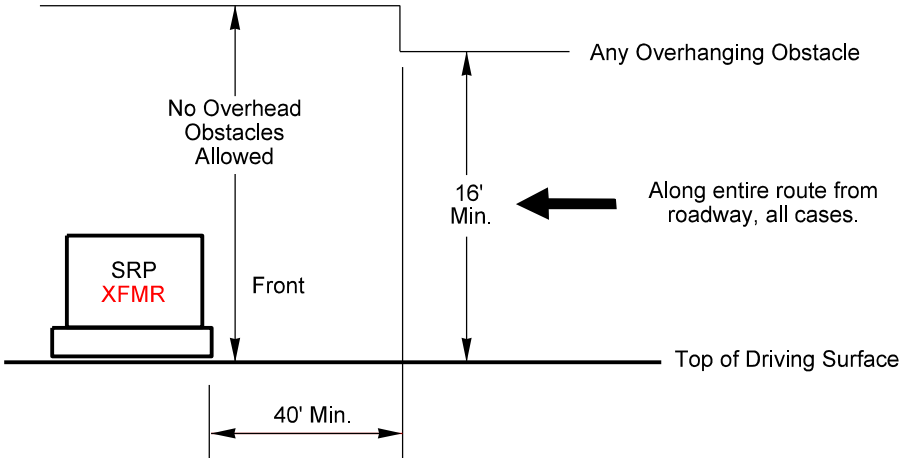


One-Way Indirect (requiring a turn) Access to the Front from the Side of the Transformer
(PLAN VIEW)



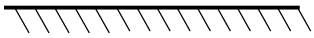
Electric Service Specifications SRP PROPRIETARY MATERIAL	REV: INCLUDE NOTE 7 & 8	PAGE 1 OF 2
	CLEARANCES VEHICLE ACCESS REQUIREMENTS 3Ø TRANSFORMERS	ISSUE DATE: 02/09/11 REV. DATE: 02/01/23 APPROVAL: J. Robbins
	5-21	8509E348.DGN

3Ø Transformer Access Height Clearance Requirements
(PROFILE VIEW)

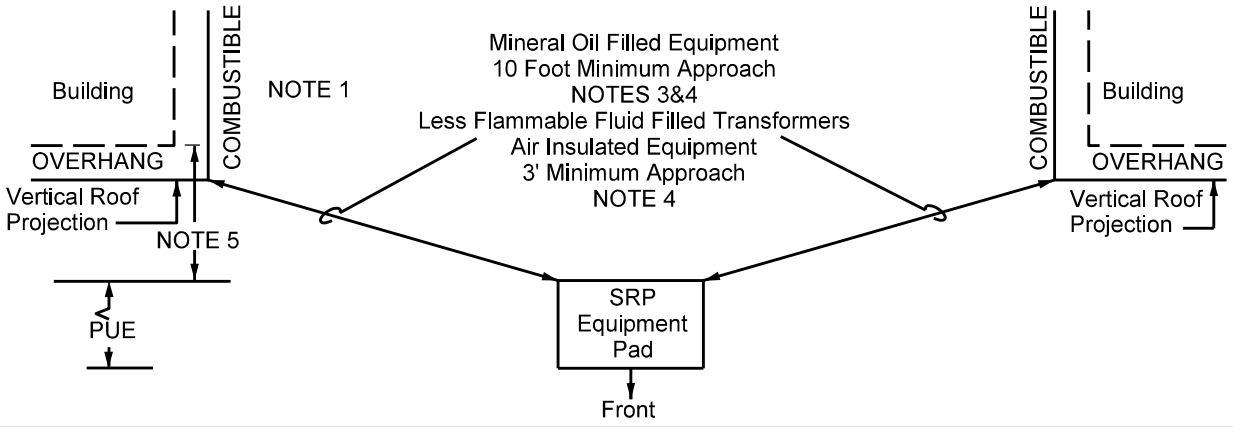


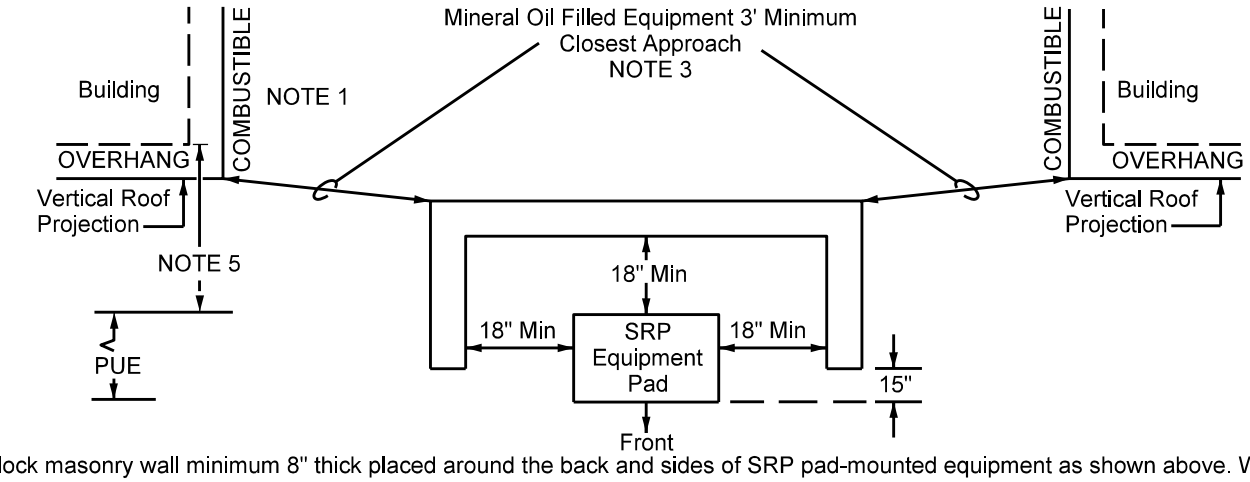
NOTES

1. These required access dimensions are in addition to the electrical clearance standards. See SRP's Electrical Clearance Standards book.
2. The Boundary of Traveled Way is any permanent obstacle to vehicle access (i.e., building, fence, Customer equipment, landscape, ditch, curb, etc.).

Boundary of Traveled Way 

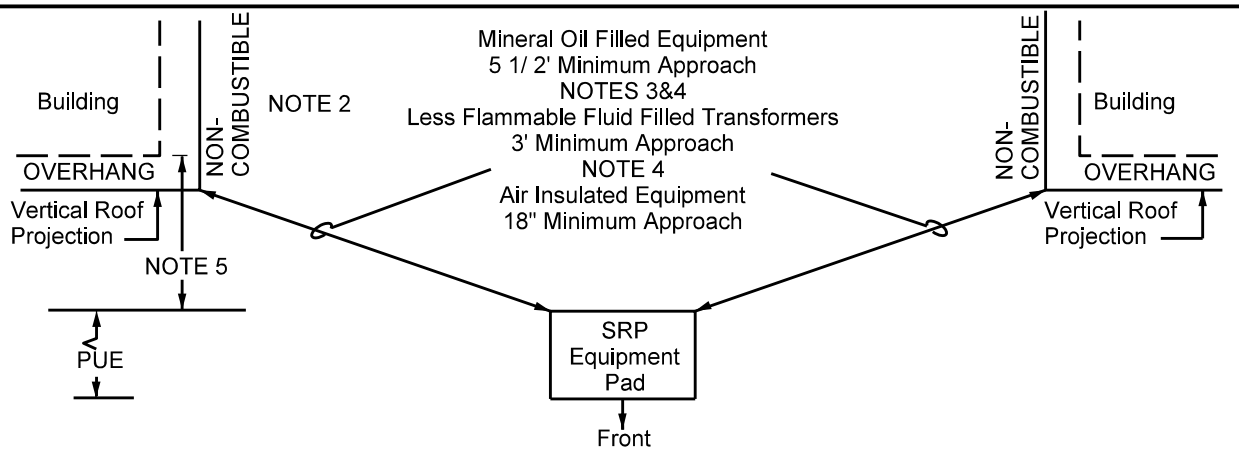
3. These requirements are based on maneuvering requirements of the QMC. If these cannot be obtained, a crane will have to be used. Consult SRP Distribution Design.
4. 8' minimum clear space is required for backing and positioning beyond the equipment.
5. Access way must support 80,000 lbs. GVW.
6. Consult Distribution Design for vehicle access to multiple pad-mounted equipment..
7. When a commercial SES/meter room and the SRP transformer share the same Traveled Way, increase distance to 24'.
8. If guard posts are to be installed to protect equipment, the width of the Traveled Way shall be measured from outside edge of guard post.





A block masonry wall minimum 8" thick placed around the back and sides of SRP pad-mounted equipment as shown above. Wall height required:

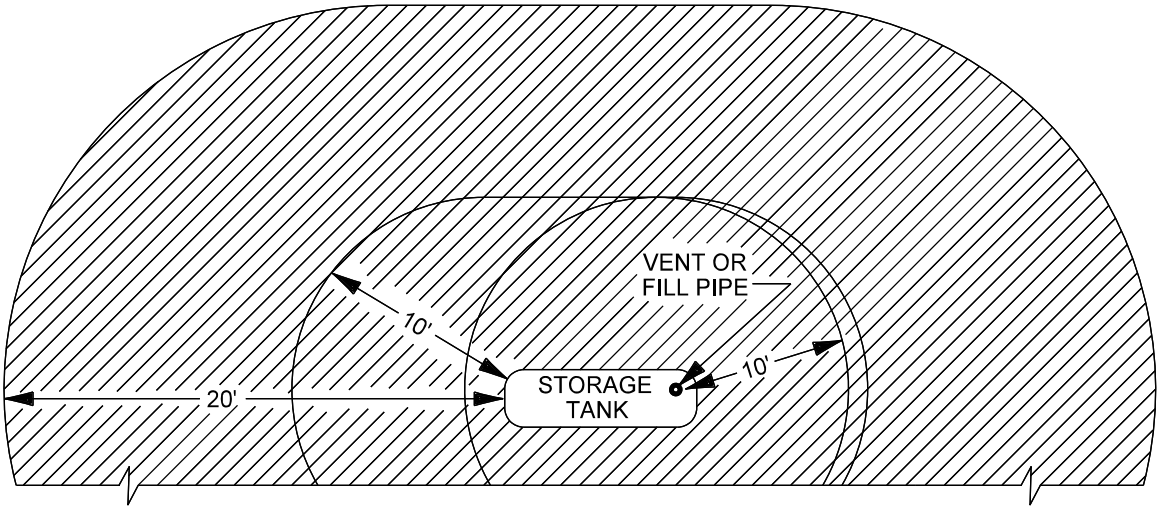
1) 1Ø pad-mounted equipment - 45" above grade.
2) 3Ø pad-mounted equipment - 1' over device height (see Underground Distribution Line Construction Standards for device height).



The building wall and overhang is block concrete or approved non-combustible material (Note 2, contact Policy, Procedures & Standards). Building wall has no windows, vents, stairs, doors or other wall openings or a combustible overhang within a 10' minimum closest approach to the pad.

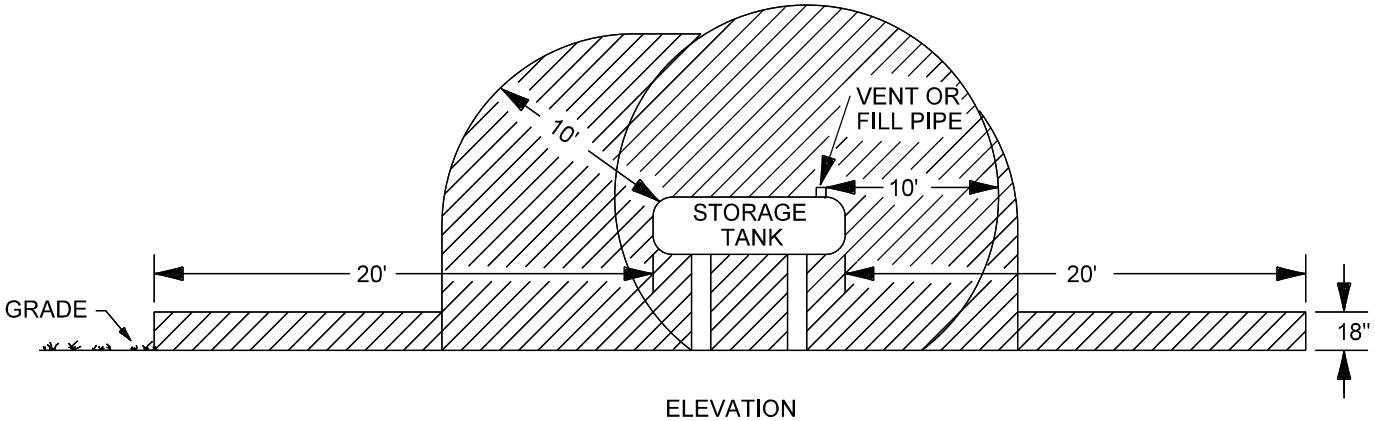
NOTES:
1. Exterior walls of Type V construction, per IBC Chapter 6, are considered combustible.
2. Exterior walls of Type I, II, III and IV construction, per IBC Chapter 6, are considered non-combustible.
3. SRP's mineral oil-filled equipment are standard 1Ø and 3Ø transformers and capacitor banks and some installed fusing cubicles.
4. Maintain 10' minimum clearance from windows, vents, stairs, doors and/or other wall openings for all mineral oil-filled equipment, and 5' minimum per less flammable fluid-filled transformers.
5. Building setbacks will be established by local ordinances. Additionally, planned structures shall not impede SRP's access to and excavation of the easement and/or PUE.

Electric Service Specifications SRP® PROPRIETARY MATERIAL		
	CLEARANCES SRP PAD-MOUNTED EQUIPMENT PAD SEPARATION FROM A BUILDING	ISSUE DATE: 02/16/05 REV.DATE: 02/10/17 APPROVAL: N.SABBAH
	5-23	8509E163.DGN



PLAN

(SEE NOTE 1)

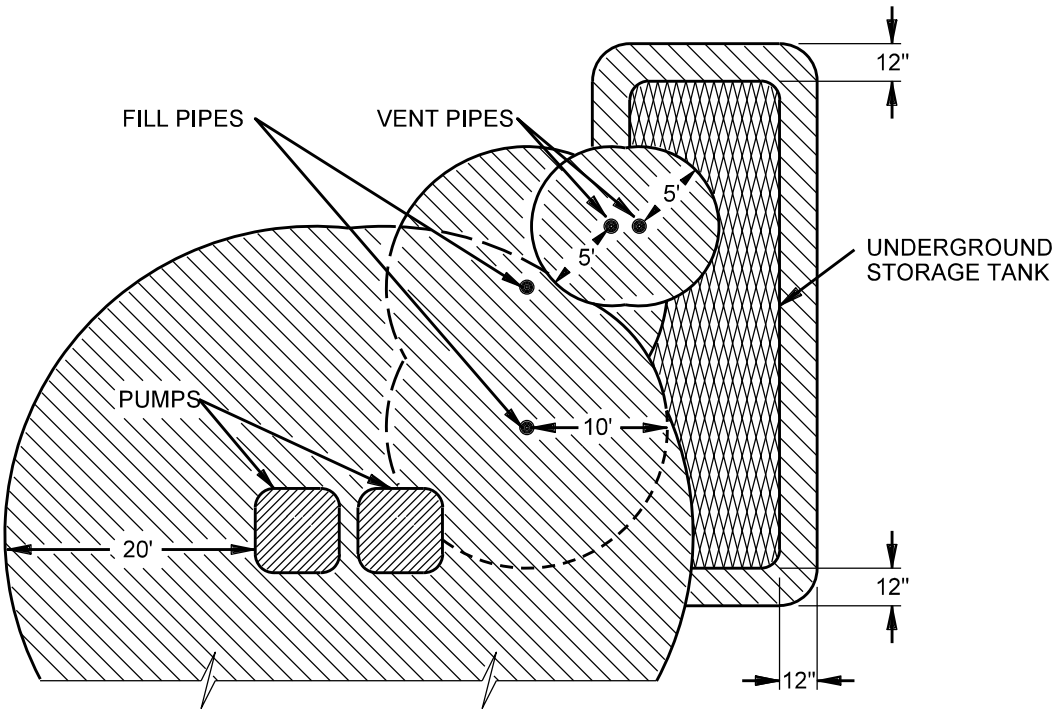


ELEVATION

NOTES

1. No SRP facility shall occupy, underlie or overhang any of the shaded areas.
2. These clearances are for all flammable liquids, per NESC Rule #127 and NEC Article 515.
   Exception: The 20' clearance may be reduced to 10' for self-contained diesel generators or above ground self-contained diesel fuel tanks.

Electric Service Specifications SRP® *PROPRIETARY MATERIAL*	REV: REMOVED NOTE 3 AND REVISED NOTE 2 FOR CLARITY	
	CLEARANCES OVERHEAD/ UNDERGROUND ABOVE-GROUND STORAGE TANKS CONTAINING VOLATILE FLAMMABLE LIQUIDS NESC RULE 127	ISSUE DATE: 03/13/07 ISSUE DATE: 06/01/22 APPROVAL: J. Robbins
	5-24	8509E272.DGN



UNDERGROUND FUEL STORAGE

PLAN VIEW

NOTES

1. No underground lines or underground electric facilities shall be located in shaded area.
2. These clearances are for all flammable liquids, per NESC Rule #127 and NEC Article 515.
   Exception: The 20' clearance may be reduced to 10' for self-contained diesel generators or above ground self-contained diesel fuel tanks.

Electric Service Specifications SRP® PROPRIETARY MATERIAL	REV: REMOVED NOTE 3 AND REVISED NOTE 2 FOR CLARITY	
	CLEARANCES UNDERGROUND CLEARANCES FUEL STORAGE DISPENSING	ISSUE DATE: 03/13/07 REV. DATE: 06/01/22 APPROVAL: J. Robbins
	5-25	8509E273.DGN

SECTION 6
TRENCHING AND CONDUIT

CONDUIT SIZES AND SPECIFICATIONS
UNDERGROUND

I. GENERAL REQUIREMENTS

A. Conduit provided by the Customer shall meet the following specifications:

1. Straight Lengths: PVC, DB-120, 400,000 psi minimum modulus (500,000 not acceptable), rated for 90° C cable, meeting the requirements of ASTM F512, latest edition or EPC-40-PVC (schedule 40), meeting the requirements of NEMA TC-2, latest edition.

2. Elbows and Fittings: EPC-40-PVC (schedule 40), three-foot radius, rated for 90° C cable, meeting the requirements of NEMA TC-2, latest edition.

B. Size, number of conduits, and encasement requirements are shown on the SRP design.

C. Maximum change in direction without elbow shall not exceed 5 degrees in 20 feet.

D. Customer shall be responsible for repairing new and existing conduit damaged prior to SRP installing cable. Conduits will be accepted following installation of cable. Do not use metal materials to tie or rack conduits.

E. The portion of conduit installed through an exterior building wall, floor, or roof shall have external seals on the outside surface of the conduit at the point of entry to the building intended to limit the likelihood of the entrance of gas into the building.

F. The table below outlines the service conduit minimum from a transformer or j-box to the Customer's SES, as per Note B, which could change based on SRP design.

Service Conduit Number and Size Minimum SRP-Owned Conductor

Service Entrance Ampacity	1Ø, 3 Wire	3Ø, 4 Wire	2400/4160	7200/12470
225 or less	1-2.5" *	1-2.5"	3-3"	3-3"
320/400	1-4" **	1-4"	3-3"	
500	2-4"			
600	2-4" ***	2-4"		
800	2-4"	3-4"		
1,000		4-4"		
1,200		5-4"		
1,600		7-4"		
2,000		10-4"		
2,500		13-4"		
3,000		19-4"		
3,600****		25-4"		
4,000**** (120/208 V Only)		30-4"		

* 2" conduit may be used if existing.
** 2.5" or 3" conduit may be used for wall mounted residential single meter installations, as specified by SRP.
*** 2-3" conduit may be used for residential single meter installations.
**** Reference to only existing SES larger than 3,000 A.

CONDUIT SIZES AND SPECIFICATIONS
UNDERGROUND

NOTES

1. A single, three-phase transformer may serve up to four separate commercial SES in the same trench when the total number of service conduits does not exceed 13.
2. The service trenches from multiple three-phase transformers shall be separated by at least 6' of undisturbed earth.
3. Except at the transformer, three-phase service conduits shall be separated from primary conduits by at least 6' of undisturbed earth. Contact Distribution Design when appropriate trench separation is unobtainable.
4. Service risers shall be rigid or intermediate metal, or approved fiberglass, installed per service riser requirements on page 3-1.
5. Exposed accessible conduits entering an SES shall be rigid or intermediate metal or approved fiberglass. The transition to buried PVC shall occur at a minimum depth of 18" upon entering earth. Customer shall be responsible for bonding and maintaining all metal conduit.
6. All requirements on page 3-1 apply.
7. The number of conduits in above table is based upon 100% of the SES ampacity, assuming 80% load factor. If load factor is greater, contact Distribution Design.
8. Trenches containing 13 or more service conduits shall be racked with spacers and encased as follows:
   A. Encased in 2" of controlled low strength material (1 ½ sacks cement per cubic yard). See page 6-18 and 6-19 for backfilling requirements.
   B. Conduits shall be distributed over 5 vertical columns. Horizontal and vertical spacing between conduits shall be 2". Place spacers at 6' intervals. See Contractor-Supplied Material for available spacers or contractor may provide their own that meet distribution and spacing requirements.
9. Install end bell fittings as per this page at conduit stub ups at SES. Install temporary conduit plugs (no duct tape) tied to a flat pull tape at all stub-up locations. Flat pull tape, customer provided and installed (Section 11 - Cable Pulling Tape), 2,500 pound, continuous (no tied pieces), shall be free moving and not glued to the conduit. See illustrations in Section 7 - Precast Pad for Single-Phase Transformer.

SPECIFICATIONS FOR EXPOSED CONDUITS

Service Conduits for SRP cables installed upon or within customer's facilities are considered exposed and accessible. Exposed accessible conduits and supporting structure when attached to the Customer's facility (wall, ceiling, or below flooring) shall be installed, owned, and maintained by the Customer.

Conduit and Fittings

Selected material type shall be used throughout the exposed section. For example, where aluminum conduit is installed, all fittings, couplers, etc. shall be aluminum.

Conduit systems carrying a single conductor per conduit (i.e., 4.16 kV service cable) shall be non-ferrous material (nonmagnetic): aluminum or fiberglass. For voltages 7.2 kV and above shall contact Distribution Design.

Conduit systems carrying a set of each phase and neutral conductors grouped together per conduit, ferrous and non-ferrous material types are permissible.

1. Conduit
    a. Rigid metal conduit (RMC), galvanized manufactured in accordance with ANSI C80.1 or aluminum manufactured in accordance with ANSI C80.5 and listed to UL-6A.
    b. Intermediate Metal Conduit (IMC), galvanized manufactured in accordance with ANSI C80.6 and listed to UL-1242.
    c. Fiberglass: Type XW, 0.25" wall thickness listed to UL-2515 Above Ground standard.
2. Elbows: 36" minimum radius
3. Couplers
    a. Metal conduits shall be threaded. Compression couplings/connectors not permitted.
    b. Fiberglass conduits shall utilize a slip center stop (double bell) type coupling or conduits with an integrated bell on one end and a machine spigot on the other end. Conduits shall be adjoined using manufacturer's recommended epoxy adhesive and installation methods.
4. End Fittings
    a. Grounding bushing: threaded with insulated throat type and set screw grounding lug listed to UL 514 B.
    b. End Bells: Fiberglass end bells installed on service conduit at SES pull section.

Installation

Installation of conduit shall comply with the latest edition of the National Electric Code (NEC) and the requirements as follows:

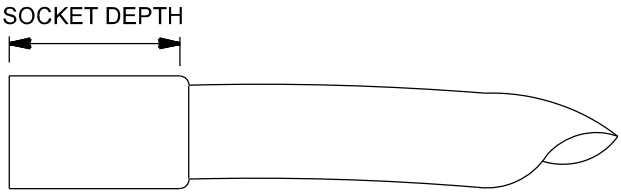
1. Customer's facility shall be designed and constructed to support the full weight of the conduit system and cable including the forces acting on the facility and conduit system during equipment and cable installation. Each 600 V conduit run shall be designed to withstand a cable pulling tension of 2,000 lbs. and elbow sidewall pressure of 600 lbs./ft. Assume cable weight to be 8.671 lbs./ft. Contact SRP Distribution Design for cable data for installations above 600 V.
2. Prior to SRP design, Customer shall submit a dimensioned isometric drawing of entire run (exposed and buried) conduit run for approval. Drawing shall include equipment, straight run lengths, bend degrees, and material type. Drawing shall be approved and sealed by a licensed engineer including documentation stating the Customer's facility can support all load placed on it from SRP facilities.

SPECIFICATIONS FOR EXPOSED CONDUITS

3. When the end point of a conduit run is exposed (not installed in earth), it is only permitted to terminate into the pull section of a Customer's service entrance section.
4. Pull boxes and conduit bodies are not permitted.
5. Each conduit or cluster of conduits shall be labeled every 10' with a decal "DANGER HIGH VOLTAGE INSIDE KEEP OUT" in a location visible to public. See section 11 for customer-supplied material.
6. Individual conduits carrying a single conductor are not to be encircled with ferrous material such as wire, clamps, supports, or rebar. Encirclement of the complete conduit system is permissible.
7. The transition to buried PVC shall occur at 12" to 36" upon entering earth.
8. Conduit(s) and support structure, when accessible and exposed to the public, shall be a minimum 8'-6" above the floor. Where portions of the conduit are less than 8'-6" and is accessible and exposed to the public, conduit shall be protected within a secured enclosure.
9. Conduit shall be supported and secured, above or below the floor, at the point of entry into the equipment.
10. Field bends are permitted provided the conduit is not damaged, remains circular, and the internal diameter is not effectively reduced. Bend radius shall be minimum 36".
11. Openings in floor where conduit passes through shall be fire stopped using approved material and methods to create a minimum 1-hour fire rating.
12. Customer shall be responsible for bonding all metal conduits.
13. The conduit bonding jumper, when required, shall be arranged as to not interfere with the installation of service cable.
14. Transition from metal to buried PVC shall be a threaded PVC coupling. Compression couplings/connectors are not permitted. Metal conduit installed underground shall be wrapped with 10 mil thick, 2" wide pipe wrap tape overlapped a minimum of 1".
15. Municipalities may require the service conductor raceway be encased in concrete. Consult the AHJ prior to proceeding with your project.

PVC STRAIGHT AND ELBOW BELLED END

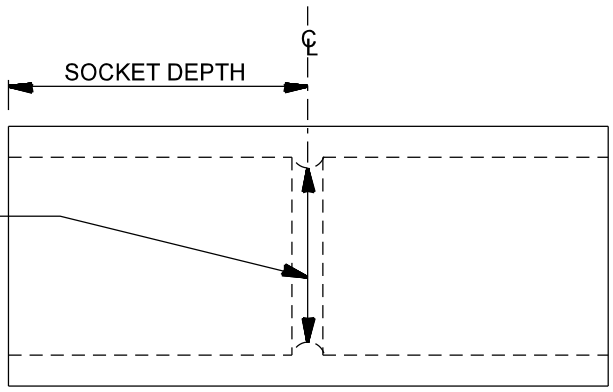
CONDUIT DIAMETER	MINIMUM SOCKET DEPTH
2 1/2"	2 3/8"
3"	2 7/8"



COUPLINGS

SHALL NOT BE LESS THAN THE INSIDE DIAMETER OF THE DB120 STRAIGHT CONDUIT IT CONNECTS.

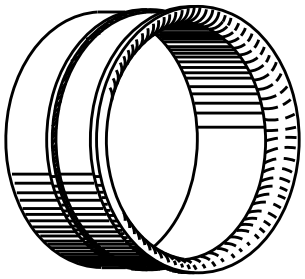
CONDUIT COUPLING DIAMETER	COUPLING SRP MATERIAL ITEM NUMBER
2 1/2"	5034166
3"	5034168



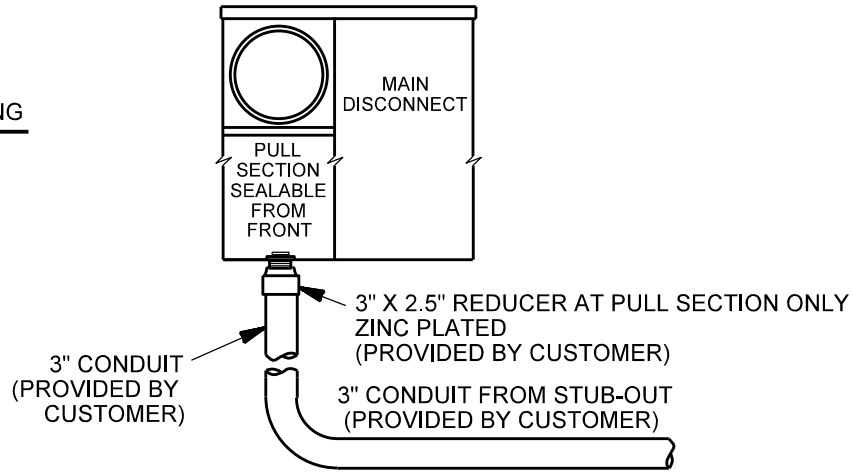
SOCKET DEPTH SHALL BE 2 1/2" MINIMUM FOR ALL SIZES OF CONDUIT PER TRI-UTILITY CONDUIT SPEC 7.8

END BELL FITTING

CONDUIT STUB UP MUST BE SPACED MINIMUM 3/4" APART TO INSTALL END BELL FITTING.

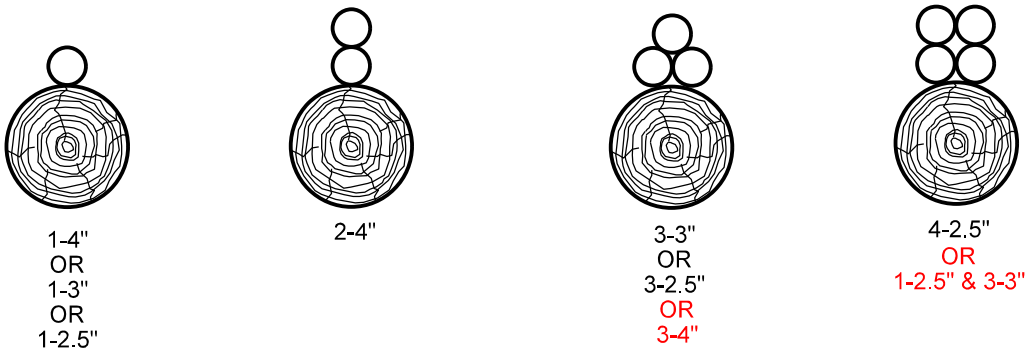


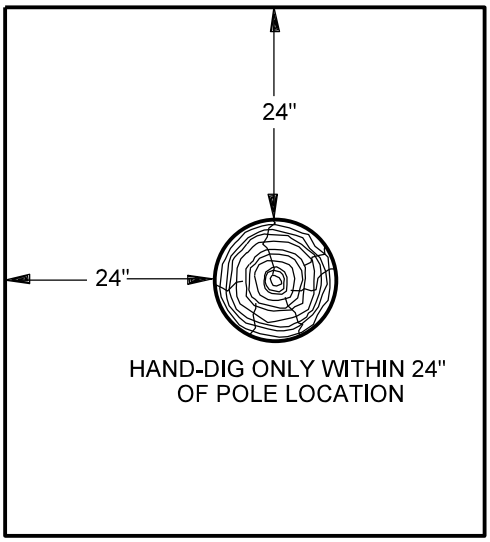
REDUCER AT PULL FITTING

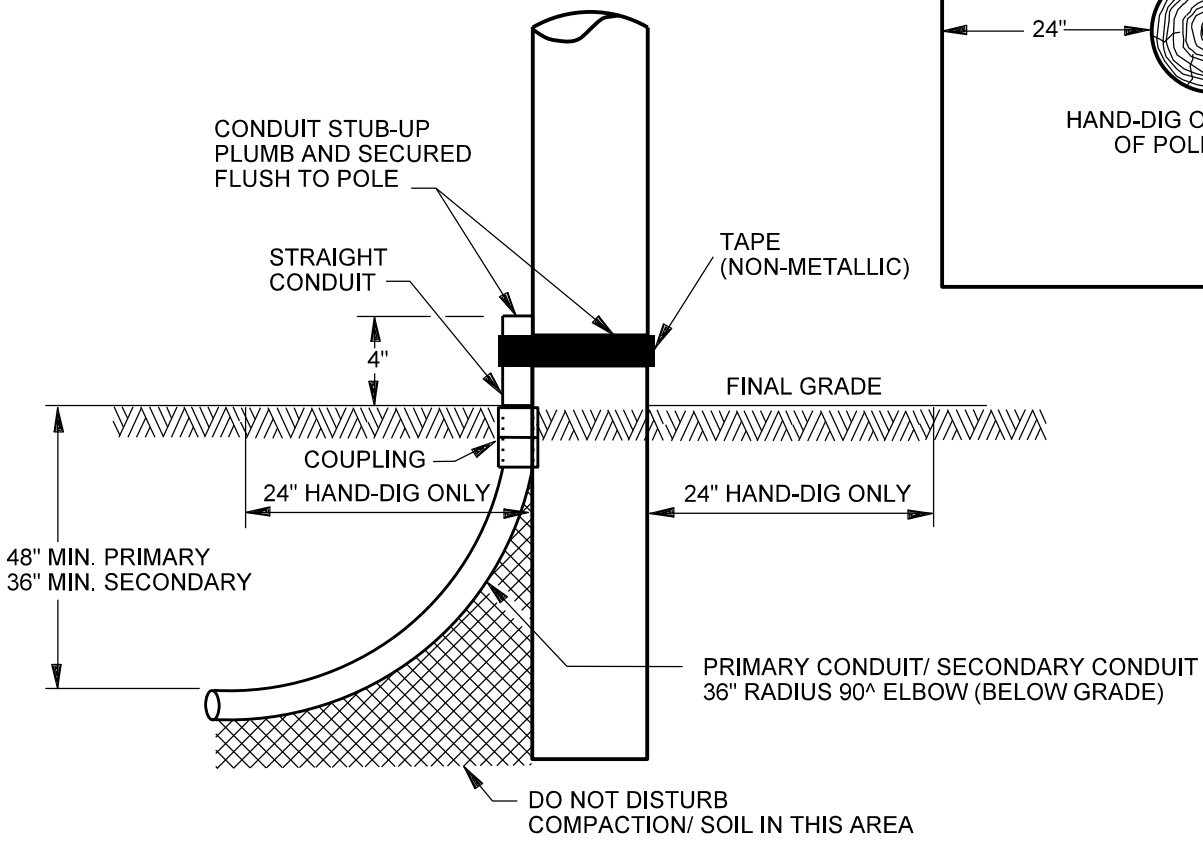


Electric Service Specifications SRP® PROPRIETARY MATERIAL	TRENCHING AND CONDUIT SIZES & SPECIFICATIONS BELLED ENDS AND FITTINGS	ISSUE DATE: 03/13/01 REV. DATE: 05/22/13 APPROVAL: W.LARAMIE
	6-5	8509E127.DGN

Required Conduit Configuration to fit Riser Boots
(The quadrant configuration for the pole riser will be specified by the Designer)

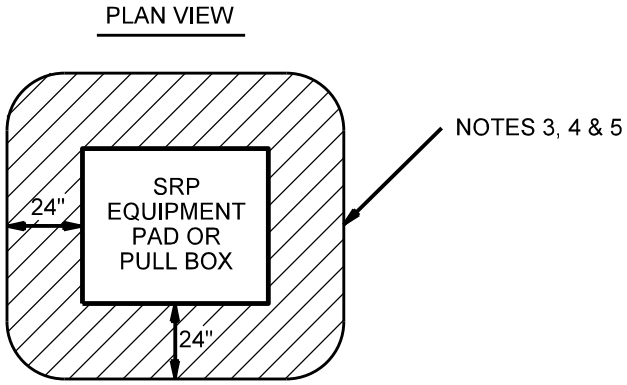




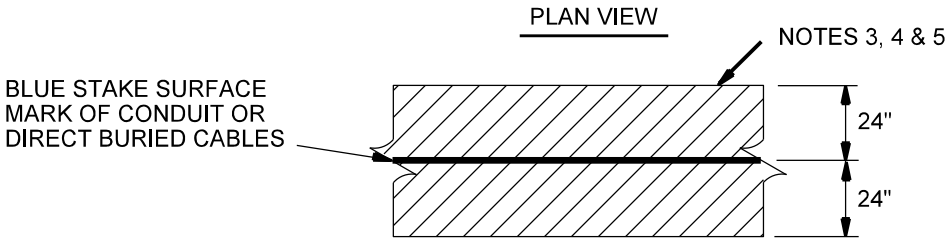


Electric Service Specifications SRP® PROPRIETARY MATERIAL	REV. ADDED 3-4" & 1-2.5" + 3-3"	
	TRENCHING AND CONDUIT POLE RISER ELBOW AND LOCATION	ISSUE DATE: 09/01/09 REV. DATE: 11/11/20 APPROVAL: J. Luera
	6-6	8509E310.DGN

Excavation Near Equipment with Conduit or Direct-Buried Cable

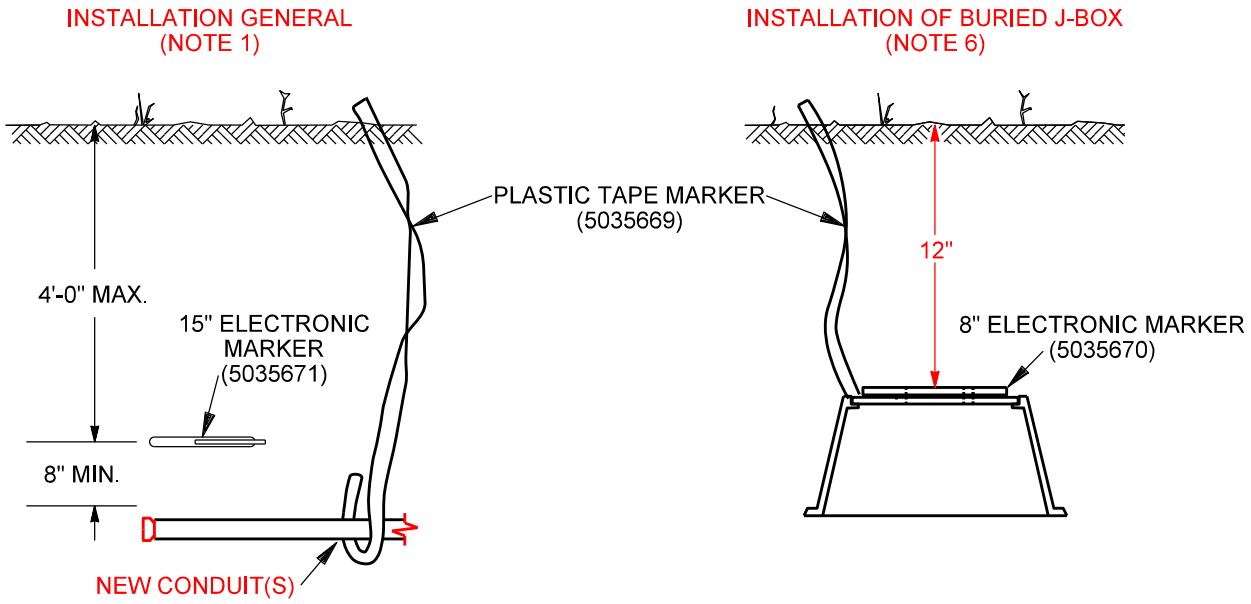


Excavation Near SRP Conduit or Direct-Buried Cable



NOTES

1. Refer to Blue Stake Law and OSHA requirements before excavating.
2. Securely cover or barricade all open trenches and excavations per OSHA requirements before leaving job site.
3. Customer shall install trench and conduit per the work order drawings and/or specifications provided by the SRP Design resource.
4. Excavating under SRP pad-mounted equipment or pull-boxes is prohibited (j-boxes are excluded).
5. Carefully excavate in a safe and prudent manner with hand tools within shaded area.
6. For exposed conduit or direct-buried cable, customer shall protect as necessary to avoid damage.
7. Contact SRP prior to any excavation near SRP poles.



NOTES

1. The 15" buried electronic marker is to be used for marking the location of conduit stub-outs. The 8" markers are intended for buried j-box applications.

2. Bury at least 8" above energized conductor, closer distance will cause the marker to be ineffective at 4' or greater depth. For service conduit, it may be in bottom of trench but not to exceed 4' max depth.

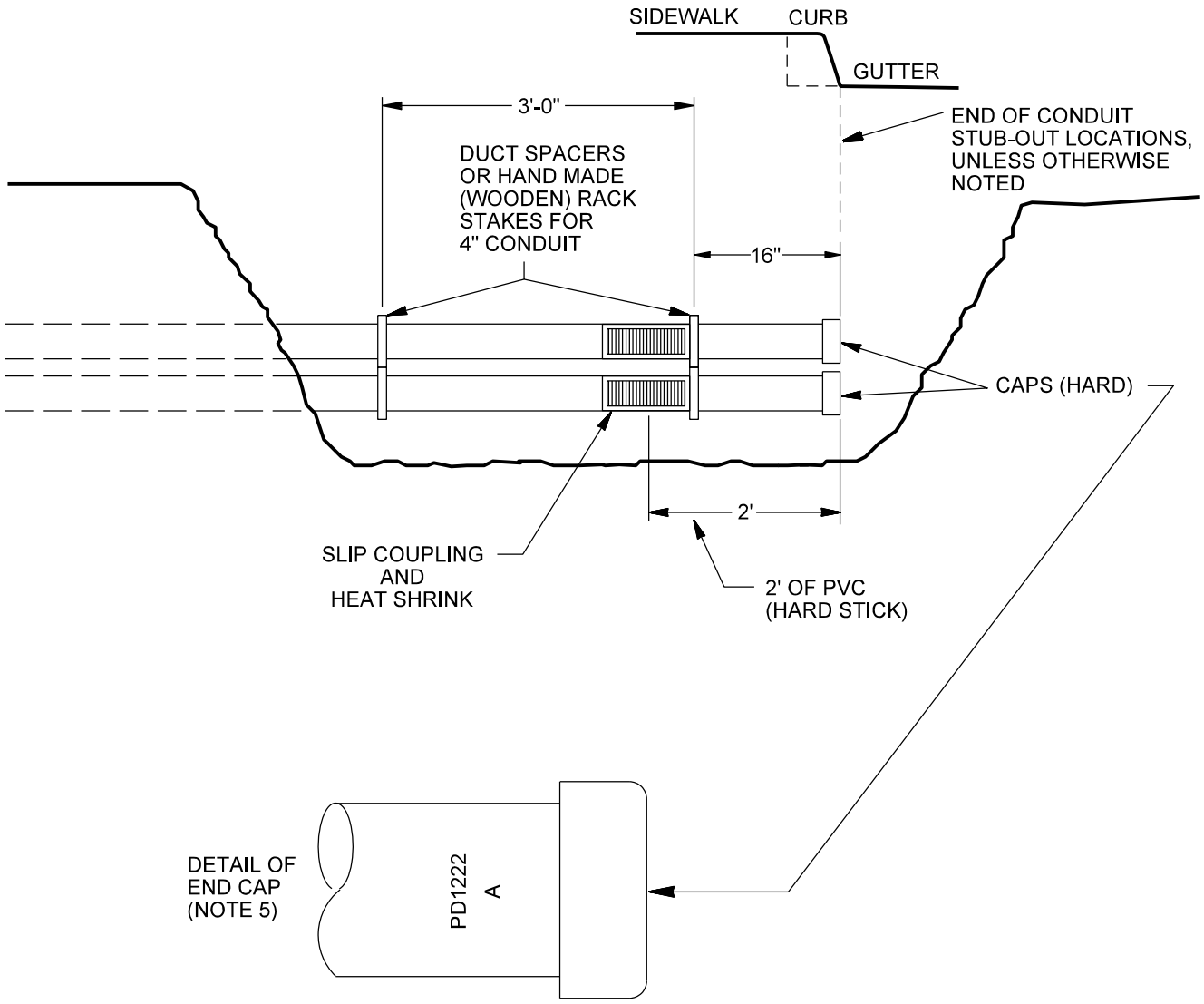
3. Markers shall be buried flat and level to ensure accuracy.

4. Shade marker with at least 4" of select native backfill to prevent accidental movement or damage during trench backfill.

5. Care should be taken to ensure that cable, tin foil, or other extraneous metal does not get discarded into the trench prior to backfill. Metal in close proximity will render the marker ineffective.

6. For permanent installation to a buried j-box, secure the 8" marker to lid with one nylon cable ties by drilling two holes in lid.

Electric Service Specifications SRP® PROPRIETARY MATERIAL	REV: UPDATED ILLUSTRATION AND NOTES FOR CLARITY	
	TRENCHING AND CONDUIT PLACEMENT STANDARD FOR BURIED ELECTRONIC MARKER	ISSUE DATE: 09/01/09 REV. DATE: 10/02/23 APPROVAL: J. ROBBINS
	6-8	8509E308.DGN



NOTES

1. Spool duct stub-outs shall be installed straight and at required specified depth.
2. Two or more spool ducts shall have duct spacers installed. Where 3' or more of spooled duct is exposed in bore pit, two sets of duct spacers shall be installed as shown and arranged with specified conduit racking.
3. Spool duct stub-outs shall be capped with PVC conduit caps, but not glued.
4. Stub-out pit may be back filled if required, but must have electronic marker and a red flag over end of conduit.
5. With black felt tip pen, write the device conduit is from and phase.
6. Spool duct shall have approved 2,500 pound, continuous (no tied pieces), non-conductive, pre-lubricated, flat pull tape, free moving and not glued to duct.

COMPACTION REQUIREMENTS

I. Purpose & General Requirements

A. As of September 2004, SRP requires reports documenting 100% compliance of subgrade compaction for Customer-installed SRP distribution facilities. The reporting is for commercial and residential underground utility installations and is to be performed by consulting engineering test firms hired by Customers or their contractors (Customer-provided excavations and trenches only). This will include density/compaction testing below SRP utility equipment (transformers, switchgear, etc.), verification of compacted separation between utilities in joint use trenches, and cover compaction.

B. This document defines the requirements to ensure SRP facilities installed by others meet all SRP requirements and industry standards in relation to compacted subgrade. In accordance with SRP Appendix B (page 6-19), the subsurface beneath all SRP utility equipment (transformers, switchgear, etc.) must be compacted to prevent settlement. In addition, electric industry codes provide minimum compacted separation requirements for joint use trench installations. The Customer/developer shall hire a consulting engineering test firm to perform all required field and laboratory testing. Typically, many of these same tests need to be performed for street and municipal utility construction associated with the development work. The Customer/developer must submit test results to SRP for review and approval. Test result documentation from the consulting engineering test firm must be sealed by one of the firm's registered professional civil engineers and affirm that the installations tested meet all SRP requirements.

C. Only technicians qualified in soils material testing, following accepted ASTM, test methods shall perform testing. The consulting engineering test firm must verify that their field personnel understand code and SRP requirements.

D. At SRP's discretion, spot field checks of Customer-performed work will be done by SRP to verify test accuracy.

E. Customers may request SRP to perform testing with direct costs paid by the Customer. These costs will vary depending upon the scope of the work, and may include one or more site visits and one laboratory Standard Proctor test.

II. Requirements for SRP Utility Equipment

All fill below and around foundation pads for pad-mounted electric utility equipment (transformers, switches, fuses, etc.) shall meet either of the two following requirements (flow chart noting the testing and inspection process is provided in Appendix B):

A. Slurried Backfill: ½-sack cement-controlled, low-strength material (CLSM) may be placed in lieu of compacted backfill. CLSM shall meet the material requirements of MAG Section 728 and the placement requirements of MAG Section 604. CLSM should be used where no future excavation into compacted backfill for additional electric installations is anticipated. The finished surface shall be level and not vary by more than a quarter inch across the specified grade. Under no circumstance shall CLSM unconfined compressive strength exceed 100 psi at 28 days.

The Customer/developer shall submit to SRP a legible weightmaster's certificate (delivery ticket) with test data. The delivery ticket shall include:

- Date
- Truck number
- Name of CLSM supplier
- Name of contractor
- Job destination
- Number of cubic yards in batch
- Type of cement
- Supplier's mix design code number
- Ticket serial number
- Time the transit mixer was loaded and the amount of water added at any time after

B. Compacted Backfill: Backfill (typically native soil) shall be compacted to at least 95% of maximum standard Proctor density and within 2% of optimum moisture content. Testing shall be as noted in Table 1. This compaction requirement shall be for soils and fills disturbed to the full depth below and within one foot outside pad area in contact with the soil. Fill soils shall be compacted as well as practical in window areas between and around conduits. Compacted soil base must be at final blue top elevation prior to testing if the Customer intends to place the concrete utility fixture pad. Aggregate backfills shall not be used under pads.

TABLE 1

Type of Tests Required	Specification	Sampling Point	Minimum Sampling Frequency
Proctor Density	ASTM D698	In place	Once per soil type
Compaction	ASTM D1556, ASTM D2922/3017		Once per soil type, min. one test per pad*

* Each lift must be tested if compaction quality below final grade is suspect. Field technician shall inspect below top lift (probe or other method) and PE must verify minimum compaction compliance to full depth of compacted fill.

C. Compaction test reports shall be provided for all industrial, commercial and residential utility pad installations. Testing includes sampling of soil and performing a laboratory Standard Proctor test (this determines the maximum density for the specific soil) and field sand cone or nuclear gauge density tests. Each 12-inch lift of compacted soil or fill at pads shall be tested.

Only SRP electrical conduits shall be below equipment pads.

III. Joint Gas/Electric Trench Construction (Shelf or Step-Type Trenches)

Code and industry standards require that there be at least one foot of compacted separation cover between underground gas and electric conduits. This separation cover must be with “well tamped earth” that will not significantly compress or consolidate over time. Tests performed by SRP have determined that the optimal relative density of the separation soil is at least 85% of maximum Standard Proctor density. For standard rectangular-shaped trenches, the separation is vertical and must be accomplished by compacting native soil or placing a granular slurry backfill. Minimum clearance between utilities is 12 inches and must be maintained. Requirements for joint electric gas installations are shown on pages 5-1 and 5-4, and in Appendix B.

Shelf or step-type trenches that utilize undisturbed native soils to provide the minimum vertical separation distance may also be used. The electric conduits are placed within the lower excavated trench “step” and are backfilled level with the “shelf” with native soil using customary methods such as water settling. This backfill is not tested, but must be firm so that there is a stable surface for placement of communication conduit. The gas conduit is then set on the “shelf” portion of the trench, resting on undisturbed native soil that is presumed to have a relative density of at least 85% of maximum Standard Proctor density. Requirements are shown in Appendix B.

A. Limitations for use of shelf or step-type trenches are as follows:

   1. Space from the top of the uppermost electric conduit to the bottom of the shelf must be at least 12 inches.
   2. Depth of the trench at the bottom of the step must not exceed 60 inches.
   3. Gas conduit must be placed upon the shelf portion of the trench.
   4. Soils must be cohesive – able to have a clean step and shelf cut while maintaining shape and stability throughout the conduit installation process.
   5. Low plasticity and non-plastic silts, sands, gravels and fractured rock are not acceptable subsurface conditions for shelf or step-type trenches. The soil types acceptable include:

      - Clays
      - Silty, sandy or gravelly clays
      - Clayey sands, clayey silts or clayey gravels
      - Cemented soils

B. Soil conditions shall be reviewed during the pre-construction meeting to determine whether SRP will allow this type of trench construction. It is the trenching contractor’s responsibility to provide a stable shelf that does not ravel or collapse during trench work.

C. Unless a shelf or step-type trench is pre-approved by SRP for the joint gas/electric installation, compacted separation cover (defined as the backfill within one foot above the top of electric conduit) shall be utilized and tested as noted below. Under no circumstance will electric cable be installed within conduit until minimum compacted separation cover is verified and sealed by the Customer's consulting engineering test firm. A flow chart noting the testing and inspection process is provided in Appendix B:

D. Backfill shall be compacted to at least 85% of maximum Standard Proctor density and within 2% of optimum moisture content. Testing shall be as noted in Table 2. This table applies to all primary and secondary within public utility easements and ROW.

TABLE 2

Type of Tests Required	Specification	Sampling Point	Minimum Sampling Frequency (in PUE and ROW)
Proctor Density	ASTM D698	In place	Once per soil type
Compaction	ASTM D1556, ASTM D2922/3017	In place	• 1 for each 500' of main line trench • 1 for every 4 street crossings • Visually examine all trenches to verify compaction has been done

E. Compaction test reports shall be provided for all joint gas/electric trench construction unless a shelf or step-type trench is used. Testing shall include sampling of soil, performing a lab Standard Proctor test, and performing field sand cone or nuclear gauge density tests. Cover thickness shall be verified by the testing.

F. If the compaction testing is not properly coordinated with backfill operations, Customers or their contractors must excavate excess backfill to within 12 inches of the top of the conduit so that the consulting engineering test firm may test minimum compacted separation cover. The standard was created so that gas could be installed above electric without SRP involvement once the separation soil was properly in place.

IV. Electric Only Trench Construction

A. Backfill and compaction requirements for electric conduits (no joint gas installation) are provided on pages 6-21 and 6-22. No reports or documentation is required by SRP for these types of installations. Testing and documentation may be required by local agencies for work done within public easements or the ROW.

B. Backfill within six inches of conduit shall have no solid material with sharp edges greater than 1½ inches in maximum dimension and contain more than 50% passing the $^{3}/_{8}$ inch sieve. The balance of the trench backfill shall have no solid material with sharp edges greater than four inches in maximum dimension and contain more than 50% passing the $^{3}/_{8}$ inch sieve.

C. The degree of compaction shall meet the minimum requirements of pages 6-21 and 6-22, or as required by local municipal standards, if greater.

V. Compliance Reporting

A. Customers or their contractors must submit all required documents verifying compliance with the standards herein prior to placement of SRP's electric utility equipment or installation or electric cable within conduits.

1. For utility equipment, the following submittals must be provided:

   a) If backfill is compacted, submit field and laboratory density test results for all required locations per Section B and with all information for utility equipment noted in Figure 2 of Appendix A. Include a sketch noting the location of all tests (or detailed written description including equipment number); along with a material testing report cover letter sealed by a registered professional civil engineer representing the Customer's consulting engineering test firm, in accordance with the example in Appendix A.

   b) If CLSM backfill is used, submit all weightmaster's certificates (delivery tickets). Include a sketch referencing the location of placed backfill and the related delivery ticket numbers.

2. For joint gas/electric trenches, the following submittals must be provided:

   a) Submit field and laboratory density test results for all required locations per number III. and with all information for joint trench work noted in Figure 3 of Appendix A. Include a sketch noting the location of all tests (or detailed written description identifying test location) along with a material testing report cover letter sealed by a registered professional civil engineer representing the Customer's consulting engineering test firm in accordance with the example in Appendix A (not required for shelf or step-type installations).

   b) Periodic submittal of required results may be provided for review as the work completed while the total project is underway. These pre-submittal reports shall contain the same information as completed final reports, but are valid only for the utility equipment pads and joint-trench lengths noted in the report. Wire and concrete pad installations may proceed for utility equipment pads and joint-trench lengths that meet compaction requirements and have been approved.

APPENDIX A

CUSTOMER-INSTALLED SRP DISTRIBUTION FACILITIES FORMS AND SUBMITTALS

I. Utility Equipment Testing – Compaction

A. All test results shall be provided and shall be sealed by a registered professional civil engineer. For compacted backfill below utility fixtures, the following submittals must be provided:

1. Field and laboratory density test results (including Standard Proctor Test results) for all locations with all information as noted in Figure 2.
2. A sketch noting the location of all tests. NOTE: A markup of job plans is acceptable.
3. A material testing report cover letter sealed by a registered professional civil engineer representing the Customer's consulting engineering test firm in accordance with Figure 1.

B. All compaction test failures will be re-tested per ASTM D1556. Any resulting failure will be reworked before re-tests are performed. Gauges used per ASTM D2922/3017 shall be calibrated against ASTM D1556 at least every 10 tests. Rock correction shall be used for any material greater than 4.75mm to obtain maximum proctor density.

II. Joint Gas/Electric Trench Testing

A. All test results shall be provided and shall be sealed by a registered professional civil engineer. For joint gas/electric installations, with the exception of shelf or step-type installations, the following submittals must be provided:

1. Field and laboratory density test results (including Standard Proctor Test results) for all locations with all information as noted in Figure 3.
2. A sketch noting the location of all tests. NOTE: A markup of job plans is acceptable.
3. A material testing report cover letter sealed by a registered professional civil engineer representing the Customer's consulting engineering test firm in accordance with Figure 1.

B. All compaction test failures will be re-tested per ASTM D1556. Any resulting failure will be re-worked before re-tests are performed. Gauges used per ASTM D2922/3017 shall be calibrated against ASTM D1556 at least every 10 tests. Rock correction shall be used for any material greater than 4.75mm to obtain maximum proctor density.

III. Electric Only Trench Testing

No SRP reporting or submittal requirements necessary.

APPENDIX A

CUSTOMER-INSTALLED SRP DISTRIBUTION FACILITIES FORMS AND SUBMITTALS

Figure 1: Example – Material Testing Report Cover Letter

(Consulting engineering test firm letterhead with name and address)

(Date of report)

SRP
Manager, Homebuilder Management Center, MS XCT330
P.O. Box 52025
Phoenix, AZ 85072-2025

Project: (Project name)
(Project location)
(Project number)

Re: Materials Testing
(Type of testing - i.e., Transformer pads, Trench backfill)

In accordance with the request of the (Customer/developer name), we have completed the materials testing at the subject project.

To the best of my knowledge and belief, the materials were found to be substantially in conformance with the latest SRP standard specifications for distribution facilities construction. Sampling, laboratory and field-testing were in accordance with the latest SRP schedule of minimum level of testing.

Attached find the laboratory and field-test performed on this work.

Respectfully submitted,
(Company name)

(Signed and sealed by Civil Engineer registered in the State of Arizona)

APPENDIX A

CUSTOMER-INSTALLED SRP DISTRIBUTION FACILITIES FORMS AND SUBMITTALS

Figure 2: Example – Field Density Test Results

(Consulting engineering test firm letterhead with name and address)

Developer: _____

Project: _____

Location: _____

City: _____

Material: _____

Contractor: _____

Sampled by: _____

Date	Pad Location	% Moisture	Dry Density (PCF)	% Compaction	Test	Lift Tested	Depth of Backfill
Date Test Taken	Plan Station or Residential Address				N-S-P		

NOTE: Location of test should be easily located on the approved plans. All stationing should follow approved plan stationing. Note test number on sketch or job plans and submit with test results.

Tests: **N** – Nuclear Gauge, **S** – Sand Cone, **P** – Proctor

Test Methods: **ASTM:** D-2922 D-3017 D-1556 D-698

Deficiency Report: Date Notified: _____ Date Cleared: _____

Customer Notified of Deficiency: Yes No

Corrective Action Taken: _____

_____

_____

APPENDIX A

CUSTOMER-INSTALLED SRP DISTRIBUTION FACILITIES FORMS AND SUBMITTALS

Figure 3: Example – Trench Construction Verification List

(Consulting engineering test firm letterhead with name and address)

Developer: _____

Project: _____

Location: _____

City: _____

Material: _____

Contractor: _____

Sampled by: _____

Date	Test Location	Depth to Top of Compacted Separation Cover	Depth to Top of Conduit	Conduit Condition	% Moisture	Dry Density (PCF)	% Compaction	Test
Date Test Taken	Plan Station			R-D				N-S-P

Notes

(1) Location of test should be easily located on the approved plans. All stationing should follow approved plan stationing. Note test number on sketch or job plans and submit with test results.
(2) Depth to top of compacted separation cover – depth to top of conduit ≥ 12 inches.
(3) Depth to top of conduit ≥ 48 inches.

Conduit Condition: **R** – Round, **D** – Deformed

Tests: **N** – Nuclear Gauge, **S** – Sand Cone, **P** – Proctor

Test Methods: **ASTM:** D-2922 D-3017 D-1556 D-698

Deficiency Report: Date Notified: _____ Date cleared:

Customer Notified of Deficiency: Yes No

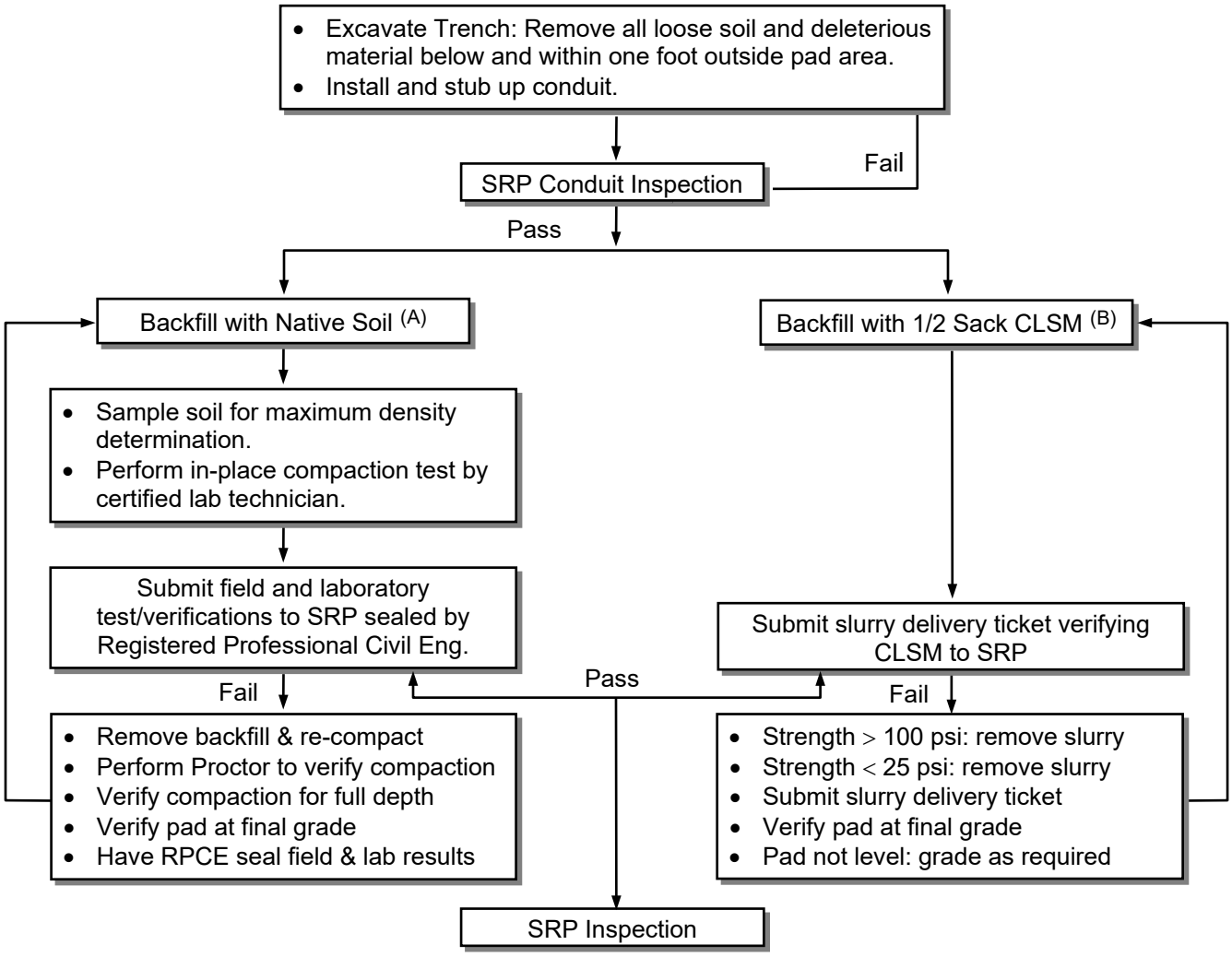
Corrective Action Taken: _____

_____

APPENDIX B

COMPACTION REQUIREMENTS
UTILITY EQUIPMENT BACKFILL FLOWCHART

I. Backfill Around and Under Pad-Mounted Utility Equipment



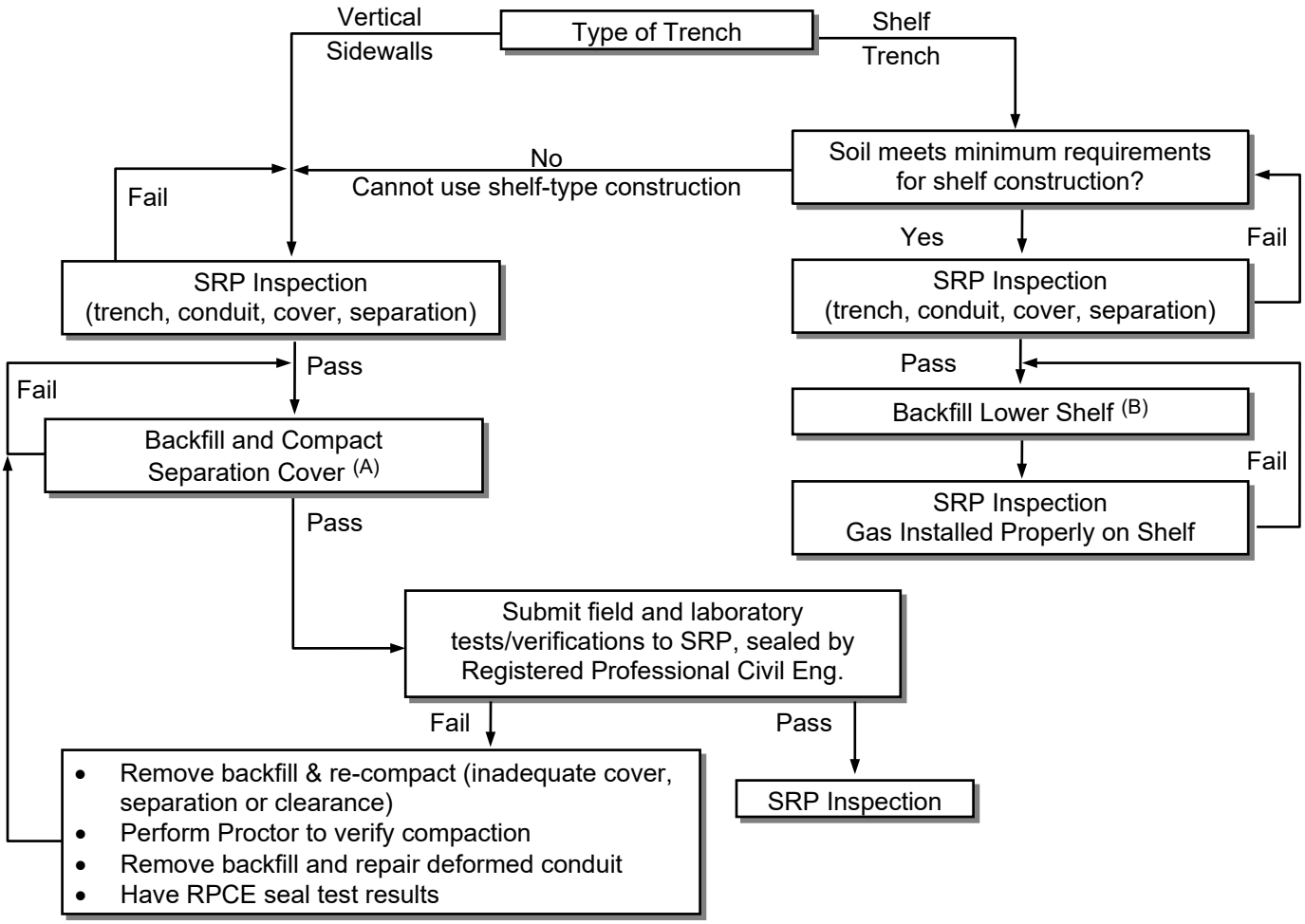
A. Place in maximum one-foot compacted lifts in accordance with ASTM D698 to at least 95% of maximum dry density and within 2% of optimum moisture content for all disturbed soils, and fill below and within one foot outside pad area in contact with the soil. Compact as well as practical in window areas between and around conduits. Pad must be at final blue top grade prior to testing. Aggregate backfills shall not be used under pads.

B. CLSM per the material requirements of MAG Section 728 (< 100 psi) and placed per the requirements of MAG Section 604. Finished surface shall be at final grade, level and not vary by more than ¼-inch across the specified grade.

APPENDIX B

COMPACTION REQUIREMENTS
UTILITY EQUIPMENT BACKFILL FLOWCHART

II. Joint Gas – Electric Trench Construction



A. 12-inch minimum compacted separation lift in accordance with ASTM D698 to at least 85% of maximum dry density and within 2% of optimum moisture content. Verify minimum 12-inch compacted separation, minimum 48-inch depth of cover and condition of conduit after compaction. Verify all gas lines are at least 24 inches from any electrical device.

B. Verify minimum 12-inch separation in lower shelf, minimum 48-inch depth of cover, maximum 60-inch conduit depth and condition of conduit after compaction. Verify all gas lines are properly placed on shelf and are at least 24 inches from any electrical device.

SOIL TYPES, BACKFILL MATERIAL AND COMPACTION REQUIREMENTS

This information is to be superseded by any conflicting information that may be published in the SRP Excavation Safety Resource Manual. Contact SRP Safety Services for a copy of this manual.

NOTES

1. Measure trench depths from final grade stakes. Follow all trench depths specified on a job drawing. See clearance section for minimum cover and separation requirements.
2. Shore or slope trench walls as required by the latest revision of the Excavation Safety Manual.
3. The bottom of the trench shall be smooth and free of aggregate protruding more than $^3/_8$" above the bottom. If this condition cannot be obtained, cover the bottom of the trench with a level layer of sand with a grain size less than $^3/_8$" in diameter to cover all protrusions.
4. BACKFILL AND COMPACTION FOR CONDUIT IN NATIVE SOIL: Within 6" of the conduit, backfill material shall be free of broken concrete, paving, wood, glass or other solid material greater than 1 ½". This backfill shall contain more than 50% fines of a size that is $^3/_8$" or smaller. The balance of the trench backfill shall be free of solid material greater than 4" in maximum dimension and shall contain more than 50% fines of a size that is $^3/_8$" or smaller.

COMPACTED FILLS

MATERIAL ITEM #	MATERIAL	DESCRIPTION
0000113	GRANULAR MAG Aggregate Base Coarse (ABC)	Well graded unwashed sand and gravel used in compacted subgrades for pavements and general backfill.
	SAND	Soil mostly made of particles less than $^3/_{16}$" in size, but containing little or no silt or clay.
	NATIVE SOIL	Soil placed by nature that has not been altered by man and meets requirements of Note 4.

5. Use other backfill if it is more economical. Notify Civil Inspectors at least 48 hours prior to start of work to arrange for compaction testing.
6. Compact backfill to at least the percentage of maximum density listed in the following MAG Specification (as determined by ASTM D698), unless otherwise specified.

   Contact the municipality concerned for repair requirements when a trench will be under pavement. The following table applies when there are no supplemental municipal requirements.

SOIL TYPES, BACKFILL MATERIAL AND COMPACTION REQUIREMENTS

MAG SPECIFICATION 601-2 *Modified to meet most MAG Agency requirements.*	**FROM SURFACE TO 2' BELOW SURFACE**	**FROM 2' BELOW SURFACE TO TRENCH BOTTOM**
A. Under or within 2' existing or proposed pavement, curb, gutter or sidewalk	Native…….....95% Granular……...100%	All 95%
B. On any utility easement street, road or alley ROW outside limits of A	90%	90%*
C. Around and under any structures or pad-mounted equipment or exposed utilities	95%	95%
D. All other areas	80%	80%
* Applicable from 1' above conduit, 85% below.		

NOTE: Do not use machine compaction within 6" of cable or conduit.

SLURRY BACKFILL MIXES (NO COMPACTION REQUIRED)

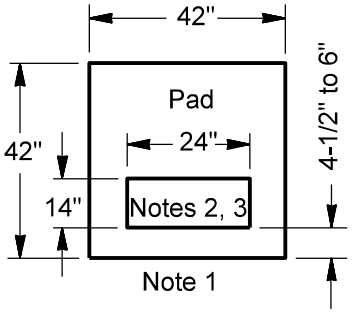
MAT. ITEM #	**ABBREV.**	**SLURRY TYPE**	**DESCRIPTION**	**COARSE AGGREGATE ASTM C33**	**FINE AGG.**	**SLUMP RANGE**	**MIN. CEMENT CONTENT (LBS/ CU. YD.)**
0000100	ASB	Aggregate Slurry Backfill	Washed gravel and sand or clean ABC, no cement, backfill around wood and concrete transmission line poles and in trenches (no loads).	NO. 67 [3/4" (19mm) NOM. MAX.]	NOTES 11 & 12	6"-9"	NONE
0000104	CLSM ½ SACK	Controlled Low Strength Material w/ ½ Sack Cement PCY	Washed gravel and sand or clean ABC, with cement, trench backfill (low load areas-streets and lots).	MIXES IN ACCORDANCE WITH MAG 728 (13)			
0000105	CLSM 1 SACK	Controlled Low Strength Material w/ 1 Sack Cement PCY	Washed gravel and sand or clean ABC, with cement, trench backfill in low load areas (streets and lots). Use in lieu of CLSM ½ Sack as required by cities.				
0000106	CLSM 1 ½ SACK	Controlled Low Strength Material w/1 ½ Sack Cement PCY	Washed gravel and sand or clean ABC, with cement, structural backfill under foundations and as thermal fill and/or mechanical protection of duct banks.				
000109	DBS	Duct Bank Backfill w/ Sand Slurry	Grout for pumping around conduits placed in pipe sleeves.	NONE	NOTE 11	6"-9"	376

7. When trenching in an area where many undercrossings of other utility lines or conflicts are encountered, installation of conduit under all of the conflicts is more difficult. Wider trenches should be used for these installations.
8. Water flooding of trenches, in order to provide compaction, is only allowed provided the volume of water does not saturate the backfill, water pressure does not displace the backfill, and is pre-approved by ESE. Standing water is an indication of saturation.
9. Trench spoil shall be placed 6’ to 10’ from edge of a trench. If not possible, trench spoil may be placed on one side of the trench, within 4’ of the edge, provided the opposite side of the trench is level, without obstructions, and accessible by persons and equipment.
10. If compaction is uneconomical around or under structures, pad-mounted equipment or exposed utilities, CLSM ½ Sack (0000104) may be used.
11. Fine aggregates (sand) shall be in accordance with ASTM C33.
12. Fine aggregates 45-50% of the total aggregate weight.
13. Purchaser may request material at lower slumps.
14. A standard sack of cement is considered to weigh 94 pounds and is one cubic foot volume.

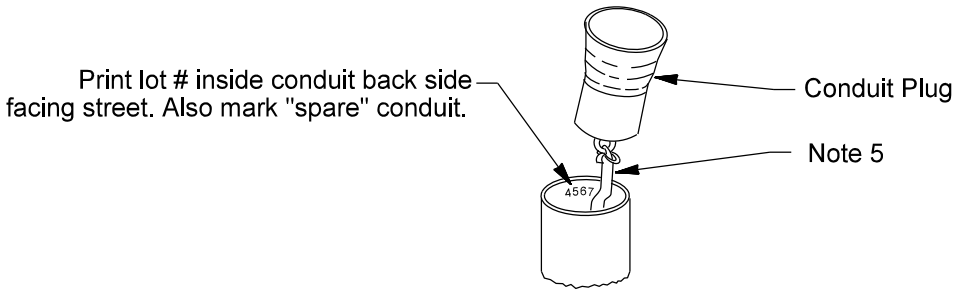
SECTION 7
TRANSFORMER PADS

DESCRIPTION **PAGE**

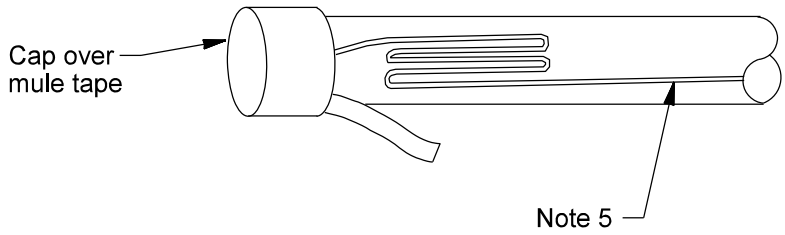
Elevation View



Conduit Marking & Pulling Tape
(by party installing the conduit)



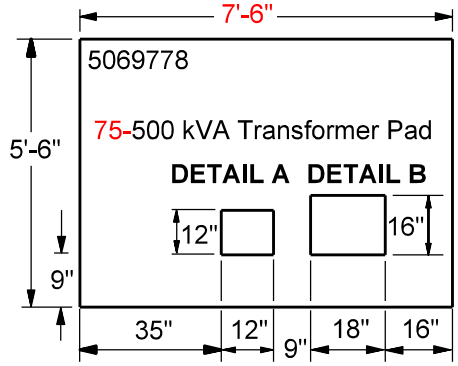
Pulling Tape in Conduit

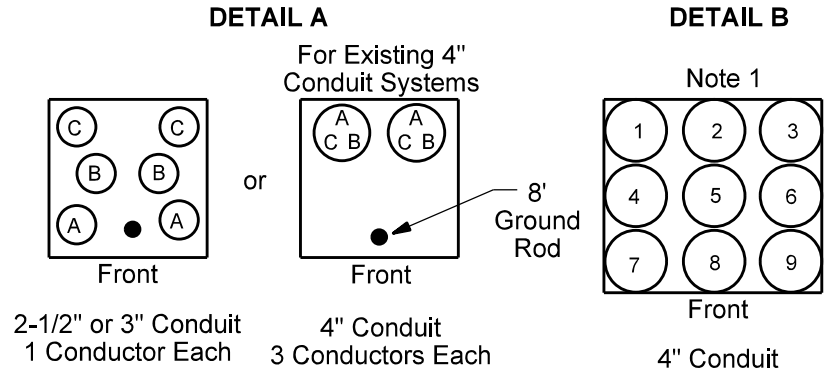


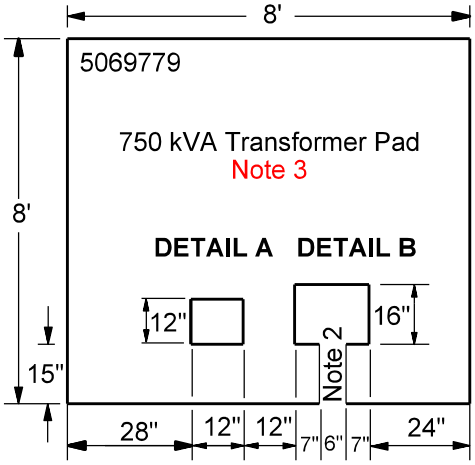
NOTES

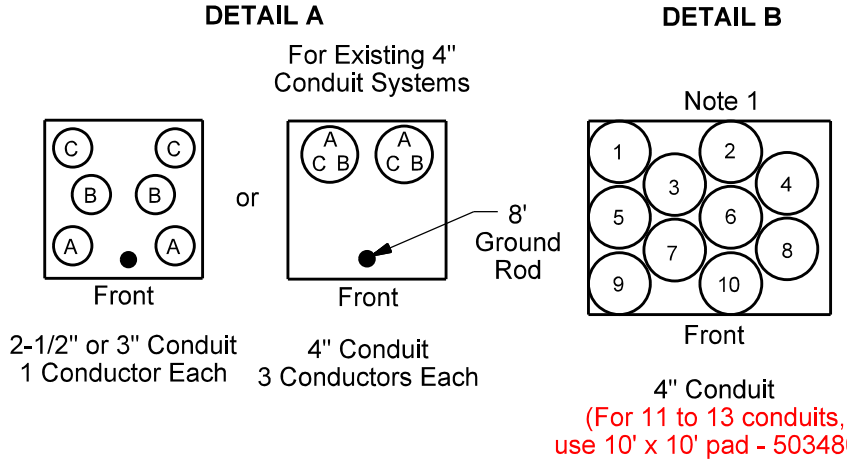
1. For reference only. Single phase pad provided by SRP.
2. Primary and secondary opening.
3. A stub-up template, along with design details by SRP, will locate conduit and ground rod within the primary/secondary window.
4. Top of ground rod and all conduits are to be 5" above final grade for new transformer installations.
5. Customer installed and approved (section 11), 2,500 pound, continuous (no tied pieces), flat, pre-fabricated pull-tape shall be free moving and not glued to the conduit.

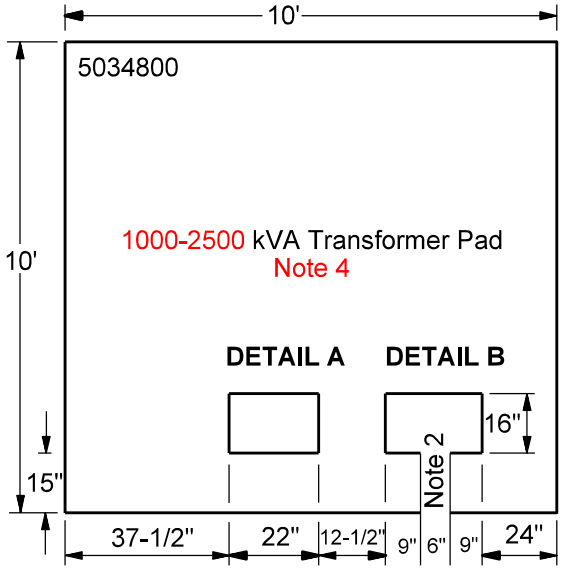
Electric Service Specifications SRP® PROPRIETARY MATERIAL	REV: UPDATED TO PULLING TAPE	
	TRANSFORMER PADS PRECAST PAD FOR SINGLE PHASE TRANFORMER (NOTE 1) 25 TO 167 kVA	ISSUE DATE: 10/25/12 REV. DATE: 11/04/24 APPROVAL: J. LUERA
	7-1	8509E350.DGN

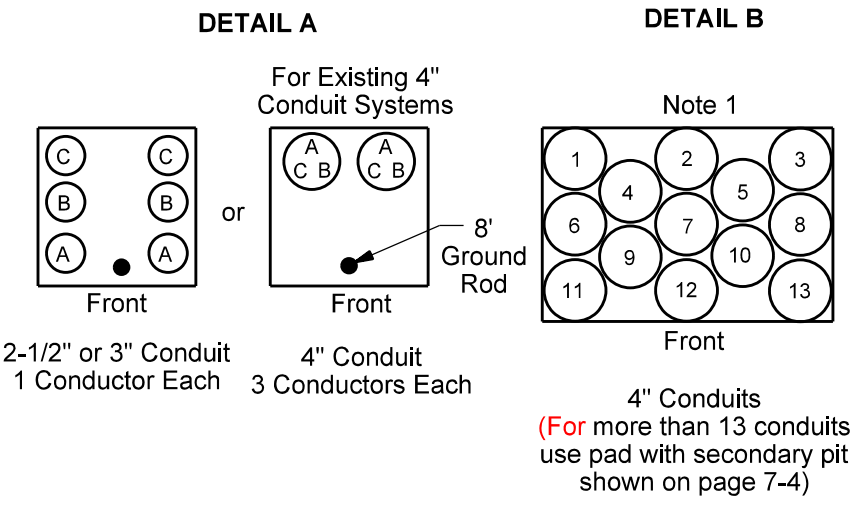












NOTES

1. Service conduit order is from the rear in both the transformer pad window and SES.
2. Secondary window gap cover plate provided by the pad manufacturer.
3. Exception: Pad 5069779 will also accomodate a 1000 kVA transformer, with 10 service conduits MAX.
4. Exception: Pad 5034800 will also accomodate a 750 kVA transformer or 3000 kVA transformer.
5. Existing transformer pad sizes and configurations are permitted to be retained to fit new transformer equipment, per the exceptions, for: maintenance, modifications, or upgrades. All efforts should be made to design new transformer pad installations according to its intended use and not per exceptions.

Electric Service Specifications SRP® PROPRIETARY MATERIAL	REV: REVISED XMFR PAD RANGE SIZES AND UPDATED NOTES	
	TRANSFORMER PADS THREE-PHASE PAD INSTALLATION DETAILS	ISSUE DATE: 08/15/19 REV. DATE: 01/08/25 APPROVAL: C. OBRIEN
	7-2	8509E392.DGN

NOTES

1. Three-phase transformer pads shall be pre-cast construction. Size is shown on the SRP design. Customer shall provide and install pad, secondary window cover plate (if required), ground rod, and all necessary conduit and backfill material. See Contractor-Supplied Material section for approved suppliers.

   Contact Distribution Design for transformer vault installations.

2. Pad shall be located to allow access and oriented to provide a minimum of 12' of clear working space at front of unit. Maintain minimum clearance of 3' at sides and 18" at back of pad (see page 5-12, items 5-10).

3. Conduits shall stub up 2" above final top surface of pad. Temporary conduit plugs (no duct tape) shall be installed in all conduits. A flat pull tape shall be tied to conduit plugs in the low voltage (secondary) opening/window. End bell fittings shall not be installed on any conduit stub-ups at the transformer. Size and number of conduits are shown on the SRP design.

4. Service conduit stubbed up in the rear off the pull box/window shall stub up in rear of the SES pad. Each consecutive row shall match the conduit stub up location in the transformer and SES. Straight runs of racked and encased service conduits of 50 feet and greater may be rolled to meet the above requirements.

5. In the “low voltage” (secondary) opening with more than 13 conduits, a pull box is required under the pad secondary window. See page 7-4, Secondary Pull-Box Placement for 3Ø Transformer, 750 – 3,000 kVA.

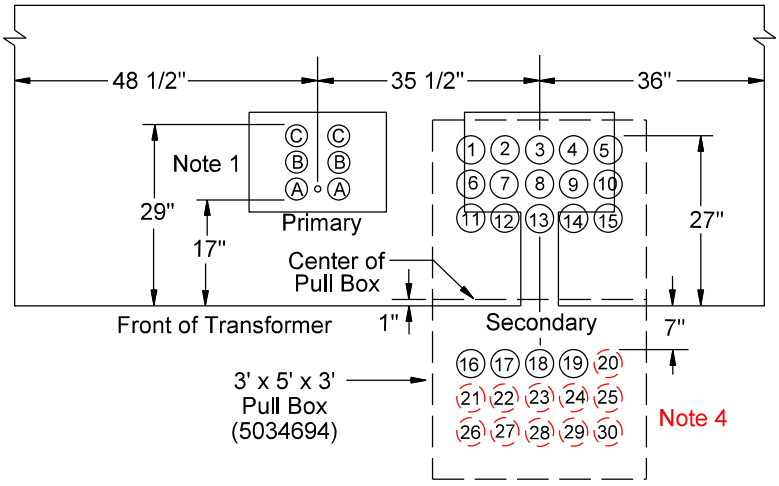
6. A 5/8" x 8' copper clad ground rod shall be installed in the "high voltage" opening of the transformer pad. The top of the ground rod shall be 2" above top of transformer pad.

7. For service conduits not requiring racking and encasement, backfill under pad shall be ½ sack CLSM (controlled low strength material), SRP material item number 5075313 consisting of washed gravel (#57 aggregate per ASTM C33) and sand slurry stabilized with Portland cement (1/2 sack Portland cement per cubic yard) in accordance with MAG section 728. For service conduits requiring racking and encasement, backfill shall be 1-1/2 sack CLSM, SRP item number 5075315 matching the conduit encasement backfill.

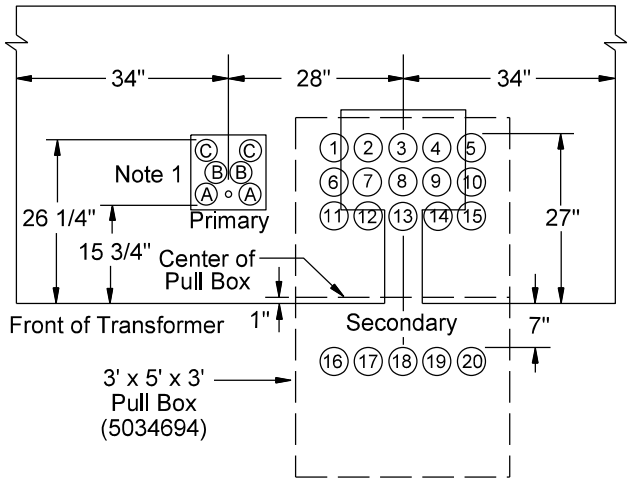
   SRP inspectors shall approve the subgrade before the pad is placed.

8. Top of pad shall be 4" minimum above surrounding grade and at sufficient elevation to prevent flooding.

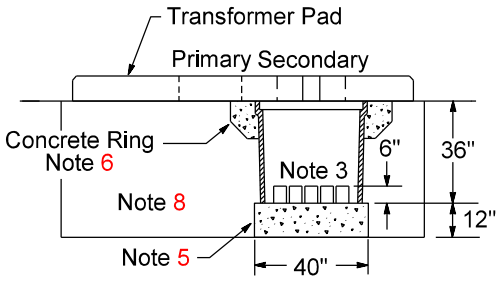
TOP VIEW
10' x 10' Transformer Pad
(5034800)



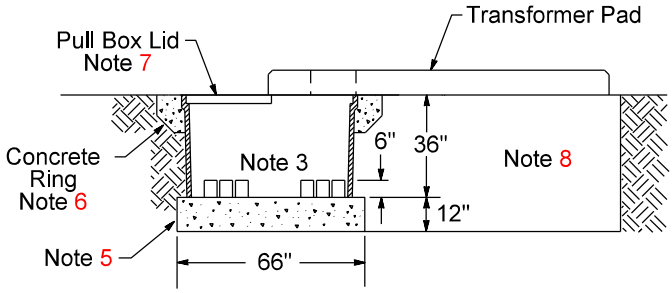
TOP VIEW
8' x 8' Transformer Pad
(5069779)



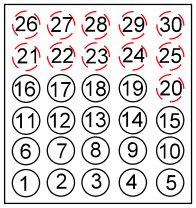
FRONT VIEW



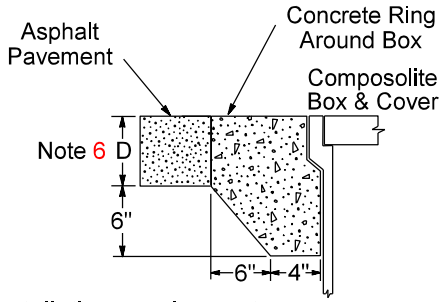
SIDE VIEW



TOP VIEW
Front of Customer SES
(Note 2)



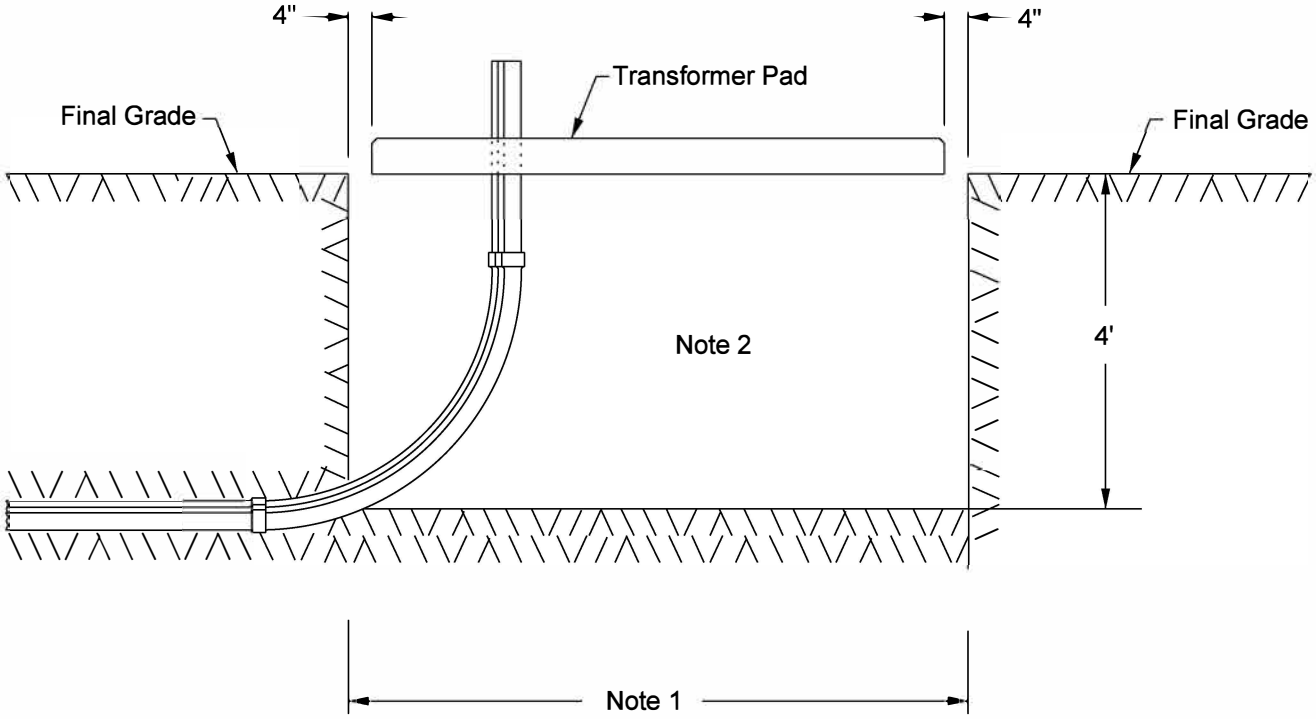
PULL BOX INSTALLED IN ASPHALT PAVEMENT



NOTES

1. See pages 7-2 through 7-3 for primary conduit and ground rod installation requirements.
2. Service conduit stubbed up in the rear off the pull box/window shall stub up in rear of the SES pad. Each consecutive row shall match the conduit stub up location in the transformer and SES. Straight runs of racked and encased service conduits of 50 feet and greater may be rolled to meet the above requirements. Route conduits out of the front, rear, or (non-primary) side of the pad.
3. Service conduits into pull box and SES shall be spaced 1" apart. Conduits to be stubbed up 6" above the bottom of pull box.
4. Conduits 20 and above are reserved for existing services greater than 3,000 A.
5. Backfill under pull box shall be 1/2 sack CLSM (material item 5075313). When service conduits are racked and encased, 1-1/2 sack CLSM (material item 5075315) may be substituted for 1/2 sack CLSM.
6. When pull box is placed in asphalt pavement subject to vehicle traffic, install concrete ring around entire box per detail shown. Concrete encasement ring dimension "D" to be equal to design pavement depth plans. Concrete encasement to be 3,000 psi minimum. See engineering plans for pavement and subgrade requirements.
7. 1" maximum overlap of pad and box lid.
8. For new transformer installations, see page 7-5 for backfill requirements under the pad. Undistributed native backfill can remain for modifications when a pull box is added.

Electric Service Specifications SRP® PROPRIETARY MATERIAL	REV: UPDATE TITLE BLOCK AND NOTE 4 BASED ON NEW REDUCE SES SIZE TO 3,000 A	
	TRANSFORMER PADS SECONDARY PULL BOX PLACEMENT FOR 3Ø TRANSFORMER 750 - 3,000 kVA	ISSUE DATE: 03/31/03 REV. DATE: 07/19/24 APPROVAL: J. ROBBINS
	7-4	8509E138.DGN



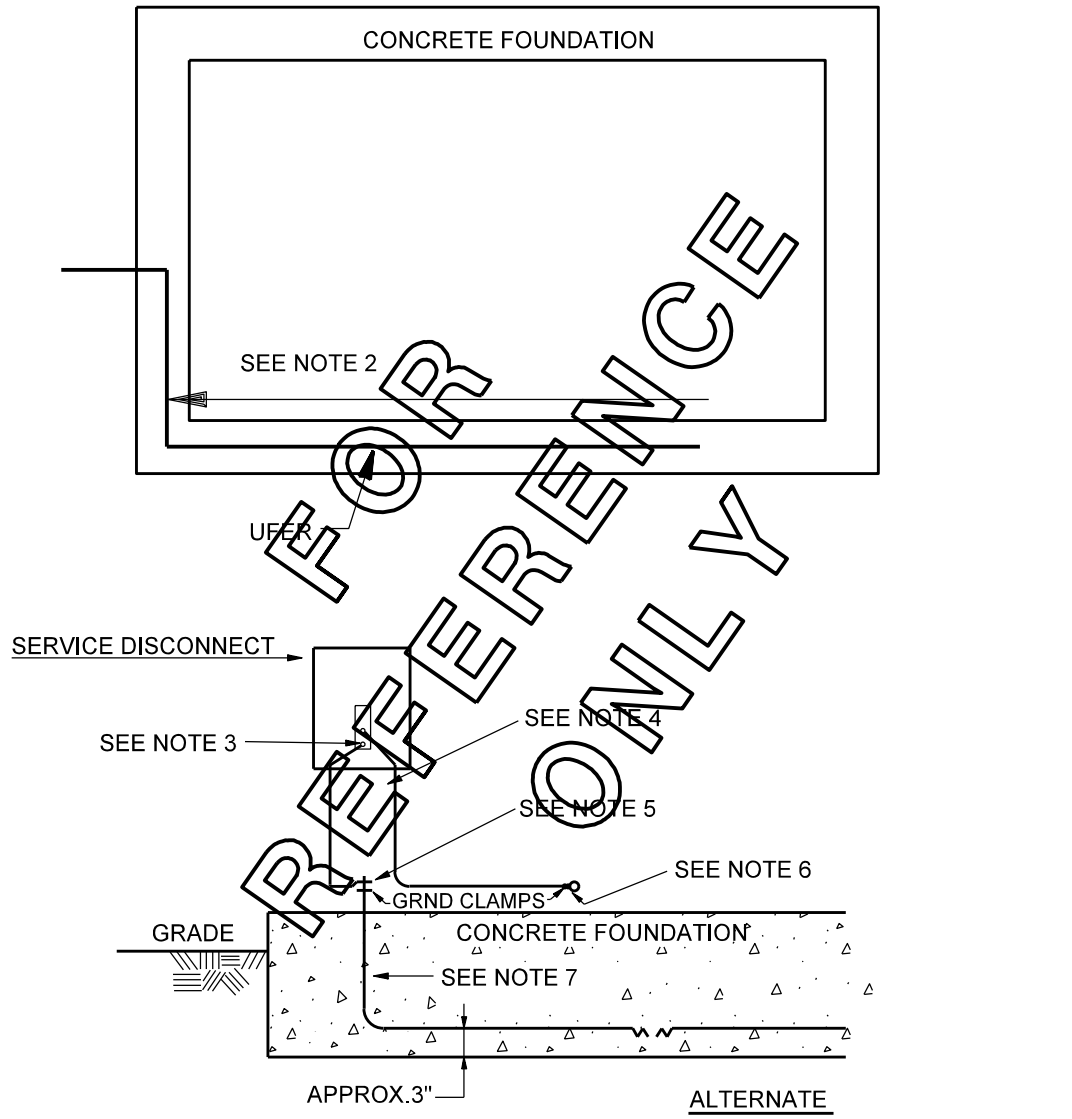
NOTES

1. Excavate 4' below pad. Pit shall extend on all sides 4" past edge of pad.
2. Backfill material under transformer pad shall be CLSM 1/2" sack material item 5075313. For installations in which service conduits require racking and encasement, backfill material shall be 1-1/2 sack CLSM material item 5075315.

SECTION 8
GROUNDING AND BONDING

NOTE: All pages in this section are provided as a reference only, as these items are under the AHJ. The NEC codes referenced on the details in this section may not be current. Contact the AHJ for their current NEC grounding and bonding code requirements.

DESCRIPTION PAGE



NOTES

1. Local municipal codes shall prevail. If no local code exists, use NEC bonding/grounding requirements.
2. 20' or more of No. 4 bare copper conductor (or larger) below the permanent moisture level and about 3" above the base of the footing.
3. If neutral terminal is insulated from the can, install a bonding jumper or screw.
4. Bond as per NEC sec.250-104 and 250-66. See NEC or local regulations for type of material and protection of the grounding conductor.
5. Approved system ground clamps shall be accessible.
6. Bond to interior metallic piping system as per NEC 250-104 and 250-50.
7. 20' or more of No. 4 (or larger) bare copper conductor as per NEC 250-52 and 250-66.

NOTE: LOCAL MUNICIPAL CODES SHALL PREVAIL. IF NO LOCAL CODE EXISTS, USE NEC BONDING/GROUNDING REQUIREMENTS.

SIZE OF BONDING AND GROUNDING CONDUCTORS

NEC TABLE 250-66

SIZE OF LARGEST SERVICE CONDUCTORS OR EQUIVALENT FOR MULTIPLE CONDUCTORS		SIZE OF GROUNDING CONDUCTOR AWG NO.	
Copper	Aluminum	Copper	Aluminum *
2 or smaller	1/0 or smaller	8	6
1 or 1/0	2/0 or 3/0	6	4
2/0 or 3/0	4/0 or 250 MCM	4	2
over 3/0 to 350 MCM	over 250 MCM to 500 MCM	2	1/0
over 350 MCM to 600 MCM	over 500 MCM to 900 MCM	1/0	3/0
over 600 MCM to 1,100 MCM	over 900 MCM to 1,750 MCM	2/0	4/0
over 1,100 MCM	over 1,750 MCM	3/0	250 MCM

* see installation restrictions in NEC section 250-64.

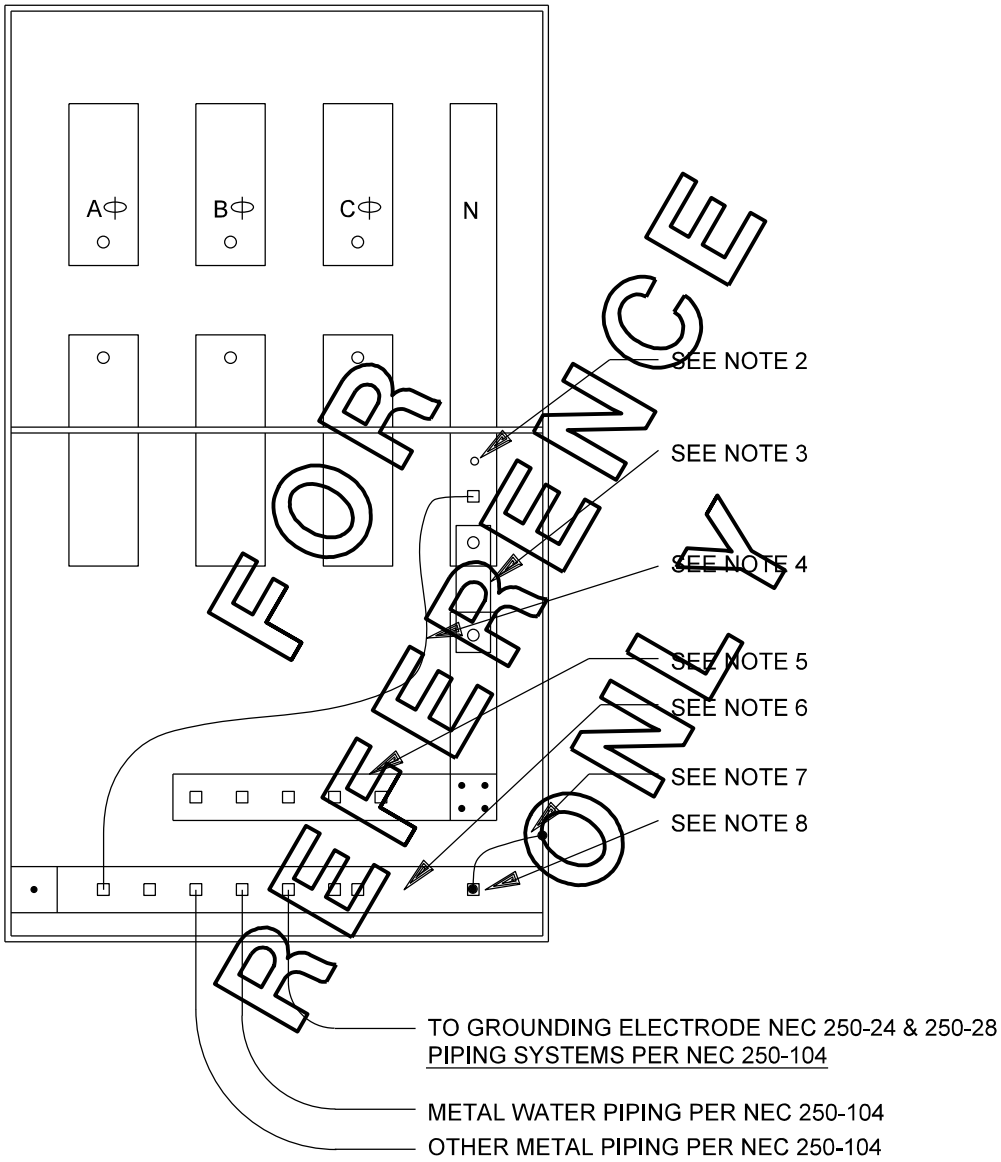
GROUNDING

1. The grounding conduit shall contain a grounding conductor if its bare or with green insulation extended from the service switch neutral lug to the ground clamp and shall have an ampere rating not less than than one third of that of the largest service conductor.
2. Bare wire is acceptable as a grounding conductor provided it is No. 4 copper wire or larger, solid or stranded and need not be in conduit or bare grounding conductor, not in conduit, must be securely fastened to the building or structure with approved fastening devices. The spacing of such devices shall not exceed 6'.
3. No grounding electrode conduit or piping system conduit conductor shall enter or exit the utility pull section on any service entrance equipment. The equipment bonding conductor shall be the only grounding conductor to enter, exit or remain in the utility pull section.
4. Direct taps to the ground electrode conductor shall be provided for other utilities requiring bonding to the common ground electrode. A bonding clamp to the electrical service riser is not acceptable.

BONDING

1. Bonding - sized in accordance with NEC section 250-66. Service bonding conductors must be of the same size as the service grounding conductor, but in no case shall the ampere rating of the bonding conductor be less than one third of that of the largest service conductor.
2. Insulated bonding conductors shall be protected by only green insulation.
3. Bonding is required on all enclosures, equipment, raceways and fittings that contain unfused service conductors. Nipples and bushings installed with eccentric or concentric knockouts and lock nuts must be bonded with ground bushings, wedges, or other approved devices. All metal conduit containing unfused conductor shall be threaded rigid or intermediate type.
4. An insulated bondable vertical lay-in lug (large enough to accomodate required wire size) shall be mounted on either sidewall.

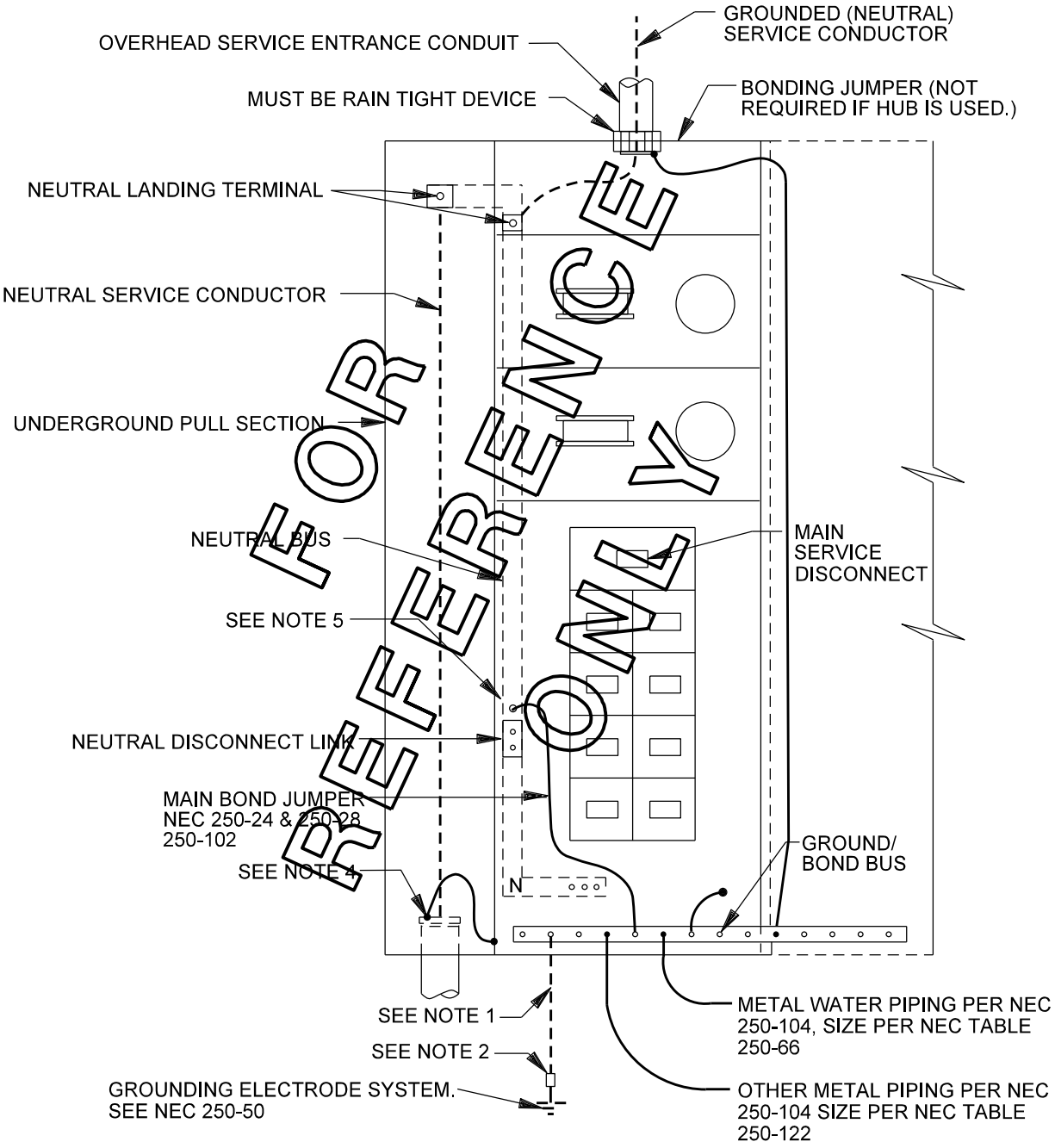
PROPER BONDING AND GROUNDING



NOTES

1. Local municipal codes shall prevail. If no local code exists, use NEC bonding/grounding requirements.
2. Connection for main bond jumper ahead of neutral disconnect link.
3. Neutral disconnect link.
4. Main bonding jumper(s) (NEC Articles 250-24 & 250-28 and NEC 250-105).
5. All neutral wires to be placed on neutral bus.
6. All bond wires (NEC Article 250-28) to be placed on bond bus.
7. Enclosure grounded NEC Article 250-80.
8. A wire may not be necessary if grounding busbar has been installed on a cleaned surface of the frame with bolts of adequate size and strength.

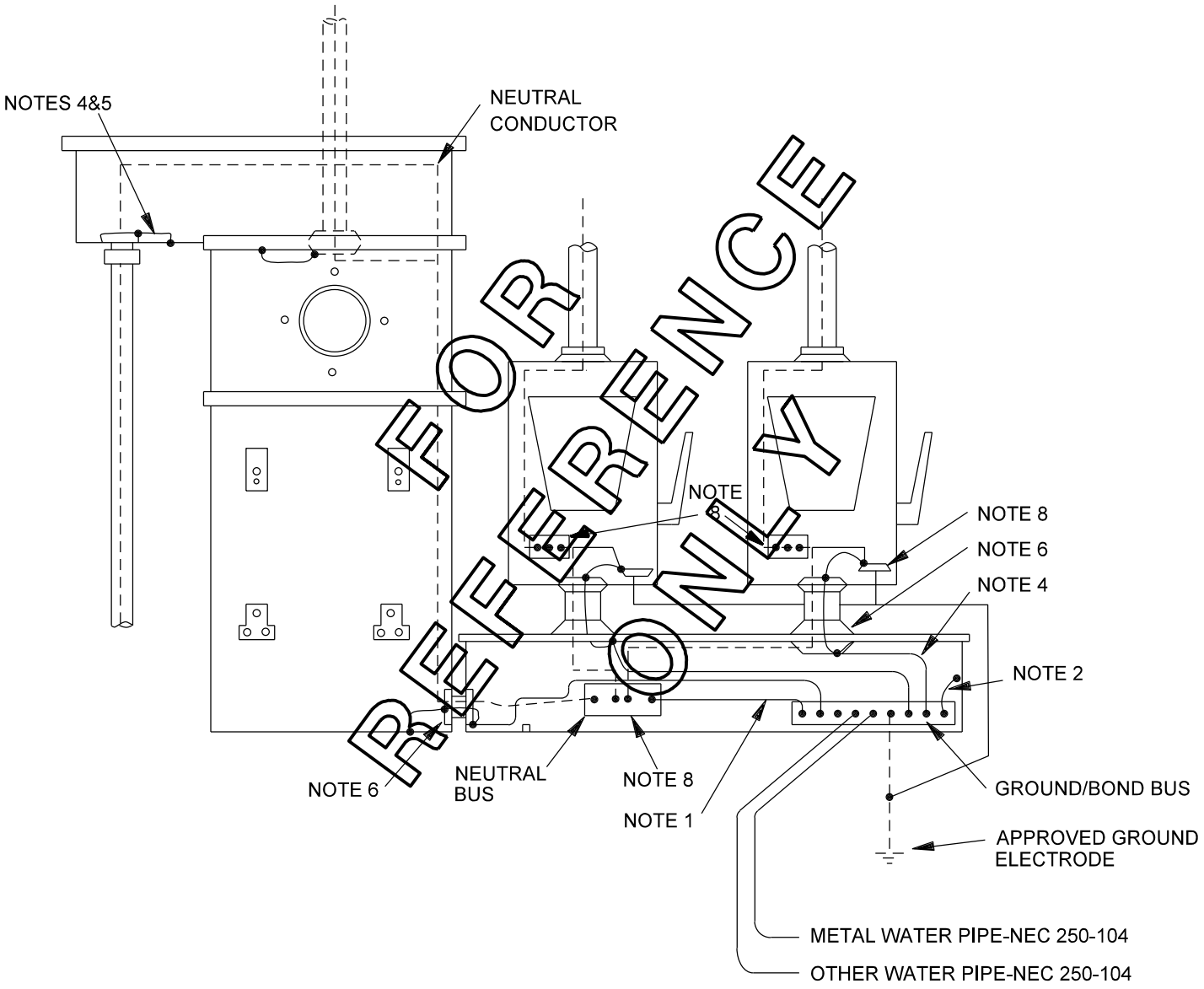
SWITCHBOARD SERVICE SECTION



SEE TABLE ON PAGE 8-2 FOR GROUNDING AND BONDING CONDUCTOR SIZE.

NOTES

1. Grounding electrode conductor. See NEC Article 250-64 for material and installation, and NEC Article 250-66 for size.
2. Connection to electrode. Connect grounding electrode conductor to grounding electrode with approved ground clamp. See NEC 250-70.
3. Local municipal codes shall prevail. If no local code exists, use NEC bonding/grounding requirements.
4. Where metallic conduit is used, install a bond bushing and bond per NEC 250-102
5. Connection for main bond jumper. Must be on lineside of neutral disconnect link.



NOTES

1. Main bonding jumper sized per NEC Article 250-28 & 250-102.
2. Ground bond bus to be tied to metal gutter.
3. All meters and disconnects shall be 6" above or below gutter. Riser shall not extend beyond gutter.
4. Bond conductor sized per NEC Article 250-66.
5. Bond conductor to be tied to metal enclosure.
6. All non-fused nipples to be bonded.
7. Bond terminal bar to be tied to metal enclosure.
8. Neutral terminal shall be insulated from metal enclosure.
9. If parallel conductors run from the meter can into the gutter, a bond wire must be installed in each conduit (see NEC Article 250-28 and 250-102).
10. Bonding conductor must be insulated using green insulation.
11. Local municipal codes shall prevail. If no local code exists, use NEC bonding/grounding requirements.

Electric Service Specifications SRP® PROPRIETARY MATERIAL	GROUNDING AND BONDING PREFERRED GROUNDING AND BONDING SERVICE ENTRANCE EQUIPMENT 400 AMPS OR LARGER	ISSUE DATE: 09/17/90 REV. DATE: 09/13/12 APPROVAL: W.LARAMIE
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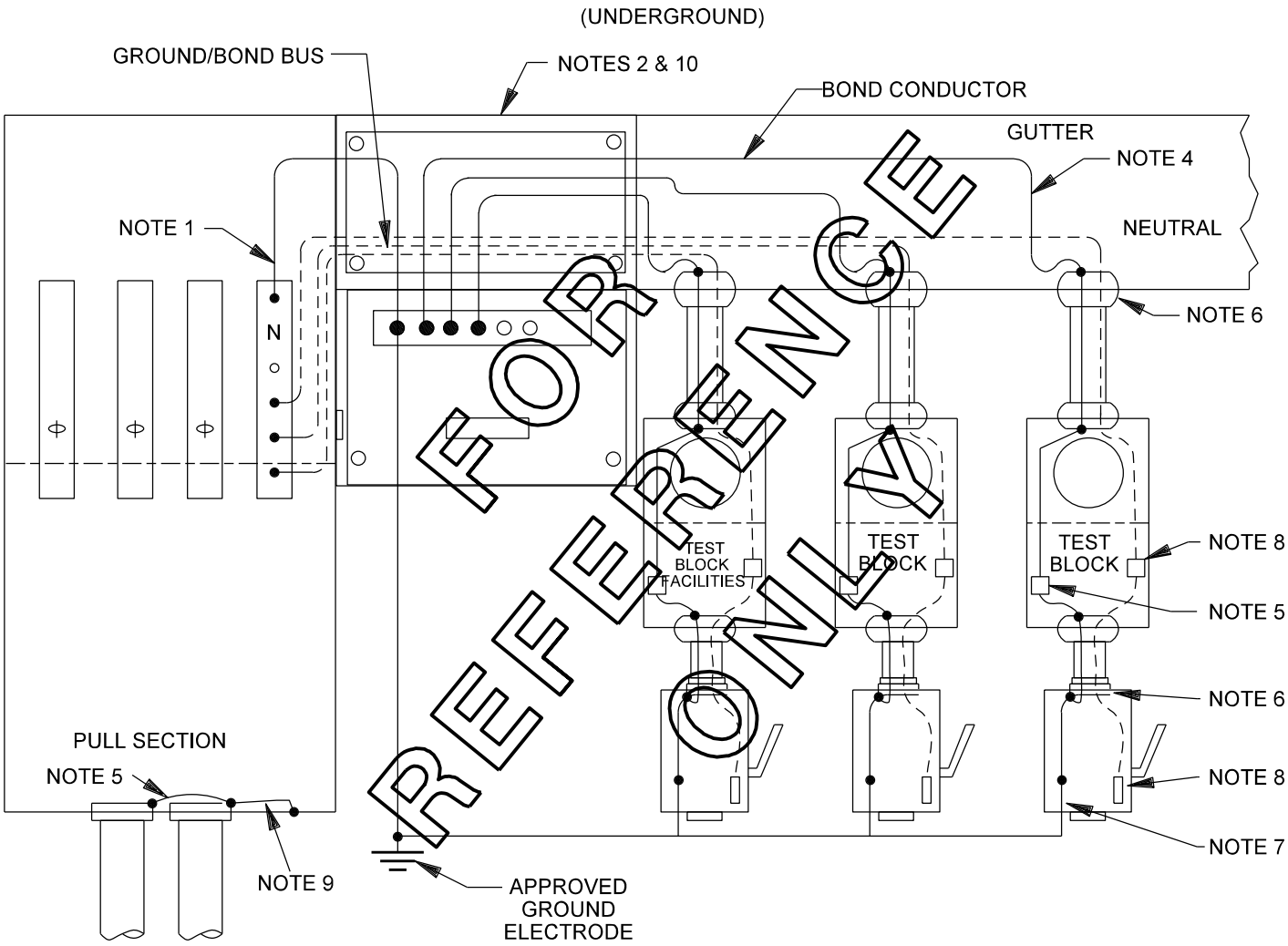
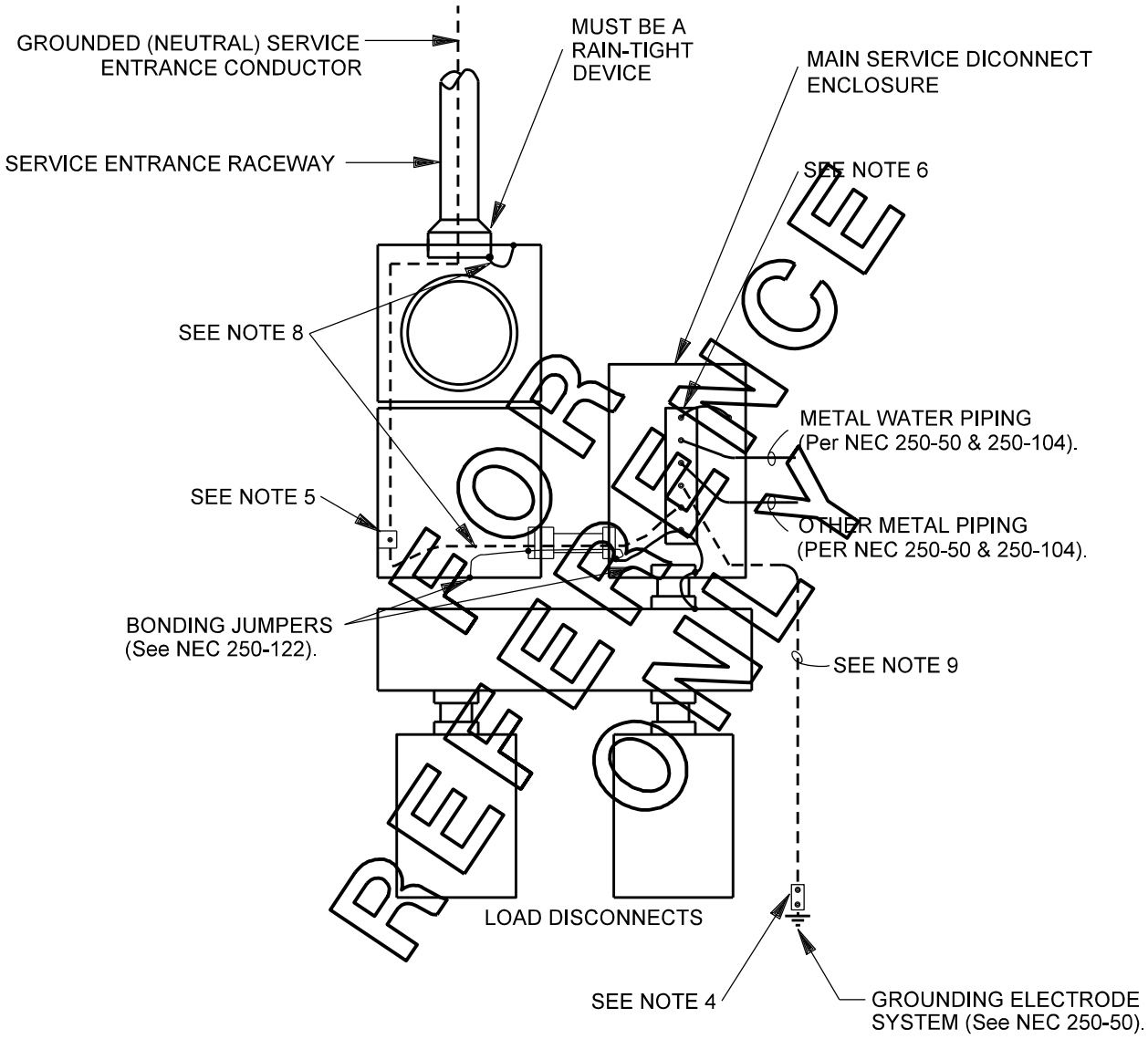


NOTES

1. Size main bonding jumper per NEC Articles 250-28 & 250-102.
2. Ground bond bus to be tied to metal gutter.
3. All meters and disconnects shall be 6" above or below gutter. Riser shall not extend beyond gutter.
4. Size the insulated bond conductor per NEC Article 250-122.
5. Bond conductor to be tied to metal enclosure.
6. Bond all non-fused nipples, on both sides, per NEC Articles 250-28 & 250-102.
7. Bond terminal bar to be tied to metal enclosure.
8. Neutral terminal shall be insulated from metal enclosure.
9. See table on page 8-2.
10. Insulate bonding conductor using green insulation.
11. Local municipal code shall prevail. If no local code exists, use NEC bonding/grounding requirements.

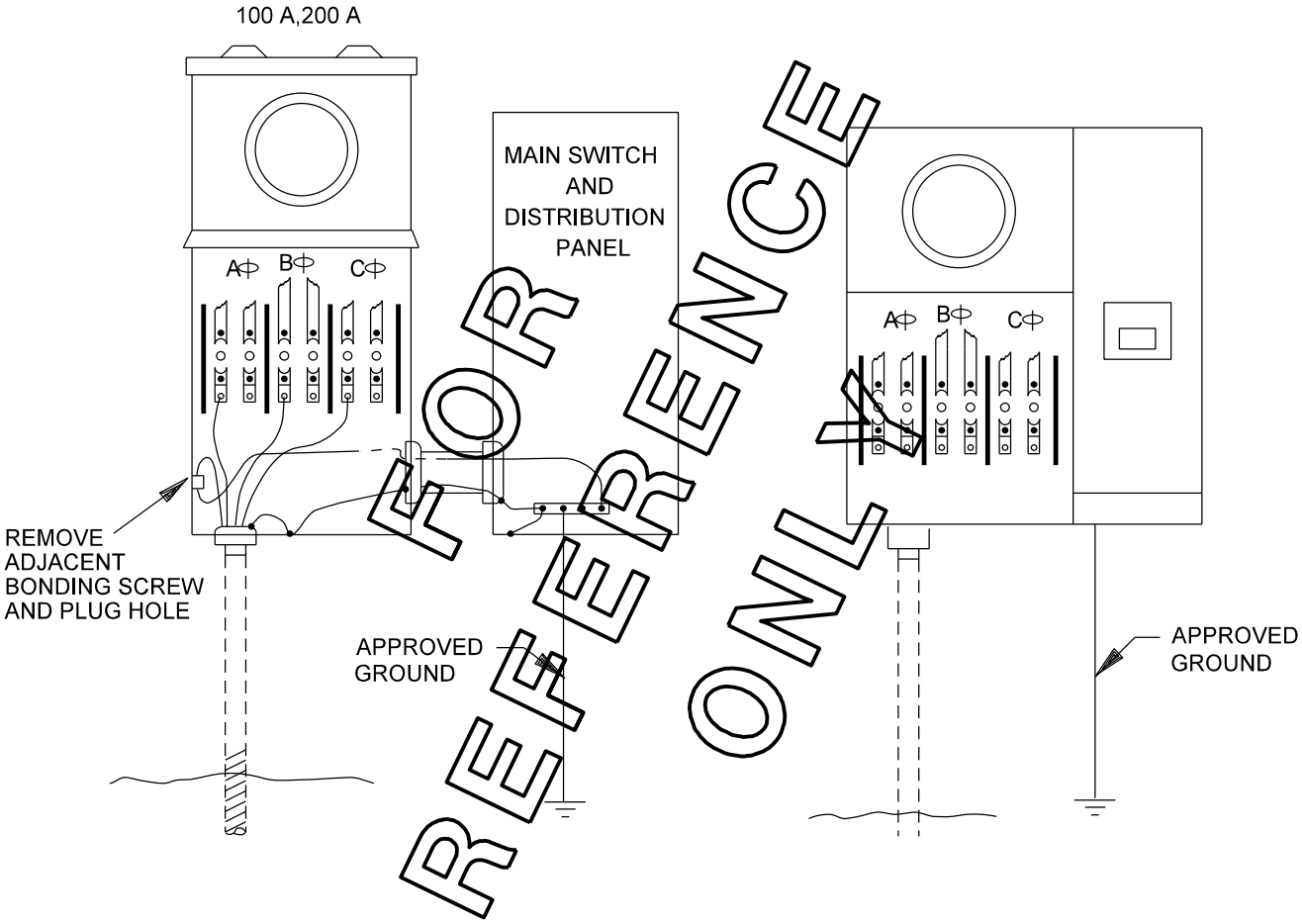


NOTES

1. All meters and disconnects shall be 6" above or below gutter. Riser shall not extend beyond gutter.
2. See table on page 8-2 for bonding and grounding conductor size.
3. All non-fused nipples to be bonded on both sides per NEC Article 250-92.
4. Connection to electrode: Connect grounding electrode conductor to grounding electrode with approved ground clamp (see NEC Article 250-70).
5. Neutral lay in lug shall be insulated from enclosure. Ajacent bonding screw shall be removed and hole plugged.
6. Where neutral terminal bus is insulated from the enclosure, install a bonding jumper or screw (See NEC Article 250-28). Neutral disconnect means (See NEC Article 230-75).
7. Local municipal codes shall prevail. If no local code exists, use NEC bonding/grounding requirements.
8. If bolted hub or self-bonding hub is used, bond jumper is not required.
9. Grounding electrode conductor. See NEC Article 250-62 for material, NEC Article 250-64 for installation, and NEC Article 250-66 for size.

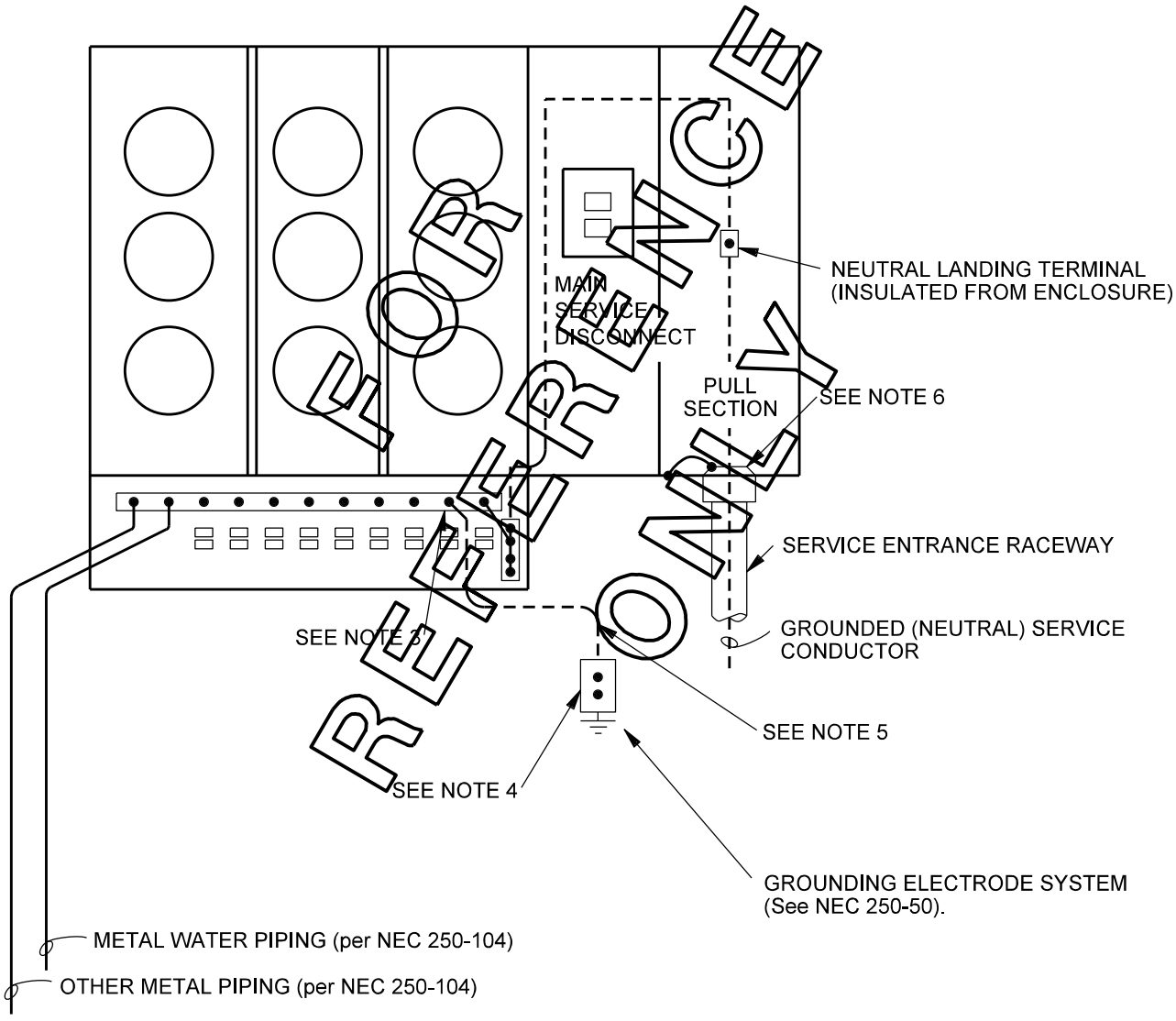
Figure 1
separate equipment
(meter base & disconnect)

Figure 2
"all-in-one" panel



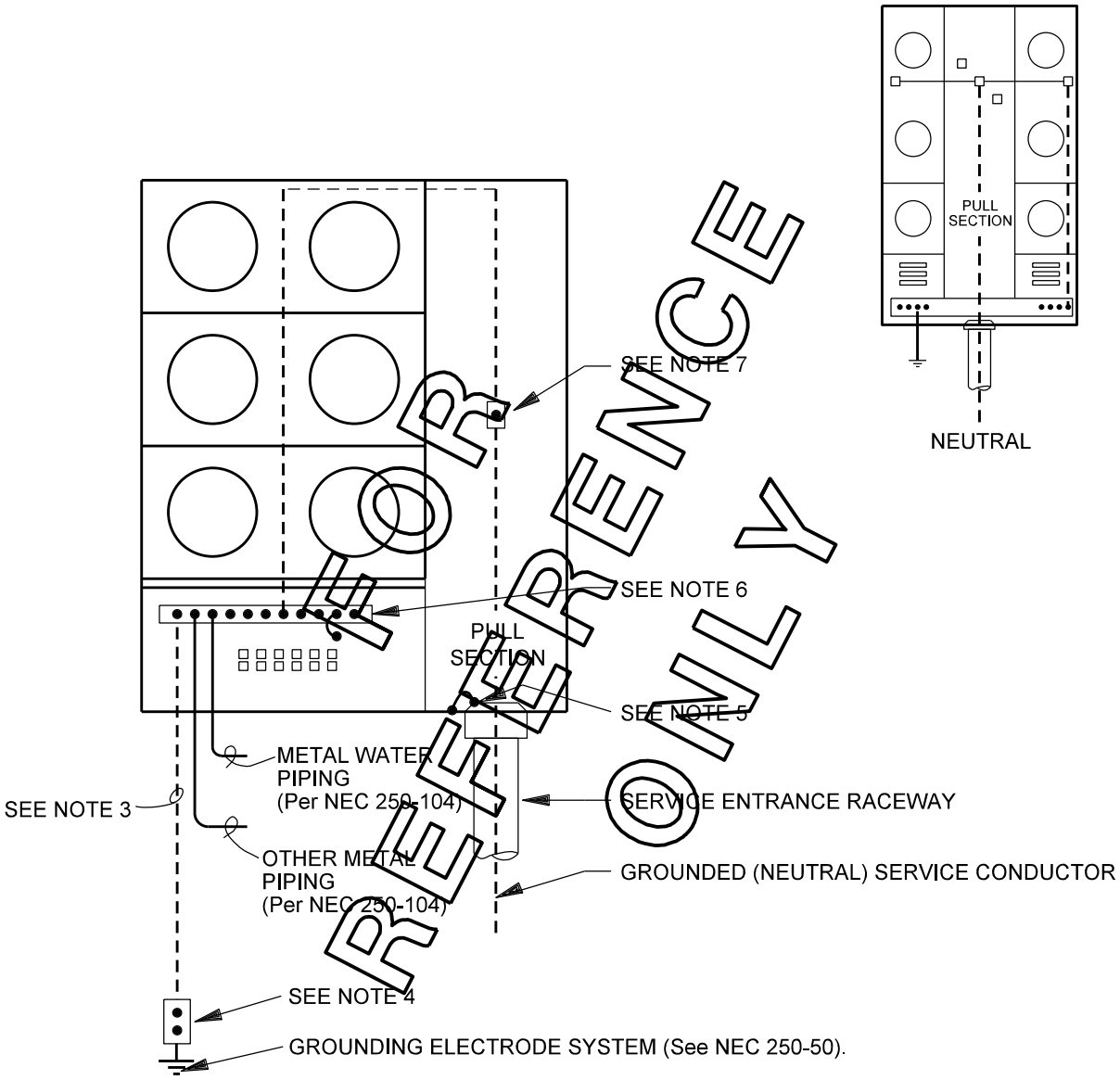
NOTES

1. Figures 1 and 2 for overhead and underground commercial use per manufacturer's specifications.
2. Main breaker may be located on either side of meter base and below meter base for overhead use only.
3. Grounding and bonding requirements per local codes of AHJ.
4. All non-fused nipples to be bonded on both sides per NEC Article 250-92.
5. Local municipal codes shall prevail. If no local code exists, use NEC bonding/grounding requirements.



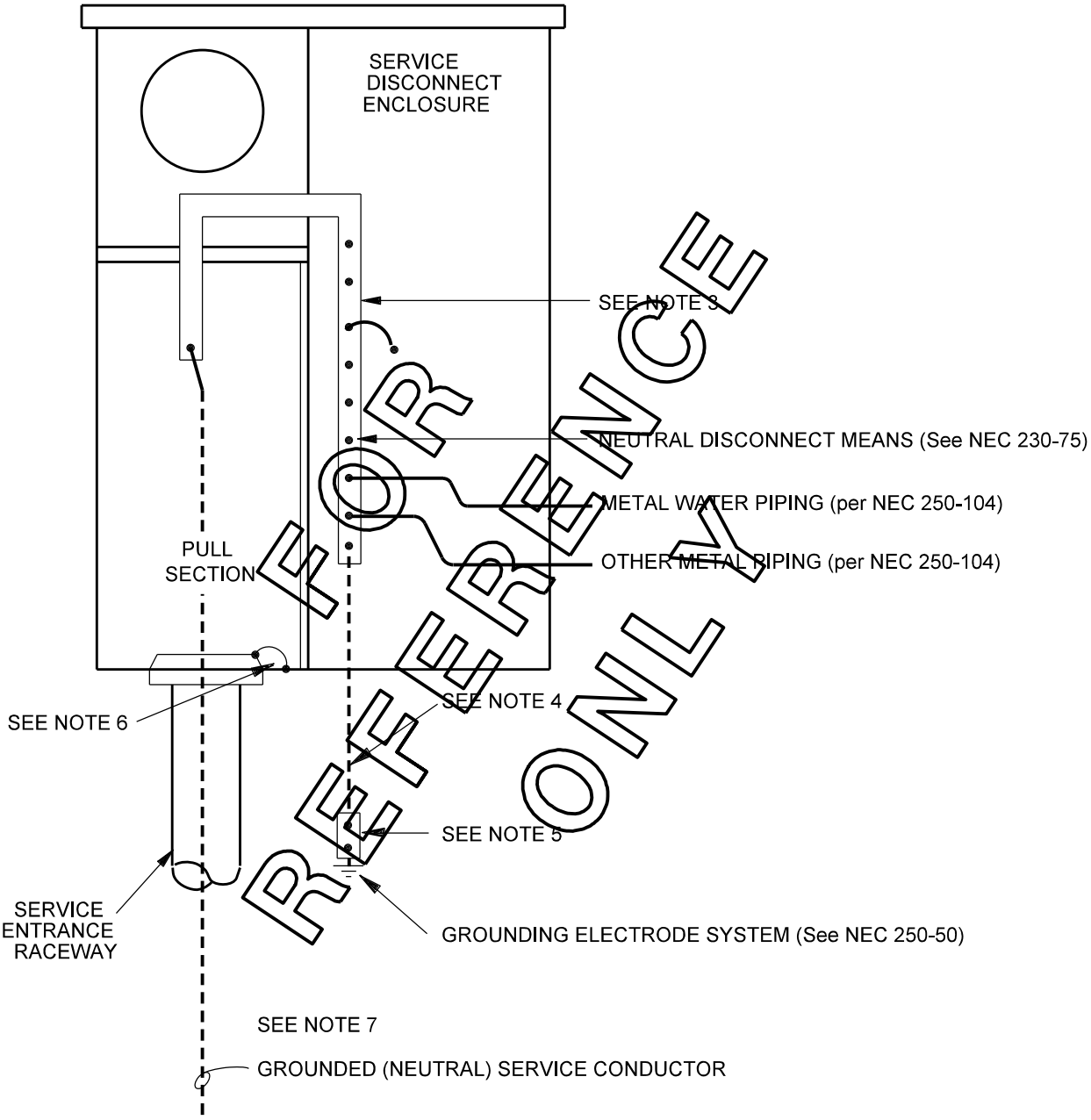
NOTES

1. Main disconnect required when panel exceeds more than 6 disconnects.
2. Local municipal codes shall prevail. If no local code exists, use NEC bonding/grounding requirements.
3. Where neutral bus is insulated from enclosure, install a bonding jumper or screw (see NEC Article 250-28). Neutral disconnect means (see NEC Article 230-75).
4. Connection to electrode: Connect grounding electrode conductor to grounding electrode with approved ground clamp (see NEC Article 250-70).
5. Grounding electrode conductor. (see NEC Article 250-62 for material, NEC Article 250-64 for installation, and NEC Article 250-66 for size).
6. If bolted hub or self-bonding hub is used, bond jumper is not required.



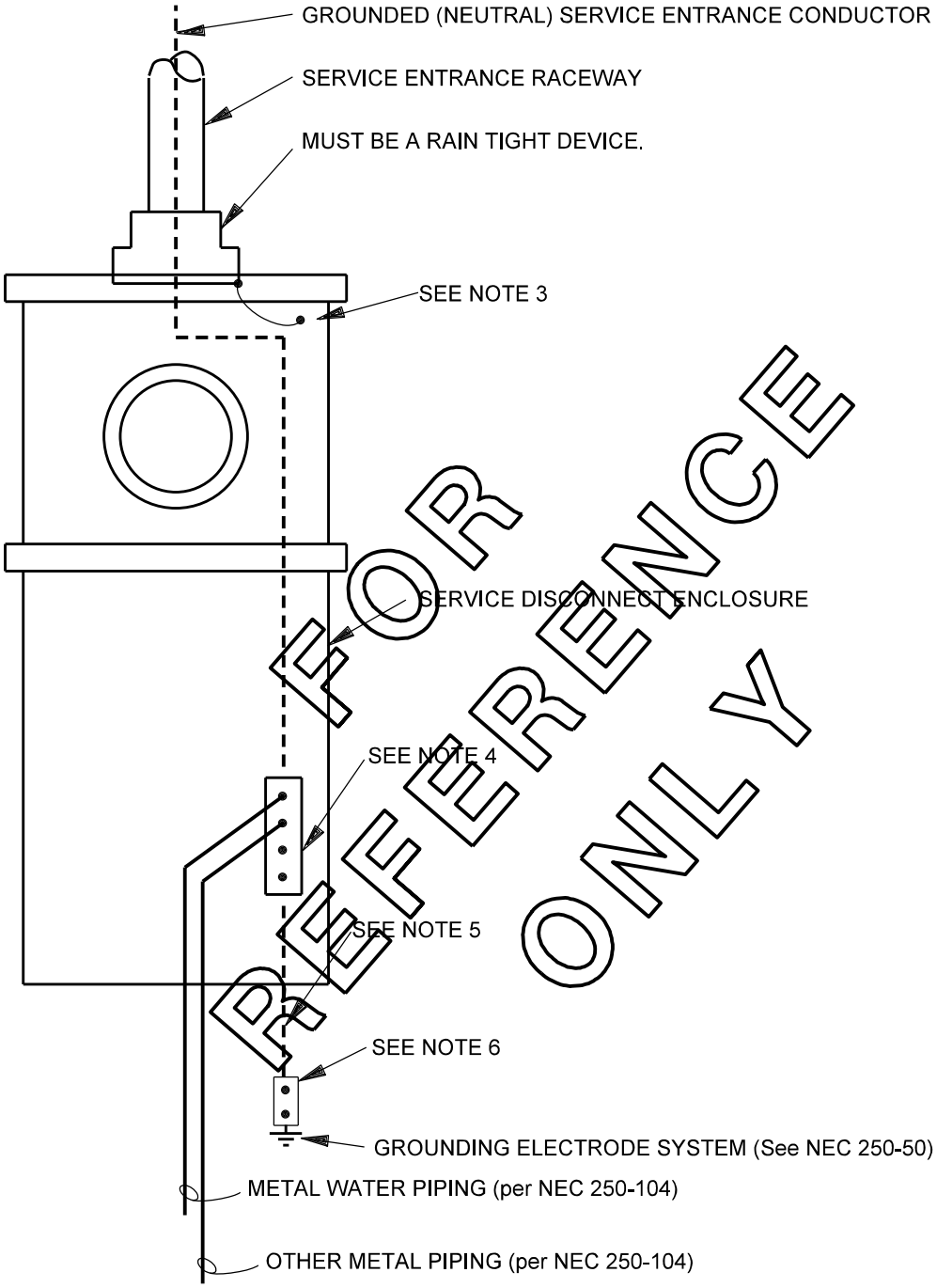
NOTES

1. See table on page 8-2 for bonding and grounding conductor size.
2. Local municipal codes shall prevail. if no local code exists, use NEC bonding/grounding requirements.
3. Grounding electrode conductor. See NEC Article 250-62 for material, NEC Article 250-64 for installation, and NEC Article 250-66 for size.
4. Connection to electrode. Connect grounding electrode conductor to grounding electrode with approved ground clamp (see NEC Article 250-70).
5. If bolted hub or self-bonding bushing is used, bonding jumper is not required.
6. Where neutral bus is insulated from the enclosure, install a bonding jumper or screw (see NEC Article 250-28). Neutral disconnect means (see NEC Article 230-75).
7. Neutral landing terminal (Insulated from enclosure). Where metallic service raceway is installed with locknuts, install a ground bushing or device and bond to the enclosure (see NEC Article 250-92).



NOTES

1. See table on page 8-2 for bonding and grounding conductor size.
2. Local municipal codes shall prevail. If local code exists, use NEC bonding/grounding requirements.
3. Where neutral bus is insulated from the enclosure, install a bonding jumper or screw (see NEC Article 250-102).
4. Bare or insulated grounding electrode conductor (see NEC Article 250-62 for material, NEC 250-64 for installation and NEC Article 250-66 for size).
5. Connection to electrode: Connect grounding electrode conductor to grounding electrode with approved ground clamp (see NEC Article 250-70).
6. If bolted hub or self bonding hub is used, bonding jumper is not required (NEC Article 250-92).
7. Where metallic service raceway is installed with locknuts, install a ground bushing or device and bond to the enclosure (see NEC Article 250-92).



NOTES

1. See table on page 8-2 for bonding and grounding conductor size.
2. Local municipal codes shall prevail. If no local code exists, use NEC bonding/grounding requirements.
3. If bolted hub or self-bonding hub is used, bonding jumper is not required per NEC Article 250-92.
4. Neutral terminal bus: Where neutral terminal is insulated from the enclosure install a bonding jumper or screw (see NEC Article 250-28 and NEC Article 250-102. Neutral disconnect means (see NEC Article 230-75).
5. Bare or insulated grounding electrode conductor. See NEC Article 250-62 for material, NEC Article 250-64 for installation and NEC Article 250-66 for size.
6. Connection to electrode: Connect grounding electrode conductor to grounding electrode with approved ground clamp (see NEC 250-70).

SECTION 9
METERING & SES

Description **Page**

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Description **Page**

SECTION 9: METERING & SES

SRP reserves the right to determine all SES locations. Only authorized personnel of SRP's Distribution Design Department will determine this location.

I. Meter Location Requirements

All SES/meter locations require approval prior to design and construction from Distribution Design. Meters shall be Readily Accessible for reading, maintenance and emergencies.

A. Factory-built Buildings must comply with the following additional requirements:

1. Secured to a permanent foundation (as approved and documented by local AHJ).
2. Trailer tongue and axles shall be removed.
3. Meter panel mounted on Building at plant.

B. Residential SES shall be Readily Accessible and located on an outside wall in an area that shall not be enclosed or fenced in (see page 5-15). The location shall be a maximum of six feet from the front corner of the house if joint with Gas, and three feet maximum without Gas.

C. Each SES shall meet all SRP requirements (see page 9-10 thru 9-16).

D. If the Customer desires to have the meters in a meter room, or if the complex is secured or access is otherwise restricted, a lock box will be required at Customer's Expense (see page 9-7, item 1). SRP reserves the right to decide if this type of arrangement is acceptable.

E. Areas that require 24-hour SRP access and are behind electronically controlled gates are required to install an SRP restricted access switch assembly at the Customer's Expense (see page 1-19 for requirements).

F. A Master Meter Service is available for new commercial and multi-level residential projects where SRP's billing meters cannot be located on the ground floor or one level below the ground floor, provided this is not the lowest level of the Building.

II. Unacceptable SES Locations

Both the Customer and SRP share an interest in the location of the SES for reading, testing, repairing, replacing and emergency purposes. The following is a partial list of unacceptable SES locations:

- In locations that are not Readily Accessible (see Glossary, Readily Accessible).
- Within substations or transformer vaults containing SRP transformers and equipment.
- In locations hazardous to personnel.
- On surfaces subject to excessive vibration. (Example: trash enclosure walls)
- Inside rest, bath, shower, powder or toilet rooms.
- In an unsanitary area in reference to farm animals and products.
- On SRP poles or other SRP facilities.
- Within 20 feet of any fuel pump or any fuel storage tank (see pages 5-23 and 5-24).

  EXCEPTION: 10' from self-contained diesel facilities.

- Within 36" of any natural Gas meter vent.
- Within parking structure.

  EXCEPTION: Customer-Owned Service, see ESS 3-7.
- Residential SES units shall not be behind wall.
- Within 5' from the edge of a drivable path.
- Elevated platforms not meeting allowances specified in Section 9 – Switchboards, General Information.

III. SRP Meter Room Requirements in Addition to AHJ Requirements

Meter rooms are not preferred by SRP. However, if the Customer desires this type of construction, the following requirements are mandatory to ensure the safety of SRP personnel and equipment.

A. A meter room is a dedicated, illuminated room on the ground floor, accessible from the outside. Meter rooms are provided and maintained by the Customer for the Customer's electric Service Equipment only.

B. The meter room shall be Readily Accessible. Direct (without bends) unobstructed access to any meter room entrance shall be provided and maintained by the Customer at all times. This access shall be suitable for Line construction equipment and shall be a minimum 12-feet wide and 16-feet high along the entire route. A bend in the access route is allowed if the width is increased to 20 feet. Due to obstructions which jeopardize access and safety, meter rooms are not permitted to be located on or in loading dock areas.

   The meter room shall be totally isolated from the rest of the Building by not less than a one-hour fire-rated boundary for all interior walls, floors, ceilings, doors and any interior wall penetrations of the meter room boundary. Exterior walls and penetrations of the meter room shall be subject to the local AHJ fire rating requirements. Roll-up doors, glass doors and windows are not permitted.

C. The number of entrance doors is dictated by NEC 110.26 and number of pull sections. All entrance doors to the meter room from the access area described in III.B shall be through a standard doorway opening (minimum 32" x 6 ½' high). The centerline of the pull section shall be in line with the door opening. For meter rooms with multiple pull sections, a separate doorway shall be required for each pull section. The path away from the SES to each exit shall be continuous and unobstructed.

D. A second doorway shall adhere to the following requirements:

   1. If a second entrance door is required by NEC 110.26, it shall open to the outside of the Building.

      EXCEPTION: The second doorway may open to areas continuously accessible to the general public (see Glossary, General Public Area), without travel through restricted or secured areas. This door shall have a minimum fire rating of one hour.

E. The Customer may request an additional doorway for an entrance from the Building interior; this doorway is not required by NEC 110.26 but may be used as an entrance to the meter room by

Customer personnel only. The door shall have a minimum fire rating of one hour, automatically lock when shut and not allow SRP personnel access to the Building interior. Door shall not be equipped with panic hardware. Signage clearly stating “not an exit” shall be placed on the door. All entrance doors used as an entrance and exit by SRP personnel shall swing out and be equipped with panic hardware.

F. Meter Room Door Signage Requirements

1. Material: Metal.
2. Color: Red letters on white background.
3. Verbiage: “Electric Equipment Room” and “Danger – High Voltage Inside”.
4. Letters: Block, three quarters of an inch minimum.
5. Attachment: Permanently affixed to outside of exterior door with threaded fasteners or rivets (no painting), attachment height of five feet +/- six inches.
6. Meter rooms with alarmed doors must have signage for 24-hour contacts.

G. When the meter room is ventilated, it shall be ventilated directly to the outside, without using flues or ducts. If ducts are required, they shall be completely isolated from air ducts serving other parts of the Building and constructed of fire resistant materials.

H. Supply air duct runs shall dead-end into the meter room. The mechanical unit supplying air to the meter room may serve other parts of the Building, provided ventilation openings to the meter room have automatic closing fire dampers rated at not less than one hour.

I. External ventilation openings from the meter room shall be located as far as possible from doors (excluding the exterior meter room door), windows, fire escapes and combustible material. Where a mechanical ventilation unit is dedicated solely to the meter room, fire dampers are not required.

J. No piping, ducts or equipment foreign to the electric Service Equipment or architectural appurtenances shall be permitted to be installed in or pass through the meter room. If space requirements for the electrical SES equipment are not impaired, the following equipment may be allowed in the meter room:

1. Distribution and branch electrical panels.
2. Communications equipment.
3. Alarm systems.
4. Small, dry-type transformers used to provide auxiliary voltage.
5. Sprinkler heads and the branch water line supplying the sprinklers inside the room. Water lines or sprinkler heads shall not be directly located over the SES.

K. The meter room shall not be used for storage. The working space must be clear and unobstructed at all times.

L. NEMA 3R enclosures are not required in a meter room. The centerline of the meter shall be between three feet and six feet three inches from floor level. The workspace around the SES shall be level and the same elevation as the SES pad. Housekeeping pads are not allowed (raised pad, not level with floor).

EXCEPTION: NEMA 1-rated enclosures may be installed in a meter room on a housekeeping pad, provided the pad does not extend beyond the SES dimensions.

M. Electrical equipment with hinged doors or panels shall be positioned in the room to provide a minimum 24" direct egress path with the doors open in any position.

IV. Meter Rooms Containing Metering Equipment over 600 V

(See page 9-73, "High Voltage Metering Enclosure, 4-Wire, 2,400-12,470 Volt Service").

The following requirements are in addition to the meter room requirements listed above.

A. A 12' clear and level work space shall be maintained in front of the pull section of the metering cabinet. In addition, an exterior entrance door used for cable installation shall be located directly in front of the pull section and directed to the exterior of the room.

EXCEPTION: If the 12' clear work space cannot be maintained between the meter cabinet and exterior wall, the entrance doorway shall be increased to 6' wide in order to extend the work space beyond the exterior of the Building.

B. An 8' clear work space shall be maintained in front of the utility voltage transformer (VT) compartment of the metering cabinet. Entrance into this work space may be through the doorway required above. However, the path away from this compartment to the exit shall be straight, continuous, and unobstructed.

V. Screen walls and Enclosures for Commercial SES Equipment

A screen wall or enclosure surrounding any commercial SES shall meet the following requirements.

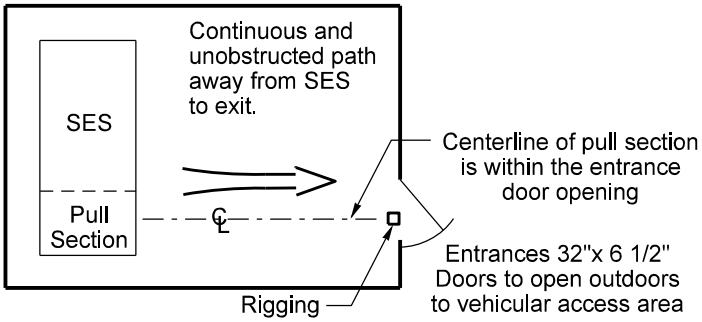
A. Vehicle access to the SES, screen wall or enclosures shall adhere to the rules shown on pages 5-18 and 5-19.

B. SES access, exit and clearance requirements including doors and signage shall adhere to the rules for meter rooms.

EXCEPTION: Gates and/or openings are permitted provided the number, placement and size meet the meter room requirements for entrance doors. A gate shall include a stop to allow it to be locked open in any position. Gates shall open a minimum of 180 degrees with no obstructions and will not impede safety of personnel, emergency access or public traffic.

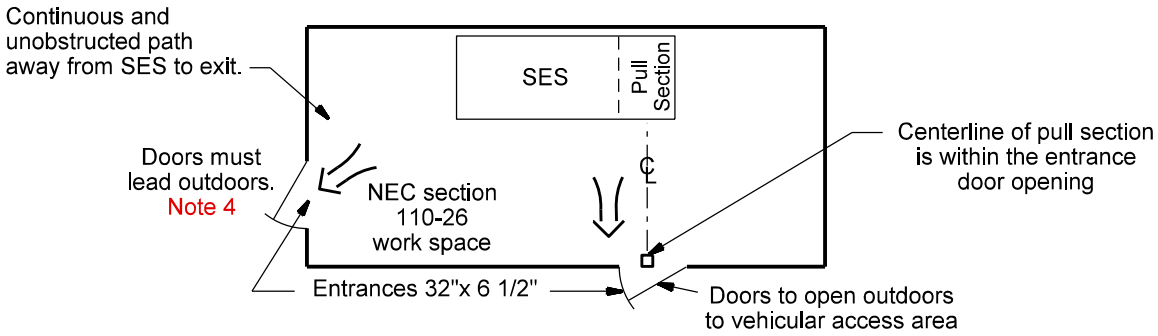
EQUIPMENT ROOM EXAMPLES

Equipment Rooms with One Entrance

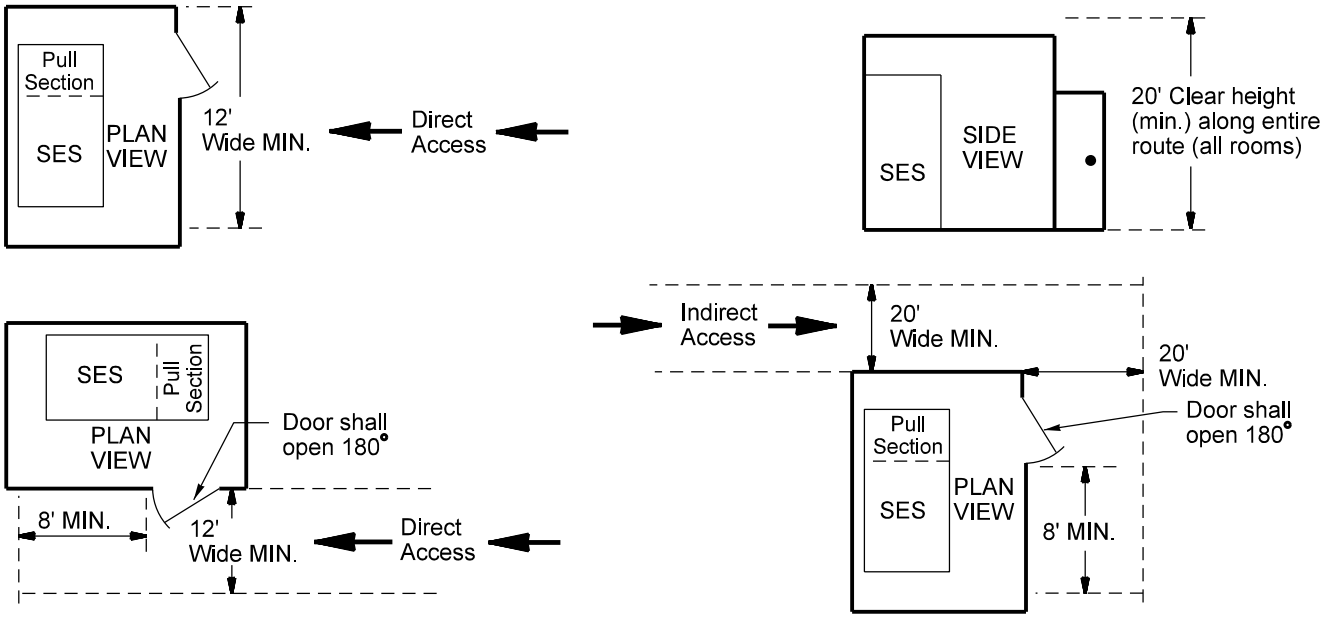


Equipment Rooms with Two Entrances

Note 3



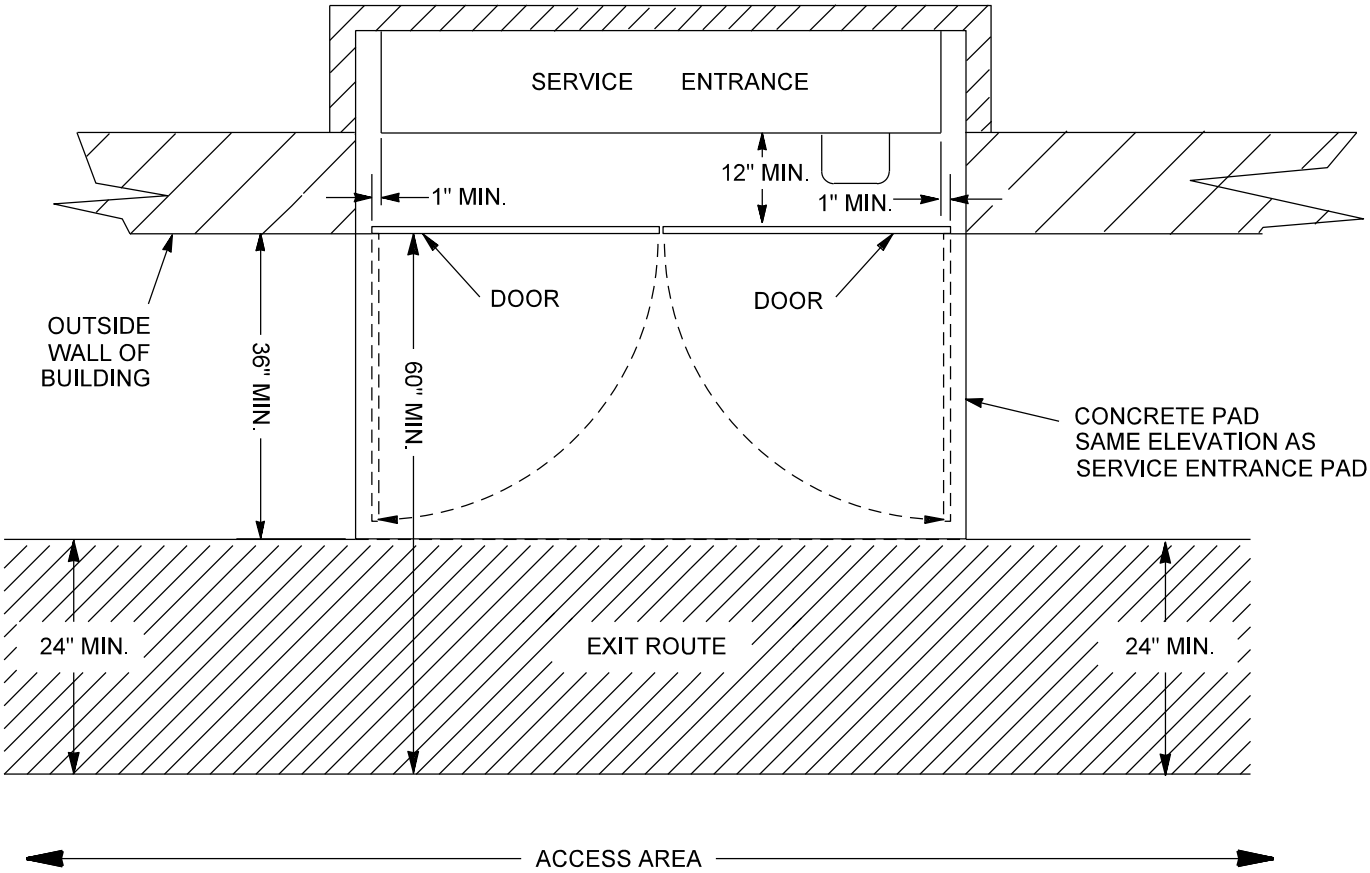
Equipment Room Readily Accessible for Vehicle Access.



NOTES

1. See pages 9-1 thru 9-4 for complete SRP meter room requirements.
2. See NEC Article 110-26 for working space and entrance requirements.
3. NEC 110.26 requires a second entrance for a SES rated 1,200 A or more and over 6' wide. EXEPTION: A single entrance is permitted where there is a clear and unobstructed path to exit or the depth of the working space is doubled.
4. For an entrance door not required by NEC110.26, door may open indoors, shall not be accessible by SRP personnel, and shall have signage clearly indicating "NOT AN EXIT".

SERVICE ENTRANCE SECTION (SES)
EQUIPMENT / METER ROOMS ALTERNATIVE



V. When rear access is not required, the following alternative to a SES equipment room is acceptable: (only for service sections 90" high):

A. All hinged doors (including meter door), when open, may not block exit route. When doors are open at 90^ (typical full open), exit shall be 24" minimum.

B. The door(s) shall have a multiple hasp for installation of an SRP Customer lock. Refer to page 9-7 Door Security.

C. Door(s) to open beyond the full width of service entrance by at least 1" on each side. Door(s) shall be metal and shall lock open at 90^.

D. See page 9-3 for meter room door signage.

E. The SES must face and be readily accessible from the outside of the building. This area to be kept clear and accessible at all times.

F. Ceiling and interior doors and walls to carry a one-hour fire rating.

G. Area adjacent to SES shall comply with III.B. page 9-2.

SERVICE ENTRANCE SECTION LOCK BOX & SEALS

I. Door Security

A. The door to the meter room must be locked. It shall be by one of the following:

1. A double hasp arrangement that will accommodate both an SRP lock and Customer lock.
2. A locking mechanism built into the door (see I.B)
3. Where there is a need for a high level of security (i.e., banks), the Customer may make a special request to have SRP install a high-security locking mechanism in the door, at the Customer's expense. This lock will be keyed to allow SRP and the Customer access to the meter room (see I.B).

B. For I.A, 1 and 2, the Customer shall be responsible for providing and installing a lock box on or within 36" of the door. The Customer shall furnish a key to the meter room and place it in the lock box. The key must not unlock any other door on premises. See ESS Section 11 – Meter Room Lock Box.

II. Seals

A. All removable panels and access covers to compartments used for terminating or routing unmetered conductors shall be sealed by SRP. When a raceway or conduit for meter secondary wiring is necessary, such a raceway or conduit shall be sealed by SRP. Do not locate removable panels or covers requiring sealing behind other panels, covers or doors (except rain-tight enclosure doors).

B. Hinged cover panels shall be sealed on the side opposite the hinges.

C. Removable cover panels and access covers shall be sealed with stud and wing nut assemblies on opposite sides of the panel or cover.

D. Alternate sealing methods may be used if the removable covers are self-supporting with the captive screws and sealing provisions removed.

E. Sealing and securing devices shall be provided by the Customer as follows:

1. Stud and wing nut assemblies shall consist of a ¼" x 20" (minimum) stud and an associated wing nut, each drilled a minimum of 0.0635 inches for sealing purposes. Attach stud securely so that it will not loosen or screw out when being fastened.
2. Sealing screws shall be drilled a minimum of 0.0635 inches for sealing purposes.

F. All securing screws shall be captive.

G. Screws or bolts requiring special tools for installation or removal are not acceptable.

H. All cover panels intended to be permanent and not requiring future removal for access (top and sides) shall be secured in place with fasteners that cannot be loosened or removed from the outside.

I. Latching devices shall be designed to permit positive locking and be made of durable corrosion resistant material.

J. All service switches or breakers shall have provisions for sealing in the open position.

I. GENERAL

A. Service disconnect(s) shall disconnect all ungrounded service conductors from a building or other structure.

B. Service disconnect(s) are furnished, installed, and maintained by the customer. Installations shall be approved by the Authority Having Jurisdiction (AHJ). SRP reviews compatibility with the source side bus (including interrupting rating).

C. Service disconnect(s) shall be in, or immediately adjacent to the SES equipment.

D. Each service disconnect shall be permanently marked to identify it as a service disconnect.

E. The maximum number of service disconnects is six.

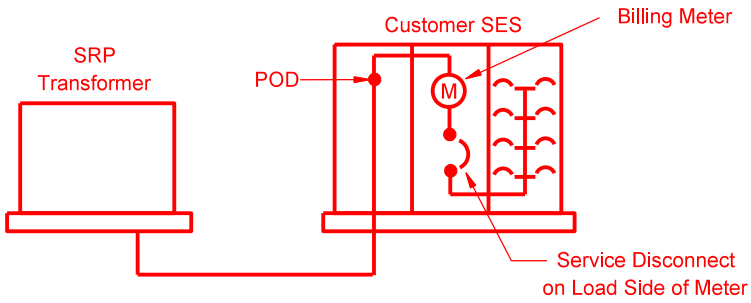
F. Service disconnects(s) shall be installed prior to SRP installing a meter.

G. When a hipot test is required by the AHJ, all service cables including metering must be isolated from the SES by SRP, which may require fees.

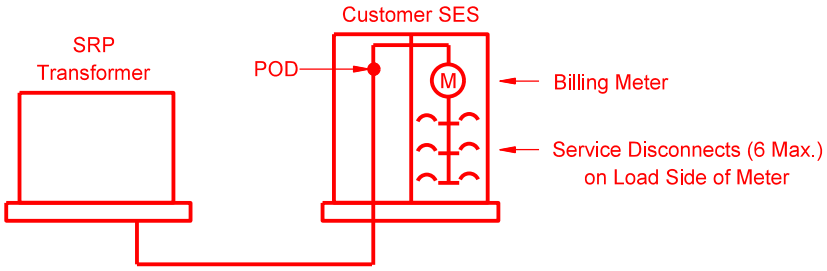
II. METER AND SERVICE DISCONNECT INSTALLATION

A. Single Service w/ Single Meter

1. A single service disconnect located on load side of meter socket.



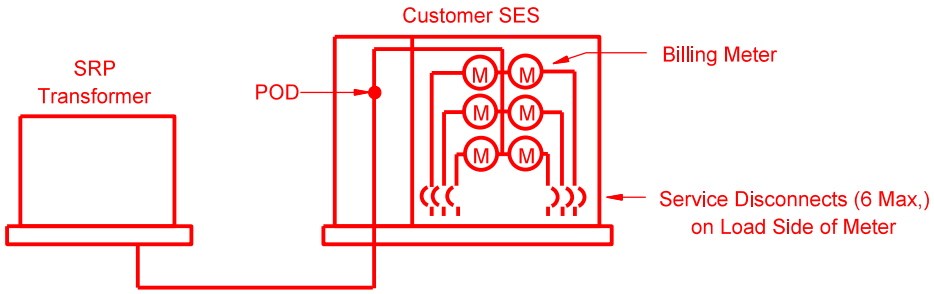
2. Multiple service disconnects (not more than 6) located on the load side of the meter socket.



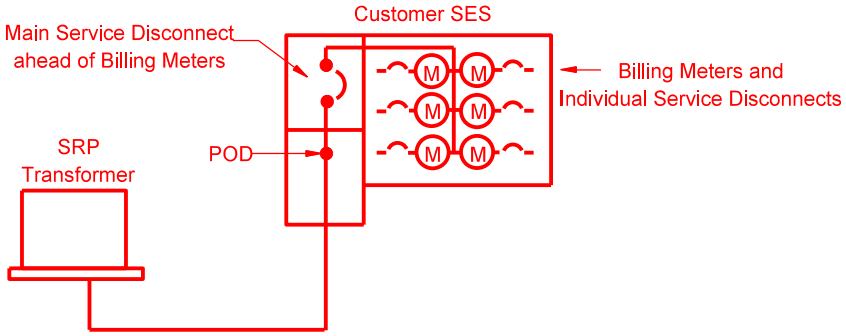
B. Single Service w/ Multiple Grouped Meters

1. TWO TO SIX METERS

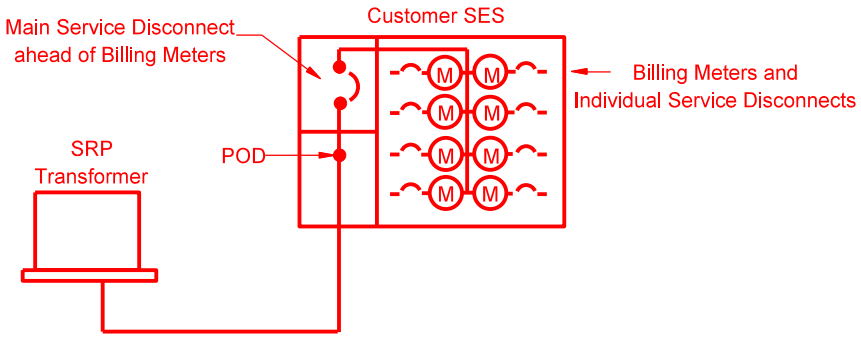
a) Individual service disconnects (not more than 6) on the load side of each meter socket.



b) A single main service disconnect located directly after the point of delivery (POD), ahead of the meter sockets and individual service disconnects.



2. SEVEN OR MORE METERS - A single main service disconnect located directly after the POD ahead of the meter sockets and individual disconnects.

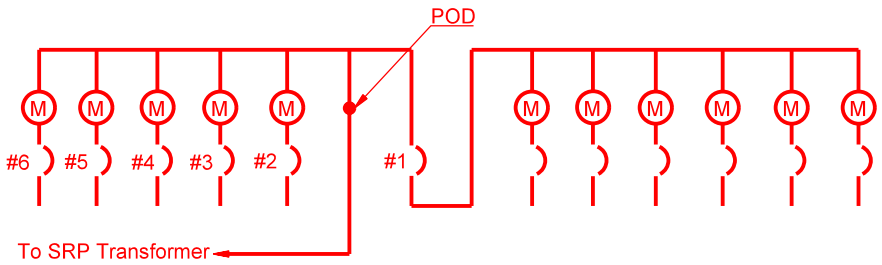


EXCEPTION:

a) Where the bus splits after the POD at the SES, each bus may have a single disconnect ahead of the meter sockets, individual disconnects on the load side of each meter in a group, or a combination of both not to exceed six service disconnects.

b) A placard one-line diagram of the SES identifying each service disconnect shall be placed on the SES pull section.

Example placard (for reference only):



III. METER DISCONNECTS & LOCKING PROVISIONS

A. Meter disconnects supplied from instrument transformer compartments shall be capable of being locked in the open (off) position.

B. Locking provisions may be:

1) A lockout device which is incorporated as an integral part of each meter disconnect.

2) A lockable cover for each meter disconnect where the lock prevents the operation of the disconnect and prevents removal of the cover.

3) A lockable cover for multiple meter disconnects where the lock prevents the operation of any of the disconnects, prevents removal of the cover, and all disconnects are supplied from a single instrument transformer compartment.

4) Items B1, B2 and B3 may have provisions to accept two locking devices.

5) For fused disconnects, the fuse access cover shall be lockable when the disconnect is locked in the off (open) position.

6) All locking provisions for disconnects rated less than 400 amps shall accept a lock shank of not less than 1/4".

7) All locking provisions for disconnects rated 400 amps and above shall accept a lock shank of not less than 5/16".

I. Addressing - Job Location

A. The assignment of street addresses is performed according to the policies and regulations adopted by the MAG or AHJ.

B. Any variance from the addresses assigned by the municipality may delay the energizing of electrical service. Clearances are dispatched to SRP using the originally assigned address, apartment number, suite number, etc. SRP will only accept numeric designations (e.g., 3rd) and will not accept spelled-out numbers (e.g., third).

C. The Customer shall provide SRP with the assigned address corresponding to the job location when applying for electric service. This address, including the lot number if applicable, shall be posted at the job site in a location visible from the street or road fronting the property to assist SRP personnel.

D. Unless otherwise specified by MAG or AHJ, address characters shall be a minimum 2" height and width.

II. SES Identification and Permanent Labels:

SES's are identified using labels to indicate the address and corresponding units they serve. Establishment of service will be delayed until labels are installed correctly and complete.

A. Labels shall be made of metal and installed as specified in Section 11 - Customer-Supplied Material - Labeling, SES.

B. Single-family dwelling with a single meter, a permanent address shall be posted on the dwelling in accordance with AHJ or MAG, or a metal address label be affixed to the meter cover panel.

EXCEPTION: SES used for early power shall have a label affixed to the meter cover panel.

Single-family dwelling with multiple services and/or more than one utility meter, an address label shall be affixed to the meter socket panel for each meter location. Each address label shall have a unique identifier assigned by a SRP Customer Service Representative for each separate metered service. Additionally, the AHJ may impose further labeling requirements in accordance with NEC 230.2.

C. Multi-family dwelling, including but not limited to apartments, condos, and town-homes, shall have their electrical connection between the meter socket and the unit's electrical panel verified by SRP. To assist with this effort, metal labels shall be installed as follows:

i. Meter socket panel. If the main breakers are not directly adjacent to the meter, both the meter and the main breaker shall be identified with individual matching labels.

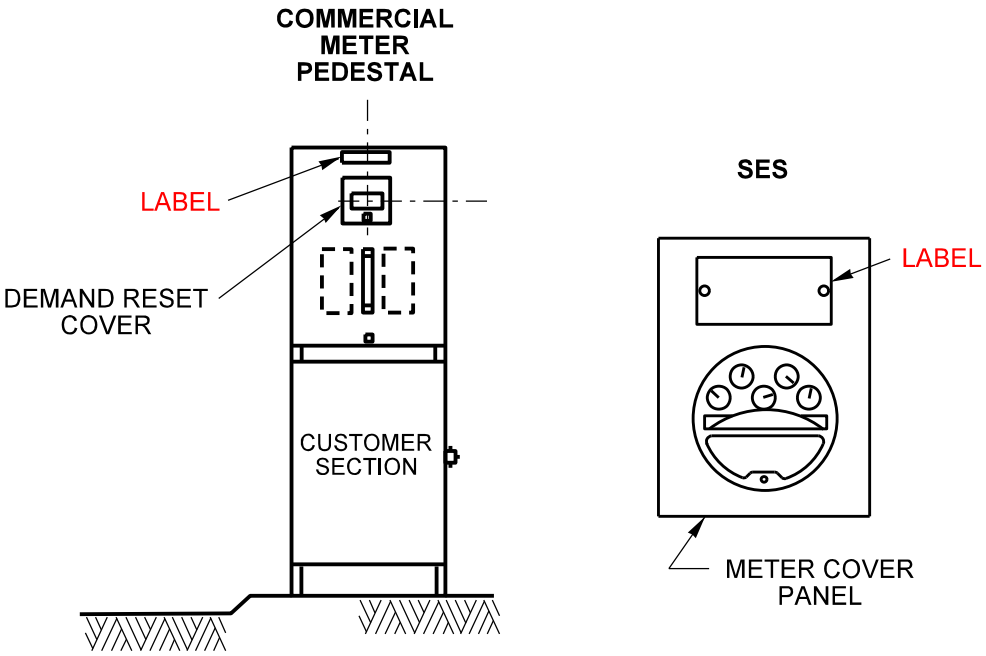
ii. Sub-panel dead-front. The label shall display the unit number that matches the corresponding wiring to the associated meter.

iii. Door or Door jamb. A temporary label is allowed at time of verification and meter install. Upon completion of service, matching permanent address label shall be affixed at the unit's entrance that is in accordance with MAG or AHJ. Access to dwellings shall be provided by the Customer or an authorized contractor to allow SRP personnel to perform their duties.

D. Pull sections with multiple meters attached to building wall: Address shall be attached to the exterior of the pull section panel not removable by the Customer (sealed panel). Unit number shall be attached to the exterior of a panel not removable by the Customer (sealed panel) directly adjacent to each meter and repeated at each corresponding main breaker.

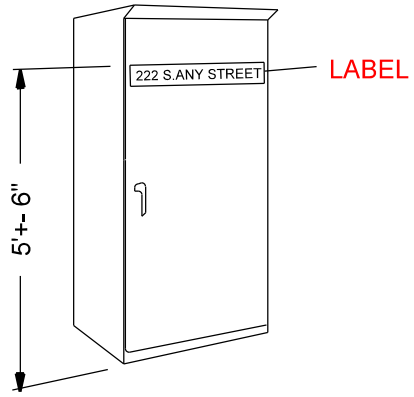
E. Enclosed SES: Address shall be attached to the exterior door of the SES, unit number shall be attached to the interior of a panel not removable by the Customer (sealed panel) directly adjacent to each meter and repeated at each corresponding main breaker

F. Pedestals or Meters Mounted on Equipment Structure: a label containing the address and unit number (where required) shall be affixed to a sealed exterior panel that cannot be removed by the Customer. It shall be positioned directly next to each meter and repeated for each corresponding main breaker. See Section 11 - Customer-Supplied Material - Labeling, SES, Meter Cover Panel.



G. Multiple Buildings: a label with building or unit number and street address shall be affixed to the pull section. See Section 11 - Customer-Supplied Material - Labeling, SES, Pull Section, Multiple Buildings.

SERVICE ENTRANCE SECTION



SELF-CONTAINED METER SOCKETS

I. Self-Contained Meter Socket

A meter socket connected directly to the service entrance conductors or bus capable of carrying the total current and voltage of electric service supplied to the Customer.

II. Ratings

Sockets shall be UL-approved. Available ratings as follows:

A. 100 amps – Standard duty

B. 200 amps – Heavy duty

C. Class 320 – Residential services only, having a continuous capacity not to exceed 320 amp.

III. Test Block (Safety Sockets)

A self-contained installation that include factory-installed safety test blocks (a.k.a. safety socket), allowing the meter socket to be deenergized and meter removed without interruption to the Customer's service.

A. Residential services do not require test blocks.

B. Non-residential services rated 200 amps or less require test blocks.

EXCEPTIONS: For the exceptions listed below, panel schedules shall be provided to SRP Design for review.

i. Services rated 30 amps at 120 V to non-critical load (e.g., sprinkler controllers, landscape lighting, barns, corrals, water features, approved cell sites).

ii. Services rated 200 amps or less using residential house panels or pedestals providing temporary service.

iii. Services rated 200 amps or less for additional facilities not used for business purposes, constructed on a residential zoned lot.

iv. Non-service related meter sockets used for distributed energy resources (DER) in measuring the non-billing production of the DER facility at 240 V or less.

C. Non-residential services rated greater than 200 amps require instrument (current) transformers.

IV. Terminals for Service Entrance Conductors

Meter sockets shall be provided with terminals suitable for the service entrance conductors.

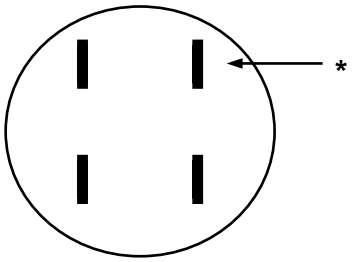
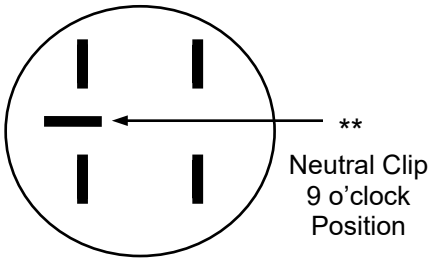
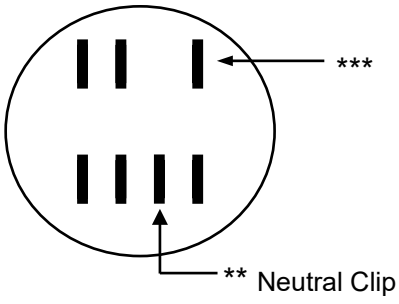
SRP gives no warranty, expressed or implied, as to the adequacy, safety or other characteristic of any equipment, wiring or device, and assumes no responsibility with respect thereto.

V. Automatic Meter Sockets

Meter socket shall not be equipped with circuit-closing or bypass devices that automatically close when the meter is removed from the socket.

VI. Self-Contained Meter Sockets Arrangements

The following arrangements identifies clips and positions for self-contained meter sockets.

TYPE OF SERVICE	SOCKET TYPE
Meter Form 1s 1Ø, 2-wire, 120V* Meter Form 2s 1Ø, 3-wire, 120/240V 1Ø, 3-wire, 240/480V	**4 Clip** 
Meter Form 12s 1Ø, 3-wire, 120/208V	**5 Clip** 
Meter Form 16s 3Ø, 4-wire, 120/240V (replaces 15s) 3Ø, 4-wire, 120/208V 3Ø, 4-wire, 277/480V	**7 Clip** 

* Neutral must be on top right side, 1Ø, 2-wire, 120V (SRP will install neutral jumper).

** Connect to neutral terminal with #12 copper wire, white in color.

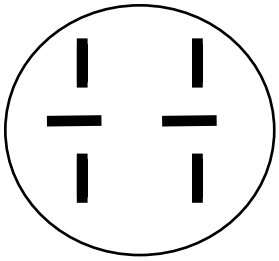
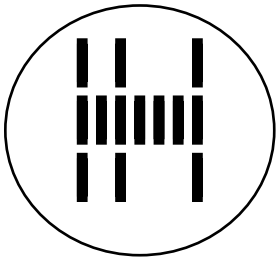
*** For all self-contained meter sockets, the power leg shall always be in the right-hand terminal position (C phase) and must be permanently identified in blue with an orange tracer at all termination points.

NOTES

1. See Section 1 – Character of Service and Limitations for approved service classifications

VII. Instrument Transformer Rated Meter Socket Arrangements

The following arrangement identifies clips and positions for instrument transformer meter sockets.

TYPE OF SERVICE	SOCKET TYPE
Meter Form 4s 1Ø, 3-wire, 120/240V	**6 Clip** 
Meter Form 9s 3Ø, 4-wire, 120/240V delta* (replaces 8s) 3Ø, 4-wire, 120/208V 3Ø, 4-wire, 277/480V 3Ø, 4-wire, 2,400/4,160 V 3Ø, 4-wire, 7,200/12,470 V A 15 meter clip base is acceptable utilizing the 13 clips shown.	**13 Clip** 

* For CT-rated meters, the center terminal position (B phase) can be a wild leg (yellow with orange tracer).

NOTES

1. See Section 1 – Character of Service and Limitations for approved service classifications.
2. When instrument transformer rated sockets are installed on panels, they shall be fabricated and installed by the manufacturer for back connection.

METER SOCKETS EQUIPMENT RESPONSIBILITY

I. Customer Furnishes, Installs and Maintains

A. Self-contained meter sockets.

B. Multiple meter panels and pre-fabricated panels.

C. Meter enclosures and their identification.

D. Metering transformer cabinets and switchboard devices.

E. Perches – for safety test switches when required.

F. Safety test blocks for self-contained meters.

G. Landing lugs as specified by SRP.

H. Meter sockets for instrument transformer meters (see page 9-14).

I. SRP will furnish and install the normal secondary wiring from the instrument transformer to the meter socket.

II. Meter Supplier Owns, Furnishes, Installs and Maintains

A. All meters required for billing purposes.

B. Sealing rings and seals.

C. Test switches for instrument-rated transformers.

D. Instrument transformers.

III. Connections by SRP

A. Metering shall be connected in the service entrance conductors on the line side of the Customer's load.

B. SRP makes all final connections to the meters (see page 9-66, Notes 4, 5 and 13).

C. SRP connects the secondary wiring in the meter sockets used with transformer-rated meters.

D. Data Pulse Initiators are available upon request.

IV. Equipment Openings by Customer

For routing conductors in or out of service entrance equipment, an approved method shall be used. The burning of holes in the equipment or the welding of couplings or fitting in lieu of an approved hub will not be accepted.

V. Customer Devices

Customer devices installed with a Supply-Side Source Connection shall be located at the service entrance section, after the billing meter and before the source side of the service disconnect, outside of any sealed area. When modifying a SES and its components, and prior to re-energization, an electrical clearance from the AHJ is required. Such installations shall comply with NEC Rule 230-82, UL 891, and the following:

A. Labeled equipment shall not be modified unless done with a manufacturer's labeled retrofit kit, or the modification is certified by a qualified third party.

B. Approved methods for protection of conductors:

1) Above ground: RMC, IMC, or approved fiberglass

2) Below ground: PVC

C. Conductor/connector ampacity rating shall be determined using a minimum ambient temperature of 110 degree F.

D. The short-circuit current rating of any disconnect or over-current protection device is equal to or greater than the service equipment.

E. Use a captive flat-blade screw fastener on any hinged access door (no cover plates).

F. Affix a permanent label located at the main or each service disconnect that states:

"WARNING: This main disconnect does not disconnect control power to *insert equipment name*. The *insert equipment name* disconnect is located in *insert location name*."

EXAMPLE: See ESS Section 11, Customer-Supplied Material: Disconnect Warning Sign.

G. Affix a permanent label, located on any door that provides access to the control power circuit disconnect, that states:

"WARNING: Control – Instrument circuit disconnect located behind this door. The line side of this disconnect remains energized when main disconnect located in service entrance section is in open/off position."

H. SRP recommends tap connections be made with a mole bar assembly connector (e.g., Utilco, Homac, Polaris or equivalent) designed and rated for this application. Insulation piercing connections or taps that cannot be inspected without removing insulation are not recommended. AHJ has final say.

NOTE: Interconnected electric power production sources must have a signed contract and comply with SRP "Interconnection Requirements".
Log onto srpnet.com/electric/generators.aspx for more information about interconnection of generation.

VI. Equipment Mountings

Devices furnished and installed by the Customer shall be securely attached to a supporting structure.

EATON

NOTES	DESCRIPTION	CATALOG NUMBER	APPLICATION
* = SEMI-FLUSH MOUNTED SES FOR UNDERGROUND USE ONLY ** = REQUIRES CONVERSION GUTTER FOR UNDERGROUND TO OVERHEAD, EATON PART #MBEGTR SUFFIXES: "S" DENOTES SURFACE MOUNT "F" DENOTES SEMI-FLUSH MOUNT	100A, 120/240V, 1 PH	MBE1224B100BTS/BTF*	UG**
	100A, 120/240V, 1 PH	MBE1428B100BS/BF*	UG**
	100A, 120/240V, 1 PH	MBE1224B100TS	OH
	125A, 120/240V, 1 PH	CMBE24L125BTS	UG**
	125A, 120/240V, 1 PH	MBE1224B125BTS/BTF*	UG**
	125A, 120/240V, 1 PH	MBE1836B125BF*	UG**
	125A, 120/240V, 1 PH	MBE24L125BTS/BTF*	UG**
	125A, 120/240V, 1 PH	MBE1224B125TS	OH
	150A, 120/240V, 1 PH	CMBE88B150BTS	UG**
	200A, 120/240V, 1 PH	CMBE24L200BTS	UG**
	200A, 120/240V, 1 PH	CMBE3242B200BS/BF*	UG**
	200A, 120/240V, 1 PH	CMBE4242B200BTS	UG**
	200A, 120/240V, 1 PH	CMBE88B200BTS	UG**
	200A, 120/240V, 1 PH	MBE2040B200BS/BF*	UG**
	200A, 120/240V, 1 PH	MBE4040B200BSH	UG**
	200A, 120/240V, 1 PH	MBE48B200BTS/BTF*	UG**
	200A, 120/240V, 1 PH	MBE88B200BTS	UG**
	200A, 120/240V, 1 PH	MBEB200BTS/BTF*	UG**
	200A, 120/240V, 1 PH	MBE2040B200BTS/BTF*	UG**
	200A, 120/240V, 1 PH	MBE4040B200BTS/BTF*	UG**
	200A, 120/240V, 1 PH	MBE4040B200TS	OH
	200A, 120/240V, 1 PH	CMBE4242B200TS	OH
	200A, 120/240V, 1 PH	MBE2040B200TS	OH
	225A, 120/240V, 1 PH	MBE2040B225BTS/BTF*	UG**
*** REQUIRES CONVERSION GUTTER FOR UNDERGROUND TO OVERHEAD, EATON PART #HP40TFKIT	400A, 120/240V, 1 PH	CG403242SH	UG***
	400A, 120/240V, 1 PH	HP404040SH	UG***
	400A, 120/240V, 1 PH	HP404040SHA	UG***
	400A, 120/240V, 1 PH	HP404040SHFA*	UG***
	400A, 120/240V, 1 PH	HP40SH	UG***

ABB/GENERAL ELECTRIC

NOTES	DESCRIPTION	CATALOG NUMBER	APPLICATION
* = SEMI-FLUSH MOUNTED SES FOR UNDERGROUND USE ONLY SUFFIXES: "S" DENOTES SURFACE MOUNT "F" DENOTES SEMI-FLUSH MOUNT	100A, 120/240V, 1 PH	TSM1610CSCU	UG
	200A, 120/240V, 1 PH	TSM2020CSCU	UG
	200A, 120/240V, 1 PH	TSM3220UWCU	UG
	200A, 120/240V, 1 PH	TSM4020UWCU	UG
	200A, 120/240V, 1 PH	TSM2020CSCU/CFCU*	UG
	200A, 120/240V, 1 PH	TSM2020UFCU*	UG
	200A, 120/240V, 1 PH	TSM3220USCU/UFCU*	UG
	200A, 120/240V, 1 PH	TSM3220UWCU	UG
	225A, 120/240V, 1 PH	TSM3222USCU/UFCU*	UG
	225A, 120/240V, 1 PH	TSM2022USCU	UG

MILBANK

NOTES	DESCRIPTION	CATALOG NUMBER	APPLICATION
	100A, 120/240V, 1 PH	U5852-RL-100	OH
	200A, 120/240V, 1 PH	U3584-O-200	UG
	200A, 120/240V, 1 PH	U3574-RL-200	OH
	200A, 120/240V, 1 PH	U5852-RL-200	OH
	400A, 120/240V, 1 PH	M400-UG-APS-P	UG
	400A, 120/240V, 1 PH	U6088-O-2-200	UG
	400A, 120/240V, 1 PH	U6020-O-2200	UG
	400A, 120/240V, 1 PH	M401-UG	UG
	400A, 120/240V, 1 PH	M404-UG-LC	UG

SIEMENS

NOTES	DESCRIPTION	CATALOG NUMBER	APPLICATION
* = SEMI-FLUSH MOUNTED SES FOR UNDERGROUND USE ONLY SUFFIXES: "S" DENOTES SURFACE MOUNT "F" DENOTES SEMI-FLUSH MOUNT	100A, 120/240V, 1 PH	MC1224B1100ESC/EFC*	OH/UG
	100A, 120/240V, 1 PH	MM0202ML1100S	OH
	125A, 120/240V, 1 PH	MM0202L1125ESC/EFC*	OH/UG
	125A, 120/240V, 1 PH	MC1224B1125ESC/EFC*	OH/UG
	125A, 120/240V, 1 PH	MM0406L1125ESC/EFC*	OH/UG
	200A, 120/240V, 1 PH	MC2442B1200ESV/EFV*	OH/UG
	200A, 120/240V, 1 PH	MC3040B1200SECW	OH/UG
	200A, 120/240V, 1 PH	MC4040B1200SECW	OH/UG
	200A, 120/240V, 1 PH	MM0202B1200ESC/EFC*	OH/UG
	200A, 120/240V, 1 PH	MM0406L1200ESC/EFC*	OH/UG
	200A, 120/240V, 1 PH	MC0816B1200EST	OH/UG
	200A, 120/240V, 1 PH	MM0202L1200ESC/EFC*	OH/UG
	200A, 120/240V, 1 PH	MC2040B1200ESC/EFC*	OH/UG
	200A, 120/240V, 1 PH	MC2442B1200ESV/EFV*	OH/UG
	200A, 120/240V, 1 PH	MC0816B1200ESN/EFN*	OH/UG
	200A, 120/240V, 1 PH	MC0816S1200SCT	OH/UG
	200A, 120/240V, 1 PH	MC2040B1200S	OH
	200A, 120/240V, 1 PH	MC2040S1200SZ	OH
	200A, 120/240V, 1 PH	MC0816B1200T	OH
	400A, 120/240V, 1 PH	MK0402L1400SC	OH/UG
	400A, 120/240V, 1 PH	MK0402L1400SCS	OH/UG
	400A, 120/240V, 1 PH	MC3042B1400SC	OH/UG
	400A, 120/240V, 1 PH	MC3042S1400SC	OH/UG
	400A, 120/240V, 1 PH	MC4040B1400SC	OH/UG
	400A, 120/240V, 1 PH	MM0404L1400SC	OH/UG
	400A, 120/240V, 1 PH	MK0603S1400SC	OH/UG
	400A, 120/240V, 1 PH	MC3042B1400SD	UG
	400A, 120/240V, 1 PH	MC3042S1400SD/FD*	UG
	400A, 120/240V, 1 PH	MC4040B1400SD	UG
	400A, 120/240V, 1 PH	MM0404L1400FD*	UG
	400A, 120/240V, 1 PH	MK0603S1400SD	UG

SQUARE D

NOTES	DESCRIPTION	CATALOG NUMBER	APPLICATION
* = SEMI-FLUSH MOUNTED SES FOR UNDERGROUND USE ONLY ** = REQUIRES CONVERSION GUTTER FOR UNDERGROUND TO OVERHEAD, SQUARE D PART #OCK400 SUFFIXES: "S" DENOTES SURFACE MOUNT "F" DENOTES SEMI-FLUSH MOUNT	100A, 120/240V, 1 PH	SC1624M100S/F*	OH/UG
	100A, 120/240V, 1 PH	SU816F100PS	UG
	100A, 120/240V, 1 PH	CU816F100PS	UG
	100A, 120/240V, 1 PH	SO1020M100S	OH
	125A, 120/240V, 1 PH	SC1624M125S/F*	OH/UG
	150A, 120/240V, 1 PH	SC816F150PS	OH/UG
	200A, 120/240V, 1 PH	SC816F200PS/PF*	OH/UG
	200A, 120/240V, 1 PH	SC42M200PS/PSH*	OH/UG
	200A, 120/240V, 1 PH	SC3042M200PS/PF*	OH/UG
	200A, 120/240V, 1 PH	SC2040M200PS/PF*	OH/UG
	200A, 120/240V, 1 PH	SU816F200PS	UG
	200A, 120/240V, 1 PH	SU48F200PS	UG
	200A, 120/240V, 1 PH	CU816F200PS	UG
	200A, 120/240V, 1 PH	CU48F200PS	UG
	200A, 120/240V, 1 PH	SO2040VP	OH
	200A, 120/240V, 1 PH	SO2040M200S	OH
	225A, 120/240V, 1 PH	SC3042M225PF*	UG
	400A, 120/240V, 1 PH	SU3040D400CN/CB	UG**
	400A, 120/240V, 1 PH	CU816D400CN/CB	UG**

Cooper / B-Line

Catalog Number	Description	Application
CMP4111MC1	100 A, 120/240 V, 1Ø, 3-Wire, 42kA	Commercial UG
224MTBP	200 A, 120/240 V, 1Ø, Test Block Bypass	Commercial OH
U227MTBPL	200 A, 120/240 V, 3Ø, 4-Wire, 22 kA	Residential/Commercial OH/UG

Eaton

Catalog Number	Description	Application
MHM100P1P	100 A, 120/240 V, 1Ø, 3-Wire, 10k AIC, w/Factory installed post, 78"	Mobile Home / RV Underground
CHM----------S	125A, 120/240 V, 1Ø, 3-Wire, 10k AIC, Surface Mount	Residential / Mobile Home / RV Overhead – catalog # varies based on receptacles installed
CHM----------P-TZ	125A, 120/240 V, 1Ø, 3-Wire, 10k AIC, w/Factory installed post, 78"	Residential / Mobile Home / RV Underground – catalog # varies based on receptacles installed
ECP111B111	125A, 120/240 V, 1Ø, 3-Wire, 35k AIC	Commercial
ECP111B411	125A, 120/240 V, 1Ø, 3-Wire, 35k AIC	Commercial
ECP111H111	125A, 120/240 V, 1Ø, 3-Wire, 42k AIC	Commercial
ECP121B211	200 A, 120/240 V, 1Ø, 3-Wire, 35k AIC	Commercial
ECP121B411	200 A, 120/240 V, 1Ø, 3-Wire, 35k AIC	Commercial
ECP121H211	200 A, 120/240 V, 1Ø, 3-Wire, 42k AIC	Commercial

Milbank

Catalog Number	Description	Application
MPRV-100-MBLC	100 A, 120/240 V, 1Ø, 3-wire, 10 kA	RV Application, UG
11XTB (X = 4, 7 Only)	100 A, 120/240 V, 1Ø, 3-Wire & 120/208 V, 3Ø, 4-Wire, 22 kA, Test Block By-pass	Overhead/Underground
CP3B11119A	100 A, 120/240 V, 1Ø, 3-Wire, 10 kA	Commercial
MPAP-100-MB-78	100 A, 120/240 V, 1Ø, 3-Wire, 10 kA	Residential UG
MPRV-100-MB-78	100 A, 120/240 V, 1Ø, 3-Wire, 10 kA	Residential UG
U5240-0-100S	100 A, 120/240 V, 1Ø, 3-Wire, 10 or 22 kA	Residential UG
CP3B11115A22	100 A, 120/240 V, 1Ø, 3-Wire, 22 kA	Commercial
U5241-0-(AMPS)S	100 A, 120/240 V, 1Ø, 3-Wire, 22 kA, Max Double Meter	UG, MH or Non-Commercial
CP3B11513A	100 A, 120/240 V, 3Ø, 4-Wire, 10 kA	Commercial

Milbank *(cont'd.)*

Catalog Number	Description	Application
CP3B13115A	125 A, 120/240 V, 1Ø, 3-Wire, 10 kA	Commercial
U5240-0-125S	125 A, 120/240 V, 1Ø, 3-Wire, 10 or 22 kA	Residential Underground
U5240-0-150S	150 A, 120/240 V, 1Ø, 3-Wire, 10 or 22 kA	Residential Underground
12XTB (X = 4, 7 Only)	200 A, 120/240 V, 1Ø, 3-Wire & 120/208 V, 3Ø, 4-Wire, 22 kA, Test Block By-pass	Overhead/Underground
U5240-0-200S	200 A, 120/240 V, 1Ø, 3-Wire, 10 or 22 kA	Residential Underground
CP3B12115A22	200 A, 120/240 V, 1Ø, 3-Wire, 22 kA	Commercial
CP3B12119A	200 A, 120/240 V, 1Ø, 3-Wire, 22 kA	Commercial
U5240-0-(AMPS)S	200 A, 120/240 V, 1Ø, 3-Wire, 22 kA, Max Single Meter	UG, MH or Non-Commercial
U227MTB	200 A, 120/240 V, 3Ø, 4-Wire	Commercial OH/UG
CP3B12513A	200 A, 120/240 V, 3Ø, 4-Wire, 10 kA	Commercial

Myers

Catalog Number	Description	Application
USP16	0-200 A, 0-480 V, 1Ø, 3-Wire, 22 kA	Commercial Underground
USP20	0-200 A, 0-480 V, 1Ø, 3-Wire, 22 kA	Commercial Underground
USP24	0-200 A, 0-600 V, 1Ø, 3-Wire, 22 kA	Commercial Underground
MEUG46-M100-AZ	100 A, 120/208 V, 3Ø, 4-Wire, 10 kA	Commercial Underground
MEUG16-M100	100 A, 120/240 V, 1Ø, 3-Wire, 10 kA	Commercial Underground
MEUG20-M100	100 A, 120/240 V, 1Ø, 3-Wire, 10 kA	Commercial Underground
MEUG35-PB-M100	100 A, 120/240 V, 1Ø, 3-Wire, 10 kA	Commercial Underground
MEUG16-M200	200 A, 120/240 V, 1Ø, 3-Wire, 22 kA	Commercial Underground
MEUG24-S-M200	200 A, 120/240 V, 1Ø, 3-Wire, 22 kA	Commercial Underground

Strong Box

Catalog Number	Description	Application
MPS-D18-10K	100 A, 120/208 V, 3Ø, 4-Wire, 10 kA	Commercial OH/UG
CSP-116-10K	100 A, 120/240 V, 1Ø, 3-Wire, 10 kA	Commercial Underground
CSP-188-10K	100 A, 120/240 V, 1Ø, 3-Wire, 10 kA	Commercial Underground
MPS-A16-10K	100 A, 120/240 V, 1Ø, 3-Wire, 10 kA	Commercial OH/UG
MPS-B16-10K	100 A, 120/240 V, 1Ø, 3-Wire, 10 kA	Commercial OH/UG
MPS-C32-10K	100 A, 120/240 V, 1Ø, 3-Wire, 10 kA	Commercial OH/UG

Strong Box *(cont'd.)*

Catalog Number	Description	Application
MPS-E24-22K	200 A, 120/208 V, 3Ø, 4-Wire, 22 kA	Commercial OH/UG
CSP-216-22K	200 A, 120/240 V, 1Ø, 3-Wire, 22 kA	Commercial Underground

Tesco

Catalog Number	Description	Application
26-100	100 A Max., 120/240 V, 1Ø, 3-Wire, 10 kA	Commercial
27-000	200 A Max., 120/240 V, 1Ø, 3-Wire, 22 kA	Commercial
27-100	200 A Max., 120/240 V, 1Ø, 3-Wire, 22 kA	Commercial
28-105	200 A Max., 120/240 V, 1Ø, 3-Wire, 22 kA	Commercial

Eaton Cutler-Hammer

Catalog Number	Description	Application
1MP2122R	125 A, 120/240 V, 1Ø, 3-Wire, 42 kA	Residential Overhead/Underground
1MP3124R	125 A, 120/240 V, 1Ø, 3-Wire, 42 kA	Residential UG (Note 1)
1MP4124R	125 A, 120/240 V, 1Ø, 3-Wire, 42 kA	Residential UG (Note 1)
1MP5126R	125 A, 120/240 V, 1Ø, 3-Wire, 42 kA	Residential UG (Note 1)
1MP6126R	125 A, 120/240 V, 1Ø, 3-Wire, 42 kA	Residential UG (Note 1)
1MP2204R	200 A, 120/240 V, 1Ø, 3-Wire, 100 kA	Residential UG (Note 1)
1MP3206R	200 A, 120/240 V, 1Ø, 3-Wire, 100 kA	Residential UG (Note 1)
1MP4206R	200 A, 120/240 V, 1Ø, 3-Wire, 100 kA	Residential UG, Indoor Only
1MP5206R	200 A, 120/240 V, 1Ø, 3-Wire, 100 kA	Residential UG (Note 1)
1MP6206R	200 A, 120/240 V, 1Ø, 3-Wire, 100 kA	Residential UG (Note 1)

General Electric (GE)

Catalog Number	Description	Application
TMM4312R	400 A, 120/240 V, 1Ø, 3-Wire, 100 kA	Residential Overhead/Underground
TMM4412R	400 A, 120/240 V, 1Ø, 3-Wire, 100 kA	Residential Overhead/Underground
TMM4220R	400 A, 120/240 V, 1Ø, 3-Wire, 100 kA	Residential Overhead/Underground
TMMG512R	600 A, 120/240 V, 1Ø, 3-Wire, 100 kA	Residential Overhead/Underground
TMMGG12R	600 A, 120/240 V, 1Ø, 3-Wire, 100 kA	Residential Overhead/Underground
TMMG320R	600 A, 120/240 V, 1Ø, 3-Wire, 100 kA	Residential Overhead/Underground
TMMG420R	600 A, 120/240 V, 1Ø, 3-Wire, 100 kA	Residential Overhead/Underground
TMMG520R	600 A, 120/240 V, 1Ø, 3-Wire, 100 kA	Residential Overhead/Underground
TMMGG20R	600 A, 120/240 V, 1Ø, 3-Wire, 100 kA	Residential Overhead/Underground

Siemens

Catalog Number	Description	Application
WEP2211	200 A, 120/240 V, 1Ø, 3-Wire, 65 kA	Underground
WEP3311	300 A, 120/240 V, 1Ø, 3-Wire, 65 kA	Overhead/Underground
WEP4511	400 A, 120/240 V, 1Ø 3-Wire, 65 kA	Overhead/Underground
WEP4212	400 A, 120/240 V, 1Ø, 3-Wire, 100 kA	Overhead/Underground
WEP4312	400 A, 120/240 V, 1Ø, 3-Wire, 100 kA	Overhead/Underground
WEP4412	400 A, 120/240 V, 1Ø, 3-Wire, 100 kA	Overhead/Underground
WEP4411	400 A, 120/240 V, 1Ø, 3-Wire, 65 kA	Overhead/Underground

WEP4611	400 A, 120/240 V, 1Ø, 3-Wire, 65 kA	Overhead/Underground
WEP5411	500 A, 120/240 V, 1Ø, 3-Wire, 65 kA	Overhead/Underground
WEP6412	600 A, 120/240 V, 1Ø, 3-Wire, 100 kA	Overhead/Underground
WEP6512	600 A, 120/240 V, 1Ø, 3-Wire, 100 kA	Overhead/Underground
WEP6612	600 A, 120/240 V, 1Ø, 3-Wire, 100 kA	Overhead/Underground
WEP6511	600 A, 120/240 V, 1Ø, 3-Wire, 65 kA	Overhead/Underground
WEP6611	600 A, 120/240 V, 1Ø, 3-Wire, 65 kA	Overhead/Underground
WEP8612	800 A, 120/240 V, 1Ø, 3-Wire, 100 kA	Overhead/Underground

Square D

Catalog Number	Description	Application
MP22-125	200 A, 120/240 V, 1Ø, 3-Wire, 65 kA	Residential Underground
MP33-125	200 A, 120/240 V, 1Ø, 3-Wire, 100 kA	Residential Underground
EZM113125	400 A, 120/240 V, 1Ø, 3-Wire, 100 kA	Residential Underground
EZM114125	400 A, 120/240 V, 1Ø, 3-Wire, 100 kA	Residential Underground
EZM112225	400 A, 120/240 V, 1Ø, 3-Wire, 100 kA	Residential Underground
EZM113225	400 A, 120/240 V, 1Ø, 3-Wire, 100 kA	Residential Underground
MP42-200	400 A, 120/240 V, 1Ø, 3-Wire, 100 kA	Residential Underground
MP43-200	400 A, 120/240 V, 1Ø, 3-Wire, 100 kA	Residential Underground
MP44-125	400 A, 120/240 V, 1Ø, 3-Wire, 100 kA	Residential Underground
MP55-125	500 A, 120/240 V, 1Ø, 3-Wire, 100 kA	Residential Underground
MP64-200	600 A, 120/240 V, 1Ø, 3-Wire, 100 kA	Residential Underground
MP66-125	600 A, 120/240 V, 1Ø, 3-Wire, 100 kA	Residential Underground
MP85-200	800 A, 120/240 V, 1Ø, 3-Wire, 100 kA	Residential Underground

NOTES

1. EUSERC lug landing kits required for UG.
2. Eaton underground lug landing kit #1MPSC1.
3. Siemens underground lug landing kit #WPSK400.
4. Square D underground lug landing kit #MMSK2.

Siemens

Catalog Number	Description	Application – Mixed Use
WC2040B2T2J	1200 A, 120/208 V, 3Ø, 3-Wire, 100 kA	1Ø, 3-Wire, 200 A
WC2040B2T3J	1200 A, 120/208 V, 3Ø, 3-Wire, 100 kA	1Ø, 3-Wire, 175 A
WC2040B2T4J	1200 A, 120/208 V, 3Ø, 3-Wire, 100 kA	1Ø, 3-Wire, 175 A
WC2040B2T5J	1200 A, 120/208 V, 3Ø, 3-Wire, 100 kA	1Ø, 3-Wire, 150 A
WC2040B2T6J	1200 A, 120/208 V, 3Ø, 3-Wire, 100 kA	1Ø, 3-Wire, 150 A
WC2040B2T7J	1200 A, 120/208 V, 3Ø, 3-Wire, 100 kA	1Ø, 3-Wire, 150 A
WC2040B2T8J	1200 A, 120/208 V, 3Ø, 3-Wire, 100 kA	1Ø, 3-Wire, 125 A
WC2040B2T9J	1200 A, 120/208 V, 3Ø, 3-Wire, 100 kA	1Ø, 3-Wire, 125 A
WCT2040B1T1RJ	1200 A, 120/208 V, 3Ø, 3-Wire, 100 kA	1Ø, 3-Wire, 225 A
WCT2040B1T2RJ	1200 A, 120/208 V, 3Ø, 3-Wire, 100 kA	1Ø, 3-Wire, 200 A
WCT2040B1T3RJ	1200 A, 120/208 V, 3Ø, 3-Wire, 100 kA	1Ø, 3-Wire, 175 A
WCT2040B1T4RJ	1200 A, 120/208 V, 3Ø, 3-Wire, 100 kA	1Ø, 3-Wire, 175 A
WCT2040B1T5RJ	1200 A, 120/208 V, 3Ø, 3-Wire, 100 kA	1Ø, 3-Wire, 150 A
WCT2040B1T6RJ	1200 A, 120/208 V, 3Ø, 3-Wire, 100 kA	1Ø, 3-Wire, 150 A
WCT2040B1T7RJ	1200 A, 120/208 V, 3Ø, 3-Wire, 100 kA	1Ø, 3-Wire, 150 A
WCT2040B1T8RJ	1200 A, 120/208 V, 3Ø, 3-Wire, 100 kA	1Ø, 3-Wire, 150 A
WCT2040B1T9RJ	1200 A, 120/208 V, 3Ø, 3-Wire, 100 kA	1Ø, 3-Wire, 125 A
WCT2040B2T1RJ	1200 A, 120/208 V, 3Ø, 3-Wire, 100 kA	1Ø, 3-Wire, 225 A
WCT2040B2T2RJ	1200 A, 120/208 V, 3Ø, 3-Wire, 100 kA	1Ø, 3-Wire, 200 A
WCT2040B2T3RJ	1200 A, 120/208 V, 3Ø, 3-Wire, 100 kA	1Ø, 3-Wire, 175 A
WCT2040B2T4RJ	1200 A, 120/208 V, 3Ø, 3-Wire, 100 kA	1Ø, 3-Wire, 175 A
WCT2040B2T5RJ	1200 A, 120/208 V, 3Ø, 3-Wire, 100 kA	1Ø, 3-Wire, 150 A
WCT2040B2T6RJ	1200 A, 120/208 V, 3Ø, 3-Wire, 100 kA	1Ø, 3-Wire, 150 A
WCT2040B2T7RJ	1200 A, 120/208 V, 3Ø, 3-Wire, 100 kA	1Ø, 3-Wire, 150 A
WCT2040B2T8RJ	1200 A, 120/208 V, 3Ø, 3-Wire, 100 kA	1Ø, 3-Wire, 150 A
WCT2040B2T9RJ	1200 A, 120/208 V, 3Ø, 3-Wire, 100 kA	1Ø, 3-Wire, 125 A
WCT2442B3T1RJ	1200 A, 120/208 V, 3Ø, 3-Wire, 100 kA	1Ø, 3-Wire, 225 A
WCT2442B3T2RJ	1200 A, 120/208 V, 3Ø, 3-Wire, 100 kA	1Ø, 3-Wire, 200 A
WCT2442B3T3RJ	1200 A, 120/208 V, 3Ø, 3-Wire, 100 kA	1Ø, 3-Wire, 175 A

Siemens *(cont'd.)*

Catalog Number	Description	Application
WCT2442B3T4RJ	1200 A, 120/208 V, 3Ø, 3-Wire, 100 kA	1Ø, 3-Wire, 175 A
WCT2442B3T5RJ	1200 A, 120/208 V, 3Ø, 3-Wire, 100 kA	1Ø, 3-Wire, 150 A
WCT2442B3T6RJ	1200 A, 120/208 V, 3Ø, 3-Wire, 100 kA	1Ø, 3-Wire, 150 A
WCT2442B3T7RJ	1200 A, 120/208 V, 3Ø, 3-Wire, 100 kA	1Ø, 3-Wire, 150 A
WCT2442B3T8RJ	1200 A, 120/208 V, 3Ø, 3-Wire, 100 kA	1Ø, 3-Wire, 150 A
WCT2442B3T9RJ	1200 A, 120/208 V, 3Ø, 3-Wire, 100 kA	1Ø, 3-Wire, 125 A

THIS CONTENT HAS BEEN MOVED TO THE

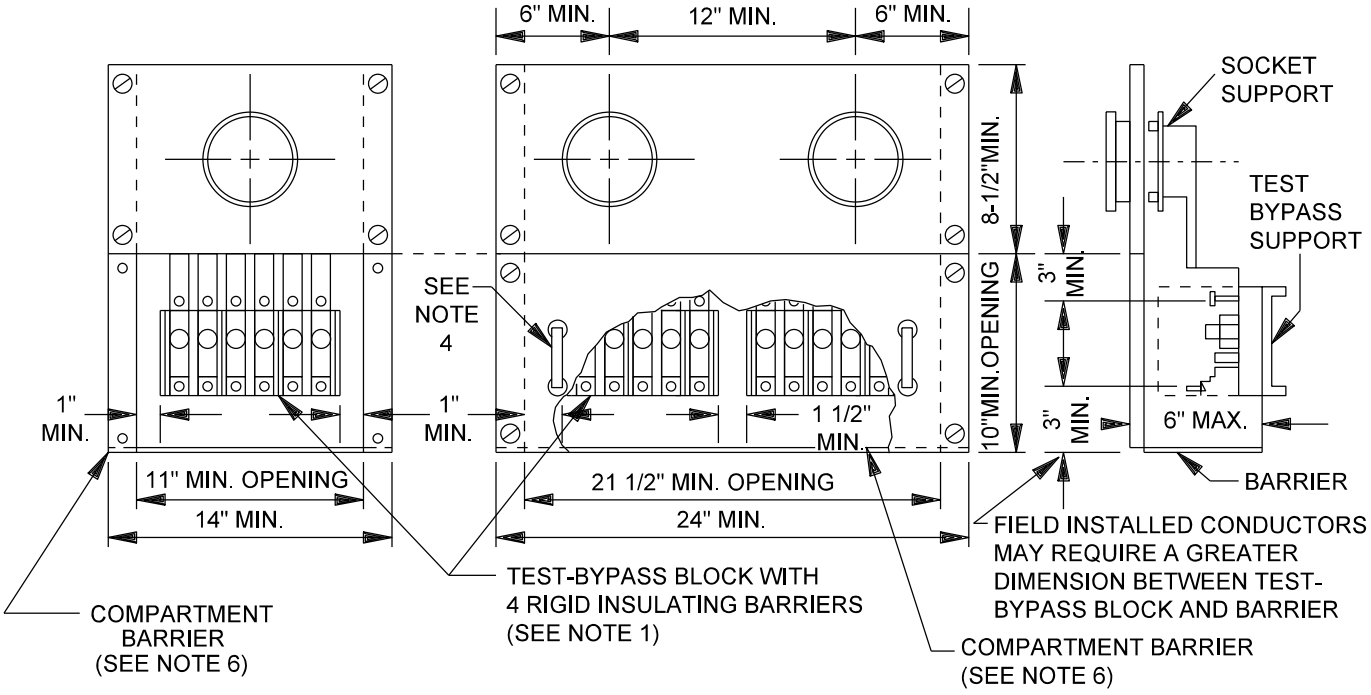
DISTRIBUTED GENERATION INTERCONNECTION HANDBOOK, SECTION 2-8.1

THIS CONTENT HAS BEEN MOVED TO THE

DISTRIBUTED GENERATION INTERCONNECTION HANDBOOK, SECTION 2-8.1

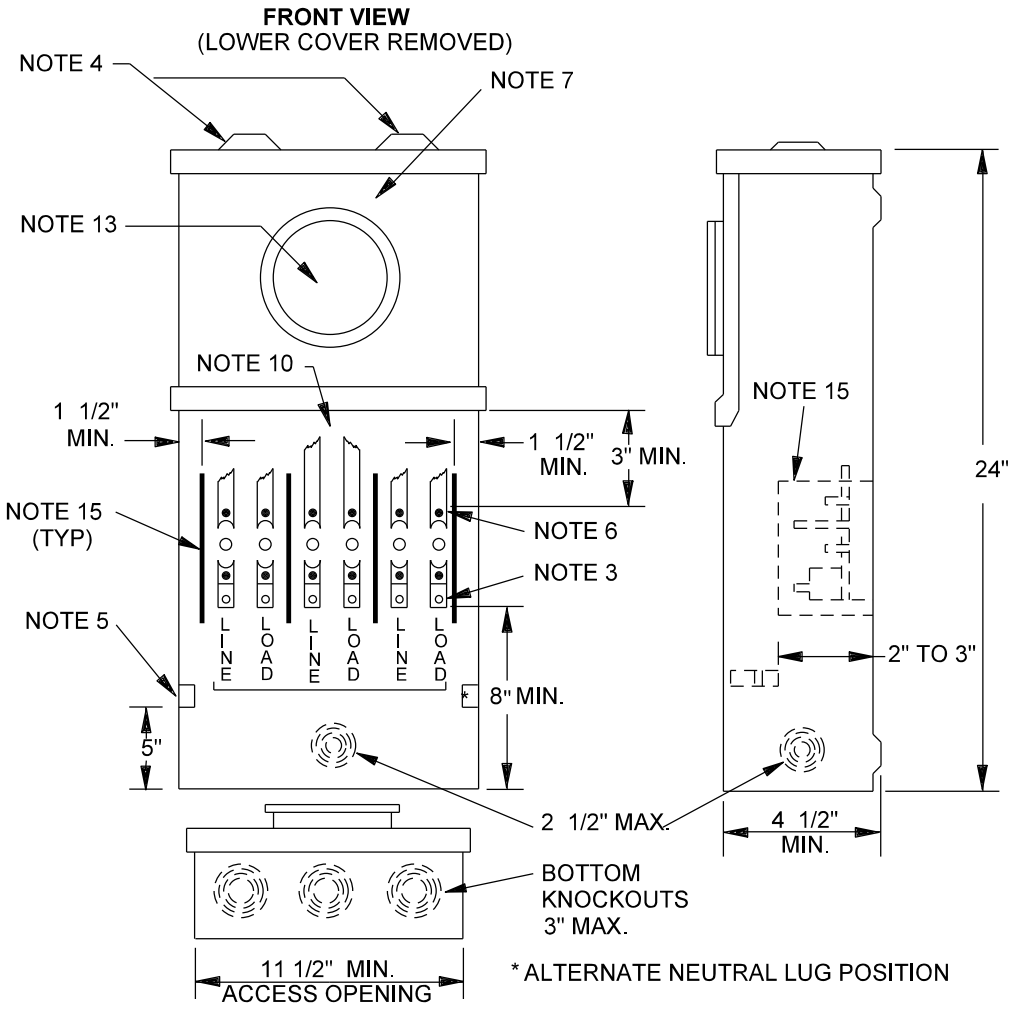
THIS CONTENT HAS BEEN MOVED TO THE

DISTRIBUTED GENERATION INTERCONNECTION HANDBOOK, SECTION 2-8.2



NOTES (Reference EUSERC Drawing 306)

1. Test-bypass blocks with rigid insulating barriers shall be furnished, installed and wired or bussed to the meter socket by the manufacturer. Connection sequence is line-load from left to right.
2. Metered conductors shall not pass through adjacent metering compartments except in enclosed wireways. To ensure proper identification of cables in factory cabled equipment, metered cables (except in the test-bypass area), shall be either physically barriered or bundled so as to separate them from unmetered cable, or permanently marked and isolated from unmetered cables. Physical barriers will not be required if the unmetered conductors are bus.
3. Meter panels shall be removable with a maximum of two meters per panel.
4. Test-bypass block cover panel shall be sealable and fitted with a lifting handle. All panels exceeding 16" in width shall require two lifting handles.
5. An insulated neutral terminal shall be provided behind each test-bypass cover panel. The terminal shall be readily accessible when the cover panel is removed and shall be individually connected to the neutral bus with a minimum size No. 8 copper wire.
6. Barrier shall:
   A) consist of an insulating non-tracking material resistant to ARC tracking.
   B) be secured in place and rigid, with maximum deflection of 1/2" (from an applied downward force of 25 lbs.).
   C) be dimensioned to fit the switchboard, with a peripheral gap not to exceed 3/8".
   D) contain cutouts for through bus bars that provide a maximum gap between bus and barrier of 3/8".
   E) not exceed ventilation hole diameter of 3/8" when provided.
7. For 3Ø, 4-wire, connect 7th jaw to body of neutral lug with No.12 minimum copper wire, white in color.
8. For 3Ø, 4-wire delta, identify right-hand test-bypass block (2 poles) as power leg. I.D. color: blue with orange tracer.
9. For 1Ø, 3-wire, omit center test-bypass block.
10. For 1Ø, 3-wire, 120-208 volts, omit center test-bypass block and connect 5th jaw to body of neutral lug with No. 12 minimum copper wire, white in color.
11. Meter panels shall be removable but shall be non-removable when meter is in place. Meter socket is to be supported independent of and attached to meter panel.
12. Contractor or manufacturer shall install separate line and load conductors for each meter socket.
13. Each line and load position shall be clearly identified by 3/4" minimum block letter labeling.
14. All securing screws shall be captive. All panels shall be sealable.
15. See page 9-13 for meter socket clip arrangement.



NOTES (Reference EUSERC Drawing 304)

1. This type of device shall be used for separately metered installations as listed on page 9-12.
2. This device may be used as a combination terminating pull and meter socket box for underground service when approved by SRP.
3. Aluminum-bodied terminals for #6 through 1/0 wire.
4. Hubs capped off if used for underground feed.
5. Insulated bondable vertical lay-in, double neutral lug with 1/0 wire capacity, mounted on either sidewall.
6. Upper test connector studs.
7. All panels shall be independently removable. Upper cover shall be non-removable when meter is in place. Provide a sealing ring with meter panel. Rigidly mount meter socket on a support and attach to the meter panel. Test-bypass compartment cover panel shall be sealable and permanently labeled: "DO NOT BREAK SEALS. NO FUSES INSIDE."
8. For 3Ø, 4-wire, connect 7th jaw to body of neutral lug with No.12 copper wire, white in color.
9. For 3Ø, 4-wire, delta, identify right-hand test-bypass block (2 poles) as power leg. Identification color: blue with orange tracer.
10. For 1Ø, 3-wire, omit center test-bypass block.
11. For 1Ø, 3-wire,120/208 volts, omit center test-bypass block and connect 5th jaw to body of neutral lug with No. 12 copper wire, white in color.
12. Permanent labels on inside back of enclosure in 3/4" (minimum) high block letters.
13. See page 9-13 for meter socket arrangement.
14. Riser to enter bottom of box on the side OPPOSITE the nipple leading to the main disconnect.
15. Insulated barriers between phase terminatIons and safety socket sidewalls.

Electric Service Specifications SRP® PROPRIETARY MATERIAL	METERING & SES - METER BOX SAFETY SOCKET W/ FACTORY TEST-BYPASS BLOCKS INSTALLED RESIDENTIAL OR COMMERCIAL 100 AMPS MAXIMUM	ISSUE DATE: 09/19/90 REV. DATE: 10/26/12 APPROVAL: W.LARAMIE
	9-37	8509E71.DGN

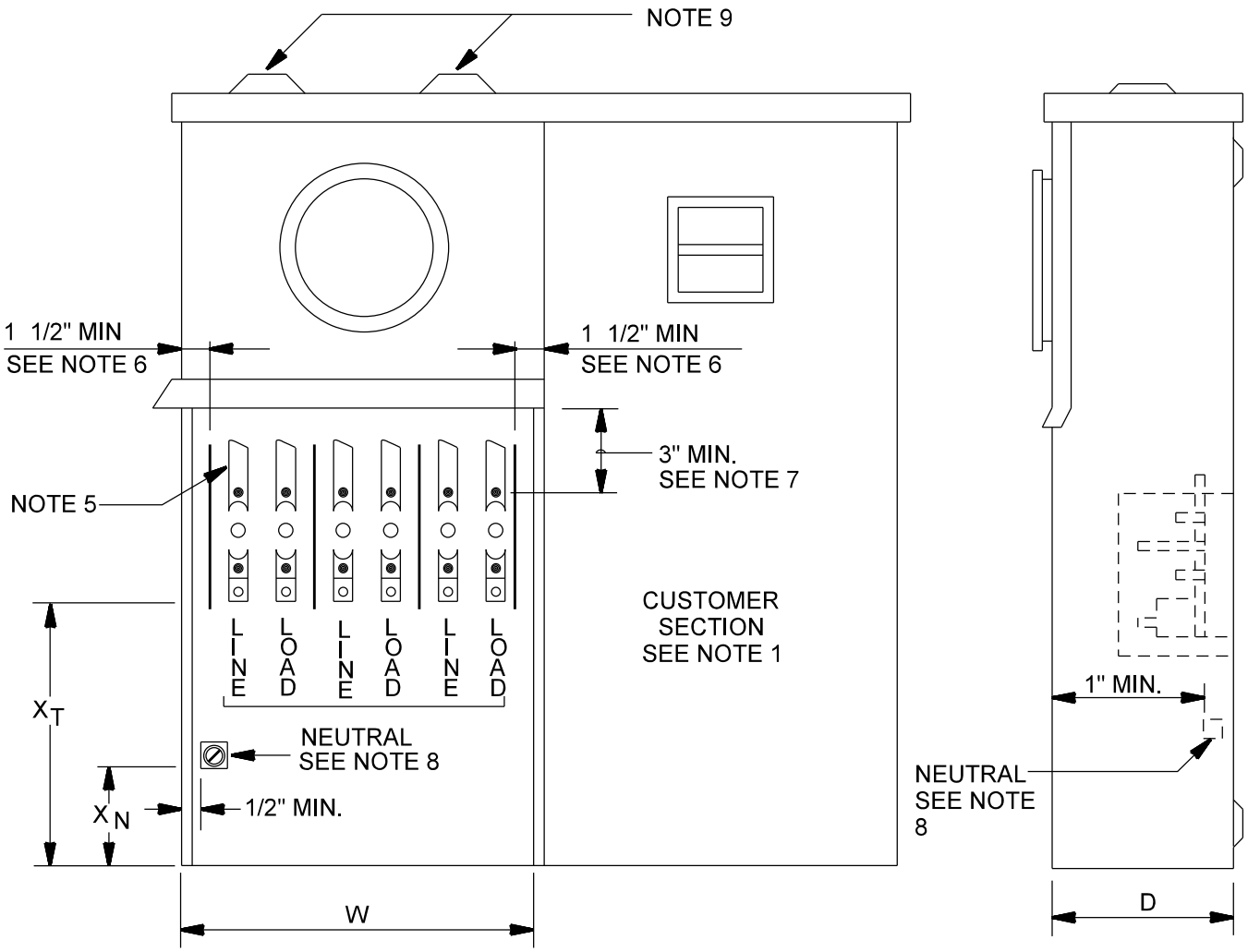


TABLE - MINIMUM DIMENSIONS

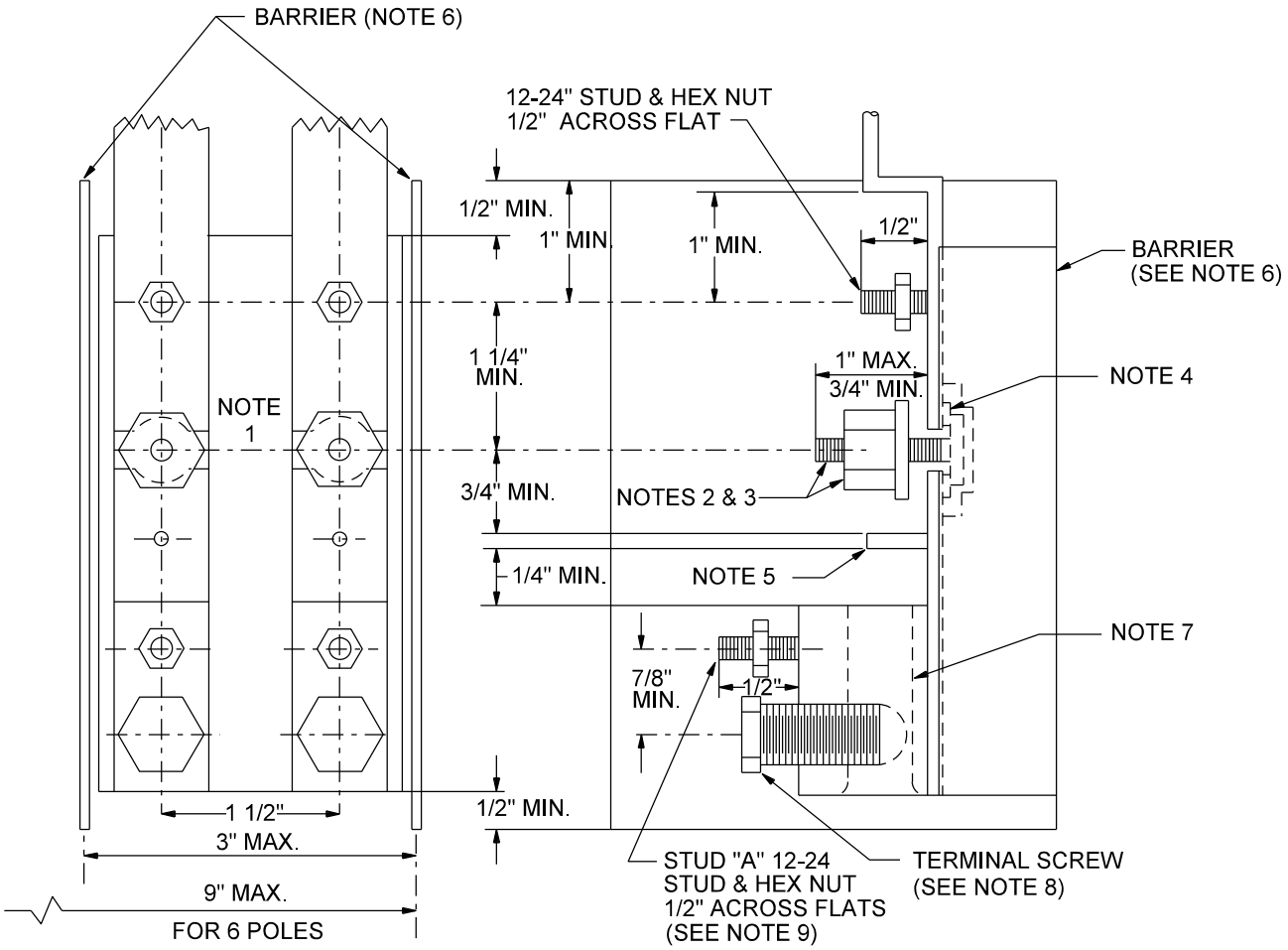
PANEL TYPE	PANEL RATING * (AMPERES)	D	W SEE NOTE 4	X_T	X_N
STANDARD	100	4 1/2	11 1/2	8	5
HEAVY-DUTY	200	6	13 1/2	11	8

* Continuous-duty

Reference EUSERC Drawing 305A.

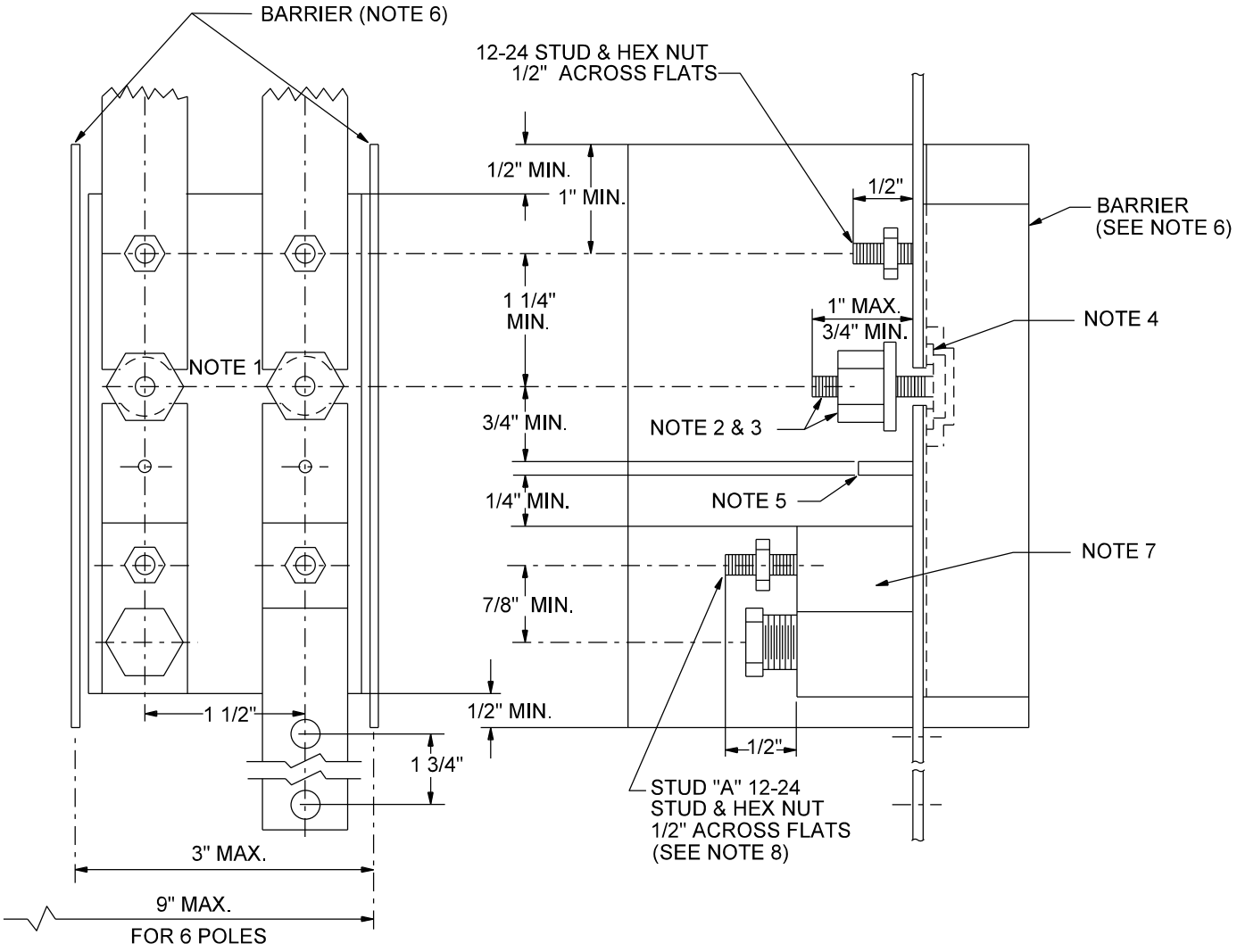
NOTES

1. The panel shown is typical with the Customer's distribution section located to the side of the metering compartment. The distribution section may also be located below the test-bypass compartment (overhead supply only) or above the meter panel.
2. Meter socket shall be mounted on a rigid support and attached to the meter socket panel.
3. All panels shall be removable without disturbing adjacent panels.
4. Minimum test compartment access opening dimension.
5. Test-bypass blocks with rigid insulating barriers shall be furnished installed and bussed or wired to the meter socket by the manufacturer as follows:
   A. **For 1Ø, 3-wire:** Provide two test-bypass blocks mounted in the outer positions and a 4-jaw socket. **120/240V:** Provide two test-bypass blocks mounted in the outer positions and a 5-jaw socket. Connect fifth jaw of the meter socket to the neutral lug with a white No. 12 AWG (min.) copper wire.
   B. **3Ø, 3-wire:** Provide three test-bypass blocks and a 5-jaw meter socket. Connect the line and load poles together at the top of the center position test-bypass block with a bus section, and connect the bus to the fifth jaw of the meter socket with a No. 12 AWG (minimum) copper wire. Do not use the color white, gray, green or orange to identify the wire.
   C. **3Ø, 4-wire:** Provide three test-bypass blocks and a 7-jaw meter socket. Connect the seventh jaw of the meter socket to the neutral lug with a white No. 12 AWG (minimum) copper wire. **120/240V, 4-wire delta:** The right hand test-bypass block shall be the power leg (measures 208 volts-to-ground) and be identified as blue with an orange tracer.
   D. Test-bypass block connection sequence shall be LINE-LOAD from left to right and shall be clearly identified in 3/4" minimum block letters.
   E. Cable terminals shall be aluminum-bodied mechanical lugs with a range on No. 6 AWG through 1/0 AWG for the 100 ampere test-bypass block and 1/0 AWG through 250 KCMIL for the 200 ampere test-bypass block.
6. 1 1/2" min. dimension measured from compartment side to the test-bypass block rigid insulating barrier.
7. 3" min. dimension measured from the upper test connector stud (stud A) to the socket meter cover.
8. The neutral terminal may be provided as follows:
   A. A single mechanical lug or lay-in lug, located on either side or side wall. The lug shall be mounted on a neutral bus bar extending into, and terminating in, the Customer section.
   B. Two mechanical lugs or lay-in lugs, located on either side or side wall. The neutral conductor provided from one of the lugs to the neutral bus in the Customer section may be factory or field installed.
   C. Overhead supply only - a single insulated, bondable, vertical, lay-in lug located on either side or side wall with the neutral conductor installed unbroken through the lug and terminating on the neutral bus in the Customer section.
9. Knockouts for the service supply conduit may be cut in the locations shown at the top of the panel.



NOTES (Reference EUSERC Drawing 311)

1. Strike distance between upper and lower bus sections shall not be less than 1/4" when shorting nut is backed off.
2. Circuit-closing nut shall be a hex nut 5/8" across flats with plated copper washer attached and have threads counter-bored at bottom to facilitate re-installation. Bolt head shall be secured in place to prevent turning and back out.
3. The circuit-closing nut and bolt assembly shall maintain the applied contact pressure between the plated copper washer and the bus members of the test-bypass block.
4. Insulating washer shall be made from dimensionally stable, non-tracking material and shall provide a minimum of 1/8" creep distance between the bolt and the bus sections. Bus sections shall be plated.
5. Wire stops shall extend to center of terminal opening or beyond.
6. Rigid insulating barriers shall project at least 1/4" beyond any energized parts when the maximum wire size is installed.
7. Terminals shall be aluminum bodied. For required conductor range, see EUSERC Drawings 304 and 305. The opening shall extend through the terminal body and, if wire hole is round, shall be chamfered as necessary to facilitate installation of the largest wire size.
8. The terminal screw may be of the allen type (3/16" across flats for 100 amps, 5/16" across flats for 200 amps). If stud "a" is a part of the terminal screw, the terminal screw shall be 5/8" hex across flats.
9. Place stud "a" in any of the following locations: the clear area between the terminating lug and the circuit-closing nut, or on the terminal body, terminal screw, bus member or incorporated as part of the wire stop.
10. All designs must receive approval of the EUSERC material standards committee prior to production.



NOTES (Reference EUSERC Drawing 312)

1. Strike distance between upper and lower bus sections shall not be less than 1/4" when shorting nut is backed off.
2. Circuit-closing nut shall be a hex nut 5/8" across flats with plated copper washer attached and have threads counter-bored at bottom to facilitate re-installation. Bolt head shall be secured in place to prevent turning and back out.
3. The circuit-closing nut and bolt assembly shall maintain the applied contact pressure between the plated copper washer and the bus members of the test-bypass block.
4. Insulating washer shall be made from dimensionally stable, non-tracking material and shall provide a minimum of 1/8" creep distance between the bolt and the bus sections. Bus sections shall be plated.
5. Wire stops are not required if line and/or load is connected with bus bar. If cable terminals are used, construction requirements on page 9-36 shall apply.
6. Rigid insulating barriers shall project at least 1/4" beyond any energized parts when the maximum wire size is installed.
7. Termination of bus bar and cable line or load conductors may be cable as per EUSERC drawing 311 or bus as per this drawing. If bus and cable terminations are used together, proper locations and alignment of stud "a" must be maintained to facilitate installation of bypass jumper.
8. Stud "a" shall be located in the clear area between the terminating lug and the circuit-closing nut, and may be positioned on: terminal body, terminal screw, bus member, or incorporated as part of the wire stop.
9. Serviceability - The line and/or load bus is to be connected to the bus block member in a manner which will allow ready replacement of the test-bypass block assembly.
10. All designs must receive approval of the EURSERC Material Standards Committee prior to production.

Concrete Pad Notes:

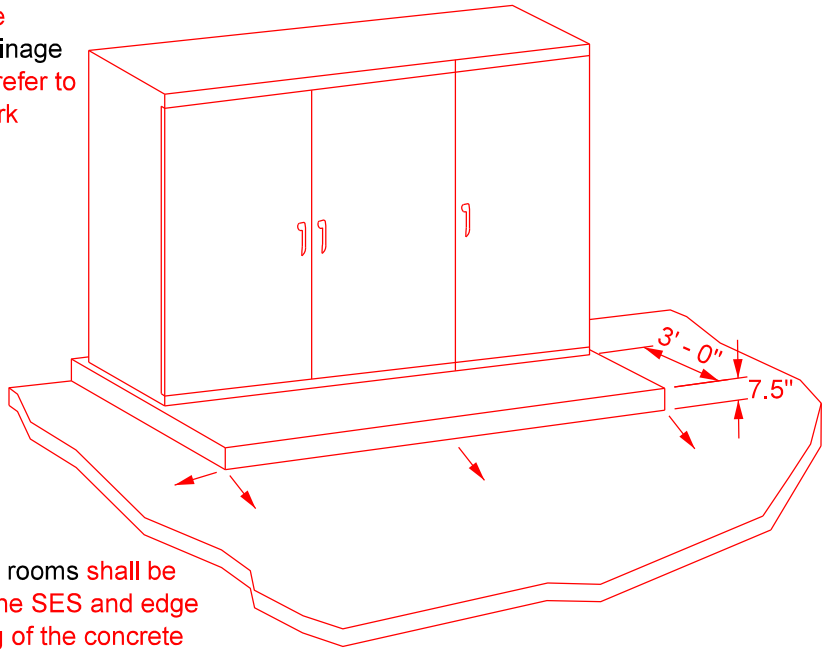
1. All free standing SESs shall be placed on a concrete pad extending a minimum 3' in front of SES with drainage away from the cabinet. For additional requirements refer to Section 5 - Clearances, SES Location, Height & Work Space Clearances.

   EXCEPTION:
   a. Pedestals rated 200 A and less do not require a concrete pad extension
   b. 5' drivable path, (except for drainage slope).

2. Parking not allowed within 5' of SES.

3. Pad (work space) shall be at the same elevation as SES. SES installed on an elevated (house keeping) pad above the workspace is not permitted.

   EXCEPTION: NEMA 1 enclosures installed in meter rooms shall be positioned to have maximum of 4" from the face of the SES and edge of the concrete pad to minimize cracking or breaking of the concrete pad when anchoring bolts near the pad's edge.

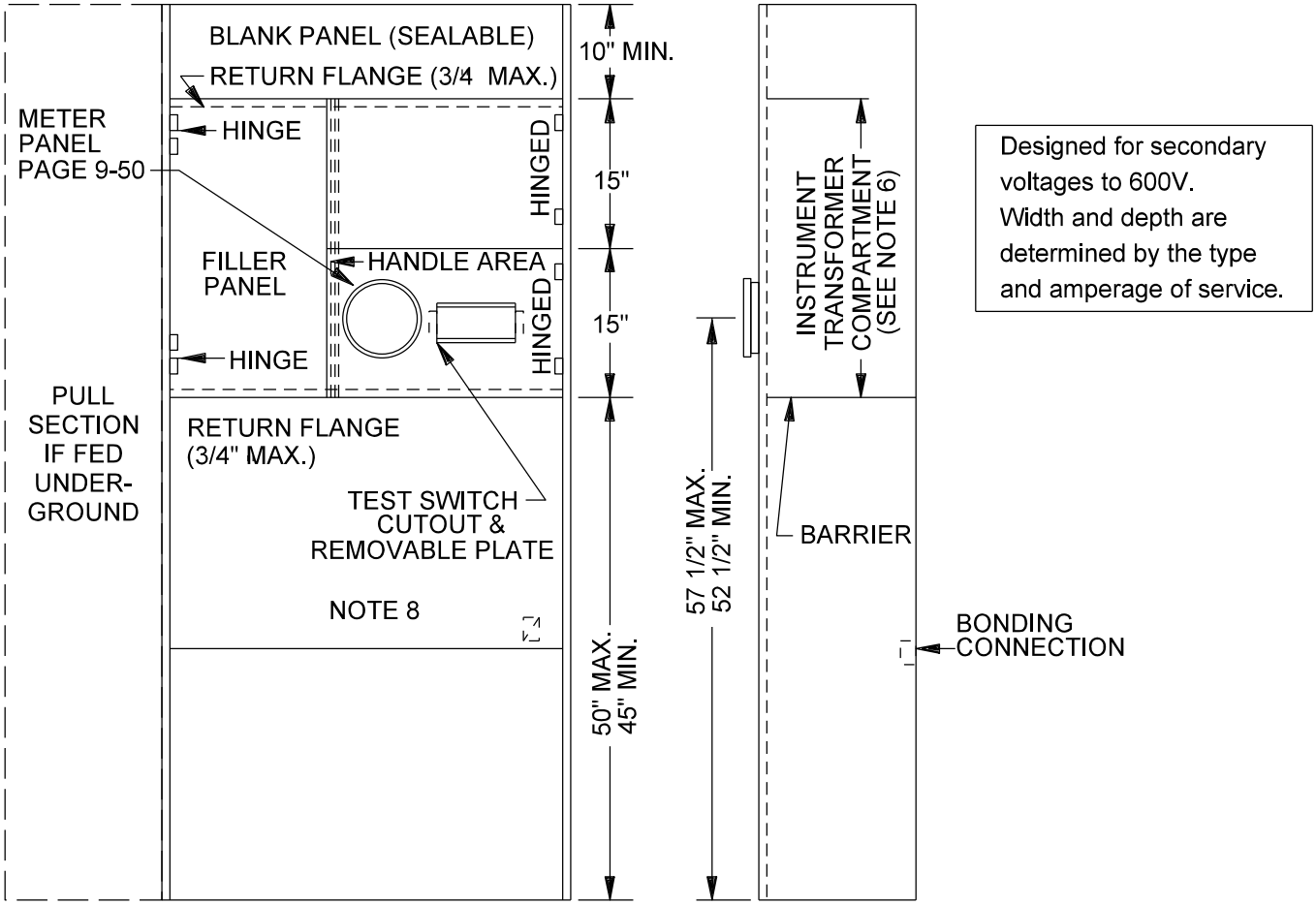


Switchboard Service Section Defined

1. A standard switchboard service section is a free-standing unit of switchgear that contains bussing for the termination of service entrance conductors, bussing for the connection and mounting of current transformers, panel for the installation of the test switch and meter socket, a service main disconnect switch or breaker, and in many cases, distribution feeder breakers or switches.
2. Switchboard service sections approved for use in the area served by SRP, shall be built to the standards developed by the EUSERC. These are available to customers and contractors through electric wholesale distributors or by purchasing a EUERC manual from EUSERCUS.com.
3. If service riser conductors are to be paralleled, they shall be paralleled in separate conduits. The only acceptable method is to install one of each phase conductor and neutral in each conduit (i.e., ABC of a 3-wire service or ABCN of a 4-wire service). If overhead service risers are to be paralleled, there shall be a maximum of two conductors per phase.
4. Overhead service entrance conductor requirements exceeding 800 amps or exceeding two 750 MCM conductors per phase shall be bus bar construction.
5. Submit electronic copies of the plans (PDF format) for all proposed SES, 400 amps or larger, to shopdraw@srpnet.com for approval prior to construction of the service section. Drawings must be labeled with the Customer's name, job address, SRP job number or account number, and contractor's name and contact phone number.
6. All SES shall be braced for the total available fault current.
7. The above requirements apply to both overhead and underground SES.
8. Barriers shall be constructed from 16 gauge (min.) steel and secured so as not to be removable from either the Customer's section or exterior.
9. See page 9-43 for door locking requirements.

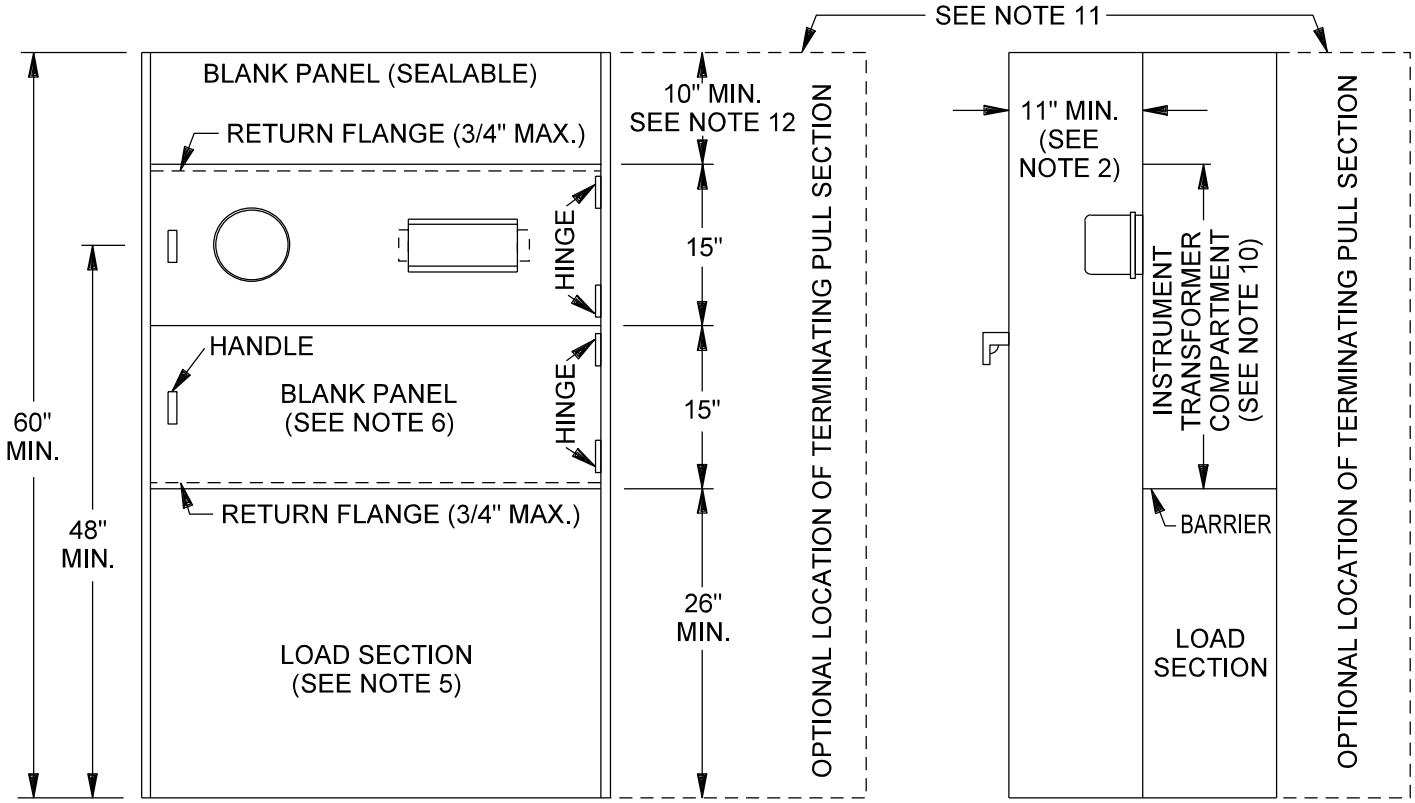
Switchboard Service Section Defined

1. Within Section 9 are EUSERC drawings illustrating the metering and pull section requirements.



NOTES (Reference EUSERC Drawing 326)

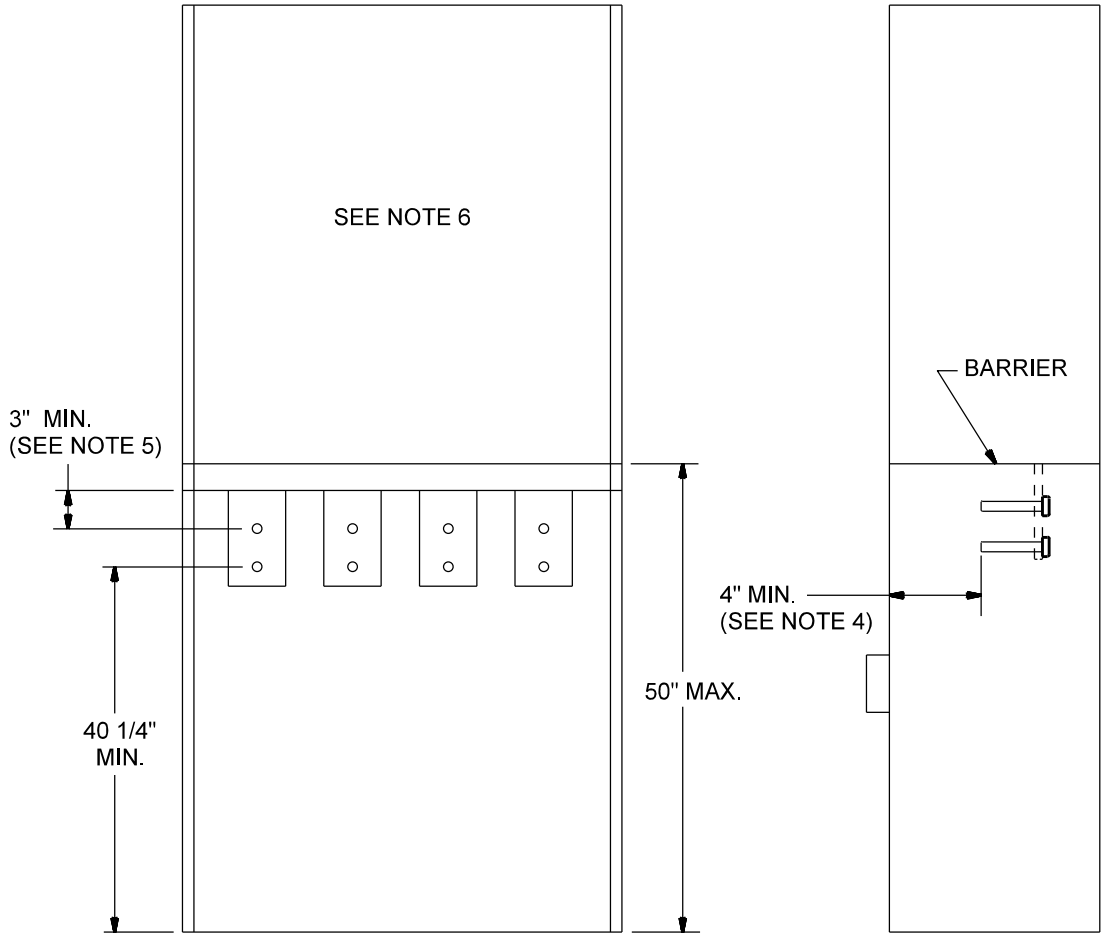
1. Instrument transformer compartments shall be bussed with rectangular bus bar.
2. The ground connection shall be made in the main switch or breaker compartment.
3. Meter and blank panels shall be constructed of 12-gauge steel (minimum) and shall be reversible, sealable, hinged and interchangeable.
4. Filler panels shall be used where the service section exceeds the meter panel width. Meter panels, either socket or blank, shall not be hinged to hinged filler panels. Non-hinged filler panels shall not extend into the required Instrument transformer compartment access opening.
5. All panels shall be equipped with stops to prevent inward swinging beyond the front surface of the service section. Hinges shall be readily interchangeable, right or left, on the job site.
6. In some cases, the width of meter panels may require the service section to be wider than the minimum allowable width of the transformer compartment. For minimum dimensions of intrument transformer compartments refer to the following pages:
   - 400 to 1000 Amps.....Pages 9-48 thru 9-51
   - 1,001 To 3000 Amps.....Pages 9-52 thru 9-53
   - 3,001 Amps and above (Reference only).....Pages 9-54 thru 9-55
7. All securing screws shall be captive. All panels and covers shall be sealable.
8. When used as a bottom fed service-terminating section, see EUSERC Drawing no. 327.
9. Submit electronic copies of the plans (PDF format preferred) for all proposed SES, 400 amps or larger, to shopdraw@srpnet.com for approval prior to construction of the service section. Drawings must be labeled with the Customer's name, job address, SRP job number or account number, and contractor's name and contact phone number.
10. See page 9-46 for outdoor applications.



FRONT VIEW **SIDE VIEW**

NOTES

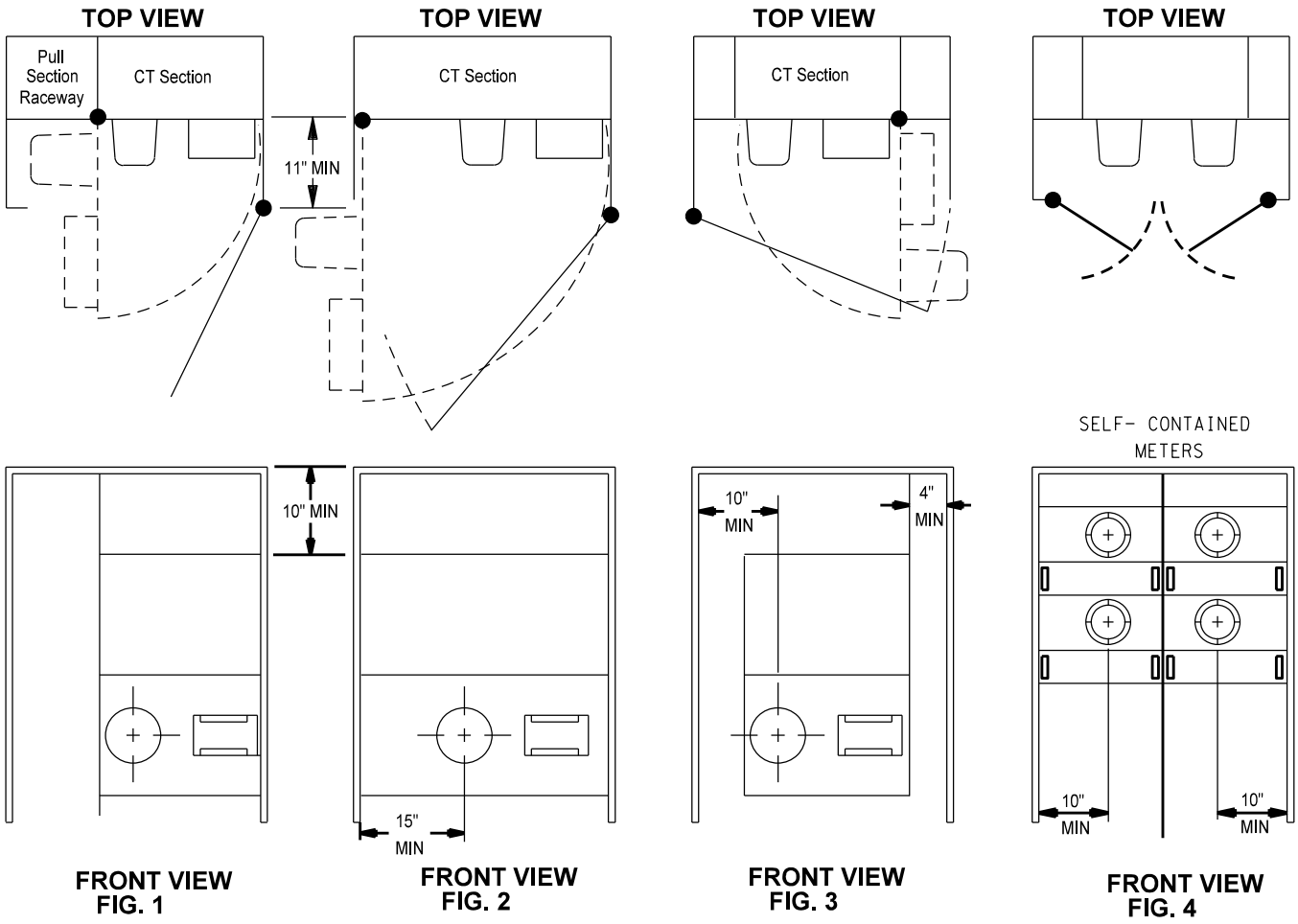
1. Terminating pull section shall be located beside or behind the instrument transformer compartment.
2. For outdoor applications only. See EUSERC Drawing 354 for weatherproof enclosure requirements.
3. Instrument transformer compartments shall be bussed with rectangular bus.
4. Filler panels shall be used where the service section exceeds the meter panel width. Meter panels, either socket or blank, shall not be hinged to hinged filler panels. Non-hinged filler panels shall not extend into the required instrument transformer compartment access opening.
5. The grounding connection shall be made in the main switch or breaker compartment.
6. Meter panels shall be constructed of 12-gauge (min.) steel and shall be reversible, sealable, hinged and interchangeable. See EUSERC Drawing 332 for socket meter panel details.
7. Hinges shall be readily interchangeable, left or right, on the job site.
8. Width of meter panels may in some cases require the service section to be wider than the minimum allowable width of the instrument transformer compartment.
9. Meter panels shall be equipped with stops to prevent inward swinging beyond the front surface of the service section.
10. For requirements regarding instrument transformer compartments, see 0 to 1000 amperes, see EUSERC Drawings 319 and 320.
11. Switchboards 400 amps and above shall be provided with landing lugs in the cable pull section.
12. Dimension may be reduced if the service section is supplied from horizontal cross-bussing.



NOTES (Reference EUSERC Drawing 327)

1. The pull section may supply either a current transformer compartment or a main service disconnect device.
2. Pull section covers shall be:
   A. Independent of other equipment and removable without disturbing adjacent panels.
   B. Sealable, provided with two lifting handles and limited to a maximum of 9 square feet in area.
3. The pull section shall be equipped with terminating facilities complying with pages 9-65 and 9-66. Terminating facilities shall be secured to prevent misalignment and shall be rigid without the installation of current transformers.
4. The clearance from the energized bus to the pull section removable access covers may be reduced if the manufacturer provides a safety barrier. For additional clearance and barrier requirements, see EUSERC Drawing 347, Note 13.
5. A vertical clearance of 3" minimum shall be maintained between the centerline of the top bolts of the terminating facilities to any obstruction.
6. When the upper section is:
   A. An Instrument transformer compartment; see pages 9-41 and 9-47 for additional service section requirements.
   B. A main service disconnect device:
      1) A full width and depth, insulated, rigid barrier shall be provided to separate the pull section and main service disconnect compartment.
      2) The main service disconnect cover shall be sealable.
7. Sealing provisions for removable covers shall consist of two drilled stud and wingnut assemblies located on opposite sides of the cover. Hinged covers shall be sealed on the unsupported side (see page 9-7).

Designed for secondary voltages to 600 volts. The width and depth are determined by the type and amperage of service.



OUTDOOR RAINTIGHT CONSTRUCTION

NOTES (Reference EUSERC Drawing 354)

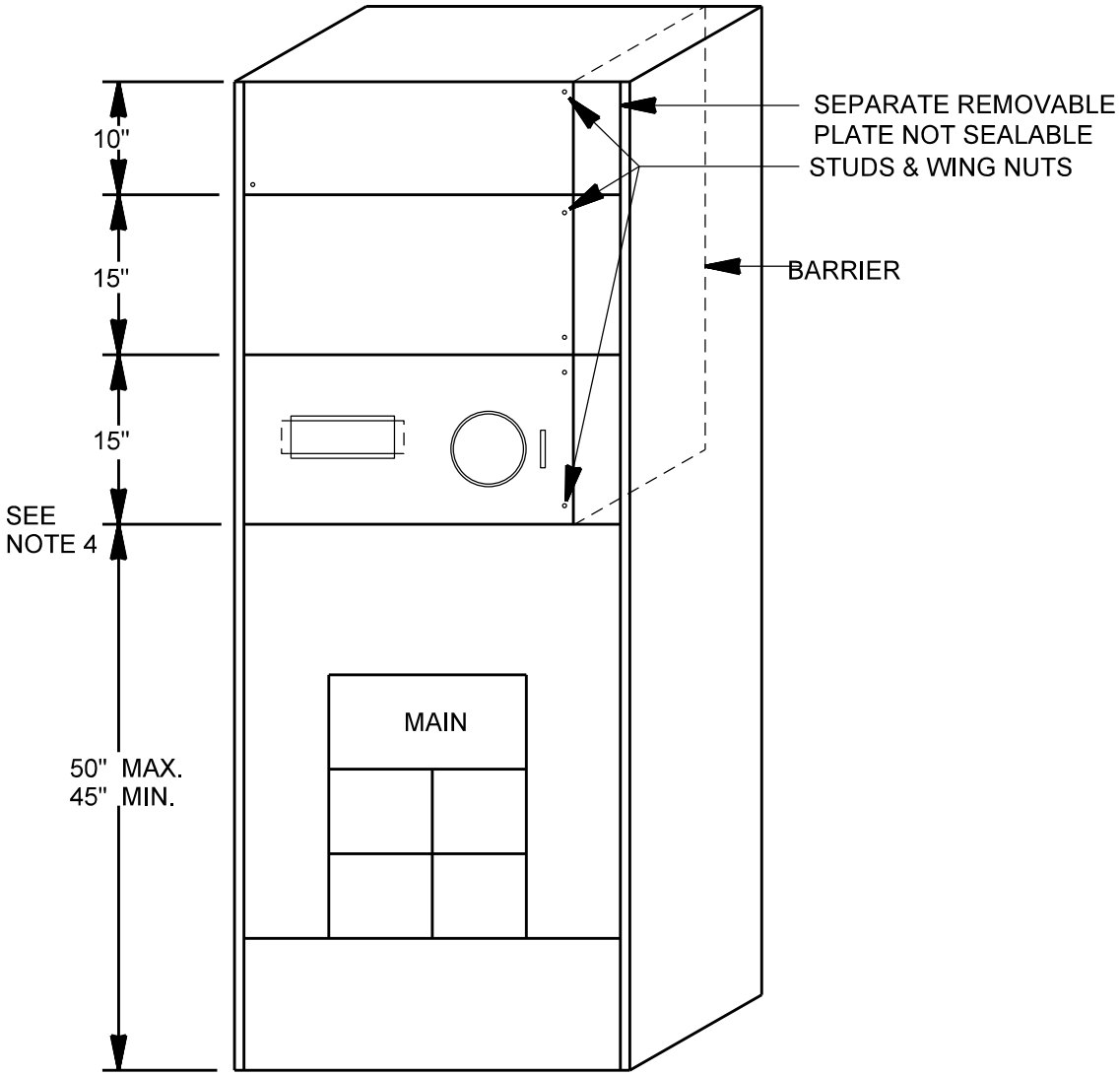
1. Hinged meter panels shall be capable of being opened 90^ with meter and test facilities in place. The hinges shall be interchangeable, right or left, on the job site.
2. Enclosure doors providing access to utility compartments (i.e., metering sections and pull sections) shall be:

   A. Equipped with a device to secure the doors in the open position at 90^ or more.

   B. Secured in the closed position with a single, handle-operated latching system. When provided with a locking means, each door or set of doors shall be equipped with an approved double-locking device accepting padlocks with a 5/16" lock shaft, to allow access by both the serving utility and the Customer.
3. Where an adjacent obstruction extends more than 11" perpendicular from the face of the meter panel, a 10" minimum dimension to the meter socket axis is required. For obstructions extending 11" or less from the meter panel, the side clearance shall be a minimum of 6 1/4".
4. All panels and covers shall be sealable.
5. Refer to the following pages for bussed current transformer compartment details and dimensions:

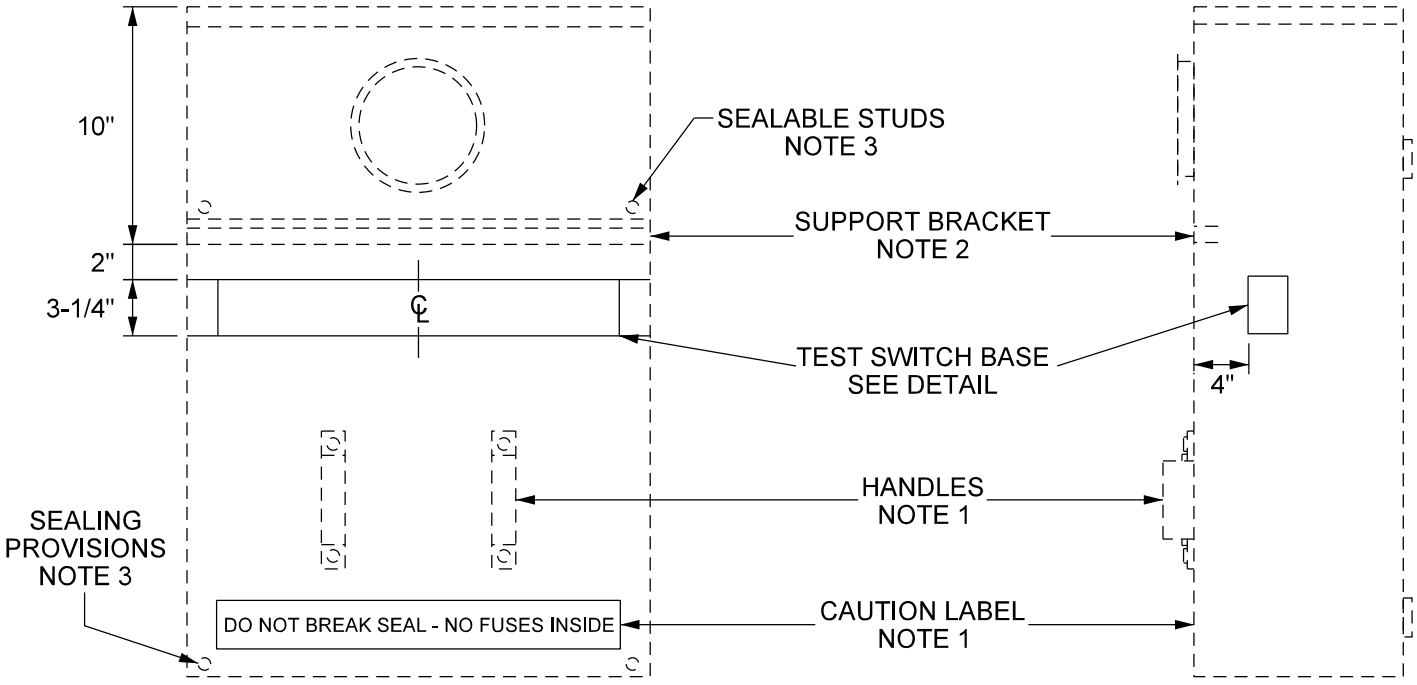
   - 400 to 1,000 Amps.....9-48 thru 9-51
   - 1,001 to 3,000 Amps.....9-52 thru 9-53
   - 3,001 Amps and above (Reference only).....9-54 thru 9-55

Designed for secondary voltages to 600 volts. The width and depth are determined by the type and amperage of service.

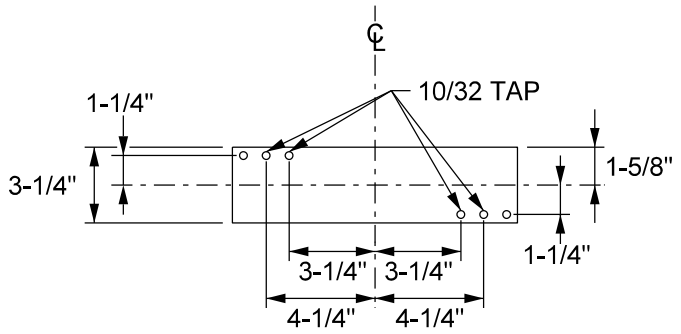


NOTES

1. This drawing shows a separate barriered load wireway at the upper right side of the switchboard in order to route the load conductors out the top. Load conductors may not be routed through the current transformer compartment in order to exit the switchboard.
2. Access to the Customer's distribution wireways shall not require opening or removing sealable panels.
3. All panels and covers shall be sealable.
4. Dimensions may be reduced if the service section is supplied from horizontal cross-bussing or bus duct (See EUSERC Drawing 326).
5. Submit electronic copies of the plans (PDF format preferred) for all proposed SES to shopdraw@srpnet.com for approval prior to construction of the service section. Drawings must be labeled with the Customer's name, job address, SRP job number or account number, and contractor's name and contact phone number.



FRONT VIEW **SIDE VIEW**

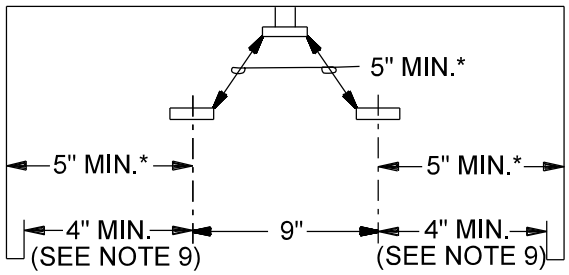


TEST SWITCH BASE DETAIL

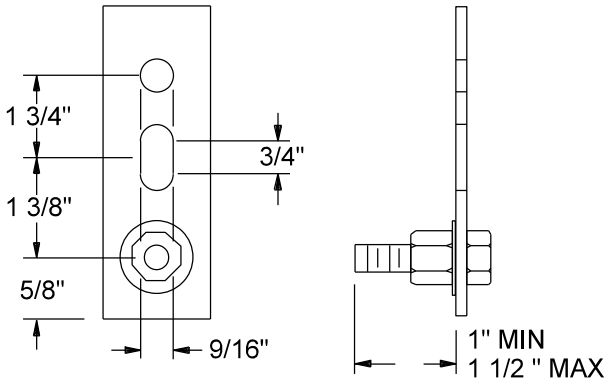
NOTES

1. Cover panel shall be provided with two lifting handles and caution sign on the front reading "DO NOT BREAK SEAL - NO FUSES INSIDE".
2. Secure the meter panel to the support bracket to prevent panel from pulling out when meter is removed.
3. Covers shall be sealable.
4. Pull section required for underground applications.

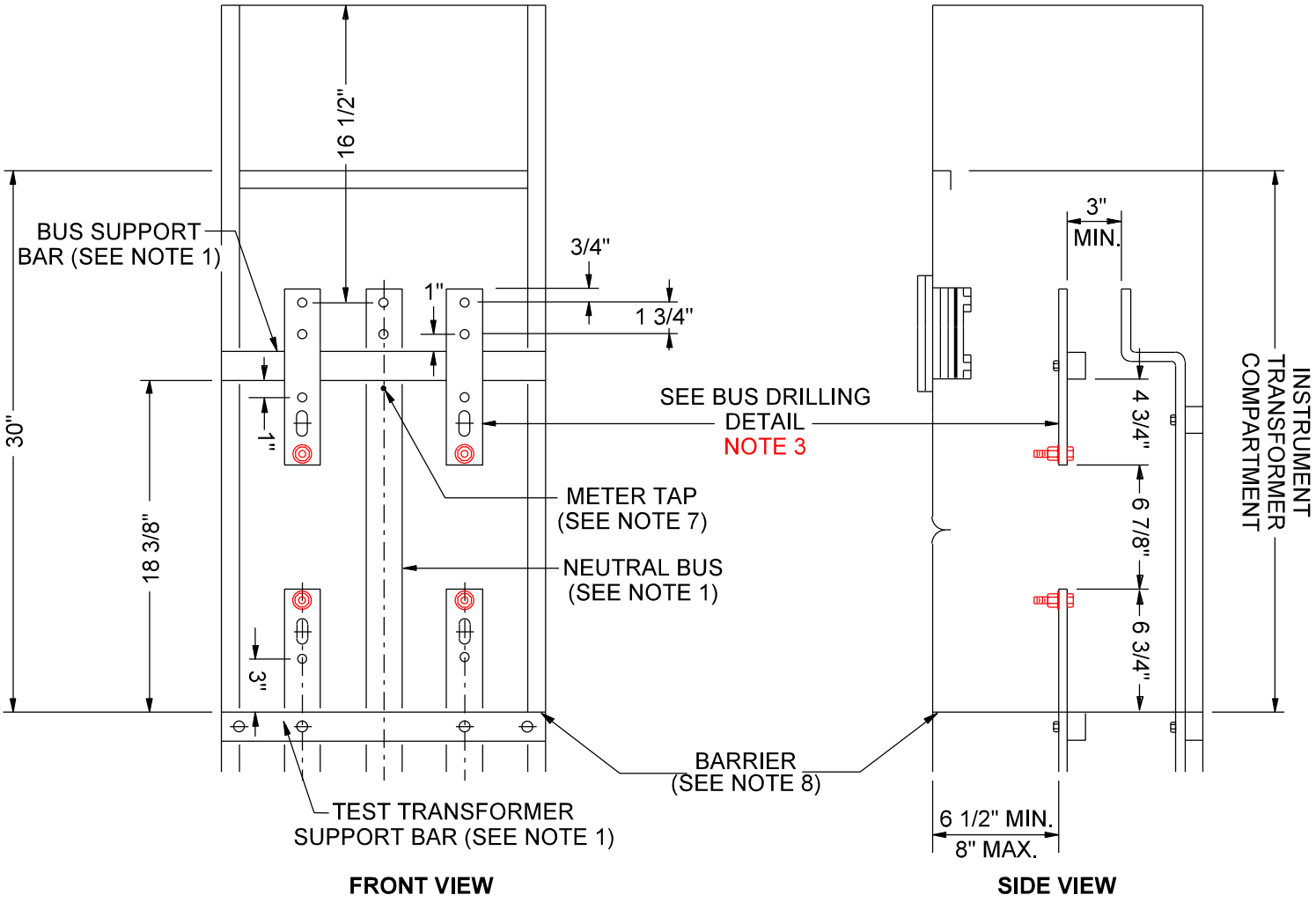
Electric Service Specifications SRP® *PROPRIETARY MATERIAL*	METERING & SES TEST SWITCH MOUNTING BASE, REMOVABLE WALL - MOUNTED SES	ISSUE DATE: 02/19/25 REV. DATE: APPROVAL: J. ROBBINS
	9-48	8509E406.DGN



*SEE NOTE 6
TOP VIEW



BUS DRILLING DETAIL
TYPICAL 4 LOCATIONS
(SEE NOTE 3)



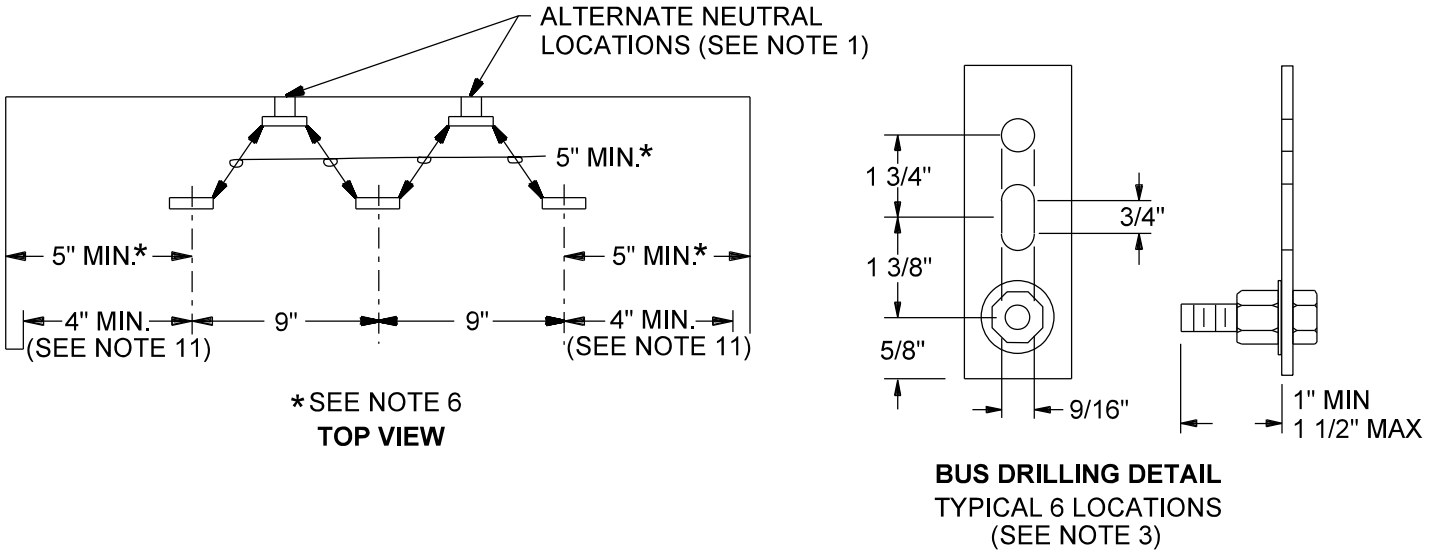
FRONT VIEW **SIDE VIEW**

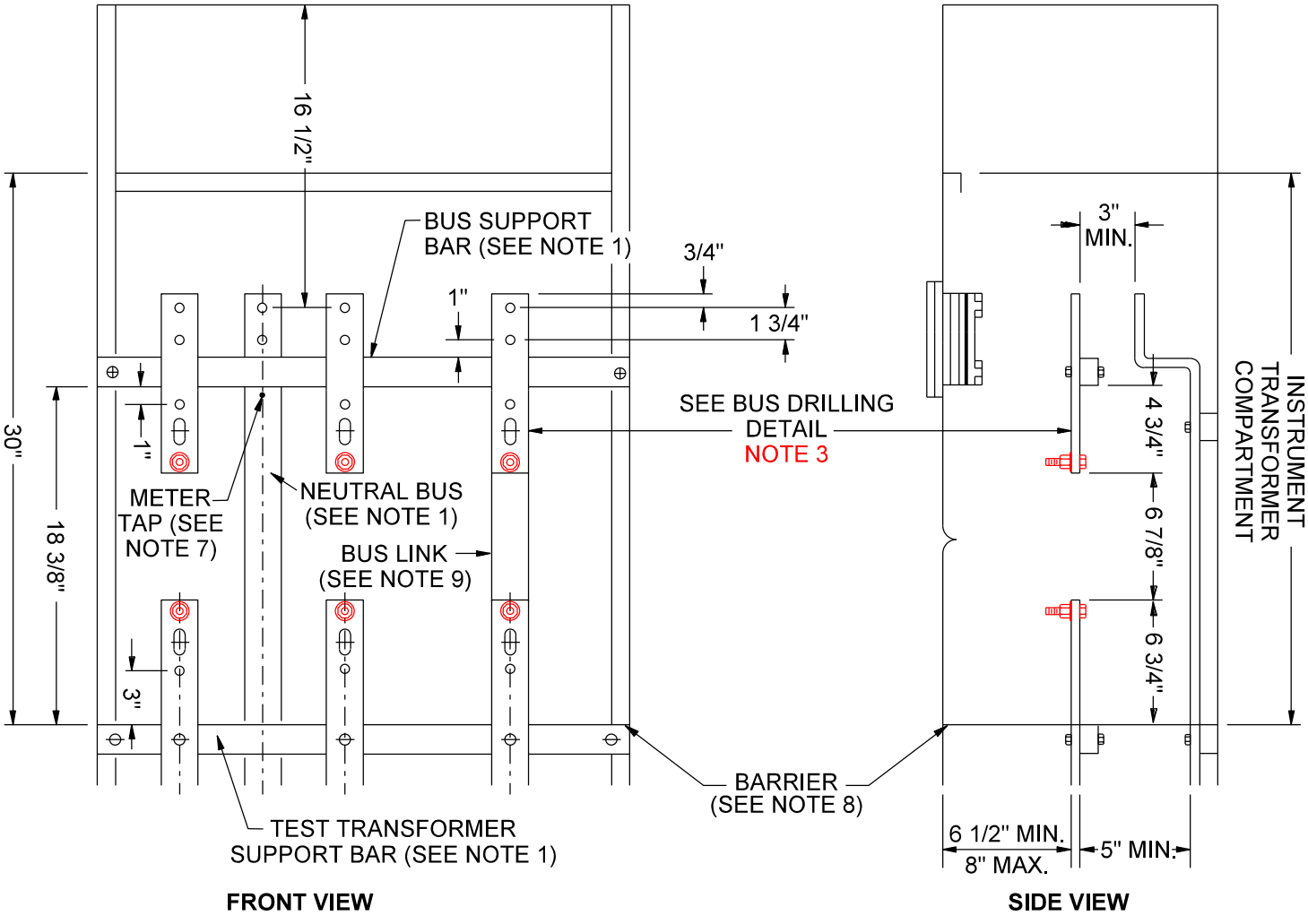
(Reference EUSERC Drawing 319)

Electric Service Specifications SRP® *PROPRIETARY MATERIAL*	REV: ADD EUSERC REFERENCE, UPDATE TITLE BLOCK RMV 3PH 3-WIRE	
	METERING & SES SWITCHBOARDS, 0 - 600 VOLTS INSTRUMENT TRANSFORMER COMPARTMENT 1Ø 3 - WIRE 400 - 1000 AMPS	ISSUE DATE: 02/20/08 REV. DATE: 02/19/25 APPROVAL: J. ROBBINS
	9-49	8509E284.DGN

NOTES

1. Bus arrangement and supports shall be provided as shown, except the neutral bus may be located at either side or on either side wall. Bus supports shall be constructed of a continuous bar of insulating material and shall be rigid to prevent misalignment of the bus units with the cables in place.
2. The bus units may be supplied from the top or bottom and shall be anchored to prevent turning. Bus units shall be constructed of rectangular bus, and when laminated shall have no space between laminations. Bus dimensions shall be: A minimum of 1/4" x 2" and a maximum of 3/4" x 2".
3. Bus unit shall be provided with a fixed stud as shown for mounting the current transformers. Each shall:
   a. Consist of a 1/2" steel bolt and shall be provided with a spring washer and a nut. The spring washer may be either a cone-type (Belleville) washer or a split-ring washer and flat washer. All parts shall be plated to prevent corrosion.
   b. Be secured in place, meaning that the stud will not turn, back out, or loosen in any manner when tightening or loosening the associated nuts (including cross-threaded situations).
4. When the compartment is supplied from horizontal cross-busing, the bussing shall pass through the compartment or in the sealed area above the compartment.
5. Except for conductors supplying the instrument transformer compartment and the ground bus, no other conductors or devices shall be installed in or routed through the compartment or the sealed area above the compartment. The ground bus shall not infringe on utility compartment space or reduce any clearances. Customer connections to the ground bus shall not be allowed in the instrument transformer compartment.
6. A clear, unobstructed work space shall be provided around the current transformer bus units from the barrier to the upper support bar.
7. Taps for attachment of meter wiring shall be provided on the neutral bus unit shown, or when the compartment is supplied from cross-bussing, a tap may be provided on the neutral cross-bus, or on a bus bar extension provided from the neutral cross-bus. A 10-32 screw and washer shall be provided for the neutral bus. Tap locations shall be centered between phase bus units, or at either side, and shall be readily accessible under energized conditions and with the current transformers in place.
8. The barrier shall be constructed of a rigid insulating material resistant to ARC tracking and shall be secured in place with a maximum deflection of 1/2" from an applied force of 25 pounds downward. Openings in the barrier (i.e., peripheral gaps around barrier, cutouts around bus bars, and hole diameters provided for ventilation) shall not exceed 3/8". The barrier shall be attached with non-conductive fasteners.
9. Dimension shall be measured to inside edge of the compartment access opening.
10. Torque labels shall be provided in each utility compartment where nut and bolt assemblies using cone-type (Belleville) washers are used for utility terminations, test-bypass block circuit-closing nuts, or for securing current transformers or current transformer bus removable links. Labels shall be readily visible and shall not be installed on any removable or hinged cover panel.
11. Wall-mount General application limited to 600 amps, cover panel shall be provided with two lifting handles and caution sign on the front reading "DO NOT BREAK SEAL - NO FUSES INSIDE".



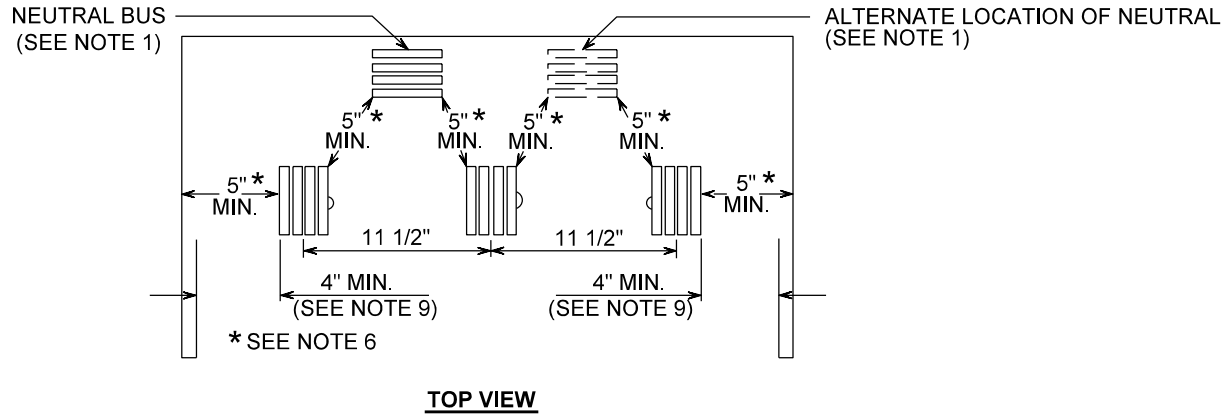


(Reference EUSERC Drawing 320)

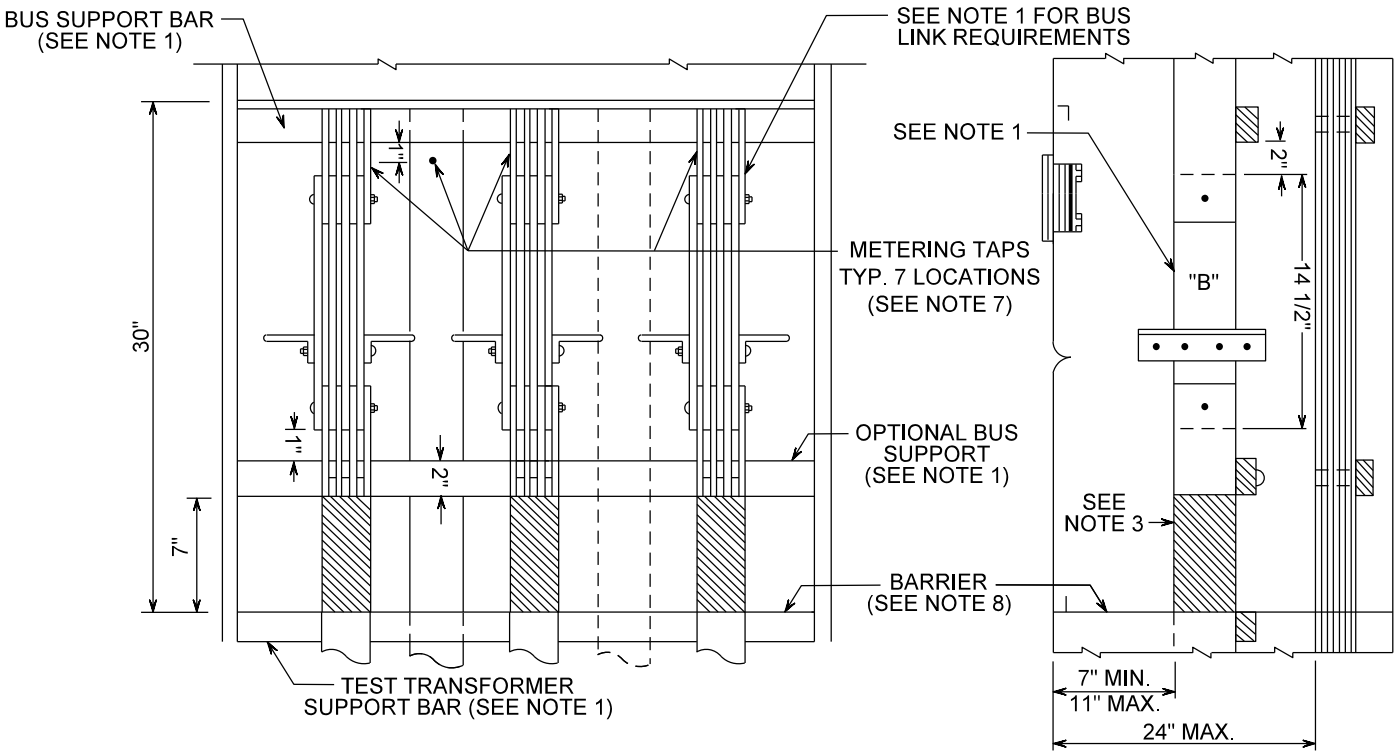
Electric Service Specifications SRP® PROPRIETARY MATERIAL	REV: ADD EUSERC REFERENCE, SRP NO LONGER PROVIDES 3 PHASE 3-WIRE	
	METERING & SES SWITCHBOARDS, 0 - 600 VOLTS INSTRUMENT TRANSFORMER COMPARTMENT 3Ø 4 - WIRE 400 - 1000 AMPS	ISSUE DATE: 02/20/08 REV. DATE: 02/19/25 APPROVAL: J. ROBBINS
	9-51	8509E282.DGN

NOTES

1. Bus arrangement and supports shall be provided as shown, except the neutral bus may be located at either side or on either side wall (neutral bus is not required for 3 Ø, 3-wire service). Bus supports shall be constructed of a continuous bar of insulating material and shall be rigid to prevent misalignment of the bus units with the cables in place.
2. The bus units may be supplied from the top or bottom and shall be anchored to prevent turning. Bus units shall be constructed of rectangular bus, and when laminated, shall have no space between laminations. Bus dimensions shall be provided a minimum of 1/4" x 2" and a maximum of 3/4" x 2".
3. Bus unit shall be provided with a fixed stud as shown for mounting the current transformers. Each shall:
   a. Consist of a 1/2" steel bolt and shall be provided with a spring washer and a nut. The spring washer may be either a cone-type (Belleville) washer or a split ring washer and flat washer. All parts shall be plated to prevent corrosion.
   b. Be secured in place, meaning that the stud will not turn, back out, or loosen in any manner when tightening or loosening the associated nuts (including cross-threaded situations).
4. When the compartment is supplied from horizontal cross-busing, the bussing shall pass through the compartment or in the sealed area above the compartment.
5. Except for conductors supplying the instrument transformer compartment, and the ground bus, no other conductors or devices shall be installed in or routed through the compartment or the sealed area above the compartment. The ground bus shall not infringe on utility compartment space or reduce any clearances. Customer connections to the ground bus shall not be allowed in the instrument transformer compartment.
6. A clear, unobstructed work space shall be provided around the current transformer bus units from the barrier to the upper support bar.
7. Taps for attachment of meter wiring shall be provided on the neutral bus unit shown, or when the compartment is supplied from cross-bussing, a tap may be provided on the neutral cross-bus, or on a bus bar extension provided from the neutral cross-bus. A 10-32 screw and washer shall be provided for the neutral bus. Tap locations shall be centered between phase bus units, or at either side, and shall be readily accessible under energized conditions and with the current transformers in place.
8. The barrier shall be constructed of a rigid insulating material resistant to ARC tracking, and shall be secured in place with a maximum deflection of 1/2" from an applied force of 25 pounds downward. Openings in the barrier (i.e., peripheral gaps around barrier, cutouts around bus bars, and hole diameters provided for ventilation) shall not exceed 3/8". The barrier shall be attached with non-conductive fasteners.
9. The power leg bus for a 4-wire delta service shall be identified by an orange outer finish or by tagging or other effective means; yellow if B-phase (center terminal), blue if C-phase (right hand terminal) with orange tracer.
10. Dimension shall be measured to inside edge of the compartment access opening.
11. Torque labels shall be provided in each utility compartment where nut and bolt assemblies using cone-type (Belleville) washers are used for utility terminations, test-bypass block circuit-closing nuts or for securing current transformers or current transformer bus removable links. Labels shall be readily visible and shall not be installed on any removable or hinged cover panel.
12. Wall-mount application limited to 800 amps, cover panel shall be provided with two lifting handles and caution sign on the front reading "DO NOT BREAK SEAL - NO FUSES INSIDE".



TOP VIEW

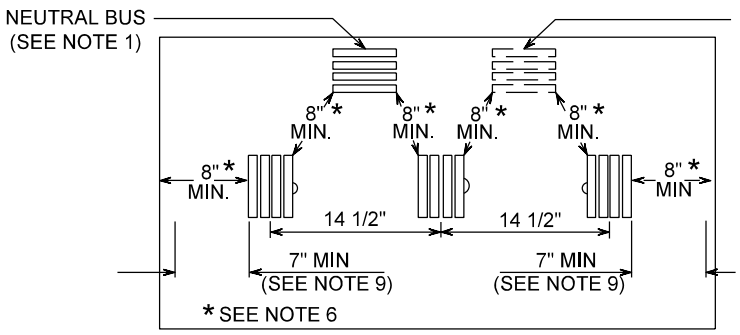


FRONT VIEW **SIDE VIEW**

Electric Service Specifications SRP® *PROPRIETARY MATERIAL*		Page 1 of 2
	METERING & SES SWITCHBOARDS, 0-600 VOLTS INSTRUMENT TRANSFORMER COMPARTMENT 3Ø 4 - WIRE, 1,001 - 3,000 AMPS	ISSUE DATE: 03/18/08 REV. DATE: 10/17/12 APPROVAL: W.LARAMIE
	9-53	8509E279.DGN

NOTES

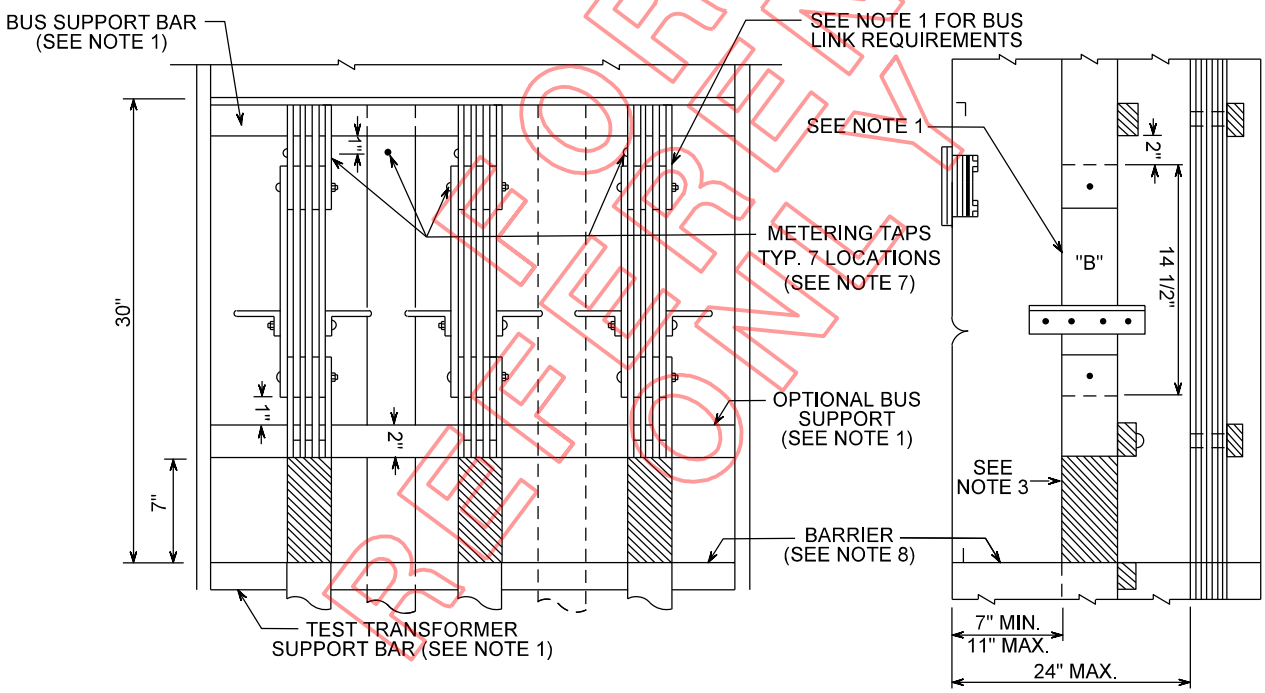
1. Bus arrangements and supports shall be provided as shown, except the neutral bus may be located at either side or on either side wall. Bus units shall be anchored so that busses will remain in position when section "B" is removed. Bus supports shall be constructed of a continuous bar of insulating material.
2. The bus units may be supplied from the top or bottom and shall be constructed of rectangular bus. Maximum allowable bus size shall be four 1/4" x 4" bars spaced 1/4".
3. Bus units shall be insulated as shown and the insulating material shall be rated for the serving voltage. Round bus corners as necessary to prevent damage to insulation.
4. When the compartment is supplied from horizontal cross-bussing, the bussing shall pass through the compartment or in the sealed area above the compartment.
5. Except for conductors supplying the instrument transformer compartment, and the ground bus, no other conductors or devices shall be installed in or routed through, the compartment or the sealed area above the compartment. The ground bus shall not infringe on utility compartment space or reduce any clearances. Customer connections to the ground bus shall not be allowed in the instrument transformer compartment.
6. A clear, unobstructed work space shall be provided around the current transformer bus units from the barrier to 2" above the removable current transformer bus sections ("B").
7. A 10-32 tap for attachment of meter wiring shall be provided as follows:
   A. One tap on each upper and lower phase bus unit with a 10-32 screw and washer provided for each phase bus in either the upper or lower position.
   B. One tap on the neutral bus as shown, or when the compartment is supplied from cross-bussing, a tap may be provided on the neutral cross-bus or on a bus bar extension provided from the neutral cross bus. A 10-32 screw and washer shall be provided for the neutral bus. Tap locations shall be centered between phase bus units, or at either side, and shall be readily accessible under energized conditions and with the current transformers in place.
8. The barrier shall be constructed of a rigid insulating material resistant to ARC tracking and shall be secured in place with a maximum deflection of 1/2" from an applied force of 25 pounds downward. Openings in the barrier (i.e., peripheral gaps around barrier, cutouts around bus bars, and hole diameters provided for ventilation) shall not exceed 3/8". The barrier shall be attached with non-conductive fasteners.
9. Dimension shall be measured to inside edge of compartment access opening.
10. See page 9-56 for 4" bus and page 9-57 for 5" bus.



TOP VIEW

TABLE 1

MAXIMUM ALLOWABLE BUS SIZES			
FOUR	1/4"x4"	BARS SPACED	1/4"
FIVE	3/8"x5"	BARS SPACED	3/8"
SIX	1/4"x5"	BARS SPACED	1/4"

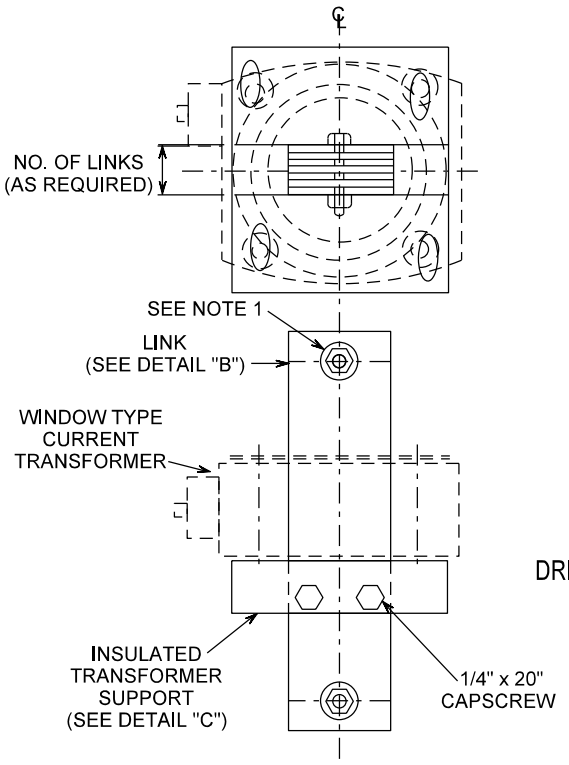


FRONT VIEW **SIDE VIEW**

Electric Service Specifications SRP® *PROPRIETARY MATERIAL*	REV: ADDED FOR REFERENCE ONLY, APPLIES TO EXISTING SERVICES ABOVE 3,000 A	
	METERING & SES SWITCHBOARDS, 0-600 VOLTS INSTRUMENT TRANSFORMER COMPARTMENT 3Ø 4-WIRE, 3,001 AMPS & LARGER	ISSUE DATE: 02/20/08 REV. DATE: 07/19/24 APPROVAL: J. ROBBINS
	9-55	8509E280.DGN

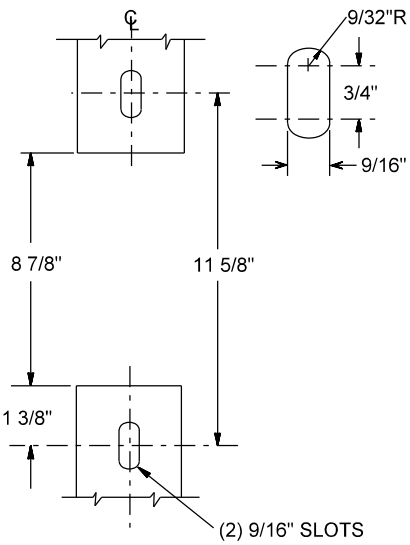
NOTES

1. Bus arrangements and supports shall be provided as shown, except the neutral bus may be located at either side or on either side wall. (neutral bus is not required for 3⌀, 3-wire service). Bus units shall be anchored so that busses will remain in position when section "b" is removed. Consult serving agency for the use of bus larger than 5". Bus supports shall be constructed of a continuous bar of insulating material.
2. The bus units may be supplied from the top or bottom and shall be constructed of rectangular bus. For maximum allowable bus sizes, see table 1 on the previous page.
3. bus units shall be insulated as shown and the insulating material shall be rated for the serving voltage. round bus corners as necessary to prevent damage to insulation.
4. When the compartment is supplied from horizontal cross-bussing, the bussing shall pass through the compartment or in the sealed area above the compartment.
5. Except for conductors supplying the instrument transformer compartment and the ground bus, no other conductors or devices shall be installed in or routed through the compartment or the sealed area above the compartment. The ground bus shall not infringe on utility compartment space or reduce any clearances. Customer connections to the ground bus shall not be allowed in the instrument transformer compartment.
6. A clear, unobstructed work space shall be provided around the current transformer bus units from the barrier to 2" above the removable current transformer bus sections ("b").
7. A 10-32 tap for attachment of meter wiring shall be provided as follows:
   A. One tap on each upper and lower phase bus unit with a 10-32 screw and washer provided for each phase bus in either the upper or lower position.
   B. One tap on the neutral bus as shown, or when the compartment is supplied from cross-bussing, a tap may be provided on the neutral cross-bus or on a bus bar extension provided from the neutral cross bus. A 10-32 screw and washer shall be provided for the neutral bus. Tap locations shall be centered between phase bus units, or at either side, and shall be readily accessible under energized conditions and with the current transformers in place.
8. The barrier shall be constructed of a rigid insulating material resistant to arc tracking and shall be secured in place with a maximum deflection of 1/2" from an applied force of 25 pounds downward. Openings in the barrier (i.e., peripheral gaps around barrier, cutouts around bus bars, and hole diameters provided for ventilation) shall not exceed 3/8". The barrier shall be attached with non-conductive fasteners.
9. Dimension shall be measured to inside edge of compartment access opening.
10. See page 9-56 for 4" bus and page 9-57 for 5" bus.



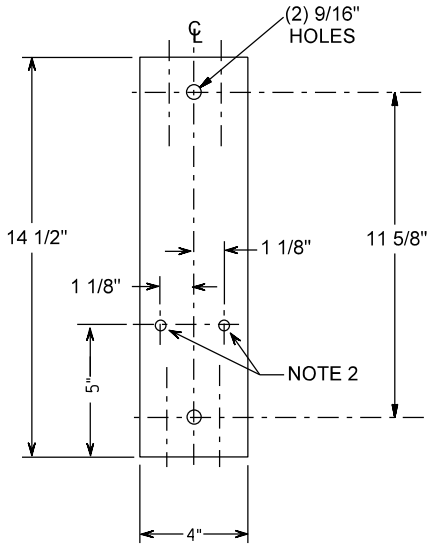
REMOVABLE LINK

(FURNISHED BY MANUFACTURER)



DETAIL "A"

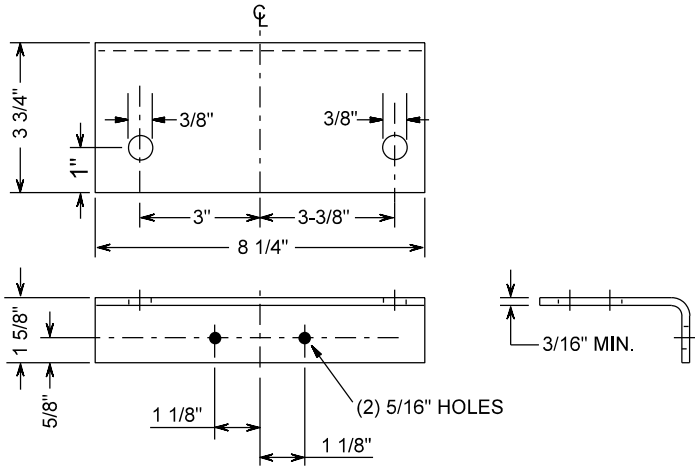
DRILLING & SPACING OF BUS



DETAIL "B"

1/4" x 4" LINK

(SAME MATERIAL AS BUS)



DETAIL "C"

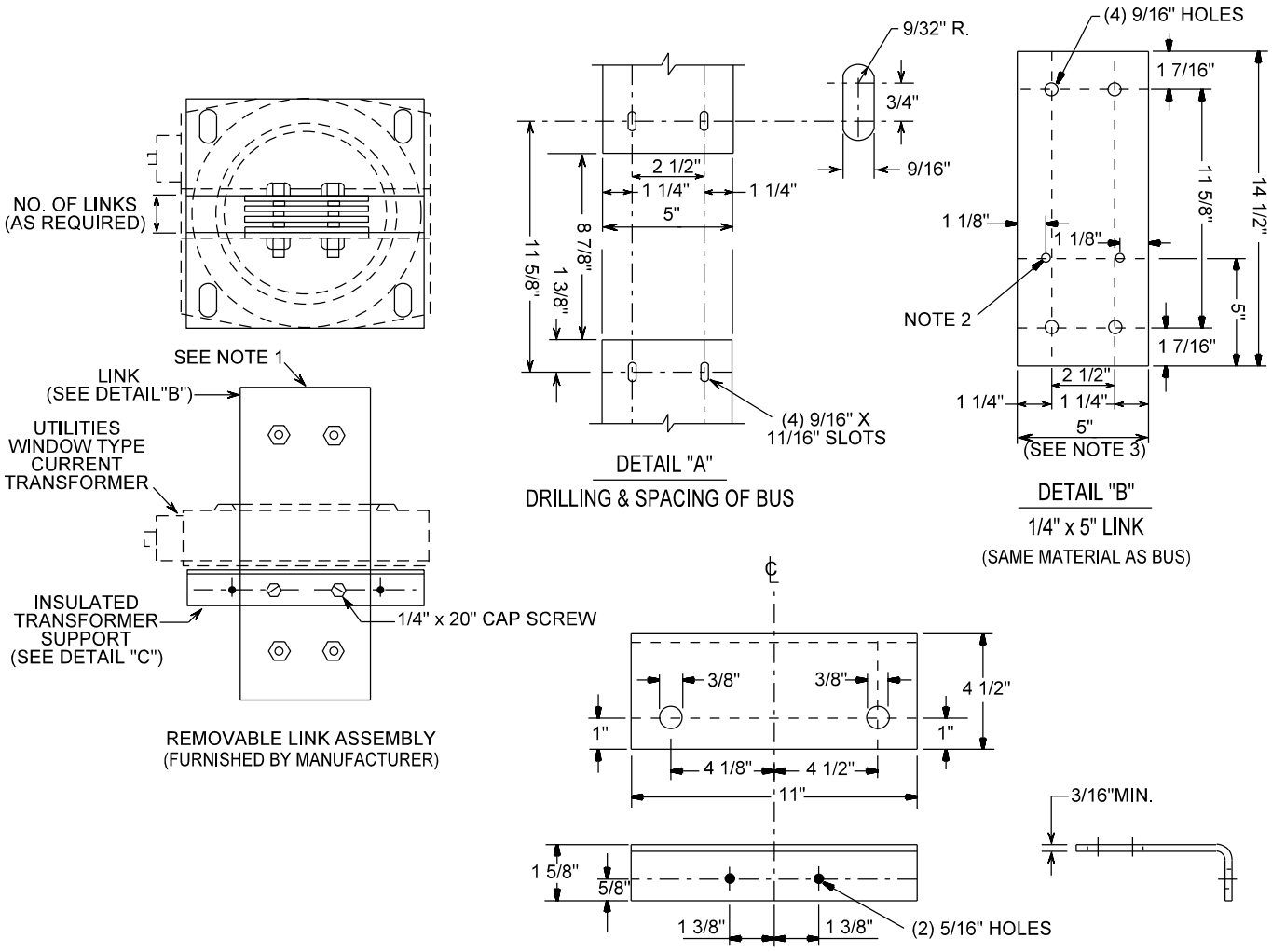
INSULATED SUPPORT FOR CURRENT TRANSFORMER

(MATERIAL: INSULATING, NON-TRACKING)

NOTES (Reference EUSERC Drawing 330)

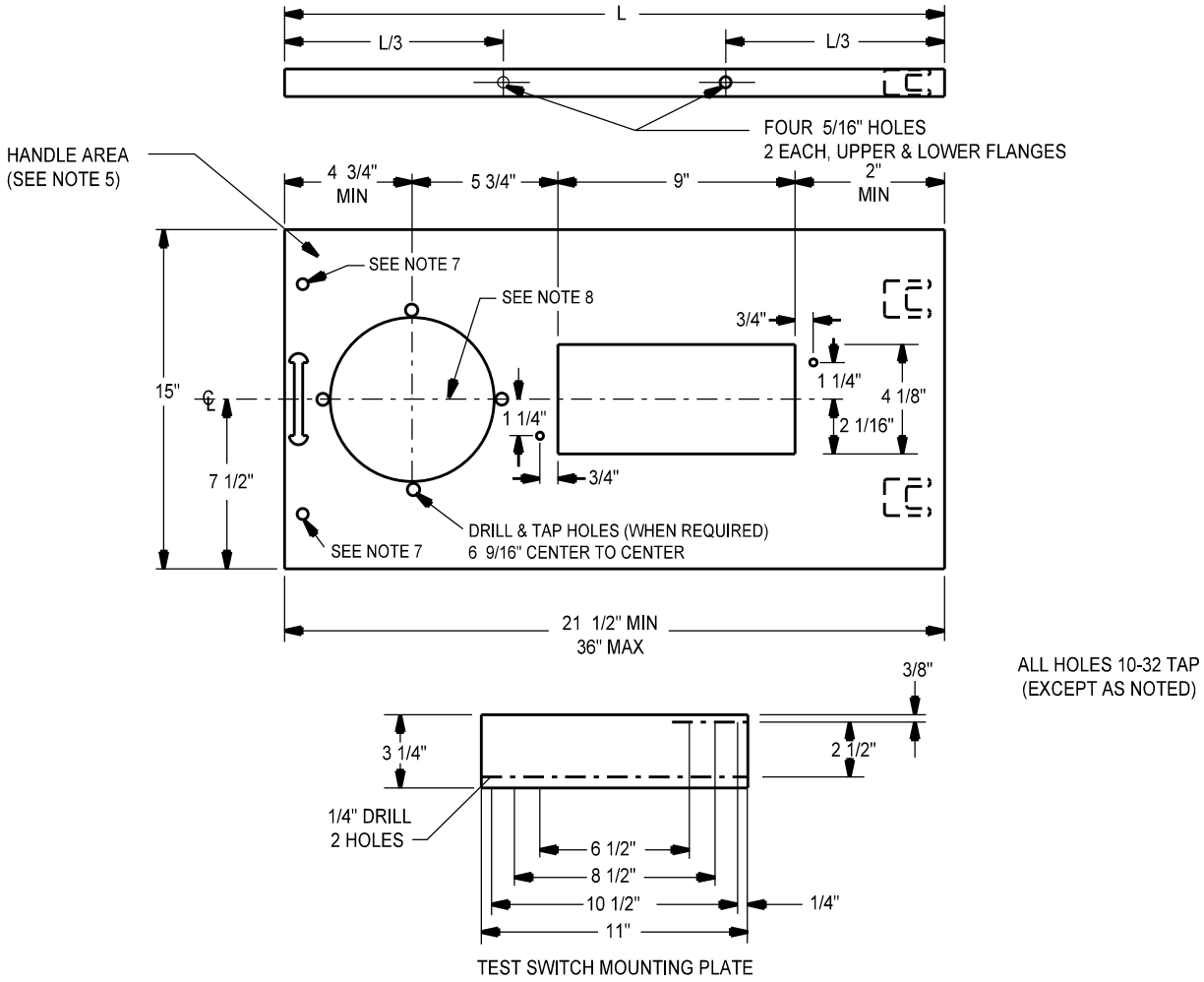
1. Manufacturer to secure the removable bus link to the upper and lower current transformer bus units] using 1/2" hex head bolts, nuts (as shown) with a spring washer and a nut. The spring washer may be either a cone-type (Belleville) or a split-ring washer with a flat washer. Bolts shall be grade 5 (min.) and washers (Belleville or flat) shall be a minimum of 2 1/4".
2. Drill and tap two holes (as shown) on the outer bus units for 1/4" x 20 cap screws.

Electric Service Specifications PROPRIETARY MATERIAL	METERING & SES - SWITCHBOARDS, 0-600 VOLTS INSTRUMENT TRANSFORMER COMPARTMENT WITH 4" BUS, REMOVABLE LINK & CURRENT TRANSFORMER SUPPORT	ISSUE DATE: 01/30/94 REV. DATE: 10/17/12 APPROVAL: W.LARAMIE
	9-57	8509E145.DGN



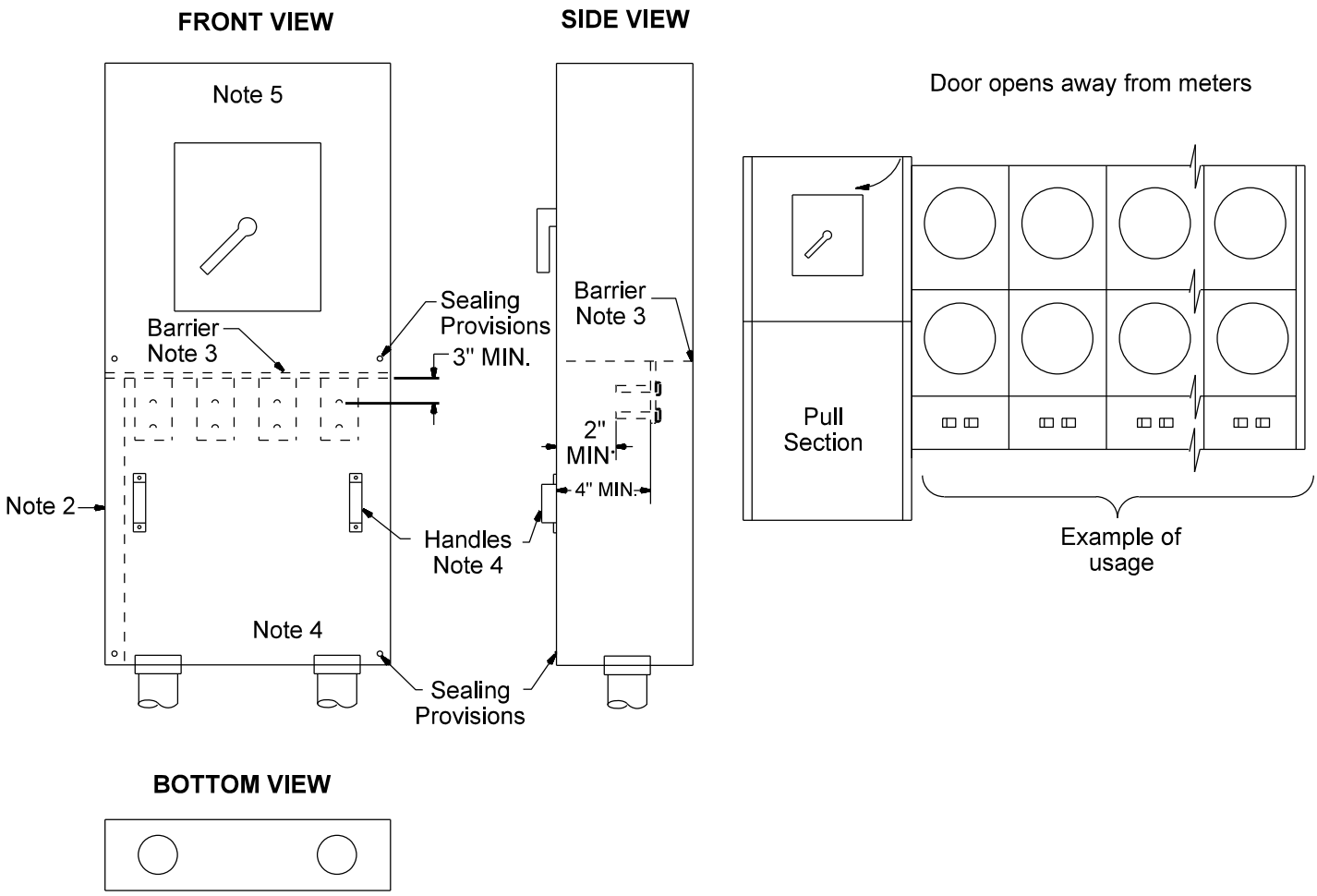
NOTES (Reference EUSERC Drawing 331)

1. Manufacturer to secure the removable bus link to the upper and lower current transformer bus units using 1/2" hex head bolts, nuts (as shown) with a spring washer and a nut. The spring washer may be either a cone-type (Belleville) or a split-ring washer with a flat washer. Bolts shall be grade 5 (min.) and washers (Belleville or flat) shall be a minimum of 2 1/4".
2. Drill and tap two holes as shown on the outer bus units for 1/4" x 20 cap screws.
3. Consult the serving agency for use of bus bars larger than 5".



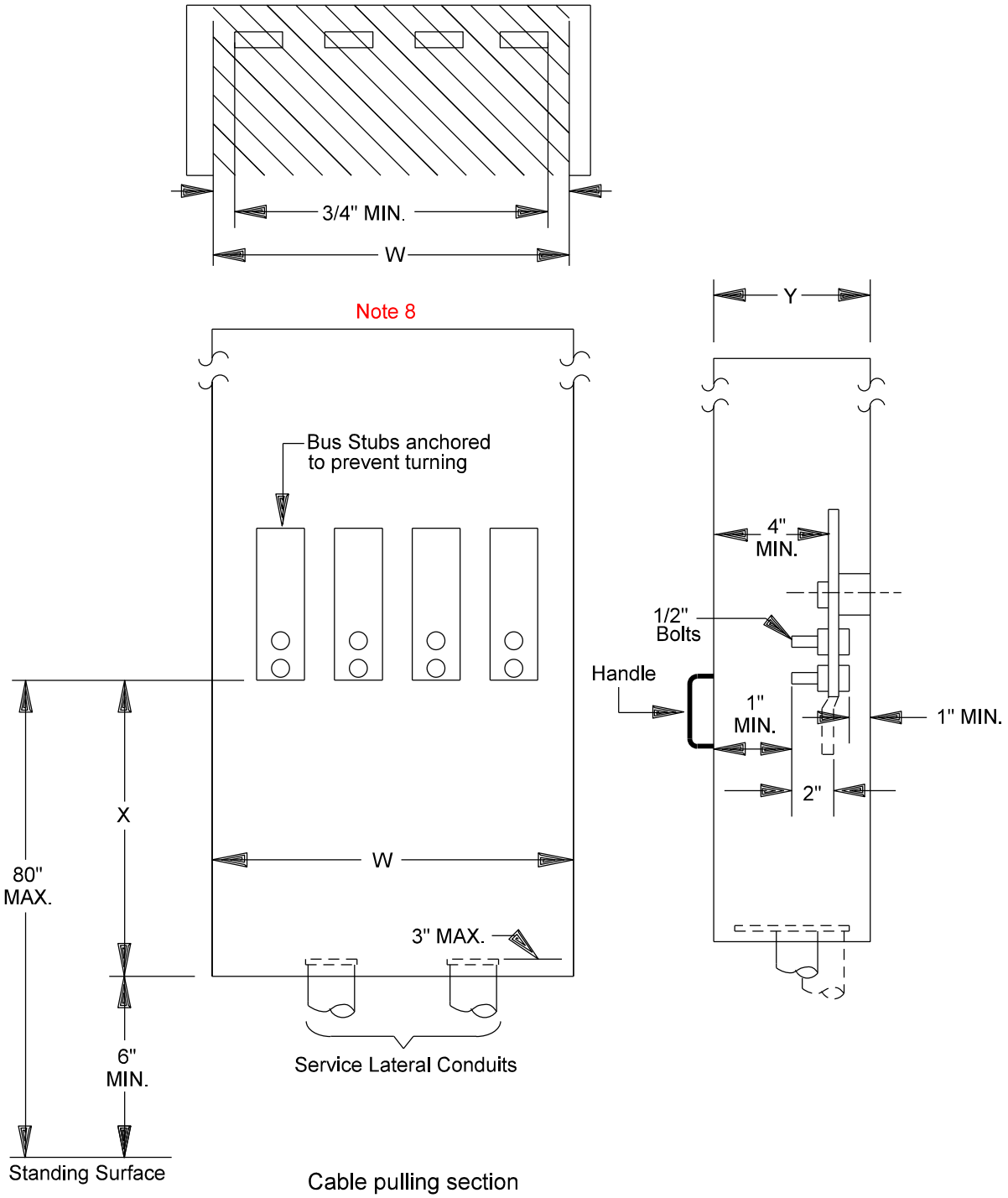
NOTES (Reference EUSERC Drawing 332)

1. Construct panel of 12 gauge (min.) steel and furnished with a meter socket, sealing ring and a slotted opening and removable plate for the installation of a secondary test switch. The slotted opening and removable plate edges shall be smooth to prevent damage to meter wiring.
2. The removable plate shall be attached to the rear of the panel with screws that do not protrude through the face of the panel.
3. The meter socket shall be designed for back connection.
4. The panel shall be equipped with hinges. The hinges shall permit the panel to open to 90 and shall be readily interchangeable, right or left, on the meter socket panel. For clevis or removable pin-type hinges, the pin shall be removable from the top.
5. The panel shall be equipped with a handle on the unsupported end. The handle shall be interchangeable, right or left, on the meter socket panel and maintain a minimum of 1" clearance from the meter socket flange and slotted opening.
6. The panel shall support a 25-pound load applied at the unsupported end when fully opened with a maximum sag of 1/8".
7. Stud and wing nut assemblies shall be sealable.
8. Socket diameters to meet ANSI Spec. #C12.7 (5.992" - 6.25").



NOTES (Reference EUSERC Drawing 332)

1. A vertical clearance of 3" minimum shall be maintained between the centerline of the top bolts of the terminating facilities to any obstruction. See pages 3-22, 9-60 thru 9-62, 9-65 and 9-66 for terminating enclosure dimensions, terminating facility clearances, and construction details.
2. The grounding electrode conductor may be installed in a fully enclosed, factory-installed wire way located in either back corner of the pull box. The raceway shall not impede the serving utility's required working space or reduce any specified clearances.
3. A full width and depth, insulated, rigid barrier shall be provided to separate the termination and main disconnect device compartments.
4. Terminating enclosure covers shall be:
   A. Independent of other equipment and removable without disturbing adjacent panels.
   B. Sealable and provided with two lifting handles and limited to nine square feet in area, maximum.
5. The main disconnect cover shall be sealable.



Cable pulling section
of service termination
pull section

(Reference EUSERC Drawing 343)

Electric Service Specifications SRP® PROPRIETARY MATERIAL	REV. UPDATED TITLE BLOCK DESCRIPTION AND NOTE CALL OUT	
	METERING & SES COMMERCIAL AND RESIDENTIAL USE UNDERGROUND PULL SECTION 1200 AMPS MAXIMUM	ISSUE DATE: 9/18/90 REV. DATE: 01/29/19 APPROVAL: N. Sabbah
	9-61	8509E76.DGN

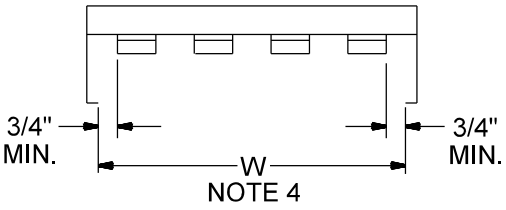
Minimum Pull Section Dimension

Service Ampacity	"W" Width (Opening)		"Y" Depth	"X" Lug Space
	Three-Wire	Four-Wire		
0-200	10 ½"	14"	6"	11"
201-400	10 ½"	14"	6"	22"
401-800	16 ½"	22"	11"	26"
801-1200	-	46 ½"	11"	26"

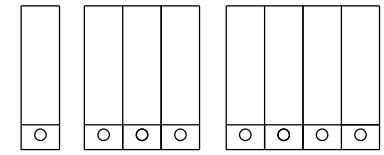
NOTES

1. The above minimum dimensions are for the conduit entering the bottom of the pull section. All load conductors exit above the terminals. Where the service conduit enters from the side or back of the pull section, the "x" dimension shall be taken from the closest portion of the nearest termination bolt. Service ampacity greater than 800 A for 120/208 V, multi-metered, wall-mounted SES serving residential load only (see Section 1 – Character of Service Limitations).
2. See page 9-65 and 9-66 for termination bus and bolt details.
3. Provide two lifting handles on pull section covers.
4. Pull section covers shall be provided with a means of sealing consisting of two drilled stud and wing nut assemblies on opposite sides of the panel.
5. The pull section cover shall be independent of any service equipment other than the pull section.
6. Pull sections shall not be used as a j-box (see page 3-23).
7. Not to exceed six meters and/or disconnects.
8. The minimum pull section access opening ("w") is measured between the left side and the right side return flanges.
9. Submit electronic copies of the plans (PDF format preferred) for all proposed SES to shopdraw@srpnet.com, for approval prior to construction of the service section. Drawings must be labeled with the Customer's name, job address, SRP job number or account number, and contractor's name and contact phone number.

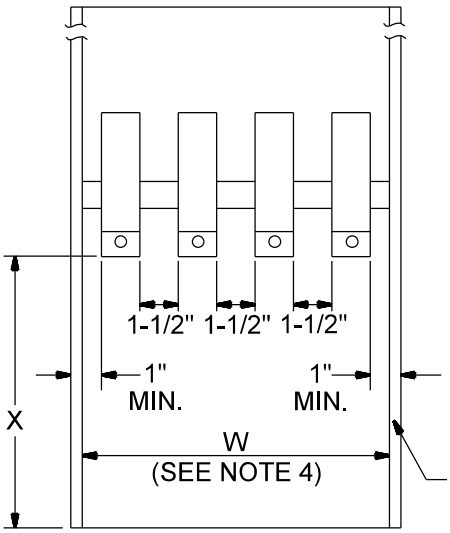
TOP VIEW



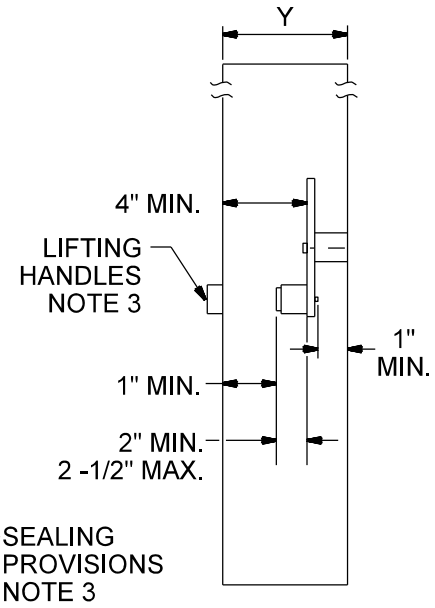
DETAIL VIEW
MECHANICAL LUG ARRANGEMENT
FOR TERMINATING FACILITIES



FRONT VIEW



SIDE VIEW



MINIMUM PULL SECTION DIMENSIONS				
SERVICE AMPACITY	"W" WIDTH (OPENING)		"Y" DEPTH	"X" LUG SPACE
	3-WIRE	4-WIRE		
0-200	10 1/2"	14"	6"	11"
201-400	10 1/2"	14"	6"	22"
401-800	16 1/2"	22"	11"	26"
801-1200	N/A	30"	11"	26"

NOTES (REFERENCE EUSERC DRAWING 343A)

1. TERMINATING FACILITIES FOR SERVICE SUPPLY CONDUCTORS SHALL BE ALUMINUM-BODIED MECHANICAL LUGS WITH A RANGE ACCEPTING NO.4 AWG THROUGH 750 KCMIL CONDUCTOR. PROVIDE ONE LUG FOR TERMINATIONS RATED UP TO 400 AMPS, THREE LUGS FOR TERMINATIONS RATED 401-800 AMPS, AND FOUR LUGS FOR TERMINATIONS RATED 801- 1200 AMPS (120/208V MULTI-METERED WALL MOUNTED SES SERVING RESIDENTIAL LOAD ONLY, SEE SECTION 1 - CHARACTER OF SERVICE LIMITATIONS).
2. SECURE TERMINATING FACILITIES TO PREVENT TURNING OR BUS MISALIGNMENT WHEN THE CABLES ARE INSTALLED.
3. PULL SECTION COVERS SHALL BE REMOVABLE AND PROVIDED WITH A MEANS OF SEALING CONSISTING OF TWO DRILL STUD AND WING NUT ASSEMBLIES ON OPPOSITE SIDES OF THE COVER AND PROVIDED WITH TWO LIFTING HANDLES AND LIMITED TO A MAXIMUM AREA OF 9 SQUARE FEET.
4. MEASURE THE MINIMUM PULL SECTION ACCESS OPENING ("W") BETWEEN THE LEFT SIDE AND RIGHT SIDE RETURN FLANGES.
5. SUBMIT ELECTRONIC COPIES OF THE PLANS (PDF FORMAT PREFERRED) FOR ALL PROPOSED SES TO SHOPDRAW@SRPNET.COM FOR APPROVAL PRIOR TO CONSTRUCTION OF THE SERVICE SECTION. DRAWINGS MUST BE LABELED WITH THE CUSTOMER'S NAME, JOB ADDRESS, SRP JOB NUMBER OR ACCOUNT NUMBER, AND CONTRACTOR'S NAME AND CONTACT PHONE NUMBER.
6. DO NOT USE A PULL SECTION AS A J-BOX.
7. DO NOT EXCEED SIX METERS AND/OR DISCONNECTS.

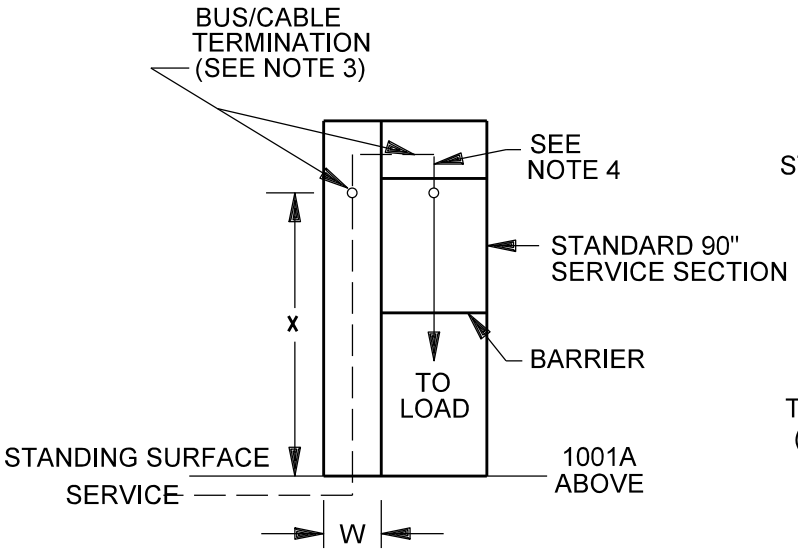


FIG.1
SWITCHBOARD PULL SECTION

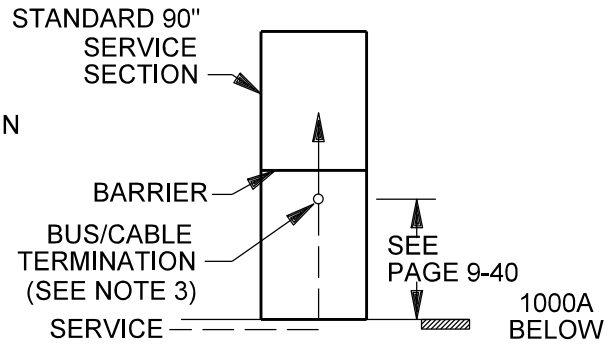
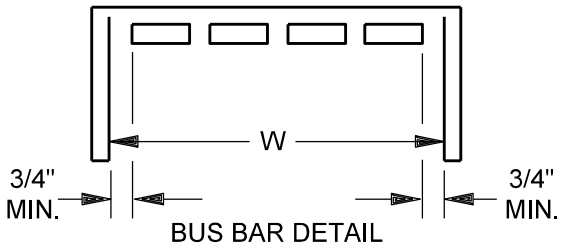


FIG.2
BOTTOM FEED
400-1000 AMPS



BUS BAR DETAIL

TABLE 1-MINIMUM PULL SECTION DIMENSIONS			
SWITCHBOARD RATING-AMPS	**MINIMUM WIDTH "W"**		**MIN. "X" DIMENSION**
	3-WIRE	**4-WIRE**	
BELOW 400	CONSULT SRP		
400-800	24"	24"	42"MIN.*-72" MAX.
801-1,000	24"	30"	
1,001-2,000	30"	35"	60" MIN.-72" MAX.
2,001-3,000	–	42"	
3,001-4,000**	–	44"	

* FOR REDUCED TERMINATION HEIGHT IN BOTTOM-FED SERVICE SECTIONS, SEE PAGE 9-45.
** REFERENCE TO ONLY EXISTING SES LARGER THAN 3,000 A.

REFERENCE EUSERC DRAWING 345

NOTES

1. A switchboard pull section (Fig. 1) or a reverse feed service section (Fig. 2) shall be provided for underground service.
2. When the service section is served from a pull section, the bus or cable conductors shall enter through the side or back of the sealable section above the current transformer compartment (as shown in Fig. 1) or shall enter by means of horizontal cross bussing in back of metering compartment.
3. **Rating above 800 amps or when multiple metering is to be supplied:** Bus bars with provisions for termination lugs (see Section 9 - Terminating Facilities, Underground Pull Sections or Pull Sections) are required from the pull section into the service section.
4. **Rating up to 800 amps:** Termination lugs are required in the pull section. The connection from the termination lugs to the service section can be made by either:
   A. Install cables up and into the service section, cables provided by customer.
   B. Install bus bar to the service section.
5. The minimum width of the pull section opening shall be as specified in table 1. See pages 9-65 and 9-66 for arrangement of the cable terminating facilities in the pull section.
6. Side or rear entry of the service cable into the pull section may require a greater dimension than that shown in table 1; consult SRP.
7. Consult SRP for the type and size of terminating lugs.
8. All pull and terminating sections shall have full front access. Cover panels shall be removable, sealable, provided with two lifting handles and limited to a maximum size of 9 square feet in area.
9. Sealing provisions shall consist of two drilled stud and wingnut assemblies on opposite sides of the panel.

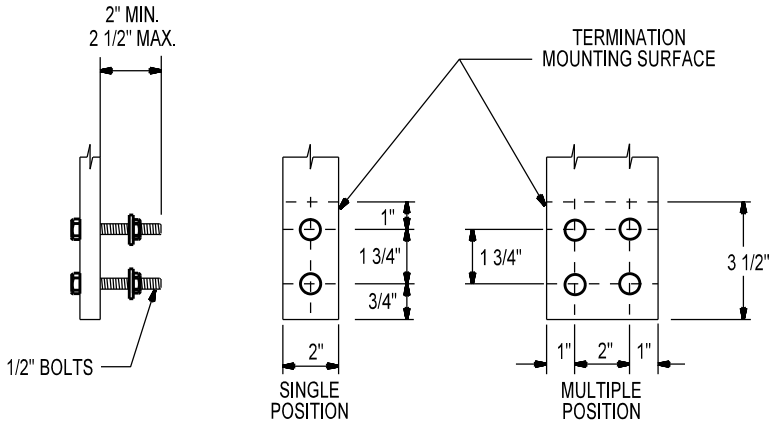


FIG. 1 TERMINATING BOLT AND DRILLING DETAIL
OF TERMINATING FACILITIES

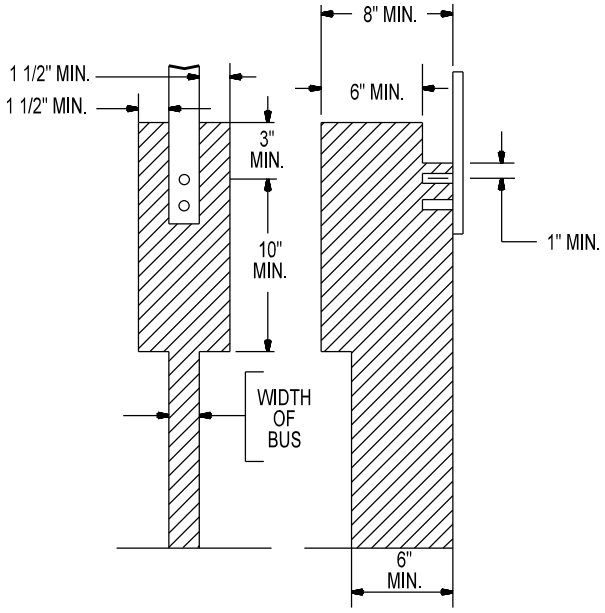
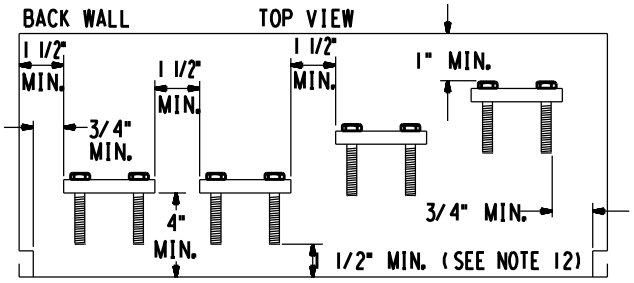


FIG. 4 REQUIRED UNOBSTRUCTED WORKING SPACE
FOR ALL TERMINATIONS



REMOVABLE FRONT COVER PANEL

FIG. 2 SPACING REQUIREMENTS FOR TERMINATING FACILITIES
(SIDE BY SIDE OR STAGGERED)

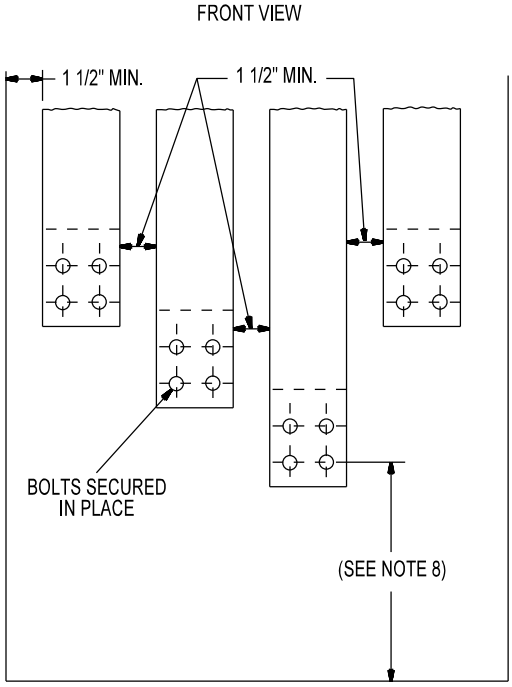


FIG. 5 SPACING REQUIREMENTS FOR TOP TO BOTTOM
STAGGER OF TERMINATING FACILITIES

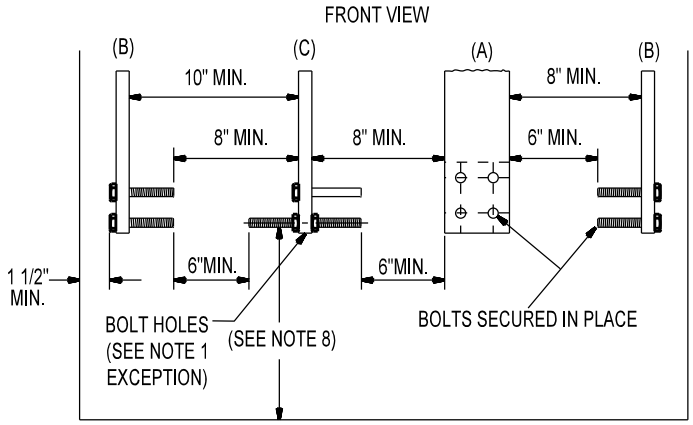


FIG. 3 SPACING REQUIREMENTS FOR TERMINATING FACILITIES
ACCESSIBLE FROM (A) FRONT ONLY, (B) ONE SIDE ONLY,
OR (C) FROM EITHER SIDE

Reference EUSERC Drawing 347.

Electric Service Specifications SRP® PROPRIETARY MATERIAL		Page 1 of 2
	METERING & SES TERMINATING FACILITIES UNDERGROUND PULL SECTIONS OR PULL SECTIONS	ISSUE DATE: 04/15/86 REV. DATE: 10/17/12 APPROVAL: W.LARAMIE
	9-66	8509E102.DGN

NOTES

1. The number of landing positions shall be equal to the number of conduits required on page 6-2. Each landing position shall consist of two 1/2" steel bolts spaced on 1 3/4" vertical centers and extending from 2" to 2 1/2" from the mounting surface. When multiple positions are required, provide a minimum of 2" of horizontal spacing between positions.
   Exception: Edgewise terminating facilities may consist of 9/16" holes having the same spacing as specified for the 1/2" bolts in Note 1 and in Figure 1. The unobstructed working space shall be provided on both sides of the termination bus (see Figure 3).
2. Each terminating bolt shall be provided with a spring washer and nut. The spring washer may be either a cone-type (Belleville) washer or a split-ring washer and a flat washer. All parts shall be plated to prevent corrosion. Terminating bolts shall not be used to secure the termination bus in place.
3. Terminating bolts must be secured in place, meaning that the stud will not turn, back out or loose in any manner when tightening or loosening terminal nuts (including cross-threaded situations).
4. In the terminal mounting area, which is defined as the area of the terminating facilities shown in Figure 1, a clear space (barrel of proximity) of 1 1/2" minimum is required around any terminating facility. This includes its bolts, bolt heads, any other bus, any other terminating facility or any grounded surface, except:
   A. The minimum clearance to the back of the pull section may be reduced to 1".
   B. Clearance to any fully insulated horizontal bus behind the terminating facility may be reduced to 1' minimum
   C. The neutral terminating facility may have a minimum clearance of 1" from any grounded surface.
5. Each terminating facility may have an unobstructed working space accessible from the front of the pull section. Figure 4 shows the view from the access compartment opening in the front of the mounting surface.
   Exception: For terminating facilities with bolts facing the access opening (as shown in Figure 2), the required 1 1/2" side clearance (bus to access opening return flange) may be reduced to 3/4".
6. The clearance directly above and measured from the center of the top termination bolt may be reduced to 1" to either an insulated surface or bus of the same potential.
7. No more than one termination facility may be mounted along any sidewall.
8. See pages 3-20, 3-24 and 9-60 through 9-63 for the minimum distance from the lowest bolt on the termination facility to the bottom of the termination enclosure.
9. Terminating facilities shall be secured to prevent turning or bus misalignment when the cables are installed.
10. The neutral terminating facility shall be permanently identified in clearly visible block lettering reading either "neutral" or "N".
11. Uninsulated busses of different potentials shall not be permitted below or behind any terminating position as viewed from front of the pull section. If cross bussing is installed below or behind a terminating position, the cross bussing shall be fully insulated or barriered.
12. For switchboard pull sections, the minimum clearance from any energized part to a removable access cover panel shall be 4". This clearance may be reduced to 1 1/2" when the manufacturer provides a safety barrier. The safety barrier shall:
    A. Be constructed of a rigid insulating material, resistant to damage by impact or puncture, with a minimum thickness of 1/8".
    B. Extend a minimum of 10" below terminating bus and extend upward to cover all energized parts that infringe into the 4" minimum clearance dimension, and be removable.
       NOTE: Safety barrier mounting brackets and hardware shall not extend into the provided access opening.
    C. Have a caution sign affixed to the barrier reading "WARNING:THIS BARRIER MUST BE INSTALLED BEFORE REPLACING PULL SECTION COVERS". Additional caution signs shall be affixed to exterior of each pull section access cover reading "DO NOT REPLACE PULL SECTION COVERS UNTIL SAFETY BARRIER IS IN PLACE".
    D. Screws or bolts requiring special tools for installation or removal are not acceptable.
13. The Customer shall supply and install mechanical terminating connectors in the service section and provide the terminating connectors in the transformer when service conductor is Customer-owned. Wire size and quantity are approved by AHJ.
14. For 120/240 volt 3Ø 4-wire delta services, the power leg shall be CØ (measuring 208 volts to ground) and shall be marked blue with an orange tracer.

HIGH VOLTAGE METERING EQUIPMENT
3Ø, 4-WIRE 2,400-12,470 VOLTS

I. Proposal

Prior to planning this type of installation, contact Distribution Design. SRP reserves the right to determine all meter locations. Only authorized SRP personnel of the Distribution Design department will determine this location.

II. Service Section

All sections shall comply with latest requirements set forth in NEMA standards for switchgear, EUSER, and other standards organizations involved in the design and manufacture of electrical equipment.

III. Basic Impulse Level (BIL) Rating

BIL for the metering enclosure shall not be less than that of the Customer's associated switchgear. Reference shall be made to the latest edition of ANSI Standards C37.20C for minimum accepted BIL rating for high-voltage switchboards built to the nominal listed voltages in Table 1, "Voltage and Insulation Levels for AC Switchgear Assemblies," and as tabulated for Metal Enclosed Interrupter Switchgear.

IV. Drawings for Approval

Submit electronic copies of the plans (PDF format preferred) for all proposed SES to shopdraw@srpnet.com for approval prior to construction of the service section. Drawings must be labeled with the Customer's name, job address, SRP job number or account number, and contractor's name and contact phone number.

V. SRP Furnished and Installed Equipment

Current voltage transformers, meters, testing facilities, and all normal secondary wiring from the instrument transformers to the meters will be furnished and installed by SRP.

VI. Utility Compartment Labeling

Compartments of the metering enclosure shall be permanently labeled with machine-engraved laminated phenolic (or equal) tags, ¼ inch white letters and numbers on red-colored material, which is readily visible and mechanically attached to the face of the following compartments:

A. Utility voltage transformer (PT) compartment.

B. Utility voltage transformer (PT) fuse compartment.

C. Utility service termination compartment (pull section).

D. Utility current transformer (CT) compartment.

E. Utility metering panel.

F. Voltage and maximum current rating allowed by SRP on utility meter panel (i.e., 12,470V, 156A maximum).

VII. Locking

The front weatherproof door shall be a single door equipped with a latch-type handle suitable for an SRP padlock. If equipment is located indoors, the Customer shall furnish a lockable meter panel. On weatherproof equipment, all external doors shall be equipped with a device to hold the door open 90° or more.

VIII. Current Ratings

Customer must have load limiting device adjacent to the primary meter (see page 1-24).

IX. Safety Grounding Provisions

Bare bus 4 inches above and below the current transformers shall be provided to permit application of SRP's safety grounds. As an alternate, a grounding knob may be provided on the line and load side of the bus at each current transformer location.

X. Meter Panel

Meter panel hinges are to be designed to adequately support a 25-pound load applied at the unsupported end with $^{1}/_{8}$ inch maximum sag when open. A #4 AWG copper flexible braided bond wire shall be installed across the hinges. The door shall be equipped with a device that holds it at 90° or more when open.

XI. Ventilation Openings

A ventilation opening-slot louver, or the like, shall be protected by one or more baffles, barriers or other obstructions of such dimensions and locations that any wire or similar material will be deflected two times after it is inserted at any possible angle through the opening or mesh. One deflection shall be at least 90° from the direction of travel. In addition, if the minor dimension of a ventilation opening is larger than ¼ inch, it shall be protected by a screen having a minor dimension no larger than ¼ inch.

XII. Rear Door Access to Metering Cubicle

The door shall be equipped with a device that holds it at 90° or more when open. In addition, the door shall provide for a three-point locking mechanism with hardware for attachment of an SRP padlock.

XIII. Equipment Pad and Work Space

A concrete pad shall be provided with an additional three feet extending from the front and back of the metering and pull section at the same level as the section. The pad shall be sloped to provide drainage away from the metering cubicle. Provide a clear work space extending 12 feet from the CT/pull section side of the enclosure and 8 feet from the PT side.

XIV. Approved Bus Material

Only copper or plated aluminum bus shall be used. Aluminum bus shall be plated to prevent corrosion.

XV. Bus Dimensions and Spacing

Maximum bus size shall be $^{3}/_{8}$ inch x 4 inches. Minimum bus size shall be ¼ inch x 2 inches unless otherwise indicated on specific drawing. Bus sizes outside of these limits require special engineering and consultation with SRP.

XVI. Conductors Passing Through Compartment Walls

Where cable or bus passes through compartment walls, through-the-wall bushings with full voltage rating of the switchboard must be used.

XVII. Service Cable Terminations

One landing position (two ½-inch steel bolts on 1 ¾ inch vertical centers extending a minimum of two inches to a maximum of 2 ½ inches from the mounting surface) shall be provided on each phase and neutral bus. Secure all bolts in place and provide with nuts, flat washers and pressure maintaining spring washers. “Secured in Place” shall mean that the stud will not turn, back out or loosen in any manner when subjected to normal UL-approved torque while tightening or loosening terminal nuts (including cross threaded situations). All parts must be plated to prevent corrosion.

XVIII. Insulated Neutral Termination

An insulated neutral is required and shall have full voltage-rated insulation from the metering cubicle. The insulated neutral shall extend from the CT compartment to the VT compartment and Customer's disconnect section before grounding. The main bonding jumper shall be made in the Customer section.

XIX. Instrument Transformer Mounting Bases and Bus Links

Voltage and current transformer mounting bases are to be provided by the manufacturer. Locate the front or leading edge of the voltage transformer mounting holes nine inches from the voltage transformer compartment door. Bus drilling and spacing shall accommodate 800 amperes or less current transformers of the proper voltage insulation class. Lugs for voltage transformer phase and neutral connections shall be provided in the voltage transformer compartment.

XX. Fuse Specification

Voltage transformer fuses shall be furnished and installed by the serving agency. The manufacturer shall provide mounting clips for indoor current limiting fuses with mounting clip separation and fuse ferrule diameter dimensions as indicated under dimension "H".

XXI. Voltage Transformer Isolation/Ground Switch and Compartment Requirements

A. Kirk Key interlocking is required between the voltage transformer (VT) isolation/ground switch and the voltage transformer compartment door, which requires the VT isolation/ground switch to be locked in the ground position before the VT compartment door can be opened, and until the VT compartment door is locked closed.

B. Each position of all three blades must be visible through the window centered over the blades.

C. Each switch position shall be obtained by spring action independent of the operating handle speed.

D. The isolation/ground switch shall be rated for the applicable voltage and current interruption.

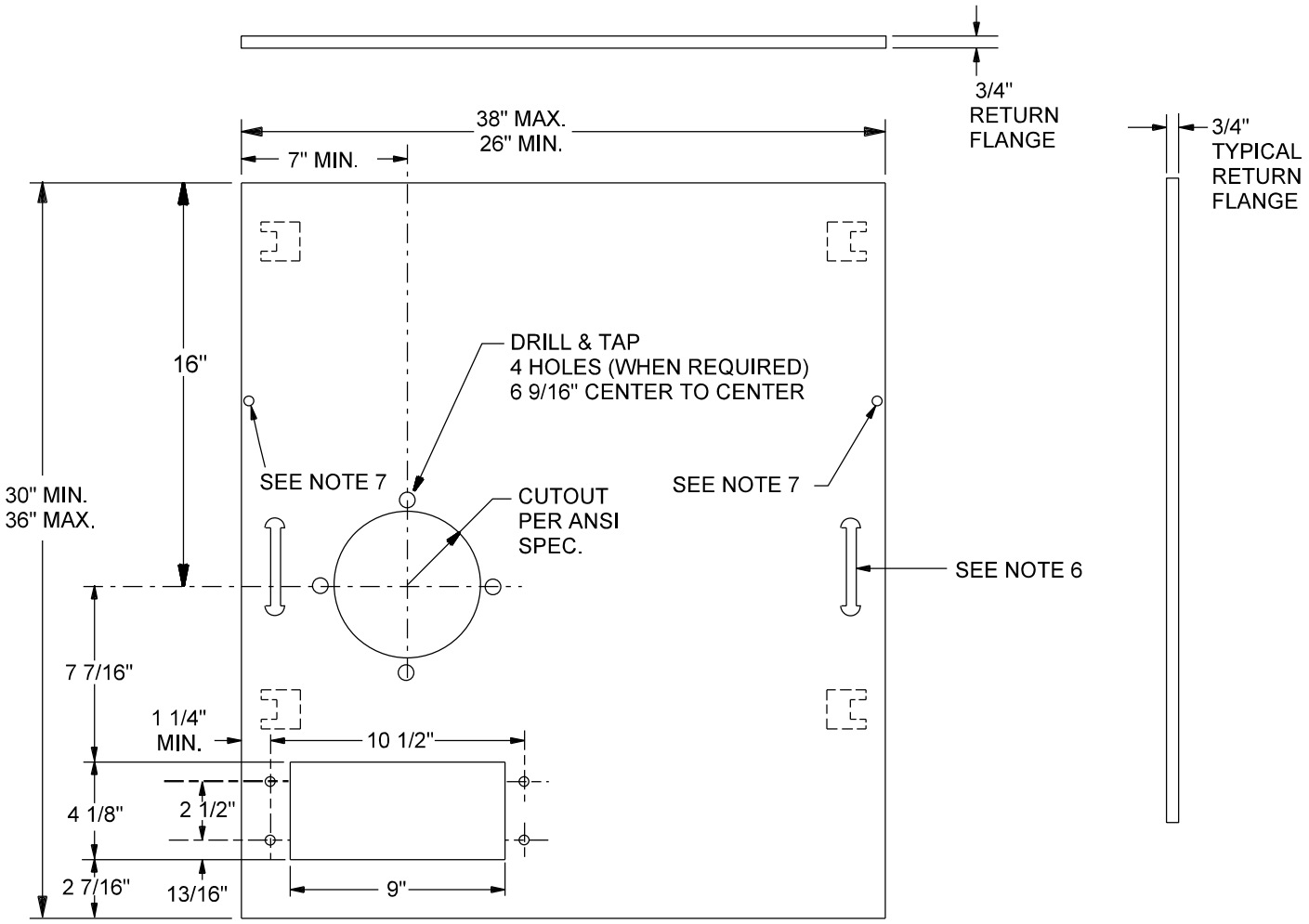
E. The single isolation/ground switch shall de-energize, isolate, and earth ground the line side of the VT fuses in one operation using one handle.

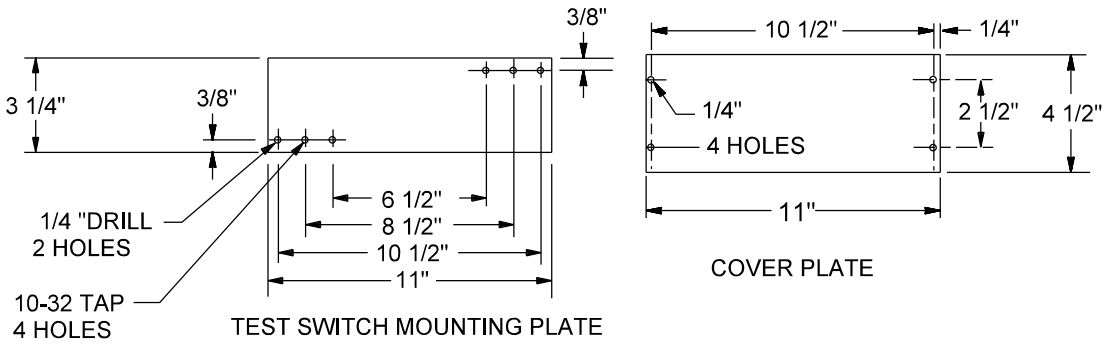
F. The voltage transformer compartment door shall provide unobstructed access to the voltage transformers and fuses.

G. The line connection to the VT disconnect shall be on the line side of the CT.

XXII. Exposed Ends of Fasteners

Exposed ends of fasteners on doors or panels shall be smooth to limit the possibility of injury.





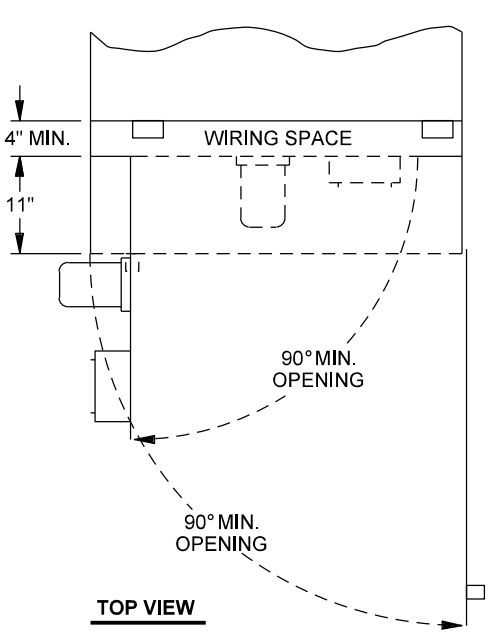
ALL HOLES 10-32 TAP EXCEPT AS NOTED.

Reference EUSERC Drawing 408.

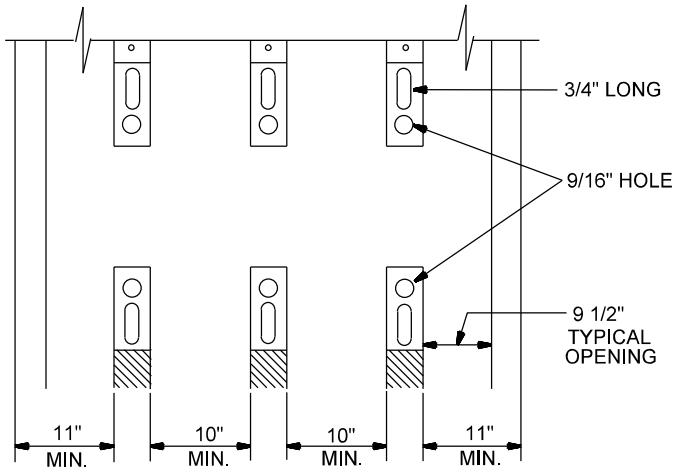
Electric Service Specifications SRP® PROPRIETARY MATERIAL		PAGE 1 OF 2
	METERING & SES HINGED METER PANEL WITH SINGLE SOCKET FOR 2,400-12,470 VOLT SERVICE	ISSUE DATE: 04/15/86 REV. DATE: 10/17/12 APPROVAL: W.LARAMIE
	9-72	8509E106.DGN

NOTES

1. Construct the panel with 12-gauge (min.) steel and furnish with meter sockets, sealing rings, slotted openings, a removable plate for installation of a secondary test switch, and a cover plate. Slotted openings and removable plate edges shall be smooth to prevent damage to meter wiring.
2. Attach the removable plates to the rear of the panel with screws that do not protrude through the face of the panel.
3. Design meter sockets for back connection.
4. Hinges shall be readily interchangeable, right or left, on panel and permit the panel to open 90^ with meter and test facilities in place. For recessed or enclosed meter panels, refer to EUSERC Drawing 407. Clevis or removable pin-type hinges shall be removable from the top.
5. The panel shall support a 25-pound load applied at the unsupported end when fully opened with maximum sag of 1/8".
6. Attach a handle to both sides of the panel.
7. All securing and sealing screws on panel shall be captive. Stud and wing nuts shall be sealable when used.

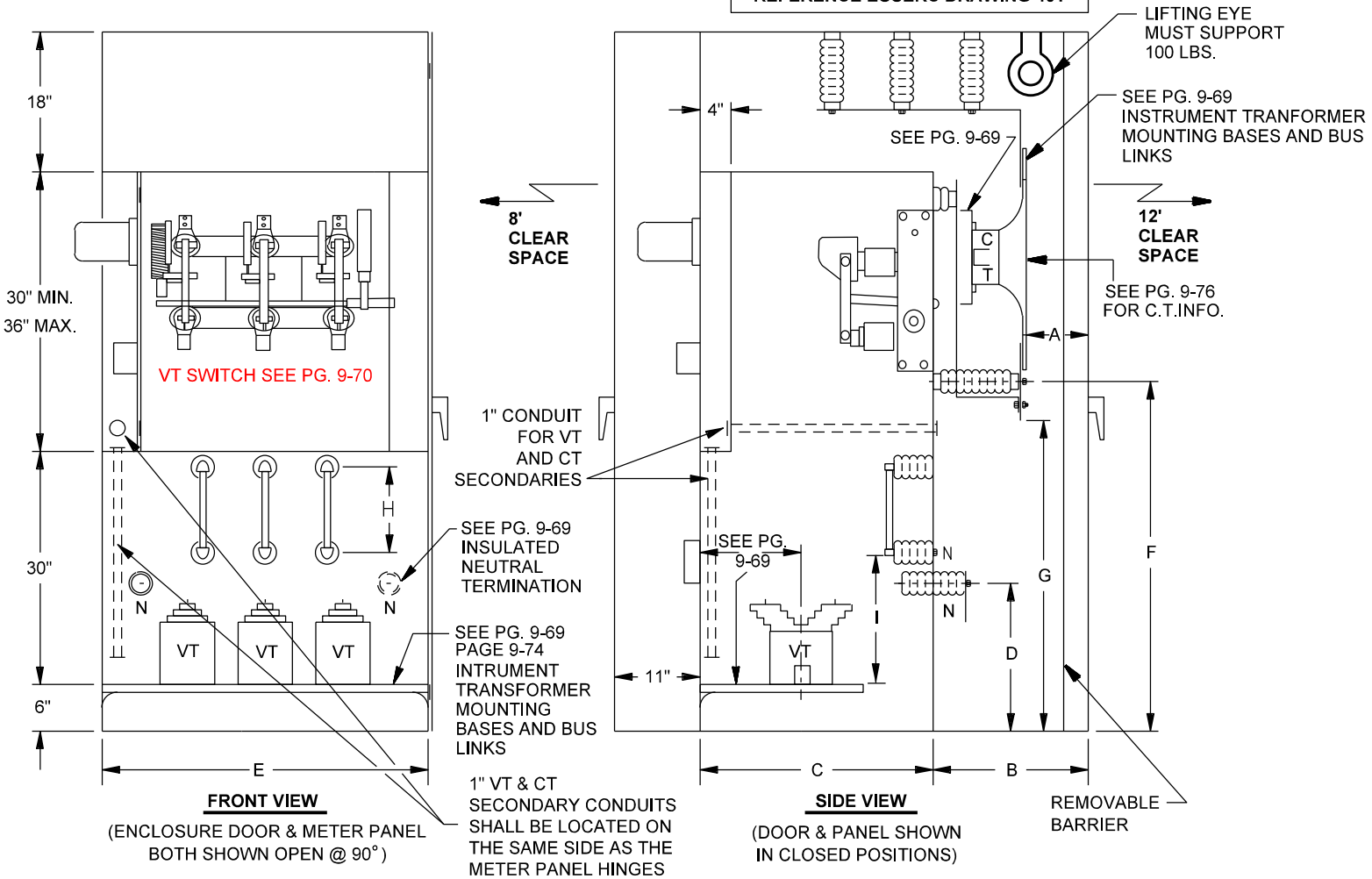


TOP VIEW



CT COMPARTMENT

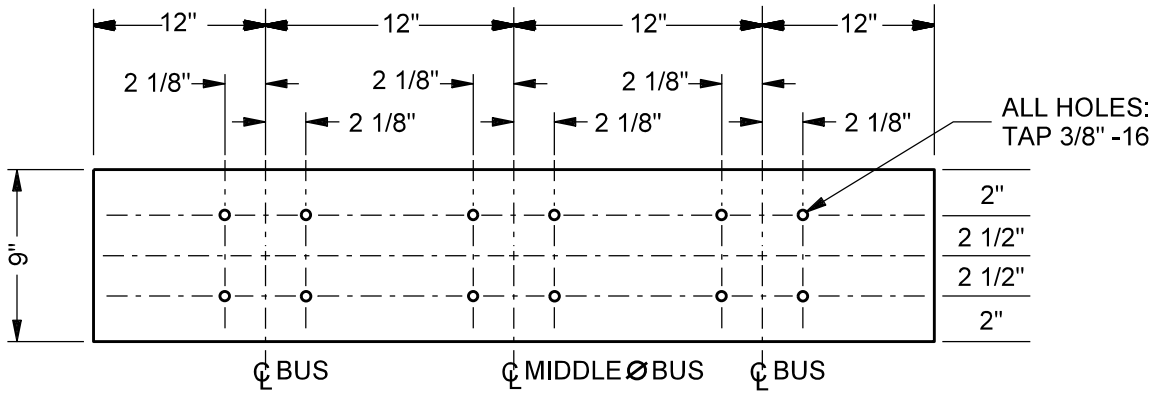
REFERENCE EUSERC DRAWING 401



NOTE: PT compartment & voltage transformer disconnect panels shall be equipped with 2 lifting handles and attached with studs and wing nuts or may be side-hinged. Panels shall not exceed 9 square feet in area.

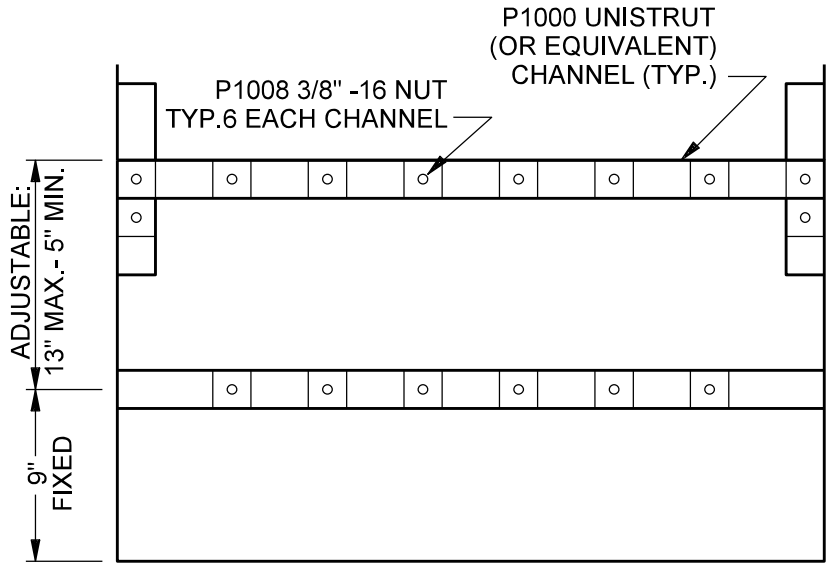
Electric Service Specifications SRP® *PROPRIETARY MATERIAL*	REV: ADD CALL OUT FOR VT SWITCH WITH PAGE REFERENCE	Page 1 of 2
	METERING & SES HIGH VOLTAGE METERING ENCLOSURE 4-WIRE, 2,400-12,470 VOLT SERVICE	ISSUE. DATE: 04/15/86 REV. DATE: 12/12/23 APPROVAL: J. ROBBINS
	9-74	8509E98.DGN

SPECIFICATIONS	VOLTAGE RATING		
	2,400	2,400/4,160Y	7,200/12,470
Minimum Bare Bus Clearance Phase to Ground	3 1/2" min.	3 1/3" min.	6" min.
Minimum Bare Bus Clearance Phase to Phase	5" min.	5" min.	7 1/2" min.
Bare Bus to Insulated Barriers	2" min.	2" min.	2" min.
Dimension "A"	5" min. 10" max.	5" min. 10" max.	8" min. 10" max.
Dimension "B"	24" min.	24" min.	24" min.
Dimension "C"	24" min.	24" min.	24" min.
Dimension "D"	12" min.	12" min.	12" min.
Dimension "E"	36" min.	48" min.	48" min.
Dimension "F"	42" min. 48" max.	42" min. 48" max.	42" min. 48" max.
Dimension "G"	36" min.	36" min.	36" min.
Dimension "H" Fuse Mounting Clip Center	8 1/2"	8 1/2"	11 1/2"
Dimension Fuse Ferrule Diameter	1 5/8"	1 5/8"	1 5/8"
Dimension "I"	18" min.	18" min.	18" min.

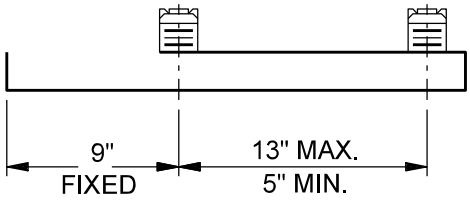


CURRENT TRANSFORMER MOUNTING BASE

REFERENCE EUSERC
DRAWING 407



TOP VIEW OF CABINET (REF.)

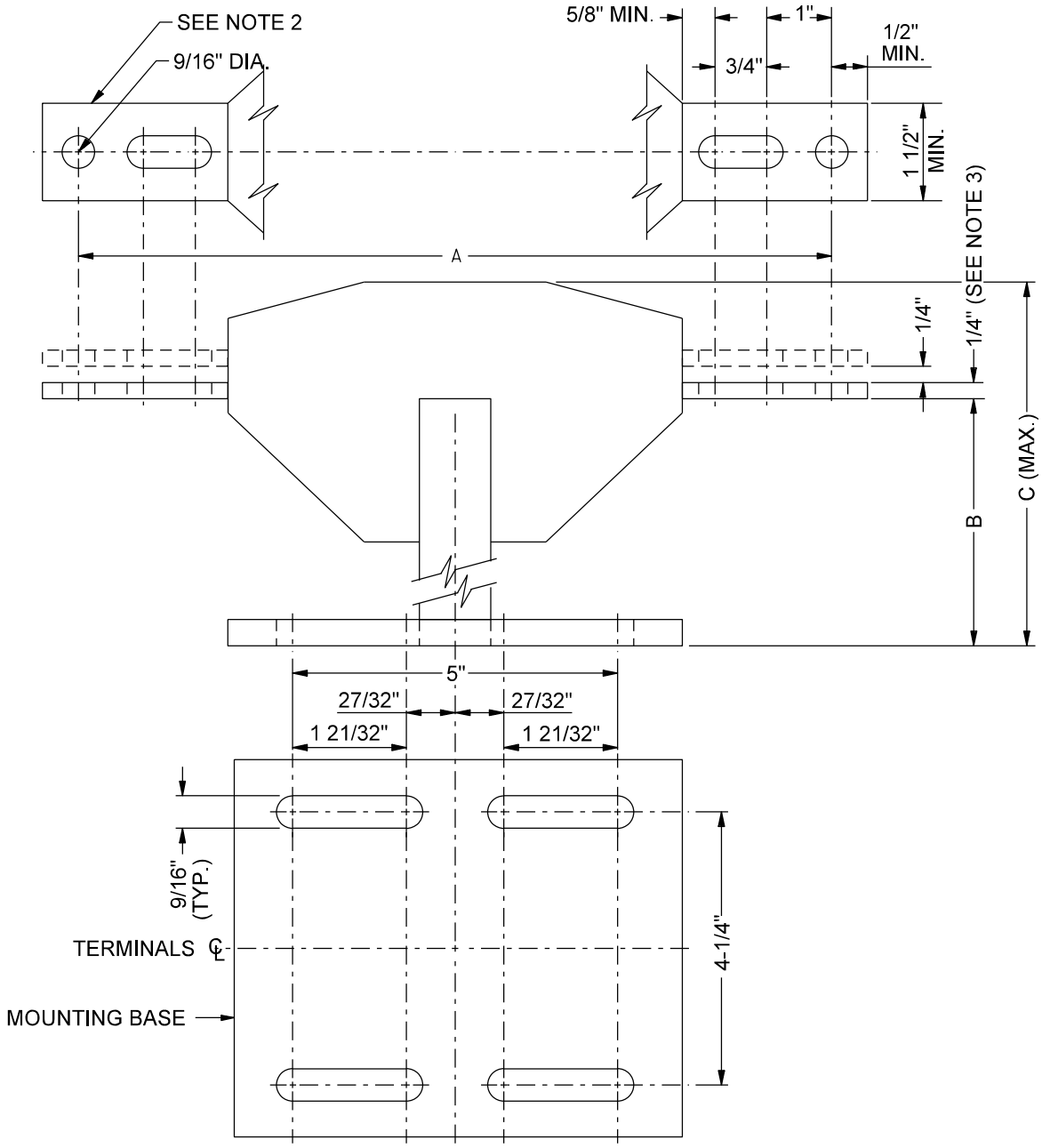


SIDE VIEW

VOLTAGE TRANSFORMER MOUNTING RAIL DETAIL

Reference EUSERC Drawing 407

Electric Service Specifications SRP® *PROPRIETARY MATERIAL*	METERING & SES INSTRUMENT TRANSFORMER MOUNTING PATTERN 2,400-12,470 VOLT SERVICE	ISSUE DATE: 01/15/94 REV. DATE: 10/17/12 APPROVAL: W.LARAMIE
	9-76	8509E69.DGN

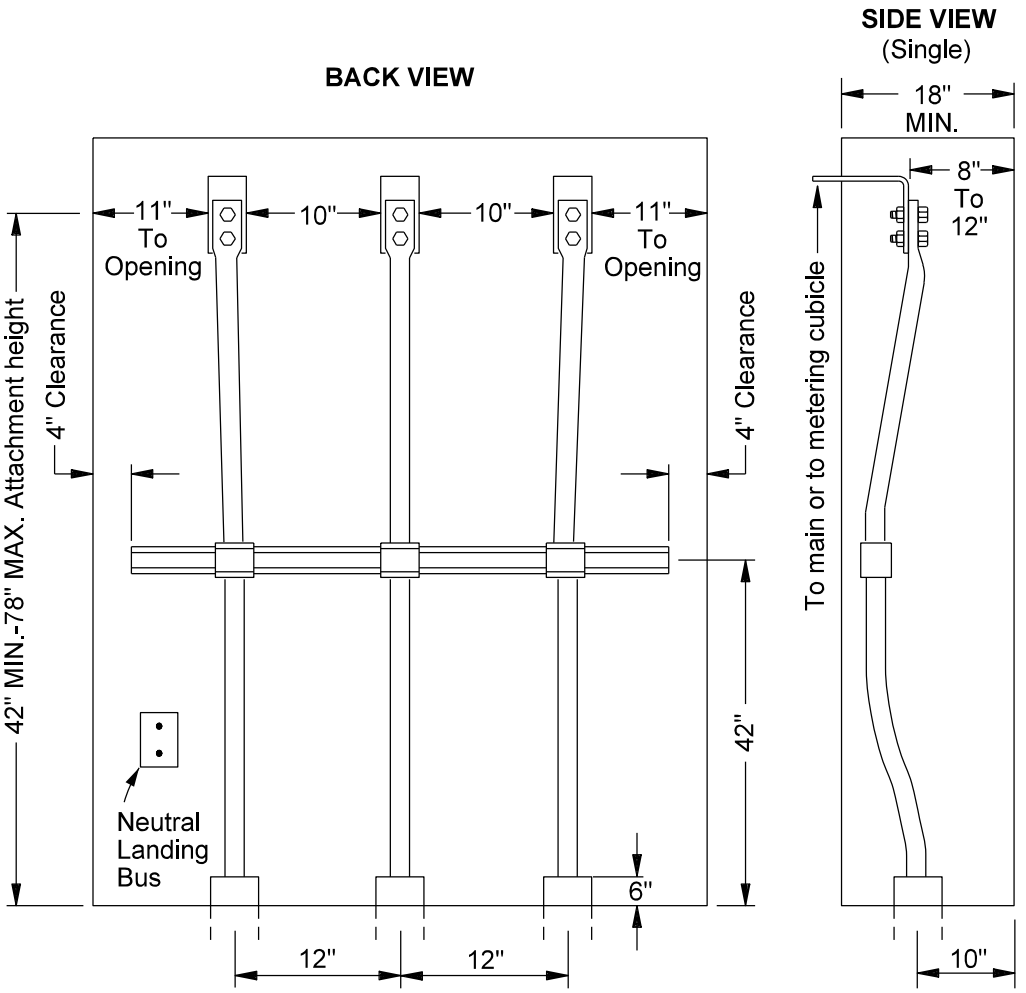


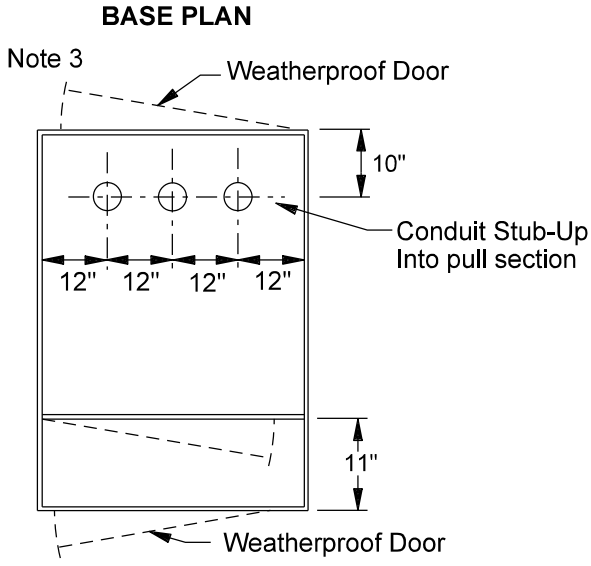
INSULATION CLASS	DIMENSIONS (SEE NOTES 2 & 4)		
	A	B	C (MAXIMUM)
5 kV	14"	5 3/4"	8"
15 kV	22"	9"	11 1/4"

NOTES (Reference EUSERC Drawing 408)

1. Insulation classes are 5kV and 15kV. Basic Impulse Insulation Levels (BIL) for these classes are 60kV and 110kV, respectively.
2. Primary terminal rating is 10 to 156 amps.
3. 1/4" applies to multiple bar thickness. Single bar thickness may be from 3/16" to 3/8".
4. Unless otherwise indicated, tolerance is ± 1/16th of an inch.

Electric Service Specifications PROPRIETARY MATERIAL	METERING & SES INDOOR CURRENT TRANSFORMER DIMENSIONS (FOR METERING PURPOSES) 5kV THRU 15kV	ISSUE DATE: 01/11/94 REV. DATE: 10/17/12 APPROVAL: W.LARAMIE
	9-77	8509E109.DGN



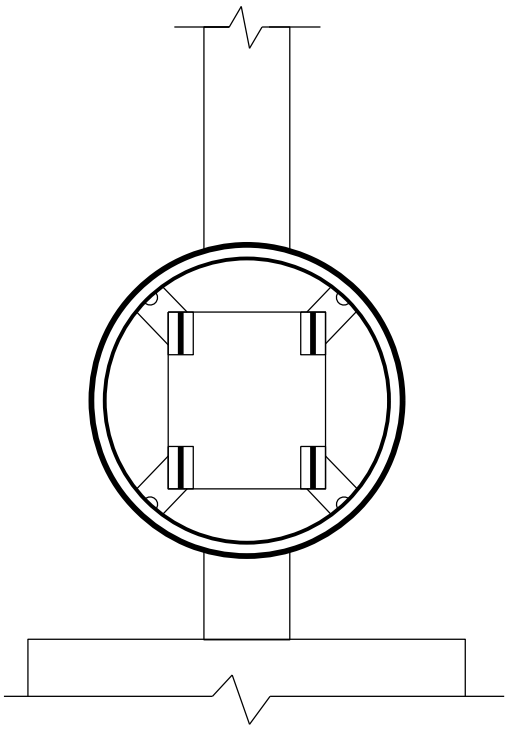


NOTES

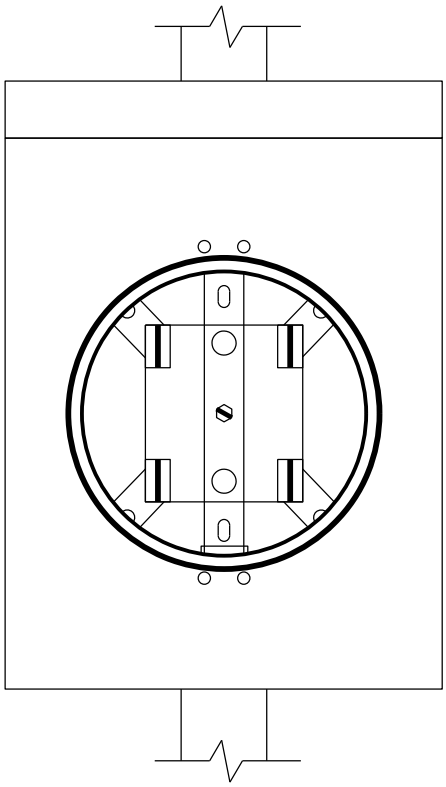
1. 12" center-to-center distance between conduits, 10" front to back.
2. Phasing shall be A-B-C or C-B-A as determined by the Customer.
3. A 12' clearance is required in front of the pull section.

Electric Service Specifications SRP® *PROPRIETARY MATERIAL*	METERING & SES UNDERGROUND SERVICE TERMINATING PULL SECTION, 4-WIRE 2,400-4,160 AND 7,200-12,470 VOLTS	ISSUE DATE: 01/15/94 REV. DATE: 09/24/13 APPROVAL: W.Laramie
	9-78	8509E113.DGN

Die-Cast Socket
(60 A, 100 A)



Square-Base Socket
(100 A, 200 A)



NOTES

1. Following a Customer's request for a service disconnect to allow work on their SES and prior to a service re-connect:
   A. All round die-cast meter sockets must be replaced with an approved meter socket.
      EXCEPTIONS
      The meter socket is in good working order and:
      - 60 A socket: The SES work is limited to replacement of a breaker in the existing load center, or
      - 100 A socket: The SES work is limited to replacement of a breaker in the existing load center, or replacement of the load center with one having an equal rating.

   B. Square/rectangular meter sockets must be replaced with an all-in-one type.
      EXCEPTIONS
      The meter socket is in good working order and:
      - The meter socket rating is not less than 100 A and
      - The SES work is limited to replacement of a breaker in the existing load center, replacement of the load center with one having an equal rating, replacement of a rusted/damaged riser or mast, replacement of the mast conductors, or minor repairs such as replacement of meter clips.
2. The meter socket rating shall not be less than the minimum rating of the load center.

INDEX

TRANSMISSION

GENERAL DESIGN GUIDELINES FOR PROPOSED IMPROVEMENTS IN SRP TRANSMISSION EASEMENT/ROW

I. Improvements Within SRP's Transmission Easement/ROW

Any improvements within SRP's transmission easement/ROW must have written approval which is given by SRP in the form of the Consent to Use Agreement. A signed Consent to Use Agreement / approval letter is required prior to beginning construction.

A. To obtain a Consent to Use Agreement, plans must be submitted to the SRP Land Department where they will undergo a process of review, revision (if necessary), and approval.

1. The review process should begin early in the design process to obtain the necessary approval of plans prior to construction. Upon approval of the plans, a Consent to Use Agreement will be drafted by the SRP Land Department and sent to the Landowner for signature.
2. The Consent to Use Agreement including an exhibit will be recorded at the County Recorder's Office. The approved plans are retained by SRP.
3. General guidelines for the Consent to Use Agreement process are as follows:

a) All plans must be drawn "to scale" and submitted to:

SRP
Attention: Manager, Property Management
Mail Station PAB 348
P.O. Box 52025
Phoenix, AZ 85072-2025

b) All plans must show:

- SRP easement/ROW boundaries.
- SRP facilities, including poles and overhead wire locations.
- All proposed improvements within SRP ROW/easement, including utilities, paving, grading, drainage, lighting, landscaping, etc.

II. Lighting Structures

Lighting structures must meet SRP electrical clearances with respect to overhead conductors and towers/poles. In general, lighting structures 12 feet high or less adhere to SRP electrical clearances. Proposed lighting plans need to be reviewed and approved by SRP. SRP may require the Landowner to provide a survey of SRP wires and structures as part of calculating clearances and approving lighting within the easement/ROW. Contact SRP to obtain a copy of Information Required for SRP Electrical Clearance Calculations prior to survey of SRP transmission lines. The lighting consultant must submit electrical clearance calculations (sealed by an Arizona licensed Engineer) to SRP for review to verify that all electrical clearances are acceptable. Contact SRP to obtain conductor sag data. Also the lighting consultant shall consider OSHA clearances on the property owner's/municipalities' behalf. SRP will not take outages on its transmission lines to allow lights to be maintained.

III. Trees

In general, trees are prohibited within SRP easement/ROW. In special cases some landscaping, including low growing type trees, may be allowed provided it does not interfere with the maintenance of existing or future transmission lines. All proposed landscaping in SRP ROW plans need to be reviewed and approved (refer to the SRP Approved Trees and SRP Approved Groundcover lists on the following pages).

IV. Structures

SRP does not allow occupied buildings, other structures, dumpsters, or drywells within its easements/ROW.

V. Retention Basins

Retention basins will need to be designed by the Customer to adhere to SRP Storm Water Retention Basin Design Guidelines and site-specific comments from SRP. Contact SRP to obtain a copy of the SRP Storm Water Retention Basin Design Guidelines.

VI. Maintenance Roads

In general, SRP requires maintenance roads (with a maximum slope of 20:1) along the length of its easement/ROW, parallel to the transmission lines. Multiple maintenance roads may be required to maintain multiple wires/circuits. The appropriate offset for the maintenance road with respect to each of the transmission line wires is determined by SRP. The roads are generally 20 feet wide, not including the width required for setup areas at poles/towers and at specific intervals along the wires. SRP maintenance roads must be accessible from public ROW. Due to the complexity of issues involved, maintenance roads will need to be designed by the Landowner's consultants based on input from SRP. The SRP Storm Water Retention Basin Design Guidelines drawing contains general design information for maintenance roads.

VII. Maintenance Equipment/Crane Setup Areas

Maintenance equipment/crane setup areas (with a maximum slope of 20:1) are required at towers/poles and at intervals parallel to the wires. The setup area at a pole/tower differs depending upon the voltage of the line. The EHV (115kV, 230kV and 500kV) pole/tower setup area is generally defined as a length of approximately 50 feet in each direction from the pole by the width of the ROW. The 69kV pole setup area is generally defined as a length of approximately 30 feet in each direction from the pole by the width of the ROW. Depending upon the transmission line voltage, the distance between setup areas along the wires and the size of the setup areas will vary. Due to the complexity of issues involved, pole setup areas and wire setup areas will need to be designed by the Landowner's consultants based on input from SRP. The SRP Storm Water Retention Basin Design Guidelines drawing contains general design information for pole and wire setup areas.

VIII. Parking Lots

Parking lots are an acceptable use of SRP easement/ROW. There are specific requirements for orientation with respect to traffic flow. Maintenance paths and crane setup areas need to be incorporated into the parking lot design based on input from SRP.

IX. Pipes, Manholes, or Other Proposed Facilities

All pipes, manholes, or other proposed facilities to be located at or below grade in SRP easement/ROW must be designed to withstand a minimum of 320 psi on a 27-inch diameter outrigger pad. Load calculations (sealed by an Arizona licensed Civil Engineer) must be submitted to SRP for review.

X. Grade Changes/Cut or Fill

No grade changes/cut or fill permitted within SRP easement/ROW without prior written approval. Changes in elevation near power structures (cuts and fill) can endanger pole or tower foundation stability because of the loss of support soil. A detailed engineering analysis is required to determine the impact of excavations on adjacent SRP poles, towers, and facilities. It is the applicant's responsibility to provide and pay for this engineering analysis. The analysis must be performed by an Arizona licensed engineer and the engineer must provide a sealed report to SRP. Depending on workload, SRP may perform this engineering analysis for a fee - contact SRP for this option. You will also need to obtain a copy of General Analysis Guidelines for Excavations Adjacent to SRP Electric Power Poles. Contact SRP to obtain a copy of Information Required for SRP Electrical Clearance Calculations prior to survey of SRP transmission lines.

XI. Public Utility Easements (PUE)

PUE shall not be platted and approved in SRP transmission easement.

XII. Transmission Pole Bracing, Pole Relocations, Conductor Warning Device Placements

For transmission pole bracing, pole relocations, conductor warning device placements or transmission line conflict checks, contact SRP Transmission Line Design.

SRP-APPROVED GROUNDCOVER PLANTS

Approval or disapproval of all trees and ground cover, regardless of whether they are on the approved list, is dependent upon electrical clearances to conductors based on voltage, as well as locations that do not hinder SRP maintenance crew access and setup. Refer to General Design Guidelines for Proposed Improvements in SRP Transmission Easement/ROW for plan submittal and approval procedures.

Scientific Name	Common Name	Height & Width (ft.)	Description
Ageratum corymbosum	Desert Ageratum	1 x 3	A perennial with light blue flowers. Dormant in winter.
Ambrosia deltoidea	Bursage	1-2 x 1-3	Also called Triangle leaf bursage and Rabbit bush.
Aristida purpurea	Purple threeawn	2-3 x 1-2	Perennial bunch grass, purple summer and fall flowers.
A. purpurea var. *arizonica*	Arizona threeawn		
A. purpurea var. *fendleriana*	Fendler's threeawn		
A. purpurea var. longiseta	Fendler threeawn		
A. purpurea var. *nealleyi*	Blue threeawn		
A. purpurea var. *parishii*	Parish's threeawn		
A. purpurea var. *perplexa*	Purple threeawn		
A. purpurea var. *purpurea*	Purple threeawn		
A. purpurea var. *wrightii*	Wright's threeawn		
Aristolochia fimbriata	Prostrate Dutchman's pipe	1 x 3-4	Heart-shaped leaves and inconspicuous flowers. Moderate to rapid spring growth but dormant in summer. A preferred host plant for swallowtail butterfly larvae. Drought tolerant.
Asteriscus maritimus	Mediterranean beach daisy	1 x 1.5	Low-mounding perennial herb with dense green, hairy leaves. Has bright yellow flowers late winter through spring. Declines in health with extreme sun, heat or cold.
Baileya multiradiata	Desert marigold	1+ x 1+	Evergreen perennial Native to AZ bears bright yellow flowers year round with adequate moisture. Short-lived but reseeds easily so there are always new plants to replace dead ones.

SRP-APPROVED GROUNDCOVER PLANTS

Scientific Name	Common Name	Height & Width (ft.)	Comments
Bouteloua aristidoides	Needle grama grass	1.5-2.5 x 1.5-2.5	Perennial bunchgrass; foliage browns in fall.
Bulbine frutescens	Bulbine	1.5 x 1.5	Tough, clumping evergreen succulent with bright green leaves & small yellow flowers. An orange flower variety called 'Hallmark' is more compact. Both bloom over long periods of the year.
Chrysactinia Mexicana	Daminiata daisy	1-2 x 3	Mounding, evergreen shrub with aromatic leaves. Leaves emit pleasant aroma when crushed or brushed. Vibrant yellow, daisy-like flowers spring through fall.
Dimorphotheca sinuate	African daisy	1 x 1	Also called Cape marigold. Annual with bright orange to yellow daisy flowers in winter & spring. Plant goes to seed & dies after flowering. New flowers arise from seed next winter.
Drosanthemum floribundum	Rosea ice plant	0.5 x 1.5	Evergreen groundcover forms a low dense mat. Light pink flowers late spring to summer.
Dyssodia pentachaeta	Golden Dyssodia	1 x 1	Low growing perennial with bright yellow, small daisy-like flowers, reseeds annually.
Encelia farinosa	Brittle Bush	3 x 3	Woody perennial mounding shrub with bright yellow daisies in spring. Native to AZ.
Eschscholzia californica	California poppy	2 x 2	Orange, yellow flowers late winter to early spring.
Eschscholzia Mexicana	Mexican Poppy	1 x 1	Seeds germinate each autumn. In late winter to early spring produces orange, yellow, and sometimes white flowers. Native to AZ.

SRP-APPROVED GROUNDCOVER PLANTS

Scientific Name	Common Name	Height & Width (ft.)	Comments
Euphorbia rigida	Gopher plant	2 x 3	Mounding perennial shrub; easily driven over.
Guara lindheimeri	Pink guara	1 x 1	Perennial with white flowers that fade to pink but some varieties have flowers that open pink from bud; summer blooms.
Gazania rigens hybrids	Clumping gazania	1 x 1	Forms nonspreading mound of foliage with daisy-like flowers in brilliant colors with decorative markings spring to fall.
Gazania rigens leucolaena	Trailing gazania	1 x 1.5	Perennial prostrate groundcover with daisy-like orange, yellow, white, or bronze flowers spring to fall.
Hechtia Montana	Sonoran hechtia (a.k.a. Mesclito)	1 x 3	Ground-hugging plant with succulent leaves in rosettes.
Hechtia texana	Texas hechtia (a.k.a. False agave)	1.5 x 3	Similar to Sonoran hechtia.
Hertia chirifolia	Hertia daisy	1.5 x 4	Gray-green mound of foliage has yellow daisy-like flowers blooming late winter into spring.
Hymenoxys acaulis	Angelita daisy	1 x 1	Resembles Desert marigold (Baileya multiradiata) but has green rather than gray foliage. Has deeper yellow flowers.
Lampranthus spectabilis	Trailing ice plant	1 x 2	Succulent groundcover with trailing habit. Vibrant red, pink, purple spring flowers.
Lanatana camara	Gold Trailing	1 x 6	Upright shrub, fast-growing to 5 x 10'.
Lantana montevidensis	Trailing Lantana	1 x 6	Evergreen perennial
Lantana montevidensis	Purple Trailing	1 x 6	Woody trailing shrub
Lantana montevidensis var. alba	White Trailing		
Lantana montevidensis	Yellow Trailing		

SRP-APPROVED GROUNDCOVER PLANTS

Scientific Name	Common Name	Height & Width (ft.)	Comments
Malephora crocea	Gray ice plant	1 x 6	Evergreen perennial succulent with trailing growth habit. Forms dense mat with reddish-yellow to orange daisy-like flowers mostly in spring.
Malephora luteola	Yellow malephora	1 x 6	Trailing succulent has bright yellow spring flowers.
Melampodium leucanthum	Blackfoot daisy	2 x 2	Low-mounding perennial has white daisies with yellow centers spring to fall; AZ native.
Muhlenbergia rigida 'Nashville'	Nashville muhly grass	2 x 2	Small, low growing clumps of grass.
Myoporum parvifolium	Trailing myoporum	0.5 x 9	Mat-forming evergreen spreads by trailing stems that root as they grow. White spring flowers, then purple berries.
Oenothera berlandieri	Mexican evening primrose	1 x 3	Spreads to form low, open cover. Has bell-shaped white to rosy pink flowers in spring.
Oenothera caespitosa	White or evening primrose	1 x 2	AZ native. Perennial forms a low-mounding clump with fragrant white flowers abundant in spring that open in evening and turn pink by midmorning the next day.
Oenothera stubbei	Chihuahuan primrose	0.5 x 4	Herbaceous perennial with heavy bloom in spring; yellow flowers open in evening.
Osteopermum fruticosum	Trailing African daisy	1 x 2-4	Low spreading evergreen perennial with light purple daisy-like flowers, mostly late winter through spring.
Penstemon baccarifolius	Rock penstemon	1-2 x 1	Shrub with beautiful flowers on flower stalks.
Penstemon superbus	Superb penstemon Coral penstemon	4-6 x 4	Coral red spring flowers. Low water use plant, susceptible to root rot, especially when overwatered.
Pentzia incana	Karoo bush	1 x 3	Forms a compact evergreen shrub with tiny yellow button flowers mostly in spring.

SRP-APPROVED GROUNDCOVER PLANTS

Scientific Name	Common Name	Height & Width (ft.)	Comments
Plantago ovata	Desert Indian wheat (a.k.a. Red or Purple threeawn)	—	Can be weedy or invasive.
Psilostrophe cooperi	Paper Flower (a.ka. Yellow Paper daisy)	1.5 x 1.5	A clump-forming perennial that yields showy bright yellow flowers that turn papery and hold their color as they dry. Native to AZ.
Ruellia brittoniana 'Katie'	Katie Trailing Ruellia	1 x 1	N/A
Sesuvium verrucosum	Sonoran ice plant	0.5 x 3	Prostrate succulent forms dense network of trailing branching stems and leaves; small pink flowers from spring to fall.
Setcreassea pallida	Setcreasea (a.k.a. Purple heart plant)	1.5 x 4	Sprawling herbaceous perennial with succulent leaves bearing small pink, lavender or purple flowers throughout summer. Leaf color varies from green to rich purple such as that in variety 'Purple Heart'.
Sphagneticola trilobata 'Yellow Dot'	Singapore daisy	1/2-1 x 4-6	Bright yellow-orange daisy-like flowers; bright glossy green leaves are lance-shaped, usually 3-lobed with toothed edges and arranged in pairs along stems. A vigorous, spreading creeper that invades native vegetation, creek beds & disturbed areas. Not currently listed on AZ Invasive Weeds list.
Tecoma stans var. agustata	Arizona yellow bells	10 x 10	Shrub has relatively small flowers & lacy foliage made up of narrow deeply toothed leaves. **NOTE:** Approved depending on location, due to concern for Condor and line trucks.
Verbena gooddingii	Gooding verbena	1.5 x 3	Perennial short-lived groundcover, yields short spikes of tiny pink/lavender flowers in spring and summer; AZ native.

SRP-APPROVED GROUNDCOVER PLANTS

Scientific Name	Common Name	Height & Width (ft.)	Comments
Verbena peruviana & Peruvian hybrids	Peruvian verbena	0.5 x 3	Perennial ground-hugging mat of dark green leaves bearing small brick red flowers during warm season. Hybrids exist in white, pink, red or purple varieties.
Verbena pulchella gracillor	Moss verbena	1 x 5	Evergreen flat growing perennial with dark green leaves and small blue to purple flower clusters (sometimes violet, pink or white) blooming late winter to fall.
Verbena rigida	Sandpaper verbena	2 x 4	Evergreen perennial has dark green leaves and clusters of deep purple flowers from summer to fall.
Wedelia trilobata	Creeping daisy, Yellow Dot, Rabbit's Paw	1' x spreading	Daisy-like flowers
Yucca rupicola	Twisted leaf yucca	2 x 2-3	With a 5’ tall flower stalk
Zauschneria californica latifolia	California fuchsia	0.5 x 3	Similar to Hummingbird trumpet bush with similar flowers, but has wider leaves and clearly visible lateral veins and are oppositely arranged.
Zephyranthes candida	Fairy lily	1 x 1	N/A
Zinnia acerosa	Desert Zinnia	1 x 1	Small herbaceous perennial bears clusters of white to pale yellow flowers marked with green veins below the petals. Flowers intermittently from early spring through fall when moisture is present. Native to AZ.
Zinnia grandiflora	Rocky mountain zinnia (a.k.a. Plains zinnia)	1 x 1	Low-spreading evergreen shrub with bright green foliage and bears clusters of small zinnia-like yellow daisies in summer and fall.

SELECTION CRITERIA FOR TREES PLANTED NEAR OR BELOW OVERHEAD ELECTRIC LINES

Approval or disapproval of all trees and ground cover, regardless of whether they are on the approved list, is dependent upon electrical clearances to conductors based on voltage, as well as locations that do not hinder SRP maintenance crew access and setup. Refer to the Refer to General Design Guidelines for Proposed Improvements in SRP Transmission Easement/ROW for plan submittal and approval procedures.

Common Name	Scientific Name	Mature Height x Width (ft.)
American Plum	*Prunus americana*	25 x 20
Arizona Yellow Bells	*Tecoma stans var stans*	25 x 15
Barbados Cherry	*Malphigia glabra*	20 x 15
Bird of Paradise	*Caesalpinia gilliesi*	10 x 10
Bouquet Orange	*Citrus aurantium "Bergamia"*	20 x 15
Brazilian Butterfly Tree	*Bauhinia forficata*	30 x 35
Cascalote	*Caesalpinia cacalaco*	20 x 20
Chihuahuan Orchid Tree	*Bauhinia macranthera*	20 x 15
Coral Gum	*Eucalyptus torquata*	25 x 20
Costa Rican Parlor Palm	*Chamaerops costaricana*	10 x 6
Cut-Leaf Chaste Tree	*Vitex negundo 'Heterophylla'*	20 x 20
Desert Acacia	*Acacia craspedocarpa*	20 x 10
Desert Fern	*Lysiloma thornberi*	25 x 25
Desert Willow	*Chilopsis linearis*	30 x 25
Dioon	*Dioon edule*	10 x 5
Dwarf Swiss Stone Pine	*Pinus cembra 'Nana'*	25 x 10
Flowering Almond	*Prunus triloba var. multiplex*	20 x 15
Flowering Peach	*Prunus persica*	20 x 15
Foothills Palo Verde	*Cercidium microphyllum*	25 x 25
Frangipani	*Plumeria rubra*	25 x 25
Fraser's Photinia	*Photinia fraseri*	20 x 20
Goldenball Leadtree	*Leucaena retusa*	25 x 20
Guajillo	*Acacia berlandieri*	15 x 15
Hong Kong Orchid Tree	*Bauhinia blakeana*	30 x 30
Japanese Privet	*Ligustrum juponicum texanum*	25 x 10
Juniper	*Juniperis chinensis*	25 x 10
Knife Acacia	*Acacia cultriformis*	20 x 20
Lignumvitae	*Guaiacum sanctum*	15 x 15
Littleleaf Ash	*Fraxinus greggii*	20 x 15
Mastic	*Pistacia lentiscus*	20 x 15

SELECTION CRITERIA FOR TREES PLANTED NEAR OR BELOW OVERHEAD ELECTRIC LINES

Common Name	Scientific Name	Mature Height x Width (ft.)
Mediterranean Fan Palm	*Chamaerops humilis*	25 x 20
Mexican Bird of Paradise	*Caesalpinia mexicana*	20 x 20
Mexican Piñon Pine	*Pinus cembroides*	25 x 20
Mexican Redbud	*Cercis mexicana*	20 x 20
Mock Orange	*Philadelphus lewisii*	15 x 10
Mulga	*Acacia aneura*	20 x 20
Orange Jasmine	*Murraya paniculata*	20 x 15
Palo Blanco	*Acacia willardiana*	25 x 20
Paurotis Palm	*Acoelorrhaphne wrightii*	25 x 15
Peregrina, Firecracker	*Jatropha integerrima*	15 x 15
Pindo Palm	*Butia capitata*	25 x 15
Pineapple Guava	*Feijoa sellowiana*	15 x 15
Pink Powder Puff	*Calliandra haematocephala*	15 x 15
Pomegranate 'Wonderful'	*Punica granatum*	20 x 20
Pygmy Date Palm	*Phoenix roebelenii*	10 x 5
Red Bird of Paradise	*Caesalpinia pulcherrima*	10 x 12
Robertson Orange	*Citrus sinensis*	20 x 15
Sago Palm	*Cycas revoluta*	10 x 5
Sonoran Emerald Palo Verde	*Cercidium 'Sonoran Emerald'*	25 x 30
Square-Fruited Malee	*Eucalyptus tetraptera*	25 x 20
Strawberry Guava, Cattley Guava	*Psidium littorale*	25 x 20
Swamp Malee	*Eucalyptus spathulata*	25 x 25
Sweet Acacia	*Acacia smallii*	30 x 25
Tangelo	*Citrus paradisi X C. reticulate*	20 x 15
Tangerine/Mandarin Orange	*Citrus reticulata*	20 x 15
Texas (Western) Redbud	*Cercis occidentalis*	25 x 25
Texas Lignumvitae	*Guaiacum angustifolium*	20 x 15
Texas Mountain-Laurel, Mescal Bean	*Sophora secundiflora*	25 X 15
Texas Olive, Anacahuita	*Cordia boissieri*	15 x 15
Trinidad or Brazilian Flame Bush	*Calliandra tweedii*	10 x 10
Twisted Acacia	*Acacia schaffneri*	20 x 20
White Thorn, Mescat Acacia	*Acacia constricta*	20 x 20
Willow Pittosporum	*Pittosporum phillyraeoides*	25 x 20
Xylosma	*Xylosma congestum*	20 x 15
Yellow Tree Oleander	*Thevetia peruviana*	20 x 15

SECTION 11: CONTRACTOR-SUPPLIED MATERIAL

This section encompasses pre-approved materials by SRP. Any variation or substitution to materials within this section requires SRP approval prior to material installation and/or use.

Description **Page**

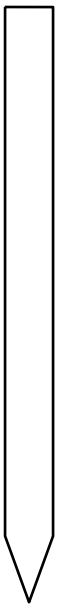
Description **Page**

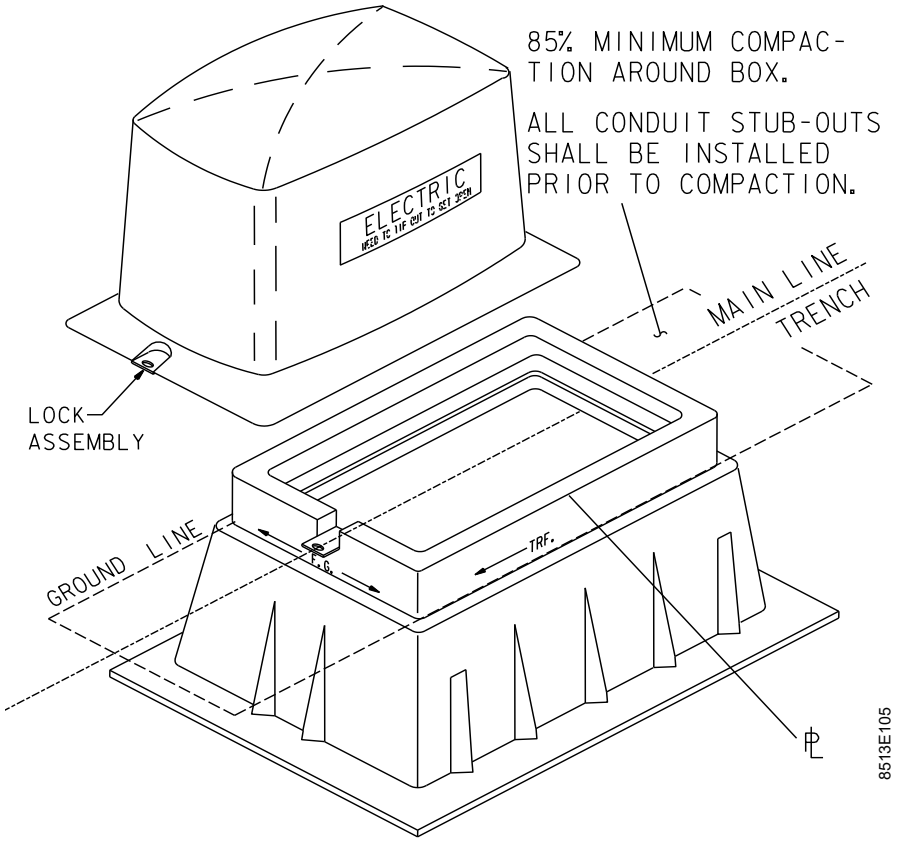
(SRP REIMBURSED)

SRP Material Item No. 5033854	
Description	
Noun	Wire
Adjective	Copper, Bare
Size	2/0 AWG, 7 strand
Type	ASTM B-3
Style	Soft drawn
Additional	Class A or AA, ASTM B-8
Approved Suppliers	**Part Number/Size**
Anixter	Use description
Champion	Use description
Nehring Electrical Works	Use description
Service Wire Co.	Use description
Southwire	Use description

GROUND ROD

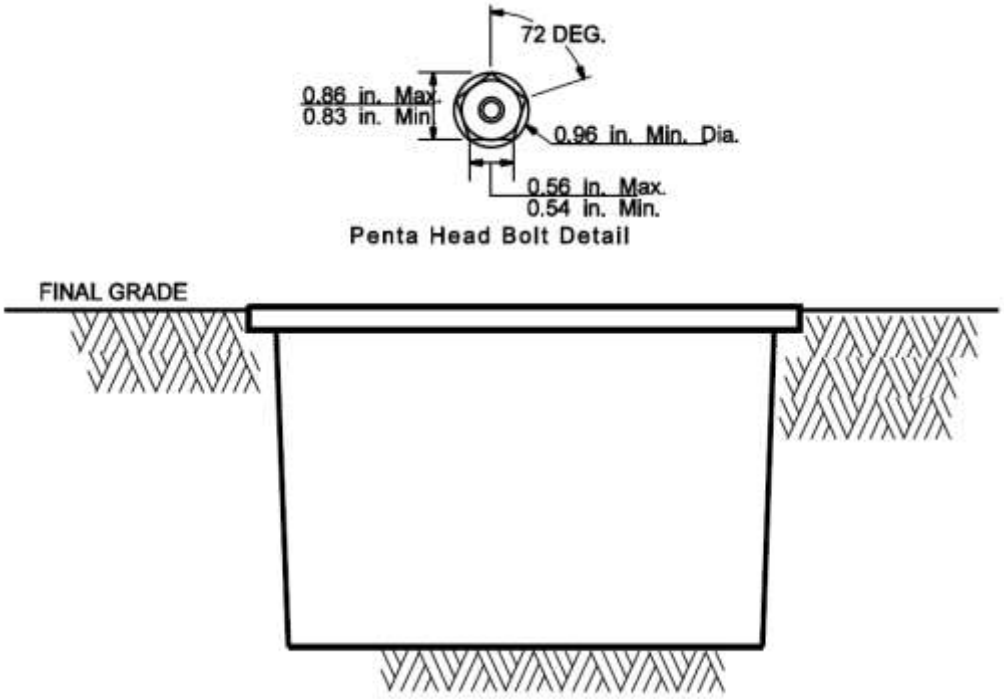
SRP Material Item No. 5034975	
Description	
Noun	Rod
Adjective	Ground
Size	$^{5}/_{8}$" x 8'
Type	Copper weld steel, UL listed
Style	Soft drawn
Use	Ground electrode at devices
Approved Suppliers	**Part Number/Size**
Eritech	615880
Galavan Industries, Inc.	6258
Joslyn	J8338



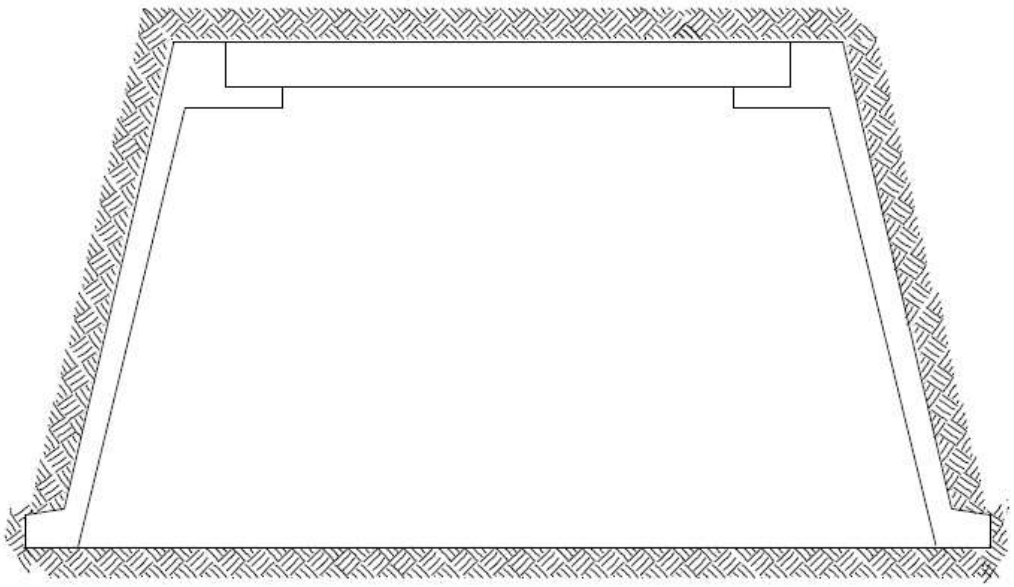


SRP Material Item No. 5034681	
Description	
Noun	Box
Adjective	Pedestal
Size	14” x 22” x 32"
Use	Secondary/service pedestal
Special Ref.	Base & cover polyethylene Armorcast has polymer concrete ring @ ground line.
Approved Suppliers	**Part Number/Size**
Armorcast Products	P6001682AA-SRP
Oldcastle	1220A3HE1C0TABCD

COMPOSOLITE FLUSH MOUNTED, BOLT-ON

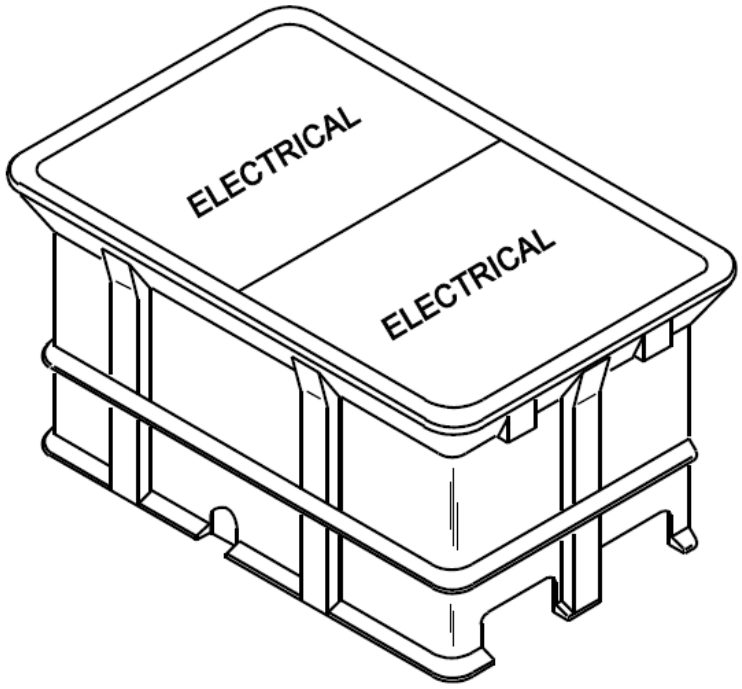


SRP Material Item No. 5034692	
Description	
Noun	Box
Adjective	Junction
Size	15” x 21” x 12”, with large head Penta bolts
Style	Word “electric” on cover
Special Ref.	Box to be polymer concrete material with polymer concrete bolt down (non-conductive cover).
Approved Suppliers	**Part Number**
Armorcast Products	A6001429A
Carson & Associates	HLW1118-12 BOX, HLW1118-PO LID
CDR Systems	PA40-1015-12
Hubbel-Lenoir	PC1118B513 BOX, PC1118C504-17/UH0390AA cover with electric
Newbasis	PCA111812-00043



BURIED BELOW GRADE ONLY
REQUIRES DESIGN APPROVAL FOR USE

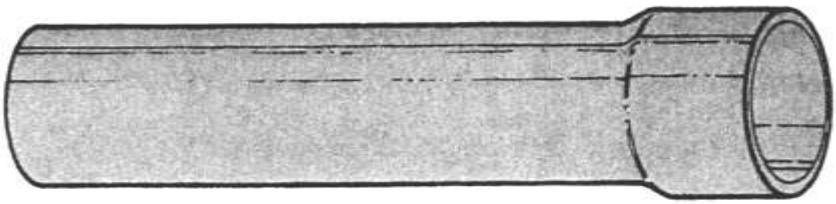
SRP Material Item No. 5034689	
Description	
Noun	Box
Adjective	Junction
Size	29” x 19” bottom opening, min. 15” tall
Type	HDPE
Style	With bolt down cover
Special Ref.	Green, gray or black in color, “electric” on cover
Approved Suppliers	**Part Number**
Carson Industries	1324153HG3206U0
Oldcastle	
Wescom / Charles Industries	P132415ABGTHXEL



SRP Material Item No. 5034694	
Description	
Noun	Box
Adjective	Junction polymer concrete
Size	5’ x 3’ x 3’
Type	Heavy duty, loadbearing
Style	Supplied assembled
Special Ref.	2-piece cover, “electric” on cover w/Penta head bolts
Approved Suppliers	**Part Number**
Armorcast Products	A6001436TAPCX36
CDR Systems	PA14-3660-36W-0438
Hubbel-Lenoir	PG3660B501-BOX, PG3660HA0017-COVER
NewBasis	PCA366036-SRP

CABLE PULLING TAPE, 1,500' REEL

SRP Material Item No. 5031726	
Description	
Noun	Tape
Adjective	Cable pulling
Size	1,500' reel
Type	Polyester, 2,500 lb.
Style	Pre-lubricated
Use	Street lights, secondary and service conduits, primary conduits
Special Reference	Reel size: 9" outside traverse, 11 ¾" flange diameter, 1 ¾" arbor hole
Approved Suppliers	**Part Number**
A-D Technologies	WP251500
ARNCO Corp	WP251500
FiberTek, Inc.	WP2500-W
Herculine	Use description
L.H. Dottie	DWP1502
NEPTCO	WP2500P-1.5
Wellington	N303M5-9083SR



ASTM F-512, F-1488, DB-120, 400,000 modulus (ASTM D-2412)
Cell classification: 12254B (ASTM D-1784)
Minimum socket depth: 1 ¾”
Color: Gray

Additional Markings:

1. 90° UL wire code
2. Spigot end marked with a circumferential ring, ¼” more than the socket depth.
3. Extrusion date: Month/Year format

SRP Material Item No. 5035468 (2.5”), 5035470 (3”), or 5035473 (4”)	
Description	
Noun	Conduit
Adjective	PVC
Size	2.5", 3” or 4”, lengths of 20’ or 25' long
Type	DB-120, ASTM F-512, F-1488
Style	Gray
Approved Suppliers	
	CANTEX Industries
	JM Eagle
	Heritage Plastics
	Prime Conduit
	Rocky Mountain Colby Pipe Co.
	(Alternate) FRE or Champion Fiberglass

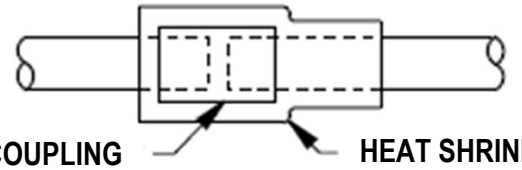
ASTM F-2160, NEMA TC7
Cell Classification: PE 3 3 or 4 4 or 5 4 or 5 4 0 E
Color: Co-extruded with a black body and outer red jacket or solid red

Additional Markings:
Conduit surface shall be permanently marked with the following information repeated at five (5) foot intervals:

1. Manufacturer's name
2. Nominal size
3. Type "HDPE"
4. Schedule 40; Exception: 4" DR-15.5
5. Cell classification
6. Date, run number and location of manufacturer
7. Sequential footage markings at two (2) foot intervals
8. NESC Lightning Bolt

SRP Material Item No. 5031714 (2"), 5031713 (2.5"), 5033738 (3"), 5033737 (4")	
Description	
Noun	Duct
Adjective	Flexible Spooled
Size	2", 2.5", 3" or 4"
Type	ASTM F-2160, NEMA TC7
Style	Black body and outer red jacket or solid red
Approved Suppliers	
JM Eagle	Performance Pipe
Dura-Line	Petroflex
United Poly Systems	

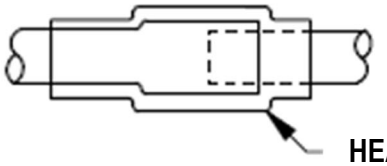
SPOOL-DUCT TO SPOOL-DUCT
OR
PVC CONDUIT TO SPOOL-DUCT



PVC COUPLING
See 11-16

HEAT SHRINK

PVC CONDUIT WITH BELLED END
TO SPOOL-DUCT



HEAT SHRINK

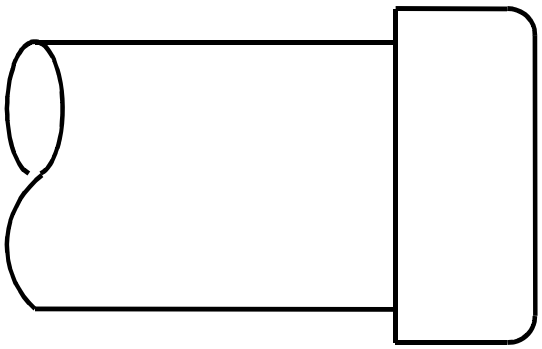
Note: Prime & cement all PVC to PVC connections.

SRP Material Item No. 5031737 (2”), 5031738 (2.5”), 5031738 (3”), 5031739 (4”)	
Description	
Noun	Heat Shrink
Sizes	2”, 2.5”, 3”, 4”
Material	Polyolefin, Thermoplastic Adhesive Lined
Style	Black, Red

Approved Suppliers & Manufacturer Part Number			
	CANUSA-EMI	**3M CO**	**RAYCHEM CORP-TE CONNECTIVITY**
2”	CFW-3500-12-D-BK	IMCSN-3000-12A	WCSM-105/30-300-S
2.5”	CFW-4700-16-D-BK	IMCSN-4300-16A	WCSM-130/36-450-S
3”	CFW-4700-16-D-BK	IMCSN-4300-16A	WCSM-130/36-450-S
4”	CFM-6700-24-D-PR-BK	IMCSN-6000-24	WCSM-180/50-600-S

	APPLIED EXTRUSION TECHNOLOGY	**INERTIA REPL INC**
2.5”	WC-300-16	HWT13037-18A
3”	WC-300-16	HWT13037-18A

SRP Material Item No. 5033732 (1"), 5033735 (3")	
Description	
Noun	Conduit
Size	1", 3"
Type	Corrugated
Style	With pulling tape installed
Special Ref.	TIA 569, UL 1666
Approved Suppliers	**Part Number**
DURA-LINE	10009315 (1")
THOMAS & BETTS CARLON	1808-250C (1"), 11813-250 (3")

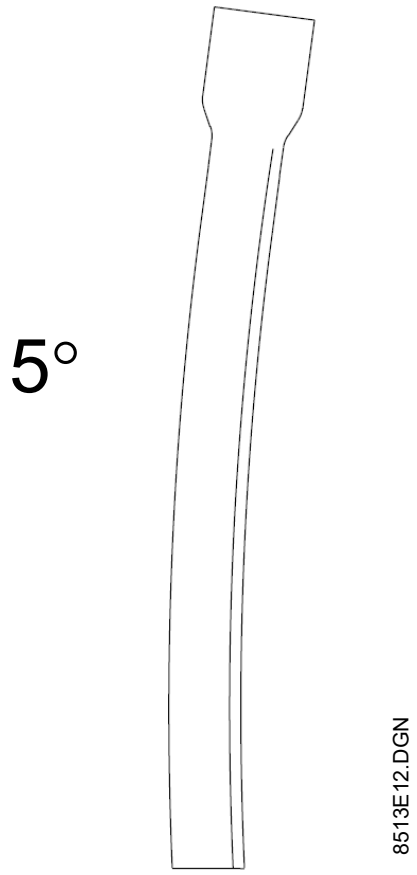


NEMA TC-2
Schedule 40
Minimum socket depth 1 ¾”

Additional Markings:

Extrusion or fabrication date: Month/Year format.

SRP Material Item No. 5035082 (2.5”), 5035086 (3”), or 5035180 (4”)	
Description	
Noun	Cap
Adjective	Conduit
Size	2.5", 3” or 4”
Type	EPC-40-PVC
Style	Direct burial molded
Use	Buried stub-outs
Approved Suppliers	**Part Number/Size**
Cal-Am Manufacturing	2046-025 (2.5”) 2046-030 (3”) 2046-040 (4”)
CANTEX Industrial	
JM Eagle	
Midwest Plastics	
Pacific Western	(4”)
Prime Conduit	

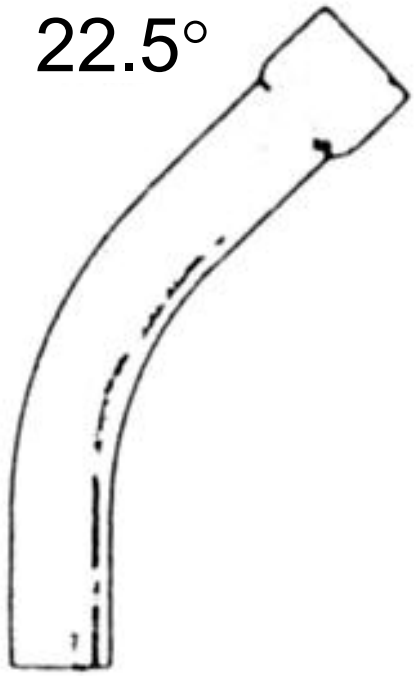


SRP Material Item No. 5034167 (2.5”), 5034169 (3”), or 5034172 (4”)	
Description	
Noun	Elbow
Adjective	Conduit
Size	2.5", 3” or 4”
Type	EPC-40-PVC
Approved Suppliers	
	JM Eagle
	Midwest Plastics
	Prime Conduit
	Underground Supply

NEMA TC-2, ASTM F-512
Schedule 40
Minimum socket depth 1 ¾”

Additional Markings:

1. 90° UL wire code.
2. Spigot end marked with a circumferential ring, ¼” more than the socket depth.
3. Extrusion or fabrication date: Month/Year format.
4. Sweep angle.

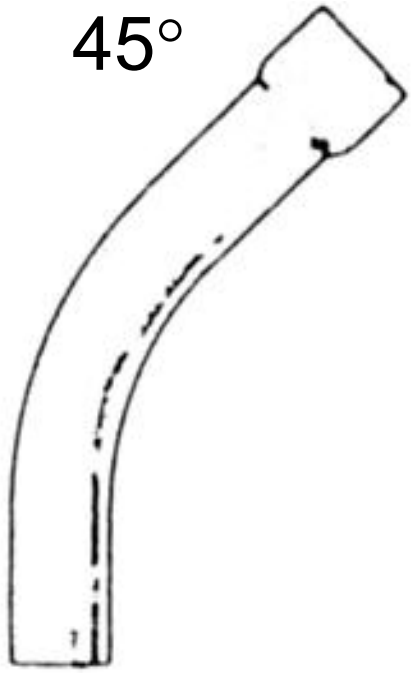


SRP Material Item No. 5033708 (2.5”), 5033589 (3”), or 5033721 (4”)	
Description	
Noun	Elbow
Adjective	Conduit
Size	2.5", 3” or 4”
Type	EPC-40-PVC
Style	22.5° sweep, 36" radius
Approved Suppliers	**Size**
CANTEX Industrial	
JM Eagle	
Heritage Plastics	
Midwest Plastic	2.5” and 3”
Prime Conduit	
Underground Supply	

NEMA TC-2, ASTM F-512
Schedule 40
Minimum socket depth 1 ¾”

Additional Markings:

1. 90° UL wire code.
2. Spigot end marked with a circumferential ring, ¼” more than the socket depth.
3. Extrusion or fabrication date: Month/Year format.
4. Sweep angle.
5. Bend radius.

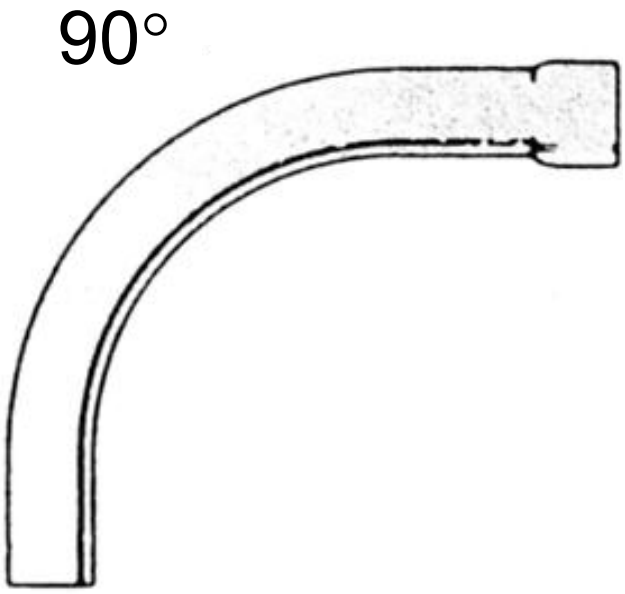


SRP Material Item No. 5033707 (2.5”), 5033590 (3”), or 5033591 (4”)	
Description	
Noun	Elbow
Adjective	Conduit
Size	2.5", 3” or 4”
Type	EPC-40-PVC
Style	45° sweep, 36" radius
Approved Suppliers	
	CANTEX Industrial
	Heritage Plastics
	JM Eagle
	Midwest Plastic
	Prime Conduit
	Underground Supply

NEMA TC-2, ASTM F-512
Schedule 40
Minimum socket depth 1 ¾”

Additional Markings:

1. 90° UL wire code.
2. Spigot end marked with a circumferential ring, ¼” more than the socket depth.
3. Extrusion or fabrication date: Month/Year format.
4. Sweep angle.
5. Bend radius.

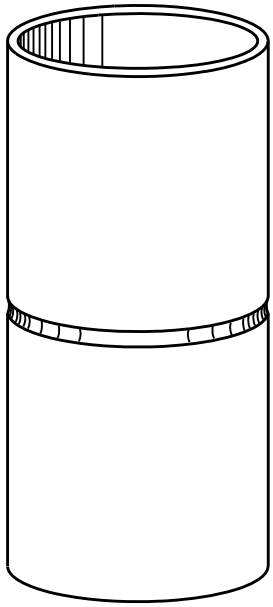


SRP Material Item No. 5033603 (2.5”), 5033722 (3”), or 5033723 (4”)	
Description	
Noun	Elbow
Adjective	Conduit
Size	2.5", 3” or 4”
Type	EPC-40-PVC
Style	90◦ sweep, 36" radius
Approved Suppliers	
	CANTEX Industrial
	Heritage Plastics
	JM Eagle
	Midwest Plastic
	Prime Conduit
	Underground Supply

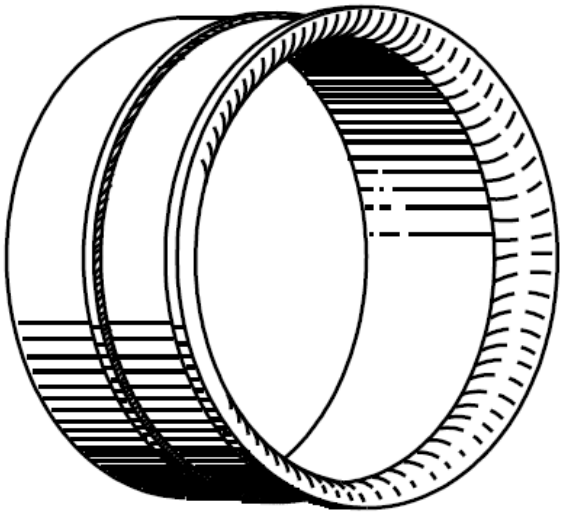
NEMA TC-2, ASTM F-512
Schedule 40
Minimum socket depth 1 ¾”

Additional Markings:

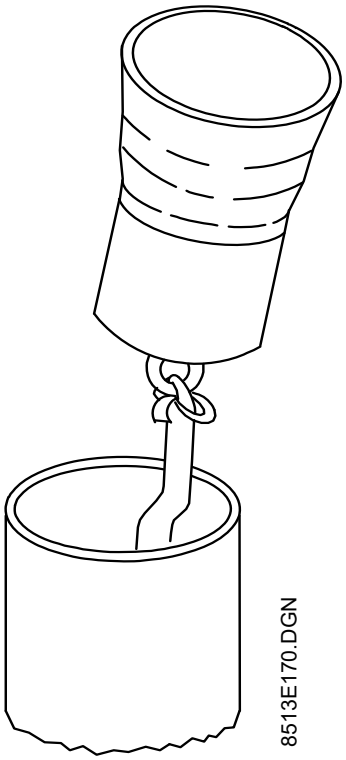
1. 90◦ UL wire code.
2. Spigot end marked with a circumferential ring, ¼” more than the socket depth.
3. Extrusion or fabrication date: Month/Year format.
4. Sweep angle.
5. Bend radius.



dSRP Material Item No. 5034166 (2.5”), 5034168 (3”), or 5034171 (4”)		NEMA TC-2, ASTM F-512 Schedule 40 Minimum socket depth 2.5” Additional Markings: Extrusion or fabrication date: Month/Year format.
Description		
Noun	Coupling	
Adjective	Conduit	
Size	2.5”, 3” or 4”, min. 2.5" socket depth	
Type	Schedule 40 PVC	
Style	.075" max. stop height	
Special Ref.	.219" max. stop width, NEMA TC3 ASTM F512	
Approved Suppliers	**Part Number/Size**	
CANTEX Industrial		
JM Eagle		
Midwest Plastic		
Picoma Industries	ME941KP (2.5”), ME941LP (3”), ME941NP (4”)	
Prime Conduit	E941L (3”), E941LN (4”)	
Underground Supply	CS2525 (2.5”), CS3030 (3”), CS4040 (4”)	



SRP Material Item No. 5033727 (3”) 5033728 (4”)	
Description	
Noun	Coupling
Adjective	End bell
Sizes	3” or 4”
Type	Conduit EPC-40-PVC
Style	Direct burial molded
Approved Suppliers	
	CANTEX Industrial
	JM Eagle
	Midwest Plastics, Inc.
	Prime Conduit
	Heritage Plastics



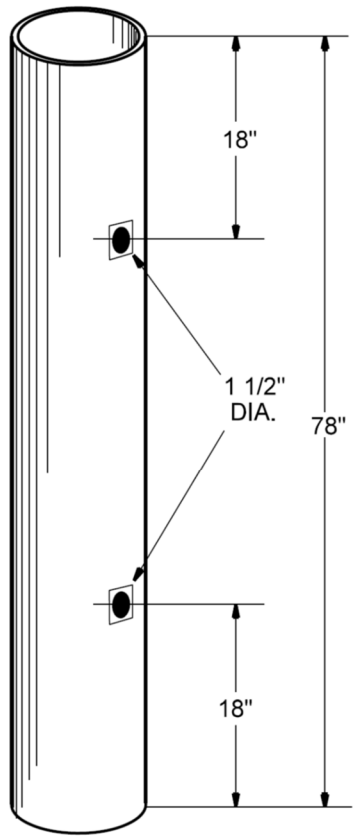
SRP Material Item No. 5035183 (2.5”), 5035184 (3”), or 5035185 (4”)	
Description	
Noun	Plug
Adjective	Conduit
Size	2.5", 3” or 4”
Type	Plastic
Style	Polyethylene insert type
Use	For plugging end of conduit; For above grade stub-ups only
Approved Suppliers	**Part Number/Size**
Armorcast Products	
Cal Am Manufacturing	2250-025 (2.5”), 2250-030 (3”), 2250-040 (4”)
CANTEX Industries	5315250 (3”), 5315252 (4”)
Prime Conduit	P258K (2.5”)
PW Pipe	
Heritage Plastics	

PVC PRIMER

SRP Material Item No. 5012035	
Description	
Noun	Primer
Adjective	PVC
Size	1 quart
Type	Purple
Style	Direct burial molded
Use	W/cement S/C 5011976
Special Ref.	ASTM D-2564
Approved Suppliers	**Part Number**
IPS Corporation	WELD-ON P-68
United Elchem Ind.	903 (PLASTI-WELD)

PVC CEMENT

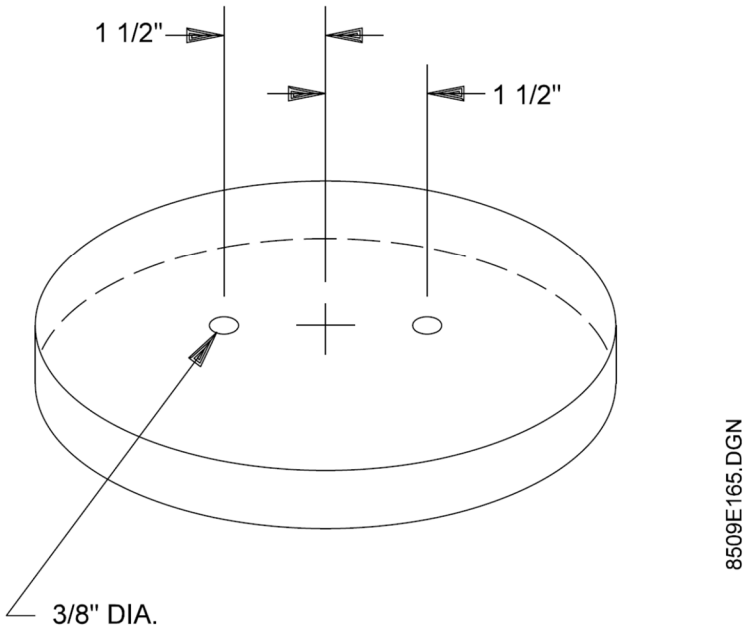
SRP Material Item No. 5011976	
Description	
Noun	Cement
Adjective	Clear, medium body
Size	1 quart, 12 per case
Style	Complete with dauber
Use	Joining PVC to PVC
Special Ref.	ASTM D-2564
Approved Suppliers	**Part Number**
Prime Conduit	VC9962
RectorSeal	WELD-ON P-68
United Elchem Ind.	404 PLASTI-WELD
Weld-On	413



6'- 6" X 10" DIA.TUBE

SRP Material Item No. 5035522	
Description	
Noun	Tube
Adjective	PVC irrigation pipe
Sizes	For 10” dia., 6’-6” long SDR 91 or better 10.2” nominal OD, 0.11” minimum wall thickness
Use	Light pole installations
Approved Suppliers	
Magma Engineering	
T&D Supply	

For 10" DIA. Pipe Cap



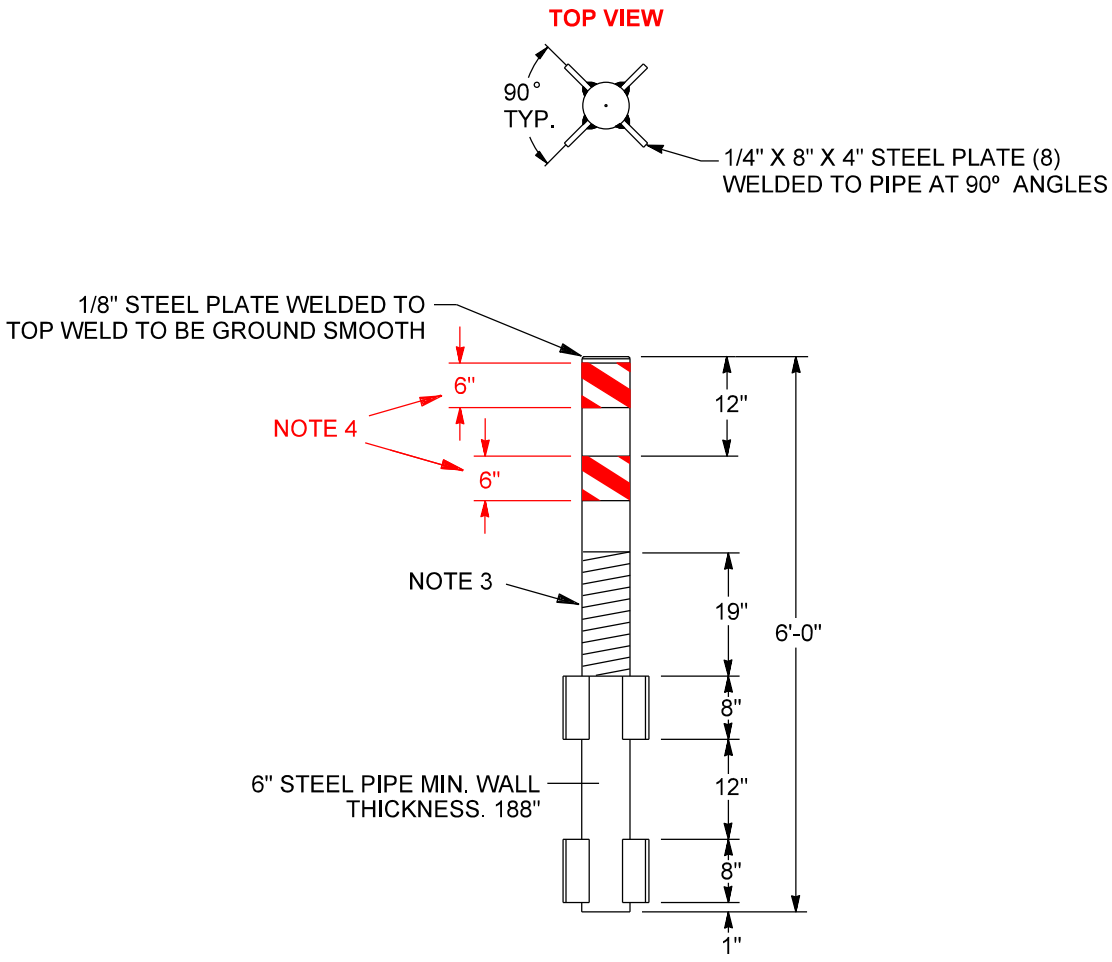
SRP Material Item No. 5035000	
Description	
Noun	Cap
Adjective	PVC
Size	10” irrigation pipe
Type	Holes for mounting electronic marker using cable ties
Style	Pre-drilled
Use	Temporary cap for 5035522
Special Ref.	For use with steel street light pole installations. SM-610900-5035000
Approved Suppliers	
Magma Engineering	
T&D Supply	

SRP Material Item No. 5035671	
Description	
Noun	Marker
Adjective	Buried electronic
Size	15" diameter, 1" thick
Type	A tuned passive element
Style	Hermetically sealed
Use	To mark sub-surface facilities
Approved Supplier	**Part Number**
3M / MSC Industrial Supply	1251

SRP Material Item No. 5035670	
Description	
Noun	Marker
Adjective	Buried electronic
Sizes	8.25” diameter
Type	A tuned passive element
Style	Hermetically sealed
Use	Attached to temporary cap (see page 11-19)
Approved Supplier	**Part Number**
Test & MeasureM	1256

SRP Material Item No. 5035669	
Description	
Noun	Marker
Adjective	Red
Sizes	7' 4" LONG
Type	Plastic
Style	Buried cable
Use	Flag above ground attached to temporary cap (see pg. 11-19)
Approved Supplier	**Part Number**
Radar Engineers	600

GUARD POST 6" X 6'

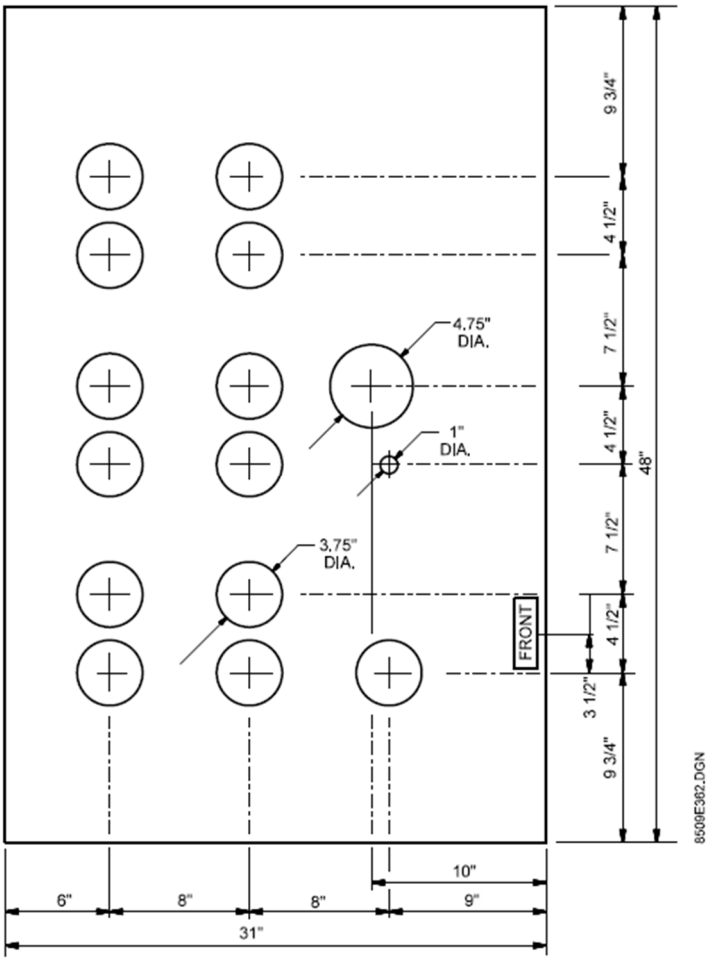


SRP Material Item No. 5034819	
Description	
Noun	Post
Adjective	Guard
Sizes	6" X 6'
Type	Steel pipe
Use	Protection around equipment
Special Ref.	SM-637200-5034819
Approved Suppliers	**Part Number**
Cem-Tec Corporation	Use description
Southwest Fabrication	SWF637200-5034819
SRP	

Material and Construction Specification Notes:

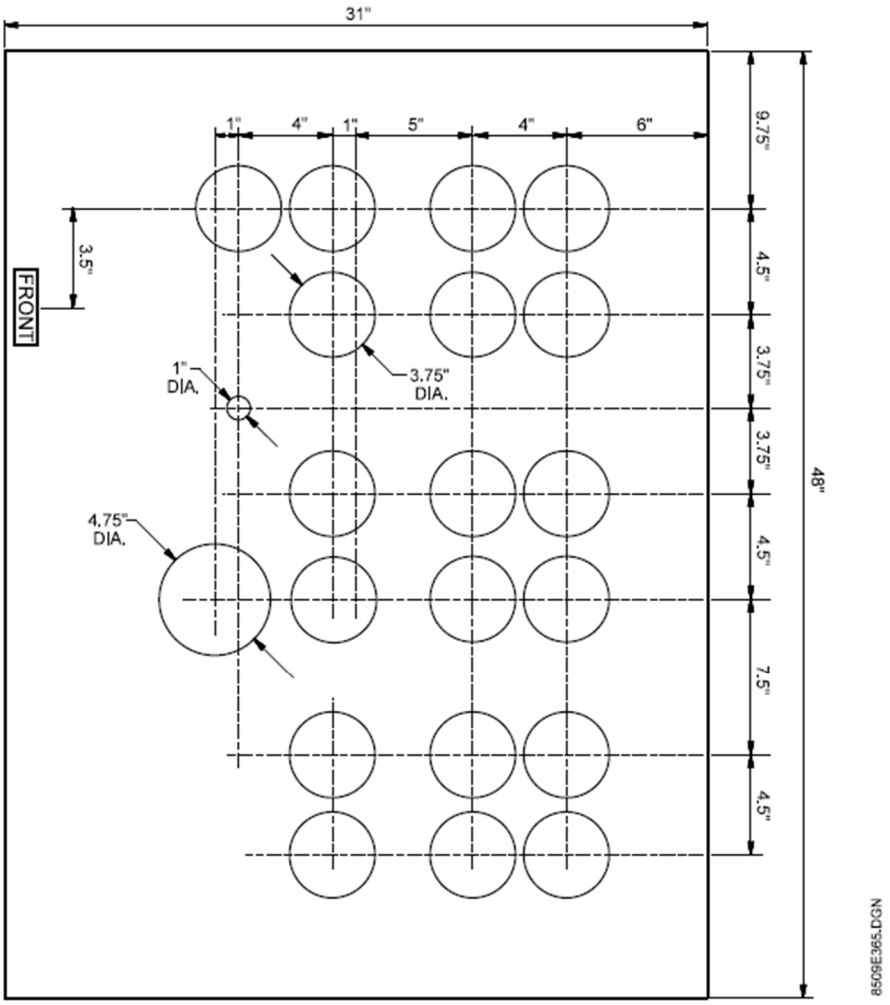
1. Surface to receive a commerical sandblast cleaning pretreatment.
2. Once blasted, the post shall be either hot dip galvanized per ASTM A123 or zinc metal sprayed 5 mil. +/- 1 mil.
3. UL-approved pipe wrap tape installed per diagram with a minimum overlap of half the tape width.
4. Apply 3" reflective tape (yellow and black) 6" at height locations per diagram.

Electric Service Specifications SRP® *PROPRIETARY MATERIAL*	REV: UPDATE NOTE 3 & ADDED NOTE 4 WITH ILLUSTRATION REFERENCE	
	CONTRACTOR-SUPPLIED MATERIAL GUARD POST 6" X 6'	ISSUE DATE: 06/02/04 REV. DATE: 06/01/23 APPROVAL: J. ROBBINS
	11-25	8509E292.DGN



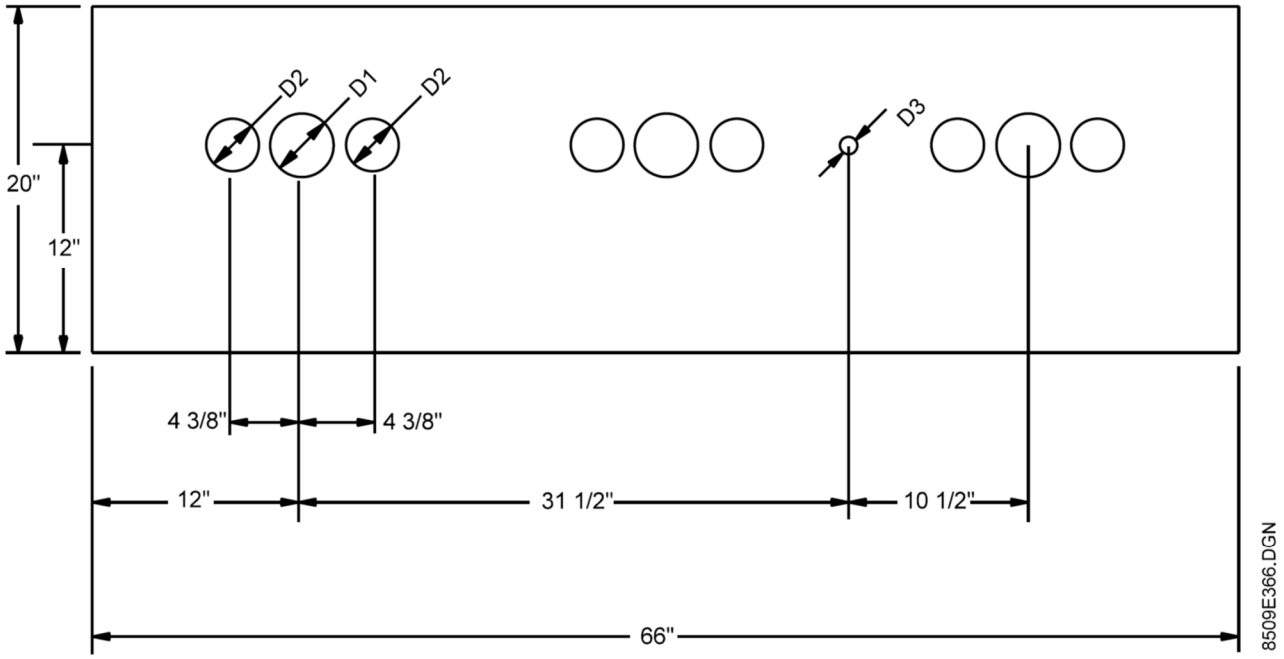
SRP Material Item No. 5031741	
Description	
Noun	Conduit
Adjective	Stub-up form
Sizes	13-3.75", 1-4.75” & 1-1" holes per drawing
Type	Recycled or new plastic
Use	For pad-mounted switch 5034828
Special Ref.	Made from polypropylene or polyethylene, SM-647561-5031741
Approved Suppliers	
Rocky Mountain Template	
Underground Supply	

NOTE: "FRONT" to be stamped or labeled into or on plastic and shall be of sufficient size to be easily readable.



SRP Material Item No. 5031856	
Description	
Noun	Spacer
Adjective	Stub-up form
Sizes	19-3.75", 1-4.75” & 1-1" holes per drawing
Type	Recycled or new plastic
Style	12kV switch
Use	For pad-mounted switch 5034828
Special Ref.	Made from polypropylene or polyethylene, SM-647573-5031856
Approved Suppliers	Rocky Mountain Template
	Underground Supply

NOTE: "FRONT" to be stamped or labeled into or on plastic and shall be of sufficient size to be easily readable.

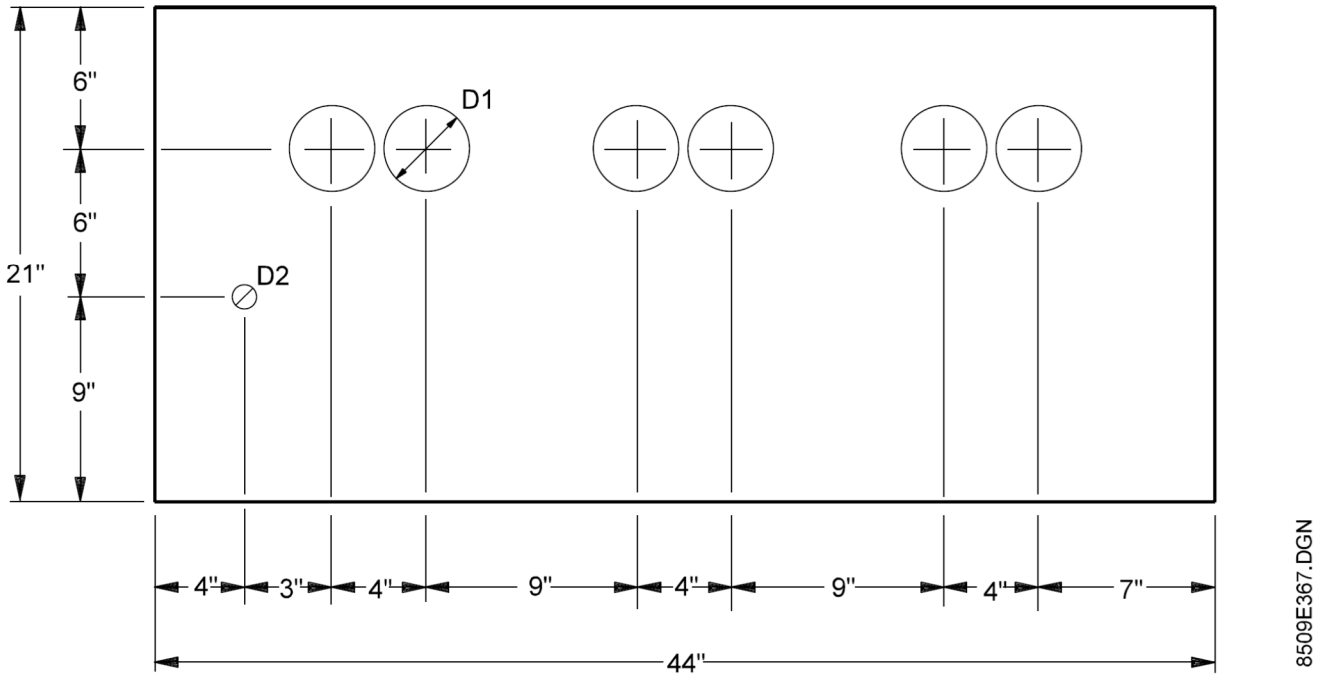


D1 = 3.75" diameter for 3" conduit

D2 = 3" diameter for 2.5" conduit

D3 = 1" diameter for ground rod or 2/0 bare copper from adjacent switch

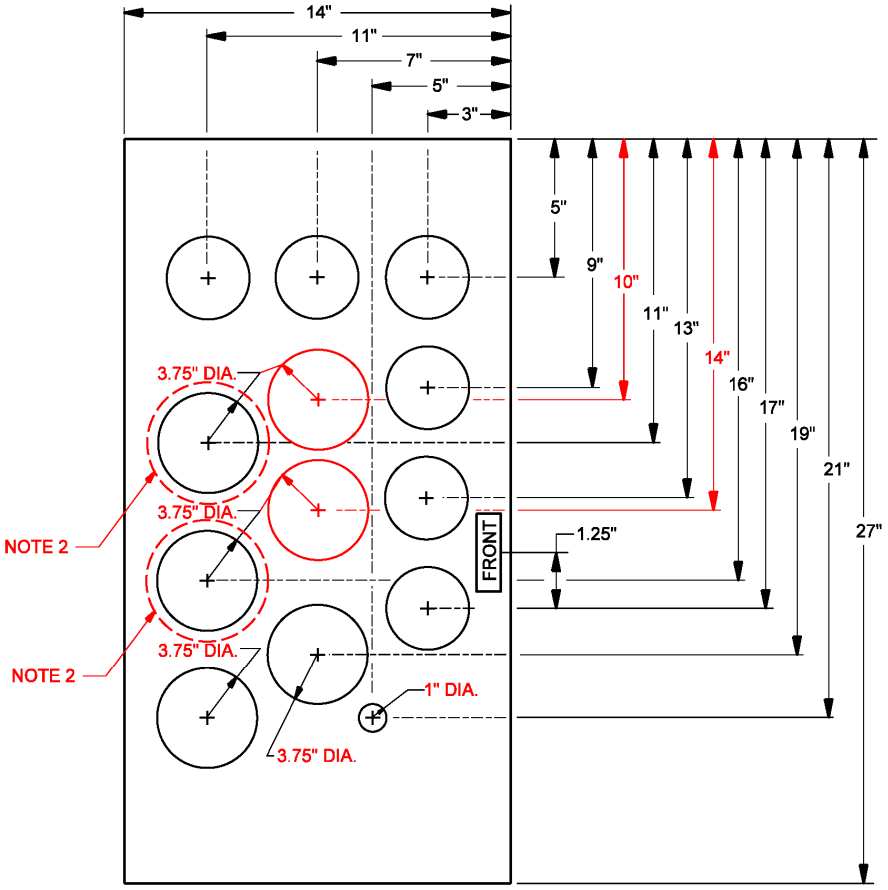
RP Material Item No. 5031742	
Description	
Noun	Spacer
Adjective	Conduit stub-up form
Size	3-3.75", 6-3.0", & 1-1" holes for conduit per drawing.
Type	Recycled or new plastic
Style	12 kV fuse
Use	For pad-mounted fuse 5034304
Special Ref.	Made from polypropylene or polyethylene. SM-647562-5031742
Approved Suppliers	
Rocky Mountain Template	
Underground Supply	



D1= DIAMETER = 3.75"
D2= DIAMETER = 1"

SRP Material Item No. 5031743	
Description	
Noun	Spacer
Adjective	Conduit stub-up form
Size	6-3.75" & 1-1" dia. Holes, 21" x 44" overall
Type	Recycled or new plastic
Style	750 feeder pulling
Use	For feeder pulling enclosure 5034298
Special Ref.	Made from 200 mil. polypropylene or polyethylene. SM-647563-5031743
Approved Suppliers	
	Rocky Mountain Template
	Underground Supply

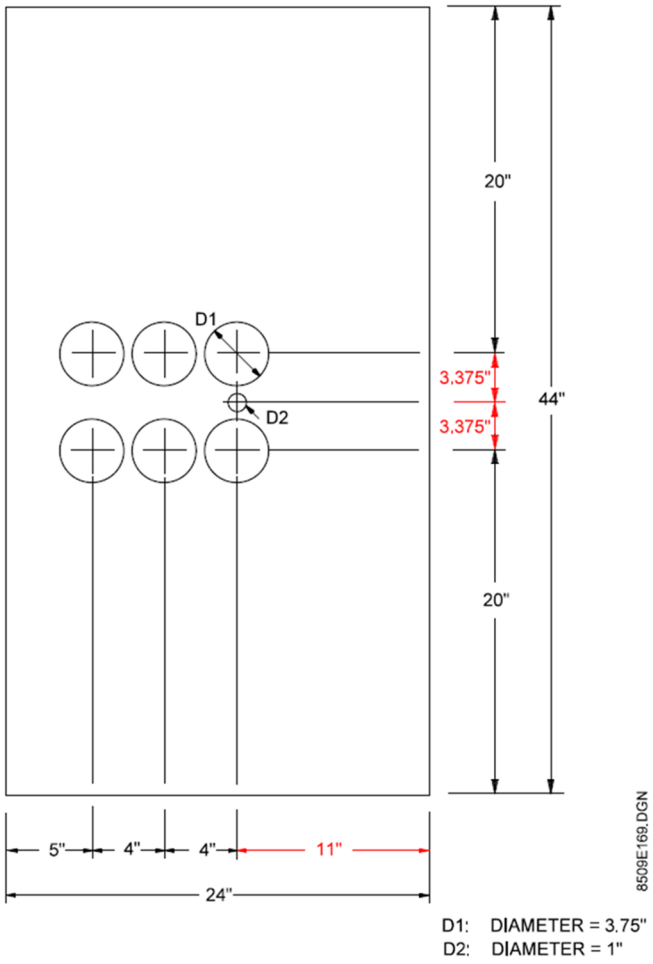
CONDUIT STUB-UP FORM SPACER
6-3”, 6-2.5” & 1-1” HOLES FOR CONDUIT AND ROD



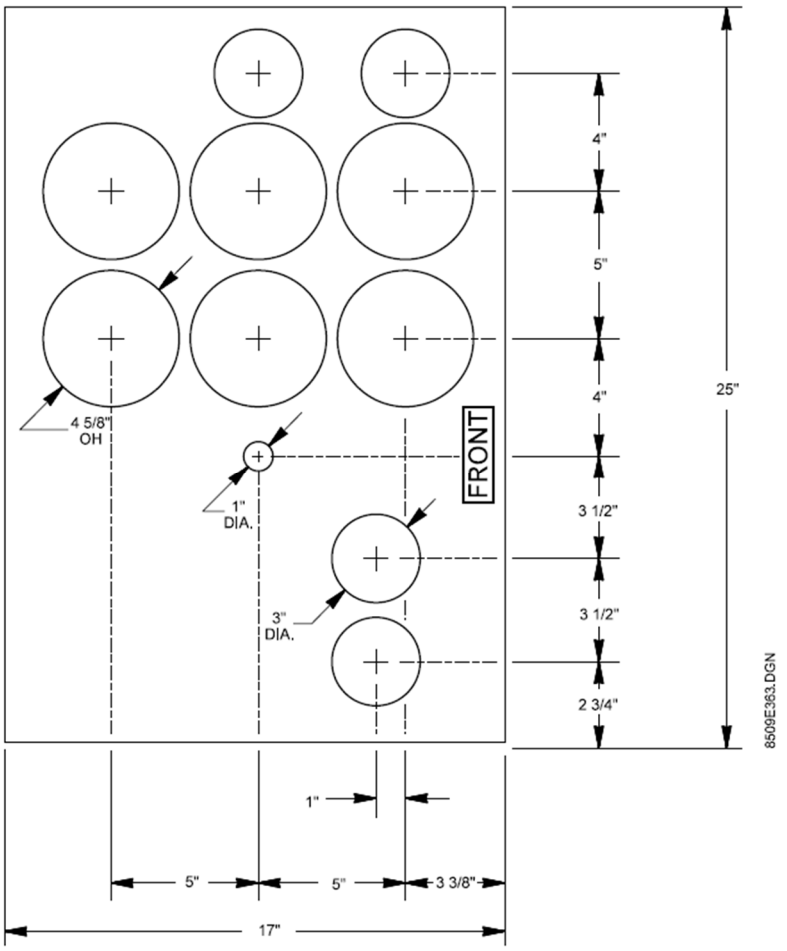
SRP Material Item No. 5031848	
Description	
Noun	Spacer
Adjective	Conduit stub-up form
Size	6-3.75”, 6-3” & 1-1” holes for conduit and rod
Type	Recycled or new plastic
Additional	With above ground j-box
Use	For single-phase transformer
Special Ref.	Made from polypropylene or polyethylene, SM-647565-5031848
Approved Suppliers	
	Rocky Mountain Template
	Underground Supply

NOTES:

1. "FRONT" to be stamped or labeled into or on plastic and shall be of sufficient size to be readable.
2. Positions SE_1 and SE_2 may be enlarged by installer to accept two 4” conduits.

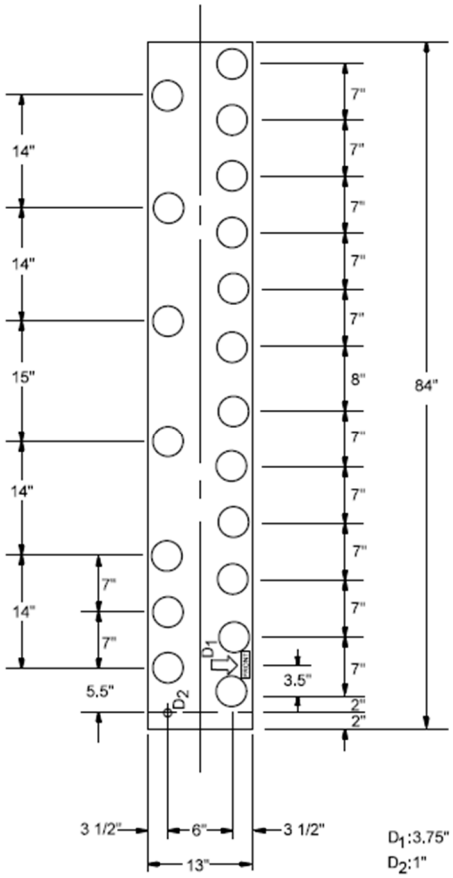


SRP Material Item No. 5031847	
Description	
Noun	Spacer
Adjective	Conduit stub-up form
Size	6-3.75”, 1-1” dia. holes, 24” x 44” overall
Type	Recycled plastic
Style	3Ø primary pulling enclosure
Special Ref.	Made from mil. polypropylene or polyethylene, solid or corrugated
Approved Suppliers	
	Rocky Mountain Template
	Underground Supply



SRP Material Item No. 5031849	
Description	
Noun	Spacer
Adjective	Conduit stub-up form
Size	6-4.5", 4-3" & 1-1" diameter holes
Style	Polyethylene
Material	200 mil. Polyethylene
Approved Suppliers	**Part Number**
Rocky Mountain Template	Use description
Underground Supply	Use description

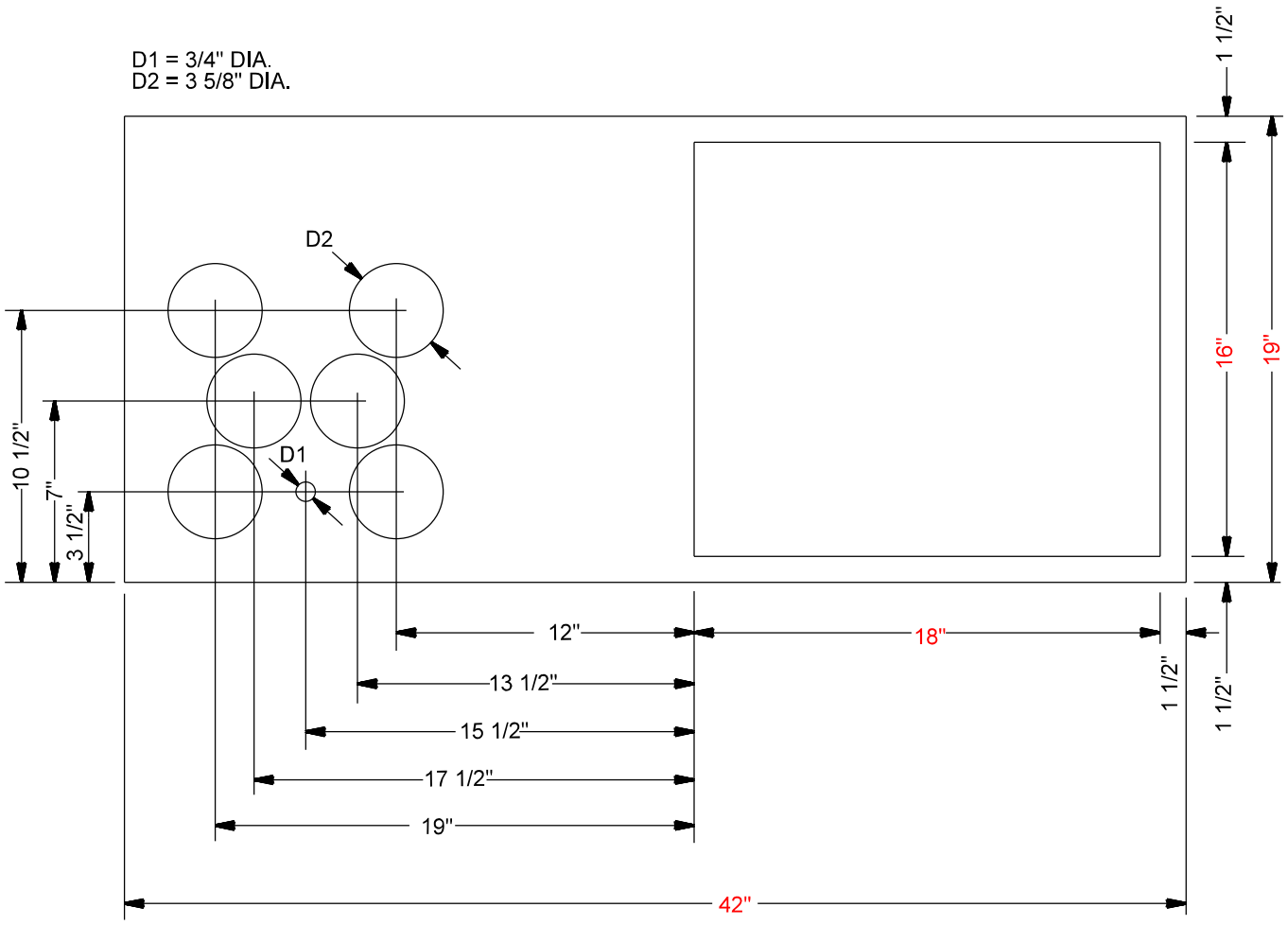
NOTE: "FRONT" to be stamped or labeled into or on plastic and shall be of sufficient size to be easily readable.



SRP Material Item No. 5031850	
Description	
Noun	Spacer
Adjective	Conduit stub-up form
Size	19-3.75" holes & 1-1" hole for 3" conduit per drawing
Use	4/0 tap enclosure
Special Ref.	Made from polypropylene or polyethylene SRP drawing SM-647567-5031850
Approved Supplier	**Part Number**
Rocky Mountain Template	Use description
Underground Supply	Use description

NOTES

1. “F” stamped in the plastic to be minimum ¾”
2. "FRONT" to be stamped or labeled into or on plastic and shall be of sufficient size to be easily readable.

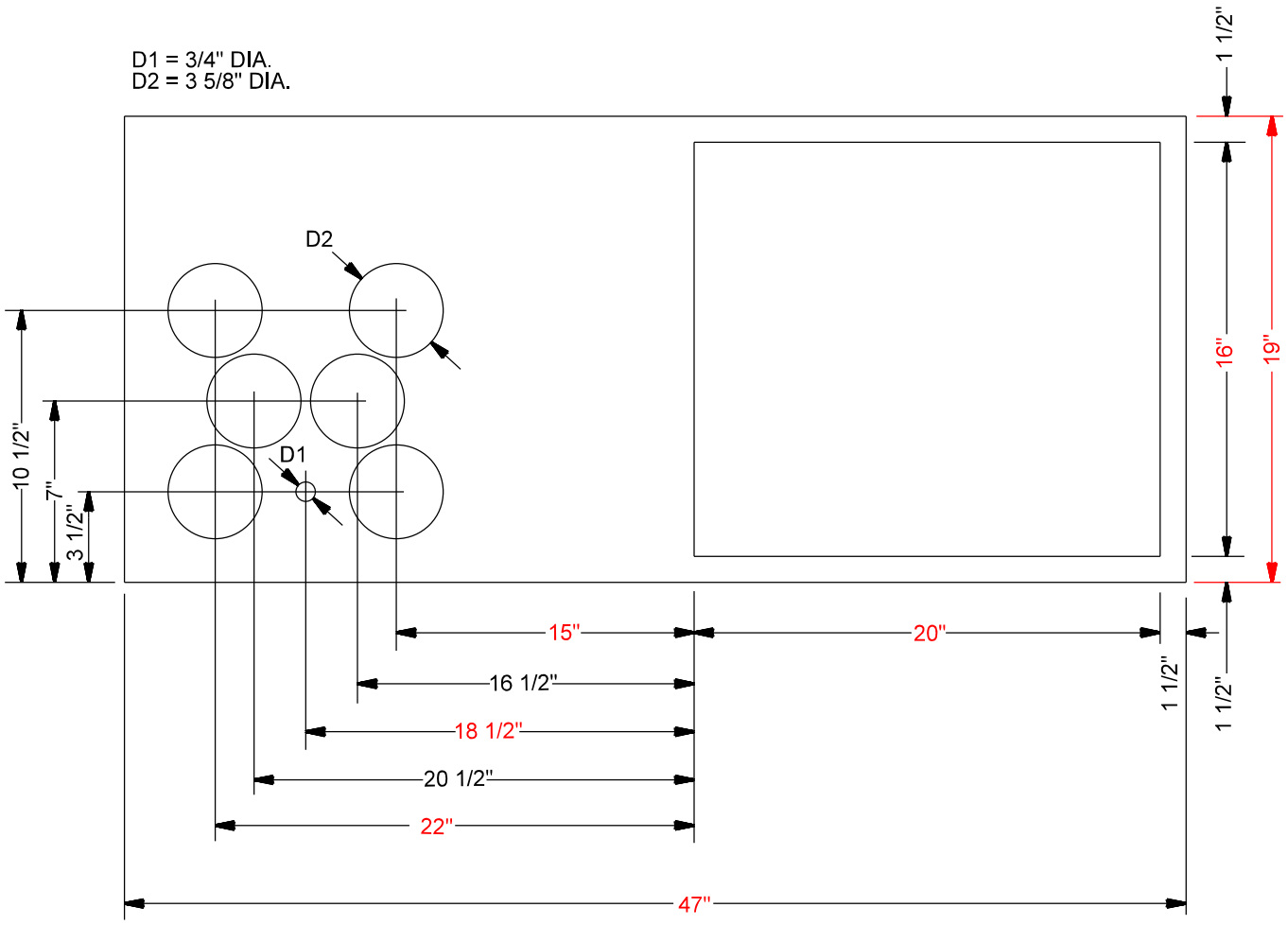


SRP Material Item No. 5031854	
Description	
Noun	Spacer
Adjective	Conduit stub-up form
Size	42" x 19" Spacer, with 6-3 5/8", 1-3/4", and 1-18" x 16" Holes
Type	Recycled plastic
Material	200 mil. Polyethylene. These shall not be made of corrugated material.
Approved Suppliers	**Part Number**
Rocky Mountain Template	Use Description
Underground Supply	Use Description

NOTES

1. Conduit spacer for 75-500 kVA, 5' 6" x 7' 6" Transformer Pad (5069778)

Electric Service Specifications SRP® *PROPRIETARY MATERIAL*	REV: REVISED XMFR PAD RANGE SIZES	
	CONTRACTOR-SUPPLIED MATERIAL CONDUIT STUB-UP TEMPLATE 75-500 kVA, 5' 6" x 7' 6" XFMR PAD	ISSUE DATE: 04/18/05 REV. DATE: 01/08/25 APPROVAL: C. OBRIEN
	11-34	8509E405.DGN

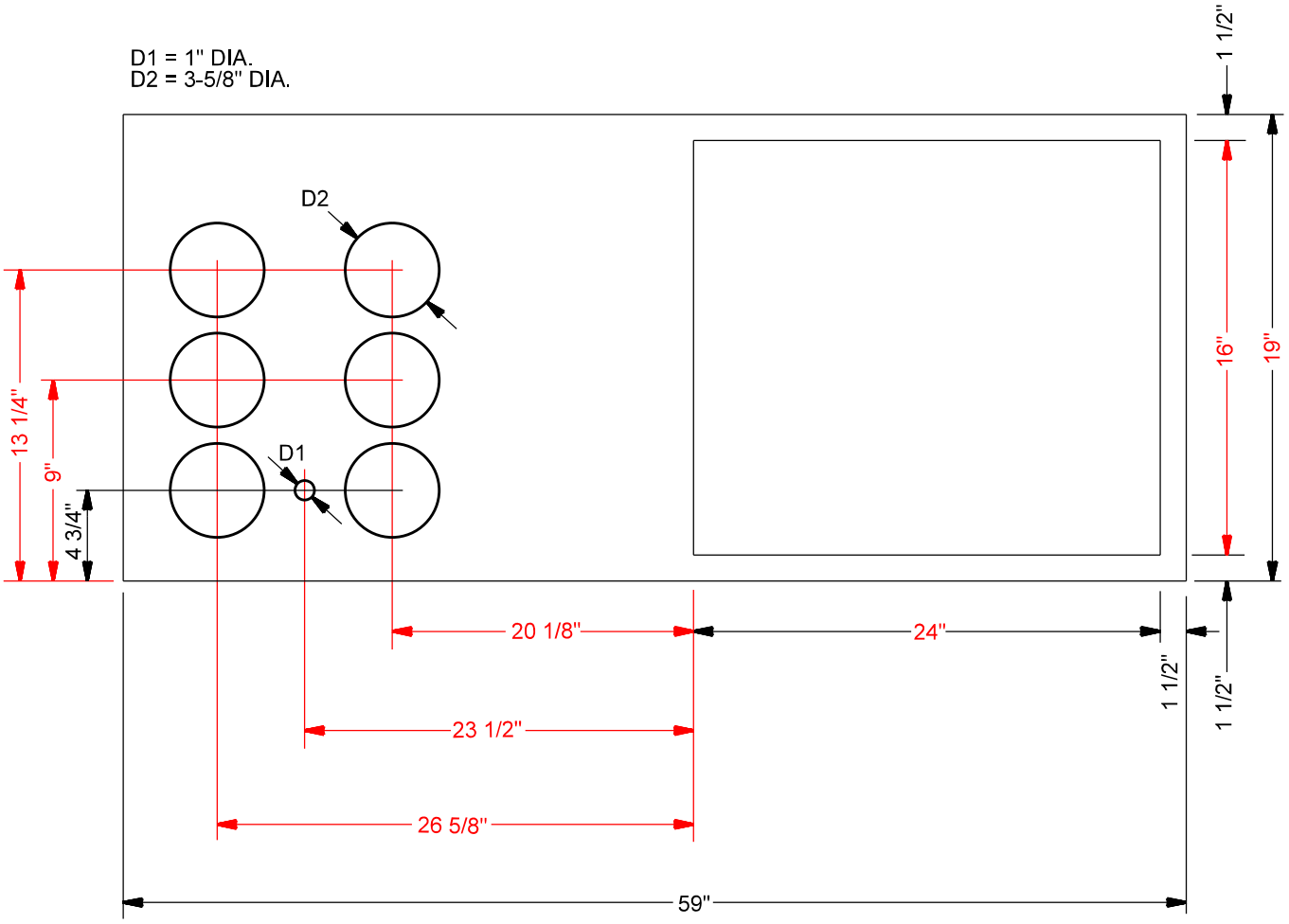


SRP Material Item No. 5031852	
Description	
Noun	Spacer
Adjective	Conduit stub-up form
Size	47" x 19" Spacer, with 6-3 5/8", 1-3/4", and 1-20" x 16" Holes
Type	Recycled plastic
Material	200 mil. Polyethylene. These shall not be made of corrugated material.
Approved Suppliers	**Part Number**
Rocky Mountain Template	Use Description
Underground Supply	Use Description

NOTES

1. Conduit spacer for 750 kVA, 8' x 8' Transformer Pad (5069779)

Electric Service Specifications SRP® *PROPRIETARY MATERIAL*	REV: REVISED XMFR PAD RANGE SIZES	
	CONTRACTOR-SUPPLIED MATERIAL CONDUIT STUB-UP TEMPLATE 750 kVA, 8' x 8' XFMR PAD	ISSUE DATE: 04/18/05 REV. DATE: 01/08/25 APPROVAL: C. OBRIEN
	11-35	8509E368.DGN

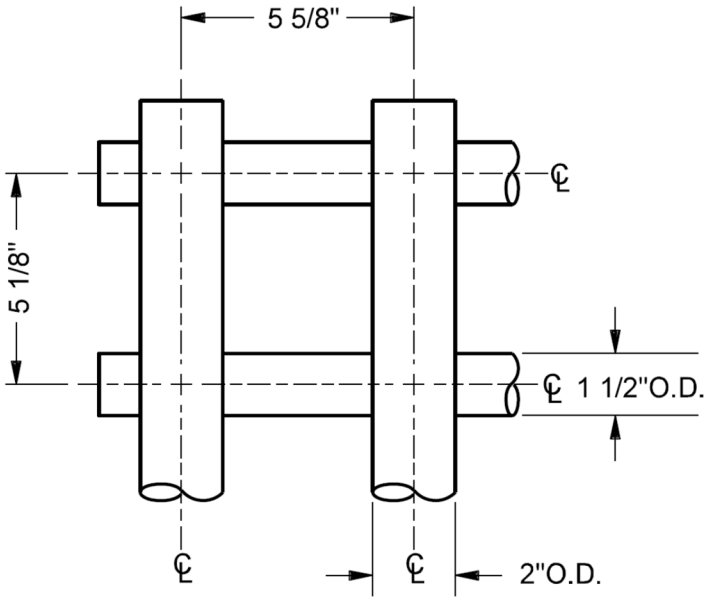


SRP Material Item No. 5031853	
Description	
Noun	Spacer
Adjective	Conduit stub-up form
Size	59" x 19" Spacer, with 6-3 5/8", 1-1", and 1-24" x 16" Holes
Type	Recycled plastic
Material	200 mil. Polyethylene. These shall not be made of corrugated material.
Approved Suppliers	**Part Number**
Rocky Mountain Template	Use Description
Underground Supply	Use Description

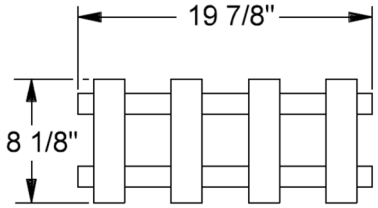
NOTES

1. Conduit spacer for 1000-2500 kVA, 10' x 10' Transformer Pad (5034800)

Electric Service Specifications SRP® PROPRIETARY MATERIAL	REV: REVISED XMFR PAD RANGE SIZES	
	CONTRACTOR-SUPPLIED MATERIAL CONDUIT STUB-UP TEMPLATE 1000-2500 kVA, 10' x 10' XFMR PAD	ISSUE DATE: 04/18/05 REV. DATE: 01/08/25 APPROVAL: C. OBRIEN
	11-36	8509E369.DGN



Spacer Detail



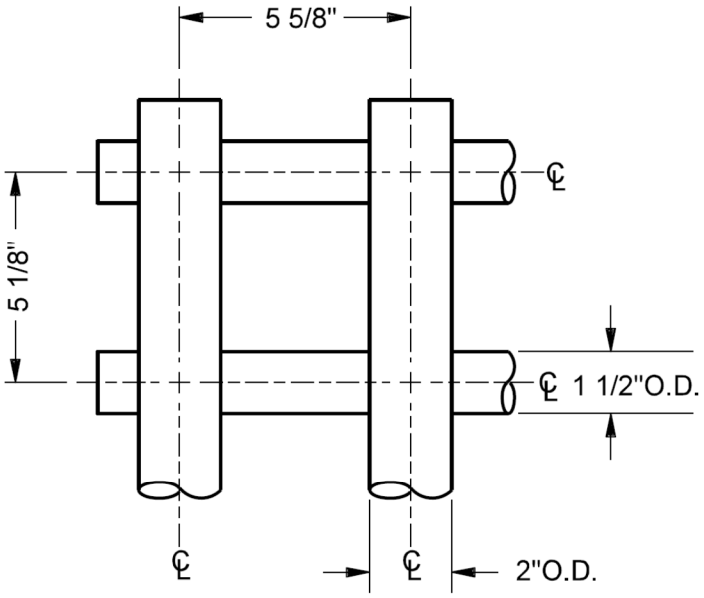
Spacer No. 3A

8509E370.DGN

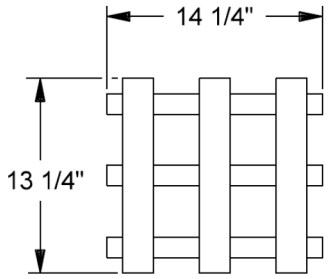
SRP Material Item No. 5031862	
Description	
Noun	Spacer
Adjective	Conduit
Size	For 3" 3-hole
Type	Plastic
Style	Duct bank spacer
Special Ref.	SRP drawing SM-647610-5031862 – SM-647635-5031868, spacer no. 3A.
Material	ABS or PVC plastic.
Approved Supplier	**Part Number**
Underground Supply	SPR30 3-HOLE
Magma Engineering	Use description

NOTES

1. All joints must be cemented.
2. Window opening: 3 $^{5}/_{8}$" x 3 $^{5}/_{8}$".



Spacer Detail



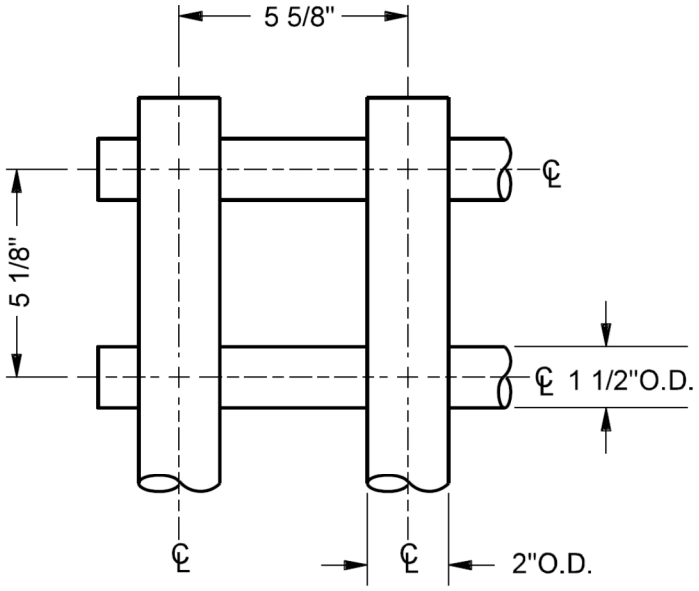
Spacer No. 4A
SM-647615-5031863

8509E371.DGN

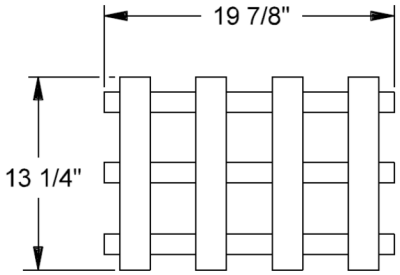
SRP Material Item No. 5031863	
Description	
Noun	Spacer
Adjective	Conduit
Size	For 3" 4-hole
Type	Plastic
Style	Duct bank spacer
Special Ref.	SRP drawing SM-647610-5031862 – SM-647635-5031868, spacer no. 4A.
Material	ABS or PVC plastic.
Approved Suppliers	**Part Number**
Magma Engineering	Use description
Underground Supply	SRP30 4-HOLE

NOTES

1. All joints must be cemented.
2. Window opening: 3 $^{5}/_{8}$" x 3 $^{5}/_{8}$".



Spacer Detail



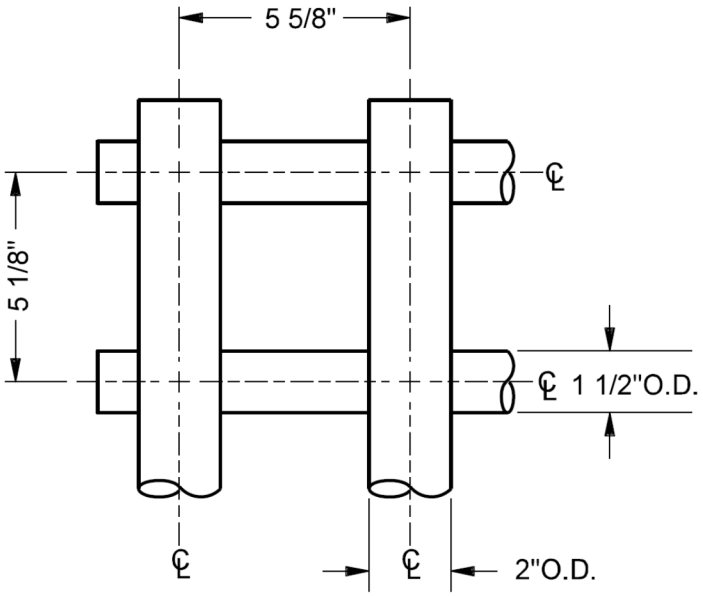
Spacer No. 6A
SM-647620-5031864

8509E372.DGN

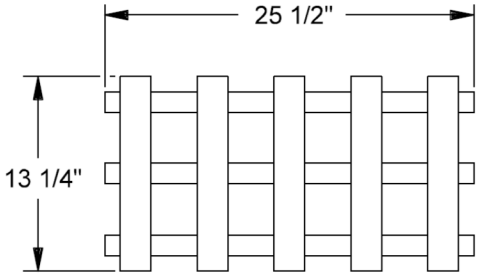
SRP Material Item No. 5031864	
Description	
Noun	Spacer
Adjective	Conduit
Size	For 3" 6-hole
Type	Plastic
Style	Duct bank spacer
Special Ref.	SRP drawing SM-647610-5031862 – SM-647635-5031868, spacer no. 6A.
Material	ABS or PVC plastic.
Approved Suppliers	**Part Number**
Magma Engineering	Use description
Underground Supply	SRP30 6-HOLE

NOTES

1. All joints must be cemented.
2. Window opening: 3 $^{5}/_{8}$" x 3 $^{5}/_{8}$".



Spacer Detail



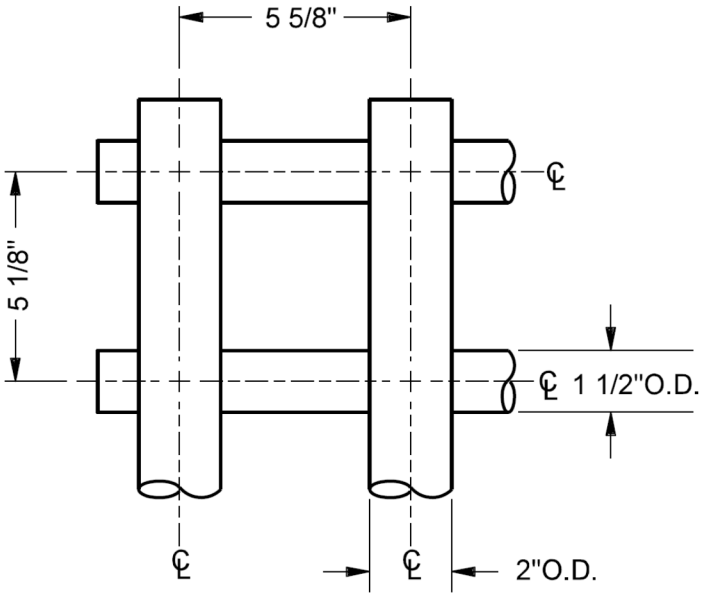
Spacer No. 8A
SM-647625-5031865

8509E373.DGN

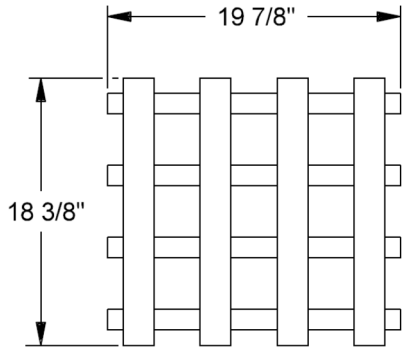
SRP Material Item No. 5031865	
Description	
Noun	Spacer
Adjective	Conduit
Size	For 3" 8-hole
Type	Plastic
Style	Duct bank spacer
Special Ref.	SRP drawing SM-647610-5031862 – SM-647635-5031868, spacer no. 8A.
Material	ABS or PVC plastic.
Approved Suppliers	**Part Number**
Magma Engineering	Use description
Underground Supply	SPR30 8-HOLE

NOTES

1. All joints must be cemented.
2. Window opening: 3 $^{5}/_{8}$" x 3 $^{5}/_{8}$".



Spacer Detail



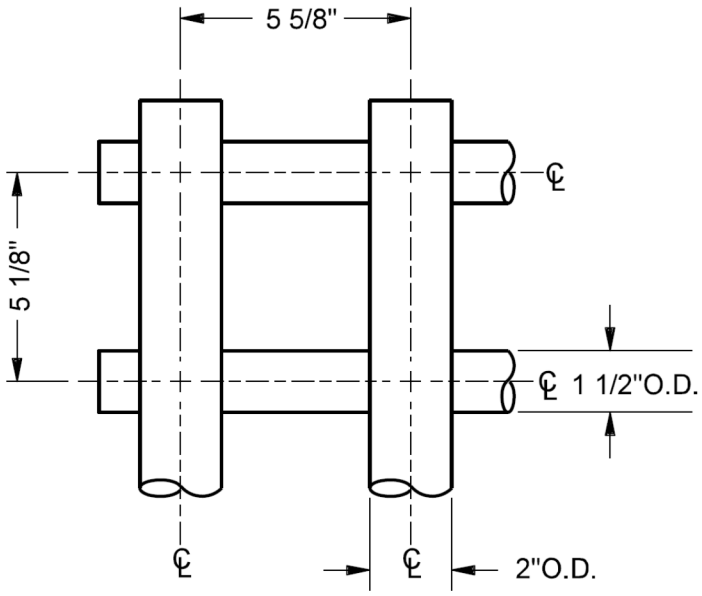
Spacer No. 0A
SM-647627-5031866

8509E374.DGN

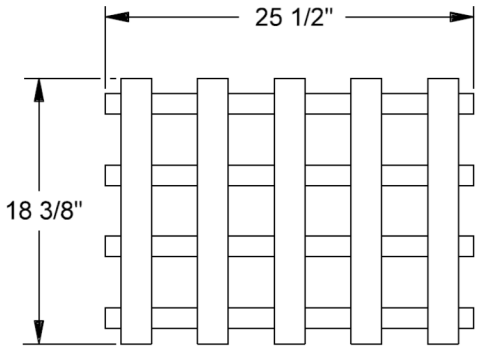
SRP Material Item No. 5031866	
Description	
Noun	Spacer
Adjective	Conduit
Size	For 3" 9-hole
Type	Plastic
Style	Duct bank spacer
Special Ref.	SRP drawing SM-647610-5031862 – SM-647635-5031868, spacer no. 9a.
Material	ABS or PVC plastic
Approved Suppliers	**Part Number**
Magma Engineering	Use description
Underground Supply	SRP30 9-HOLE

NOTES

1. All joints must be cemented.
2. Window opening: 3 $^{5}/_{8}$" x 3 $^{5}/_{8}$".



Spacer Detail



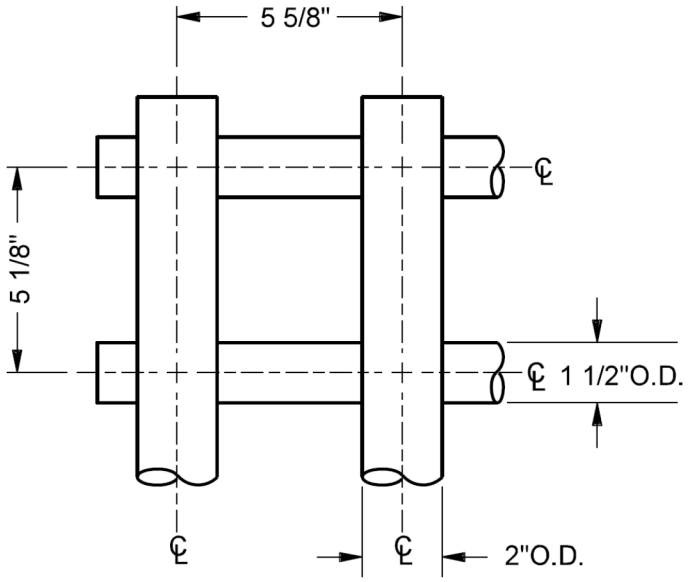
Spacer No. 12A
SM-647630-5031867

8509E375.DGN

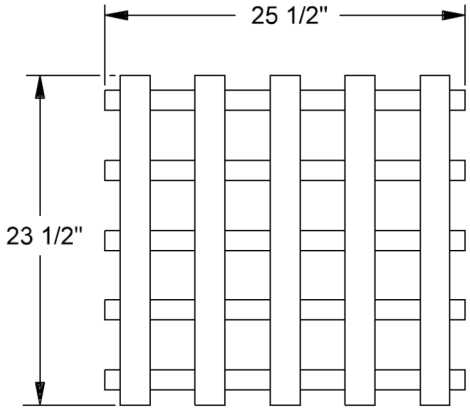
SRP Material Item No. 5031867	
Description	
Noun	Spacer
Adjective	Conduit
Size	For 3" 12-hole
Type	Plastic
Style	Duct bank spacer
Special Ref.	SRP drawing SM-647610-5031862 – SM-647635-5031868, spacer no. 12A.
Material	ABS or PVC plastic
Approved Suppliers	**Part Number**
Magma Engineering	Use description
Underground Supply	SPR30 12-HOLE

NOTES

1. All joints must be cemented.
2. Window opening: 3 $^{5}/_{8}$" x 3 $^{5}/_{8}$".



Spacer Detail



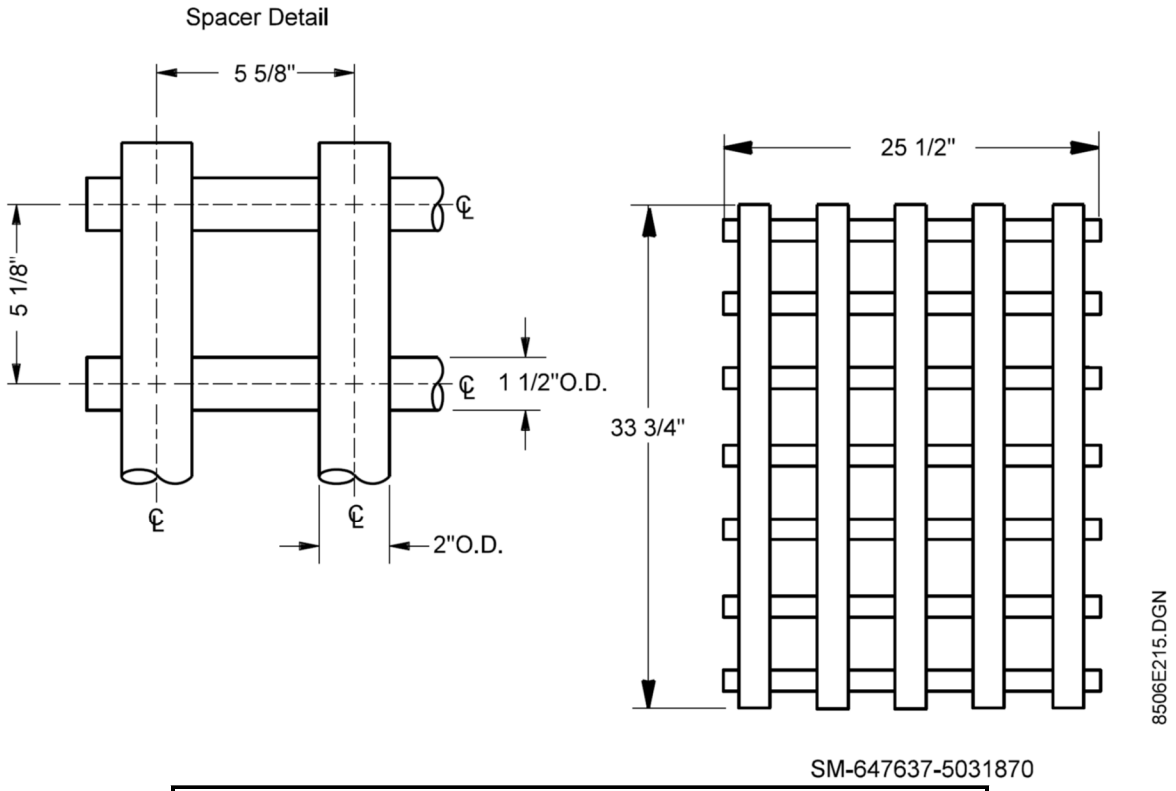
Spacer No. 16A
SM-647635-5031868

8509E376.DGN

SRP Material Item No. 5031868	
Description	
Noun	Spacer
Adjective	Conduit
Size	For 3" 16-hole
Type	Plastic
Style	Duct bank spacer
Special Ref.	SRP drawing SM-647610-5031862 – SM-647635-5031868, spacer no. 16A.
Material	ABS or PVC plastic
Approved Suppliers	**Part Number**
Magma Engineering	Use description
Underground Supply	SRP30 16-HOLE

NOTES

1. All joints must be cemented.
2. Window opening: 3 $^{5}/_{8}$" x 3 $^{5}/_{8}$".

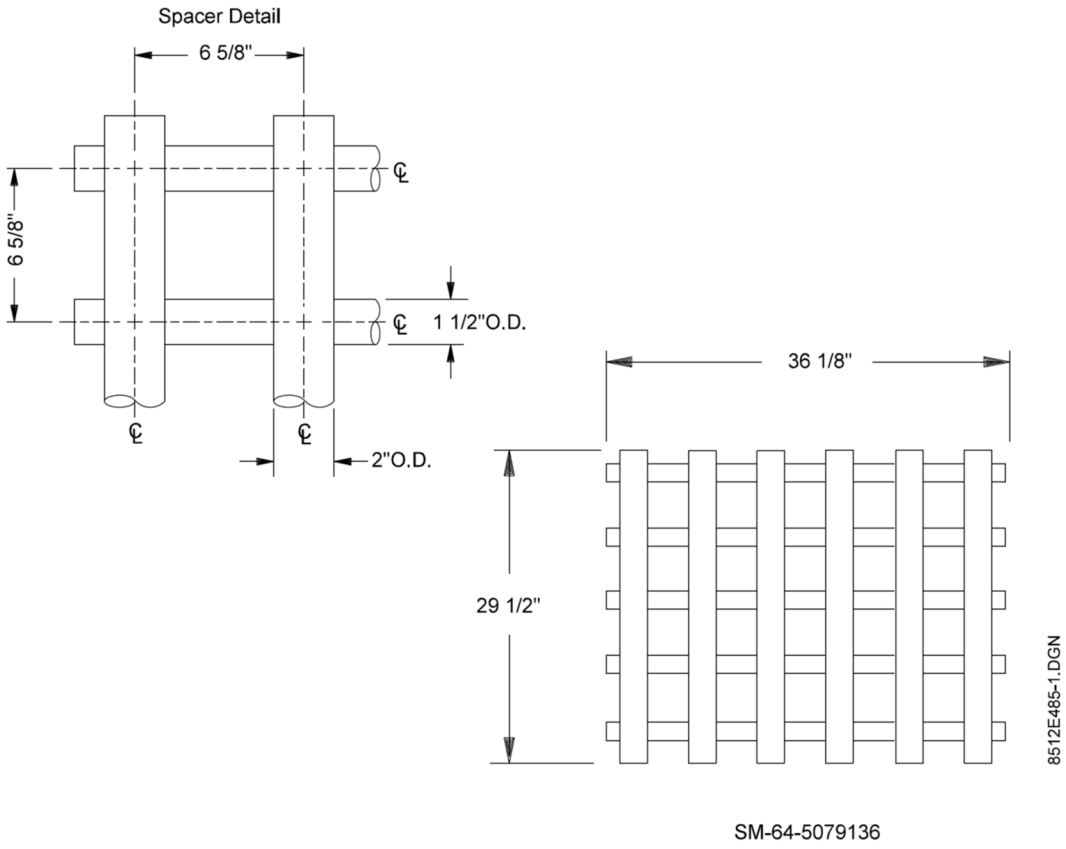


SM-647637-5031870

SRP Material Item No. 5031870	
Description	
Noun	Spacer
Adjective	Conduit
Size	For 3" 24-hole
Type	Plastic
Style	Duct bank spacer
Special Ref.	SRP drawing SM-647637-5031870
Material	ABS or PVC plastic
Approved Suppliers	**Part Number**
Magma Engineering	Use description
Underground Supply	Use description

NOTES

1. All joints must be cemented.
2. Window opening: 3 $^{5}/_{8}$" x 3 $^{5}/_{8}$".

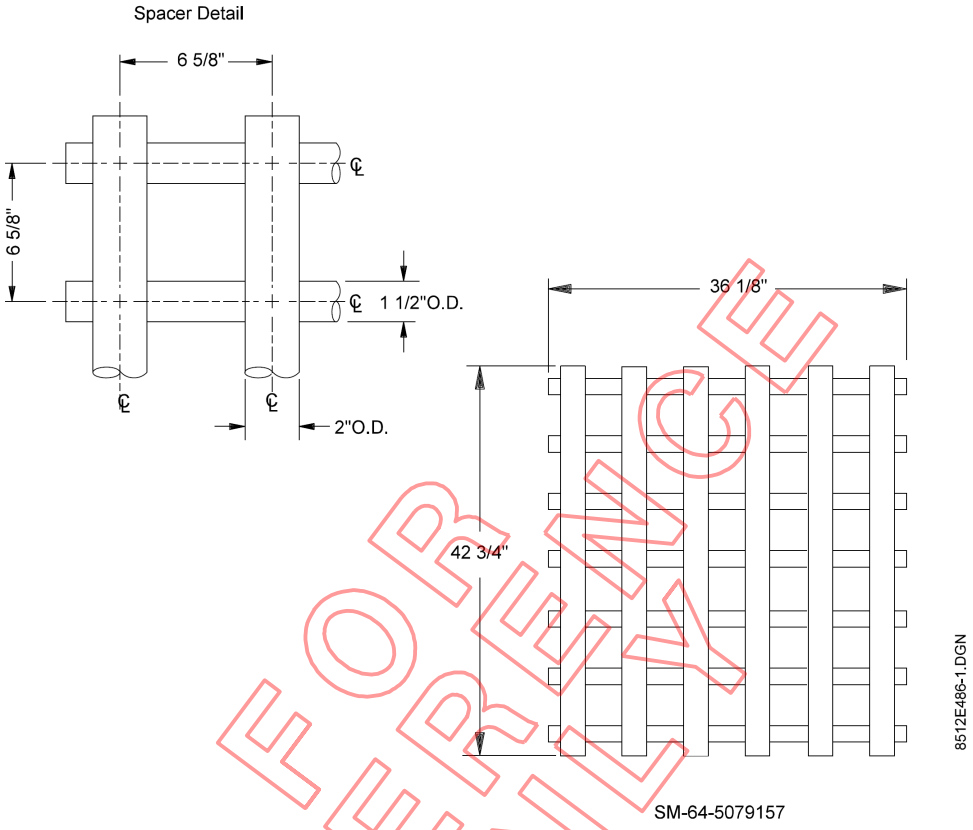


SM-64-5079136

SRP Material Item No. 5079136	
Description	
Noun	Spacer
Adjective	Conduit
Size	For 4" 20-hole
Type	Plastic
Style	Duct bank spacer
Material	ABS or PVC plastic
Approved Suppliers	**Part Number**
Magma Engineering	SRP 5079136
Underground Supply	Use description

NOTES

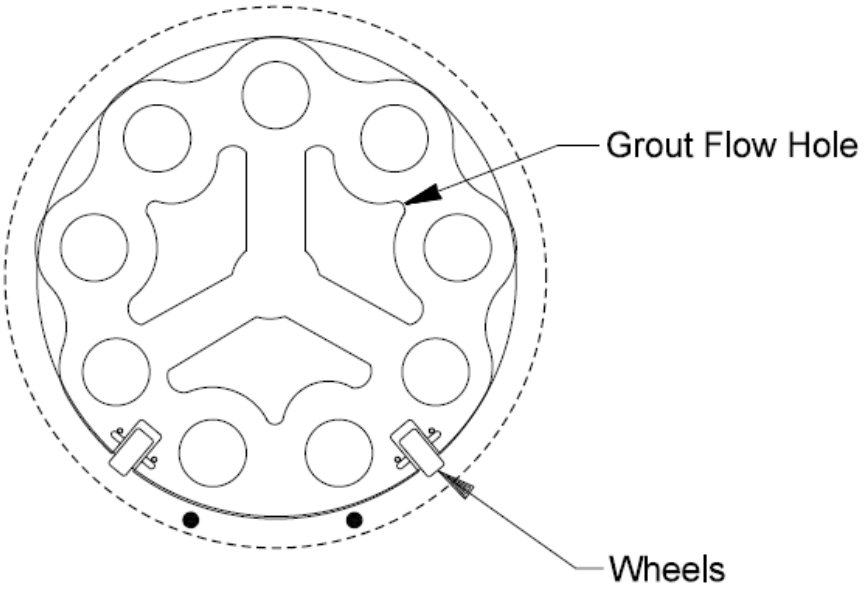
1. All joints must be cemented.
2. Window opening: 4 $^{5}/_{8}$" x 5 $^{1}/_{8}$"



SRP Material Item No. 5079157	
Description	
Noun	Spacer
Adjective	Conduit
Size	For 4" 30-hole
Type	Plastic
Style	Duct bank spacer
Material	ABS or PVC plastic
Approved Suppliers	**Part Number**
Magma Engineering	SRP 5079157
Underground Supply	Use description

NOTES

1. All joints must be cemented.
2. Window opening: 4 $^{5}/_{8}$" x 5 $^{1}/_{8}$".



8509E390.DGN

SRP Material Item No. 5031986	
Description	
Noun	Spacer
Adjective	Conduit
Size	Custom
Type	Plastic
Style	Case Bore Spacer
Special Ref.	UDCS 4-14-1
Material	HDPE plastic
Approved Supplier	**Part Number**
Professional Plastics	Use Description
Underground Devices	Use Description

NOTES

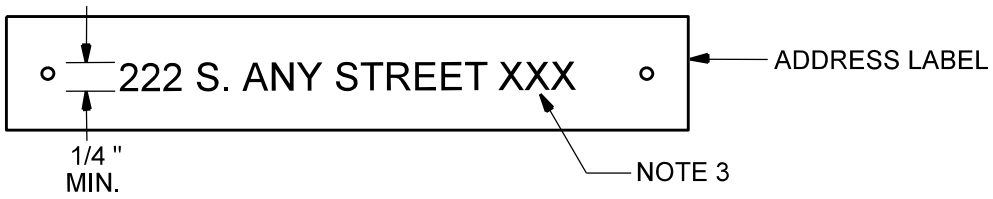
1. Case bore contractor to provide SRP with case bore and spacer project plans for approval. Electrical conduit shall be placed on the outside positions for heat dissipation.
2. Minimum 2" separation between conduits.

THIS CONTENT HAS BEEN MOVED TO THE DISTRIBUTED GENERATION INTERCONNECTION HANDBOOK, SECTION 2.5

THIS CONTENT HAS BEEN MOVED TO THE DISTRIBUTED GENERATION INTERCONNECTION HANDBOOK, SECTION 2.5

THIS CONTENT HAS BEEN MOVED TO THE DISTRIBUTED GENERATION INTERCONNECTION HANDBOOK, SECTION 2.5

Meter Cover Panel, Pull Section, Multiple Buildings



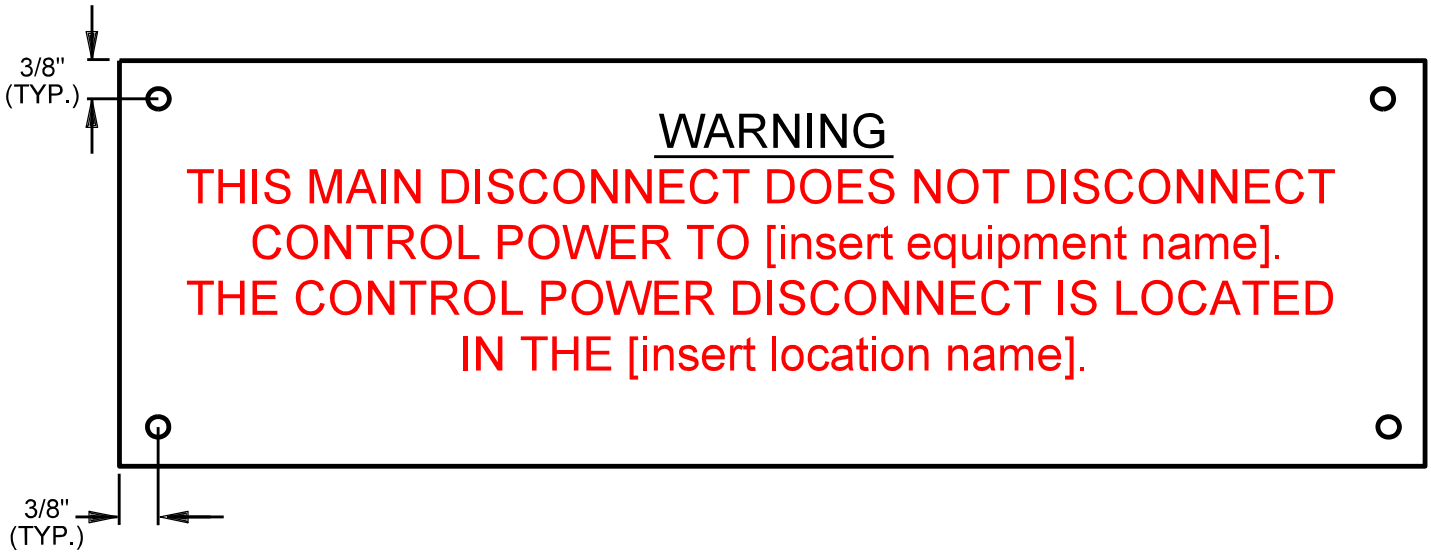
Approved Suppliers	Part Number
Photometals, PMA Industries	Address Plates

NOTES

1. The label body shall be aluminum or brass (non-ferrous), permanently affixed to the outside of the meter socket panel by metal rivets.
2. Characters shall be in Arial font or an equivalent, at a minimum height of 1/4". Dymo type metal labels with a font height of 3/16" are acceptable. Additionally, characters shall be either recessed or raised by 0.03" to prevent from being obscured by paint.
3. Building/structure having more than one meter, consult with the Customer Service Representative to obtain the assigned suffix identifier for each meter.

Meter Cover Panel Disconnect Warning Sign

Example



Approved Suppliers	Part Number
Photometals, PMA Industries	MCPDWS

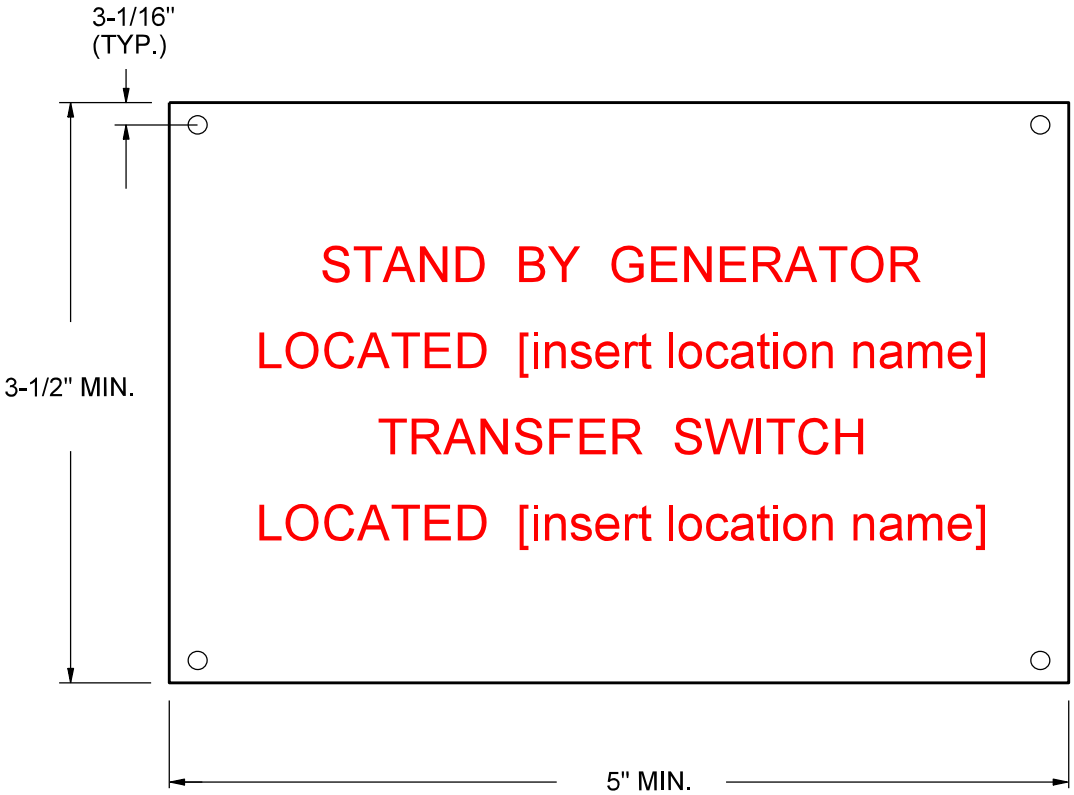
NOTES

1. The label body shall be aluminum or brass (non-ferrous), and permanently affixed to the exterior side of the main breaker cover using metal rivets.
2. Characters shall be red block letters using Arial font at a minimum height of 1/4". Characters shall be on a white background and recessed by 0.03" to prevent from being obscured by paint.

Electric Service Specifications SRP® *PROPRIETARY MATERIAL*	REV: ADDED APPROVED SUPPLIER TABLE & UPDATED NOTES & ILLUSTRATION	
	CONTRACTOR-SUPPLIED MATERIAL LABELING, SES DISCONNECT WARNING SIGN	ISSUE DATE: 07/06/18 REV. DATE: 08/14/24 APPROVAL: J. ROBBINS
	11-52	8059E318.DGN

On-site Power Source(s) And Transfer Device(s) Location Sign

Example

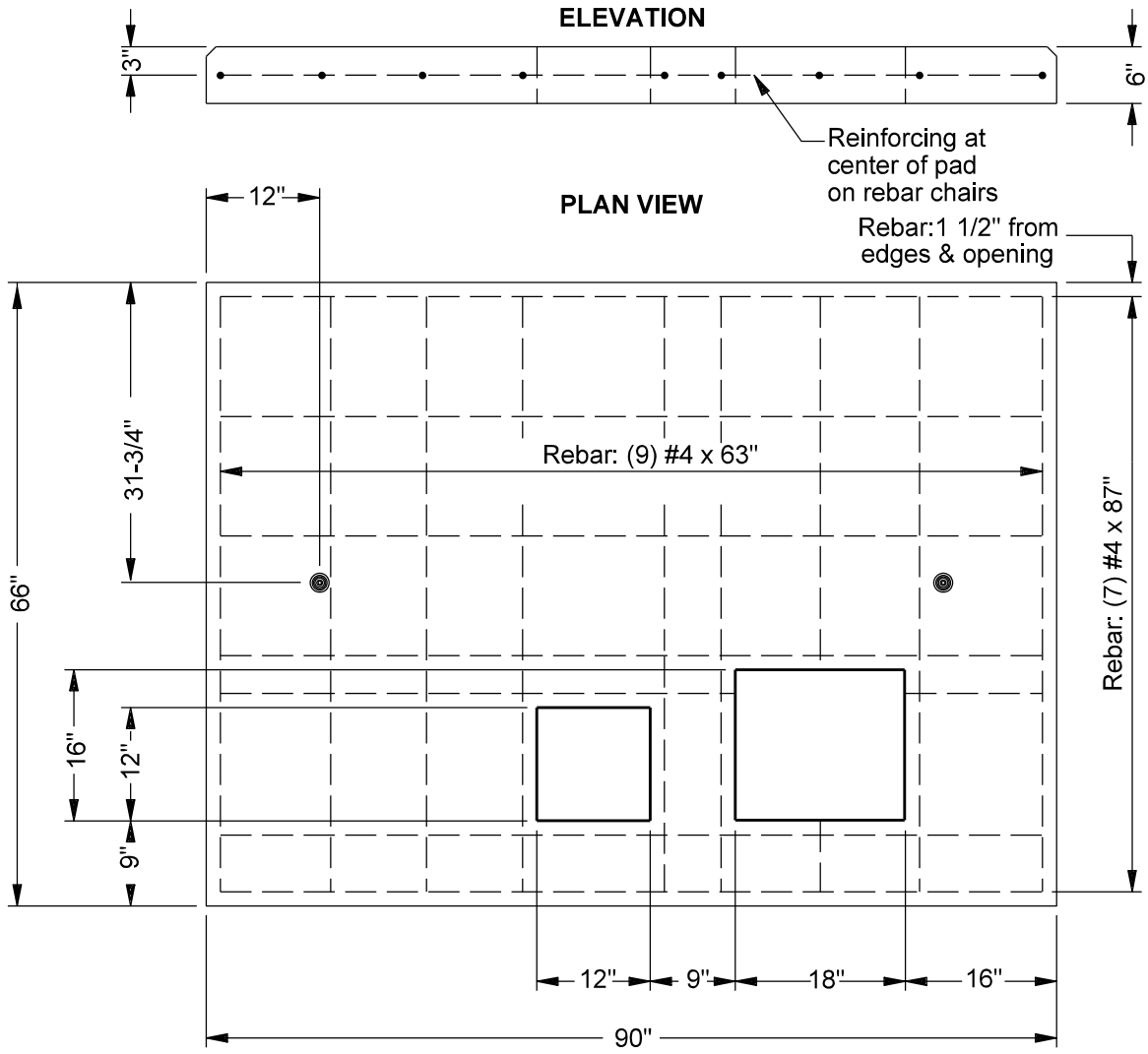


Approved Suppliers	Part Number
Photometals, PMA Industries	GATSS

NOTES

1. The label body shall be aluminum or brass (non-ferrous), and permanently affixed to the exterior side of the main breaker cover using metal rivets.
2. Characters shall be red block letters using arial font at a minimum height of 1/4". characters shall be on a white background and recessed by 0.03" to prevent from being obscured by paint.

Electric Service Specifications SRP® *PROPRIETARY MATERIAL*	REV: ADDED APPROVED SUPPLIER TABLE & UPDATED NOTES & ILLUSTRATION	
	CONTRACTOR SUPPLIED MATERIAL LABELING GENERATOR AND TRANSFER SWITCH SIGN	ISSUE DATE: 05/19/21 REV. DATE: 08/14/24 APPROVAL: J. ROBBINS
	11-53	8509E397.DGN



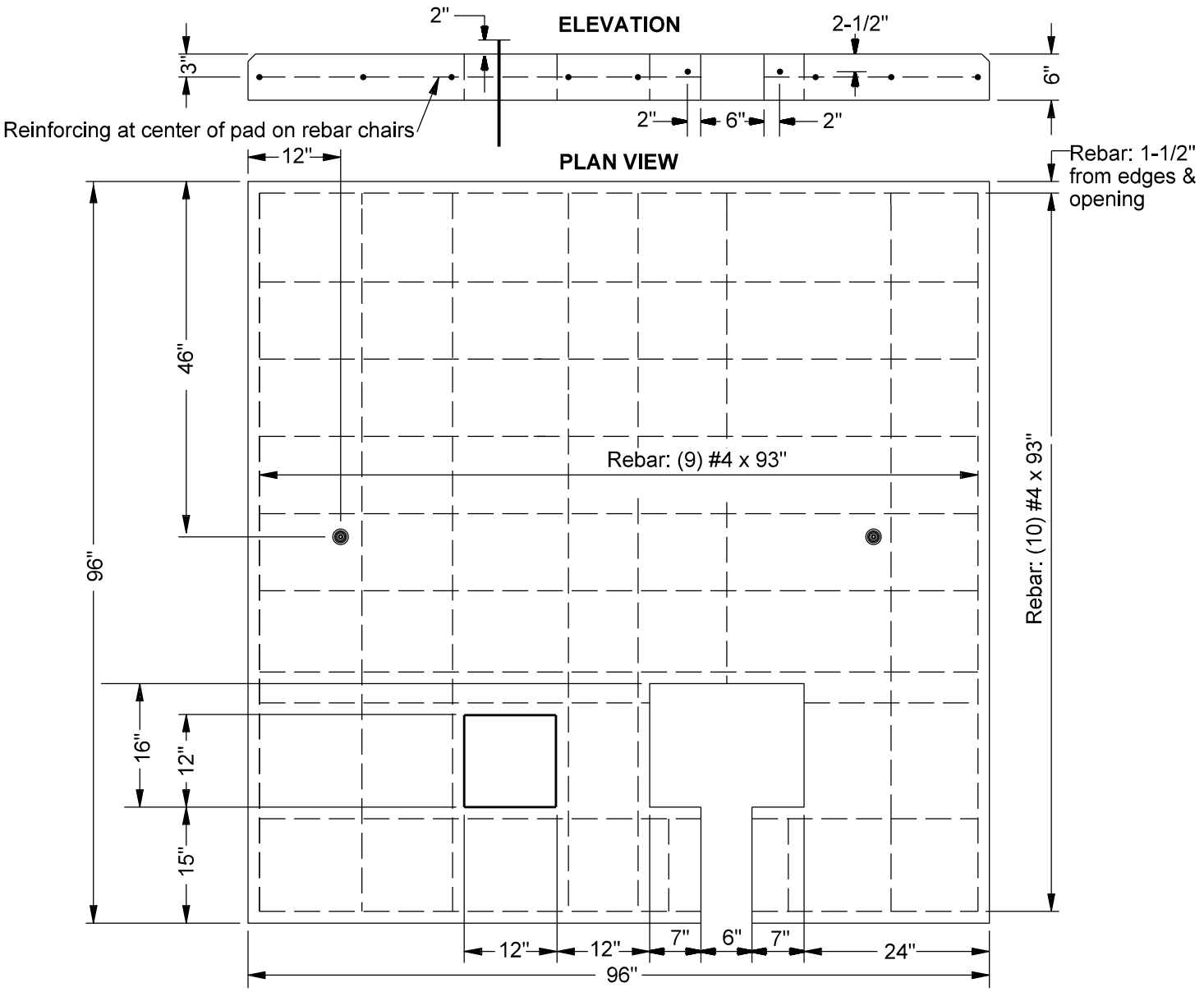
SM-637160-5069778
Weight = 2,870 lbs.

Srp Material Item No. 5069778	
Description	
Noun	Pad
Adjective	Transformer
Size	7'-6" x 5'-6"
Type	75-500 kVA
Style	Precast
Special Ref.	SM-637163
Material	Concrete
Approved Suppliers	**Part Number**
Jensen Precast	Use Description
Oldcastle	Use Description
Olson Precast	Use Description

NOTES

1. See referenced SM for construction specifications.

Electric Service Specifications SRP® *PROPRIETARY MATERIAL*	REV: REVISED XMFR PAD RANGES SIZES	
	CONTRACTOR-SUPPLIED MATERIAL THREE-PHASE TRANSFORMER PADS 75-500 kVA	ISSUE DATE: 08/27/19 REV. DATE: 01/08/25 APPROVAL: C. OBRIEN
	11-54	8509E94.DGN



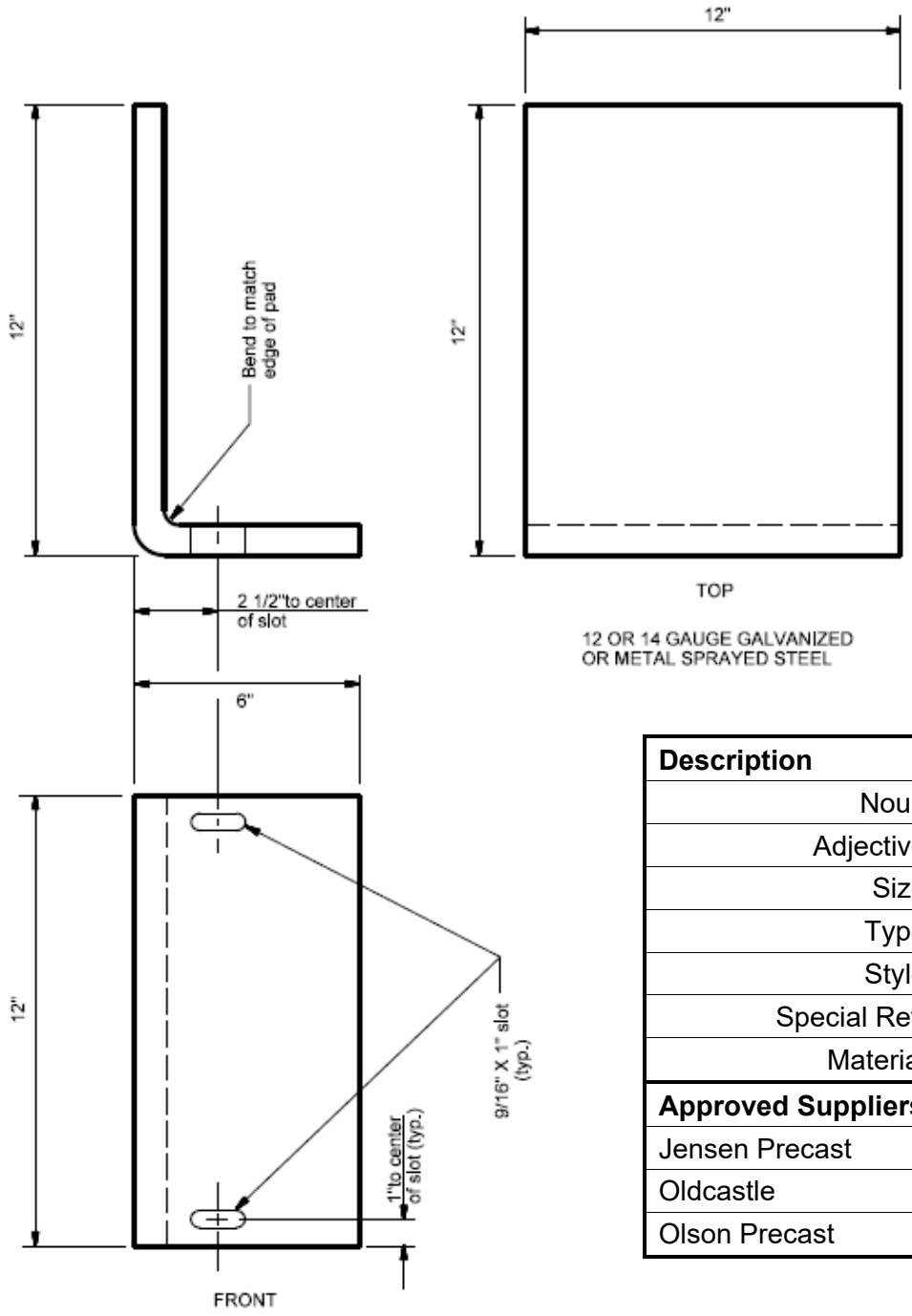
SM-637162-5069779
Weight = 4,560 LBS.

Srp Material Item No. 5069779	
Description	
Noun	Pad
Adjective	Transformer
Size	8' x 8'
Type	750 kVA
Style	Precast
Special Ref.	SM-637162
Material	Concrete
Approved Suppliers	**Part Number**
Jensen Precast	Use Description
Oldcastle	Use Description
Olson Precast	Use Description

NOTES

1. See referenced SM for construction specifications.

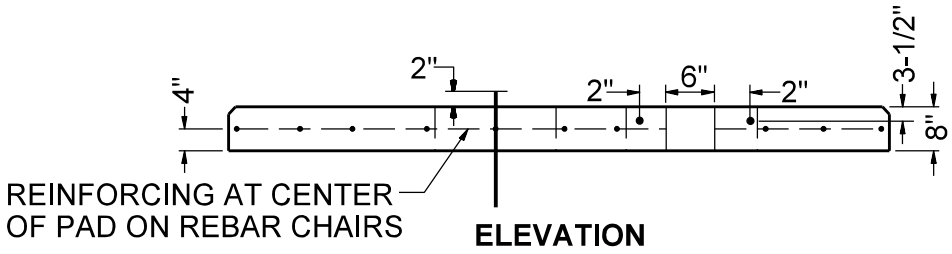
Electric Service Specifications SRP® *PROPRIETARY MATERIAL*	CONTRACTOR-SUPPLIED MATERIAL THREE-PHASE TRANSFORMER PADS 750 kVA	ISSUE DATE: 08/27/19 REV. DATE: APPROVAL: N. SABBAH
	11-55	8509E96.DGN



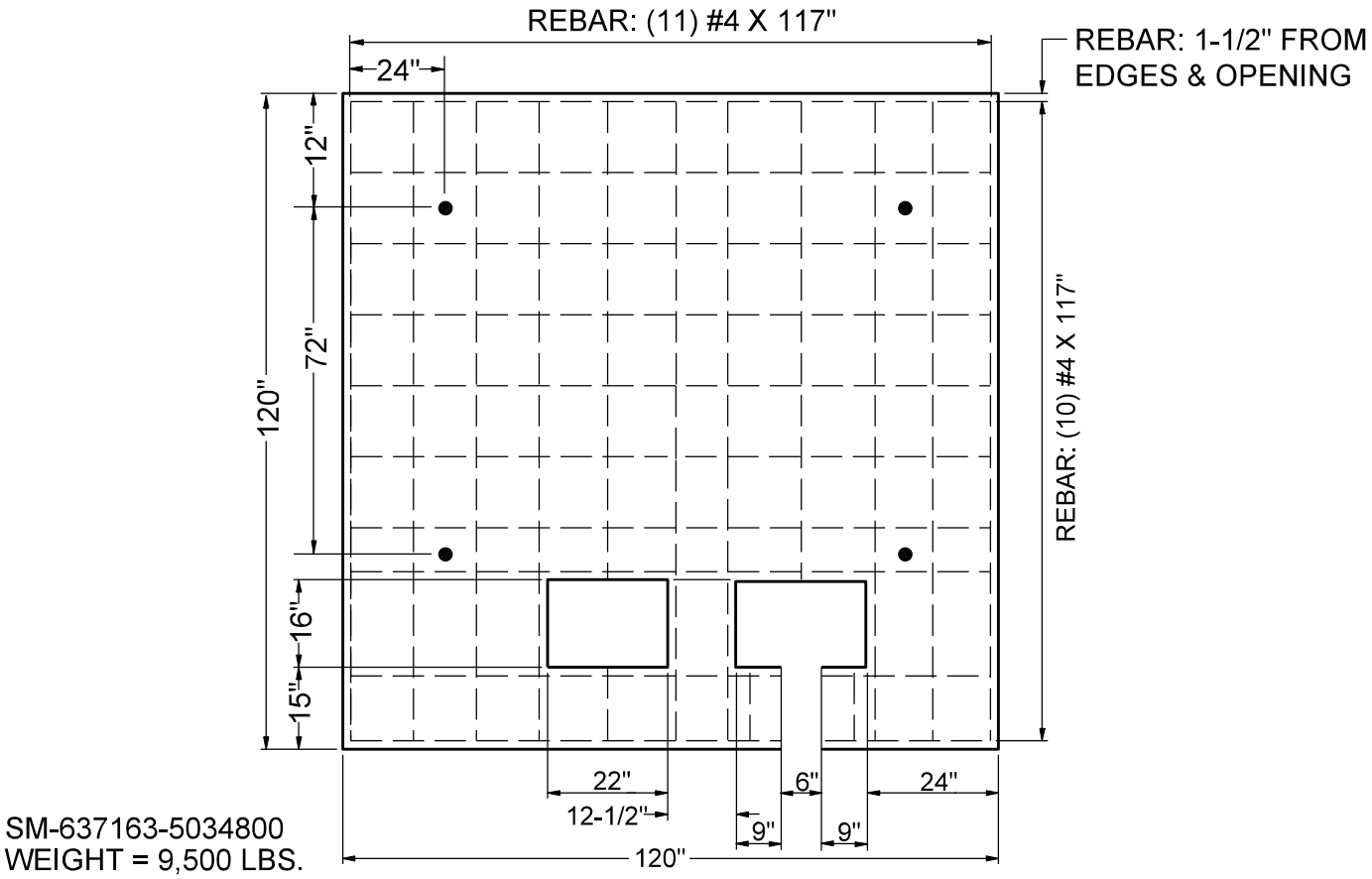
Description	
Noun	Plate
Adjective	Pad Window
Size	12” x 12”
Type	750 kVA
Style	8’ x 8’ pad
Special Ref.	SM-637162
Material	Steel
Approved Suppliers	**Part Number**
Jensen Precast	Use Description
Oldcastle	Use Description
Olson Precast	Use Description

NOTES

1. To be used with 5069779 750 kVA transformer pad.
2. Provided by supplier with transformer pad.



ELEVATION



SM-637163-5034800
WEIGHT = 9,500 LBS.

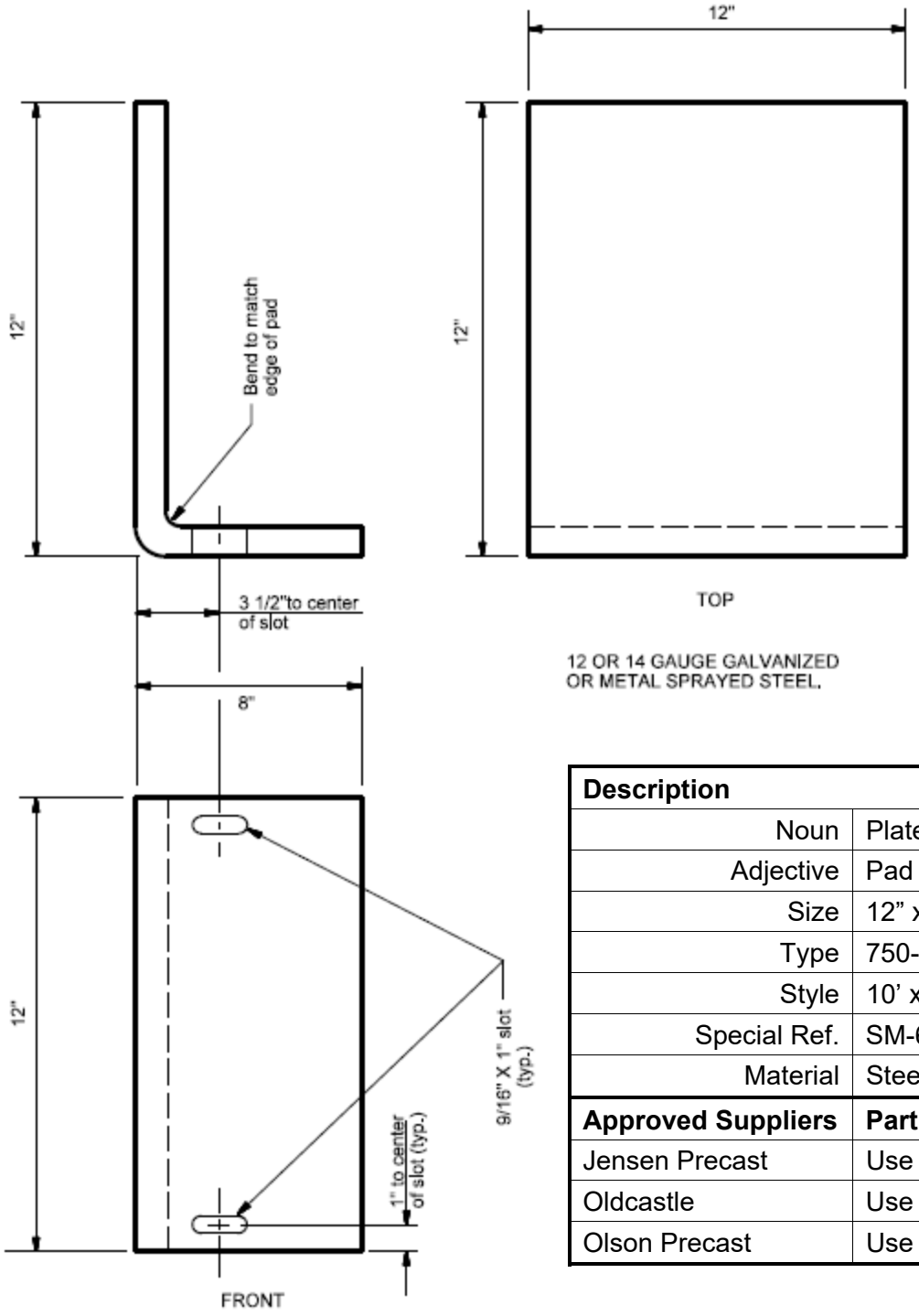
PLAN VIEW

SRP MATERIAL ITEM NO. 5034800	
DESCRIPTION	
NOUN	PAD
ADJECTIVE	TRANSFORMER
SIZE	10' x 10'
TYPE	1000-2500 kVA
STYLE	PRECAST
SPECIAL REF.	SM-637163
MATERIAL	CONCRETE
APPROVED SUPPLIERS	**PART NUMBER**
JENSEN PRECAST	USE DESCRIPTION
OLDCASTLE	USE DESCRIPTION
OLSON PRECAST	USE DESCRIPTION

NOTES

1. SEE REFERENCED SM FOR CONSTRUCTION SPECIFICATIONS.

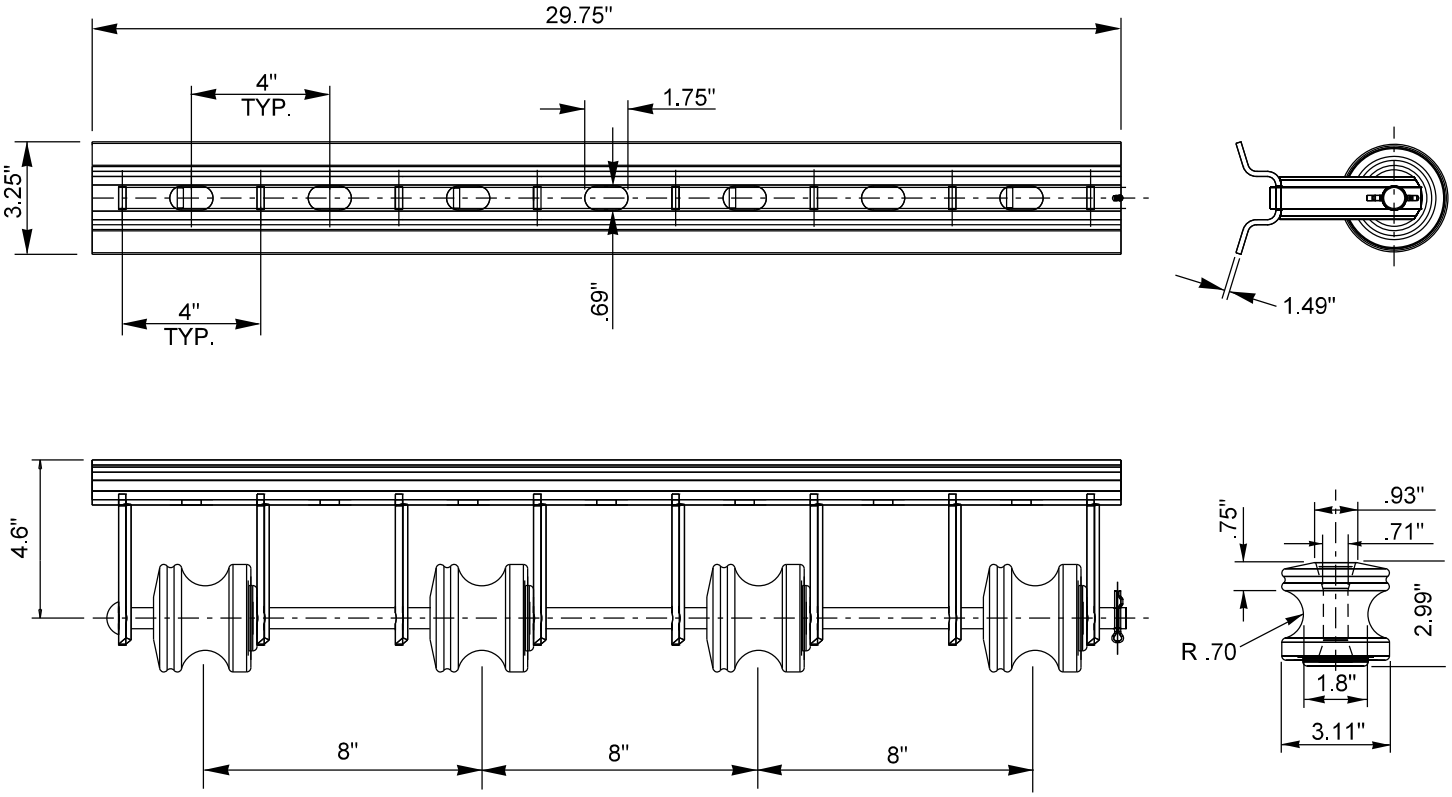
Electric Service Specifications SRP® *PROPRIETARY MATERIAL*	REV: REVISED XMFR PAD RANGES SIZES	
	CONTRACTOR-SUPPLIED MATERIAL THREE-PHASE TRANSFORMER PADS 1000-2500 kVA	ISSUE DATE: 08/27/19 REV. DATE: 01/08/25 APPROVAL: C. OBRIEN
	11-57	8509E95.DGN



Description	
Noun	Plate
Adjective	Pad Window
Size	12” x 12”
Type	750-3000 kVA
Style	10’ x 10’ pad
Special Ref.	SM-637163
Material	Steel
Approved Suppliers	**Part Number**
Jensen Precast	Use Description
Oldcastle	Use Description
Olson Precast	Use Description

NOTES

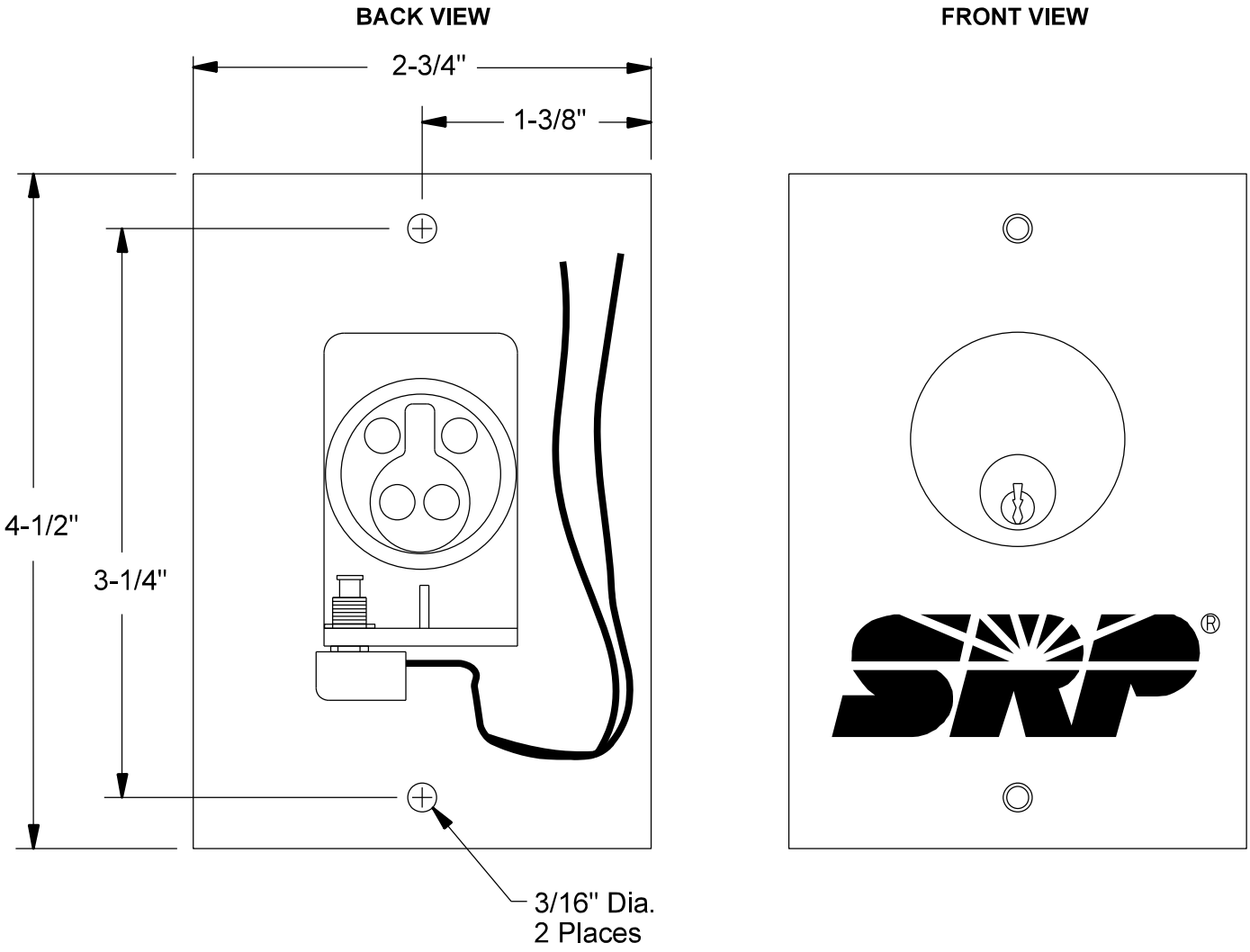
1. To be used with 5034800 750-3000 kVA transformer pad.
2. Provided by supplier with transformer pad.



NOTES

1. Sagger Bracket including Installation requirements for OH Service Entrance Sections sizes 800 Amps and higher.
2. Customer shall install sagger bracket including required number of insulators.
   a. Insulator material: wet process porcelain, glazed.
   b. Insulators per ANSI C29.3, latest revisions, class 53-2.
   c. Brown insulator = power
   d. Gray/White insulator = neutral.
   e. Catalog Number: Hubble Four Wire Rack: T207-0114, Maclean Power: J769, or equivalent.
3. Customer's point of attachment must have a minimum rating of 600 lbs. tension and have clearance enough to provide Code clearance for the service drop and drip loop.
4. Minimum spacing between closest end of sagger bracket and Service weatherhead/bus bar shall be 12".

Electric Service Specifications SRP® *PROPRIETARY MATERIAL*	SERVICE ENTRANCE SECTION - OVERHEAD SAGGER BRACKET INSTALLATION SERVICE CABLE 350MCM AND ABOVE	ISSUE DATE: 03/10/20 REV. DATE: APPROVAL: J. Luera
	11-59	8509E355.DGN

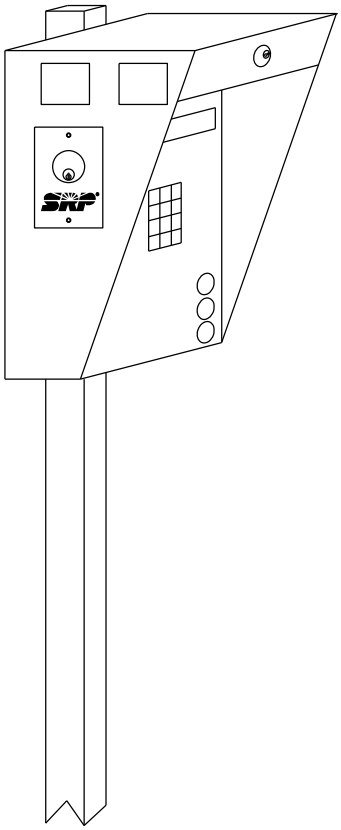


NOTES

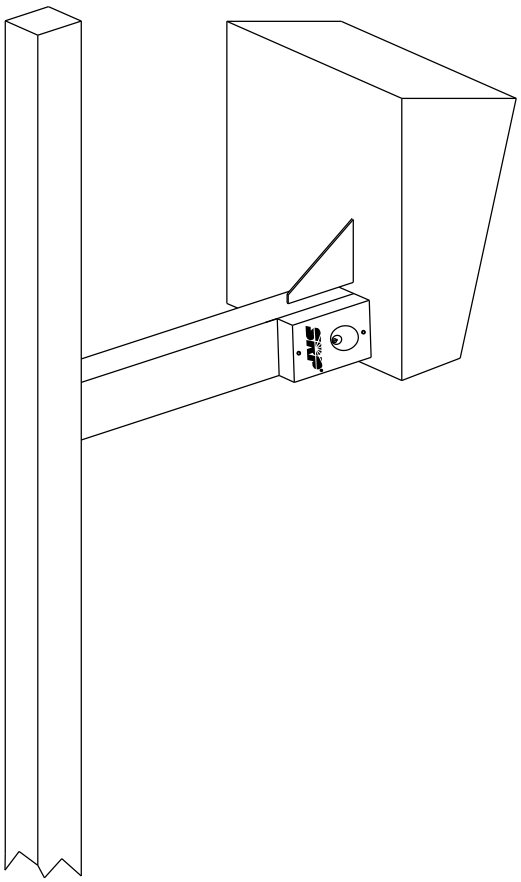
1. SRP requires the Customer to install a restricted access switch (RAS) on each existing or proposed main and guest electronic entry gate(s), and restricted electronic exit gate(s) that provide continuous 24-hour access.
2. RAS to be supplied and installed by the Customer. Customer to ensure the control circuit remains operational, which may include the installation of a replacement RAS by the Customer.
3. SRP shall have final approval on all RAS locations. Preferred locations are the side of the gate entry system pedestal facing oncoming traffic, or behind the box as shown on page 11-61.
4. The installation shall not impede the operation or placement of additional gate operation devices.
5. Click here for additional information regarding SRP's electric gate restricted access switch guidelines.

Electric Service Specifications PROPRIETARY MATERIAL	REV: UPDATED NOTE 3	
	CONTRACTOR-SUPPLIED MATERIAL RESTRICTED ACCESS SWITCH (RAS)	ISSUE DATE: 01/22/19 REV. DATE: 08/08/23 APPROVAL: C. OBrien
	11-60	8509E379.DGN

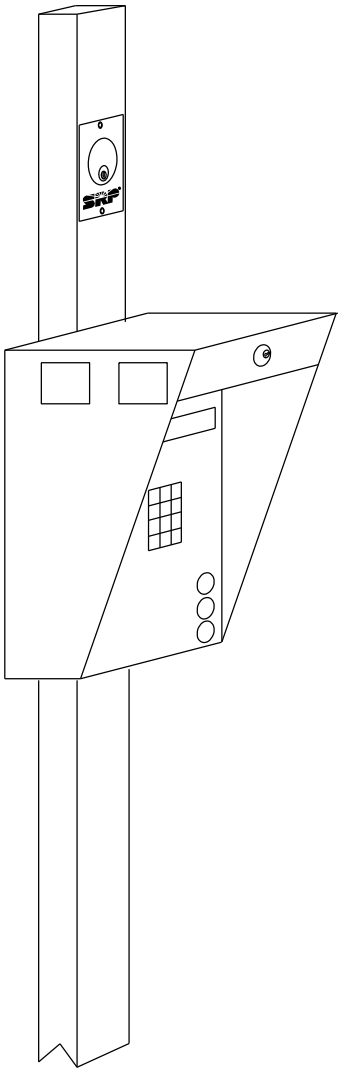
EXAMPLE A



EXAMPLE B



EXAMPLE C

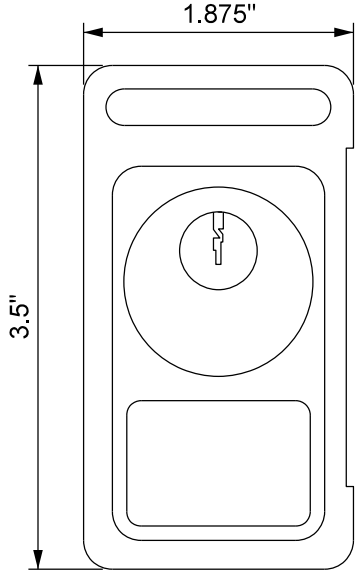


SRP MATERIAL ITEM NO. 5014361	
DESCRIPTION	
NOUN	SWITCH
ADJECTIVE	RESTRICTED ACCESS
SIZE	2-3/4" x 4-1/2"
TYPE	ELECTRIC LOCK
STYLE	PREASSEMBLED
USE	MAIN OR GUEST ENTRY GATE(S) AND RESTRICTED EXIT GATE(S)
APPROVED SUPPLIER	**PART NUMBER**
WOLF BROTHER'S CONSTRUCTION (WBC)	USE DESCRIPTION

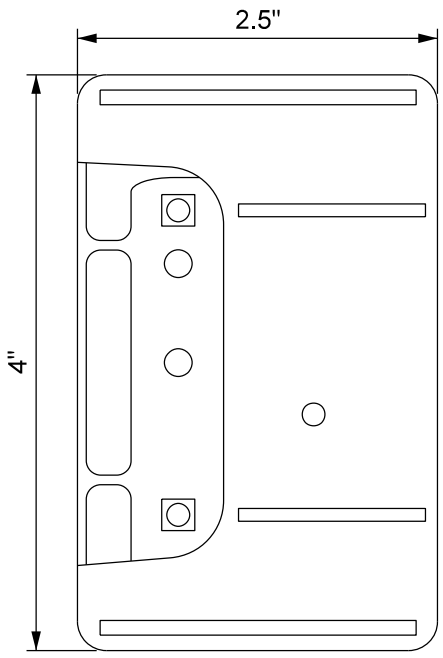
NOTE

These are typical installations and are for illustrative purposes only.

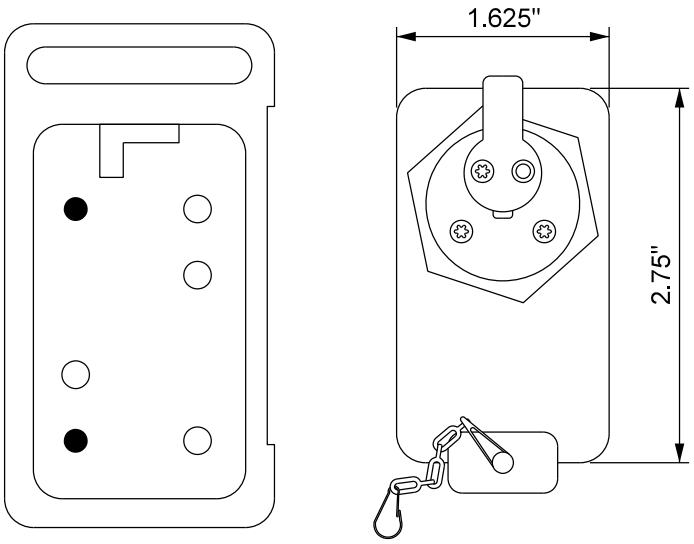
FRONT VIEW



BACK VIEW

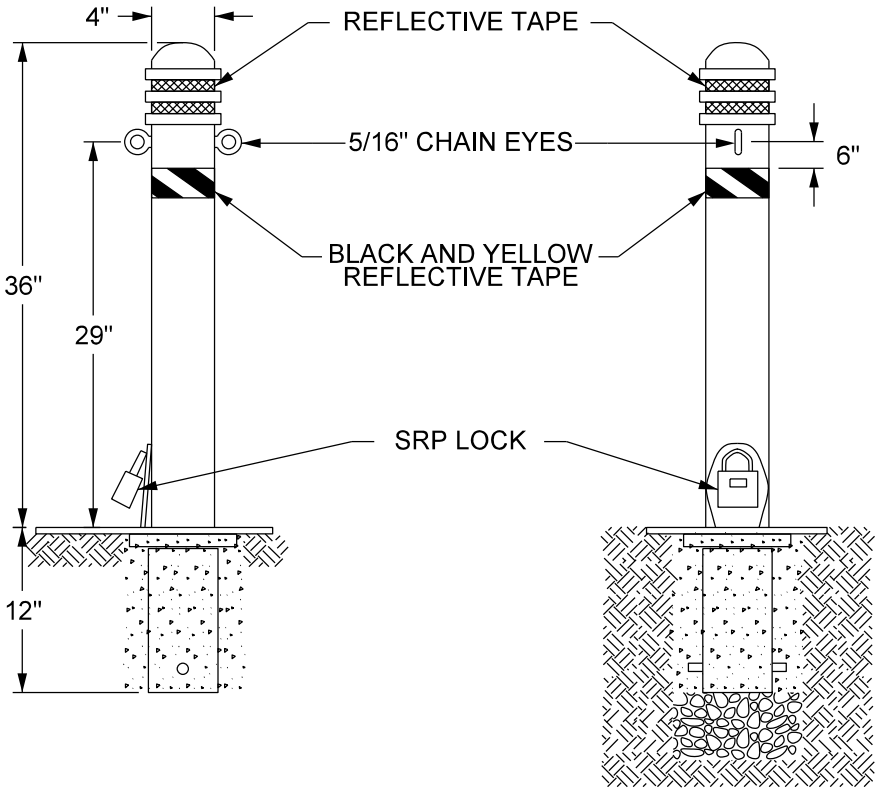


OPEN VIEW



SRP MATERIAL ITEM NO. 5094932	
DESCRIPTION	
NOUN	BOX
ADJECTIVE	LOCK
SIZE	2-1/2" x 4"
TYPE	MANUAL LOCK
STYLE	PREASSEMBLED
USE	GAIN ACCESS TO CUSTOMER'S METER ROOM KEY
APPROVED SUPPLIER	**PART NUMBER**
WOLF BROTHER'S CONSTRUCTION (WBC)	USE DESCRIPTION

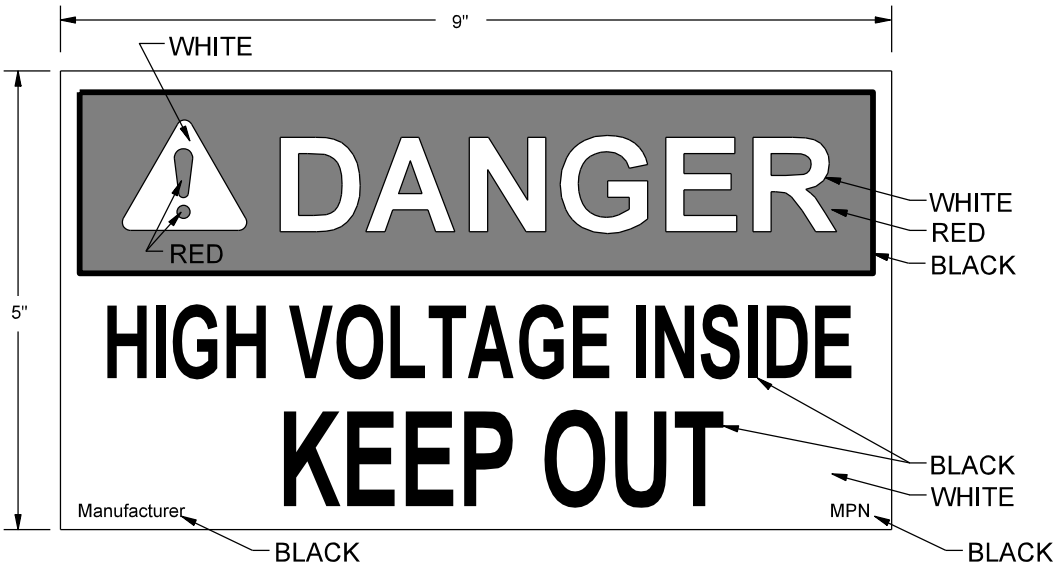
Electric Service Specifications SRP® *PROPRIETARY MATERIAL*	REV: INITIAL RELEASE	
	CONTRACTOR SUPPLIED MATERIAL METER ROOM LOCK BOX	ISSUE DATE: 08/08/23 REV. DATE: APPROVAL: C. OBrien
	11-62	8509E399.DGN



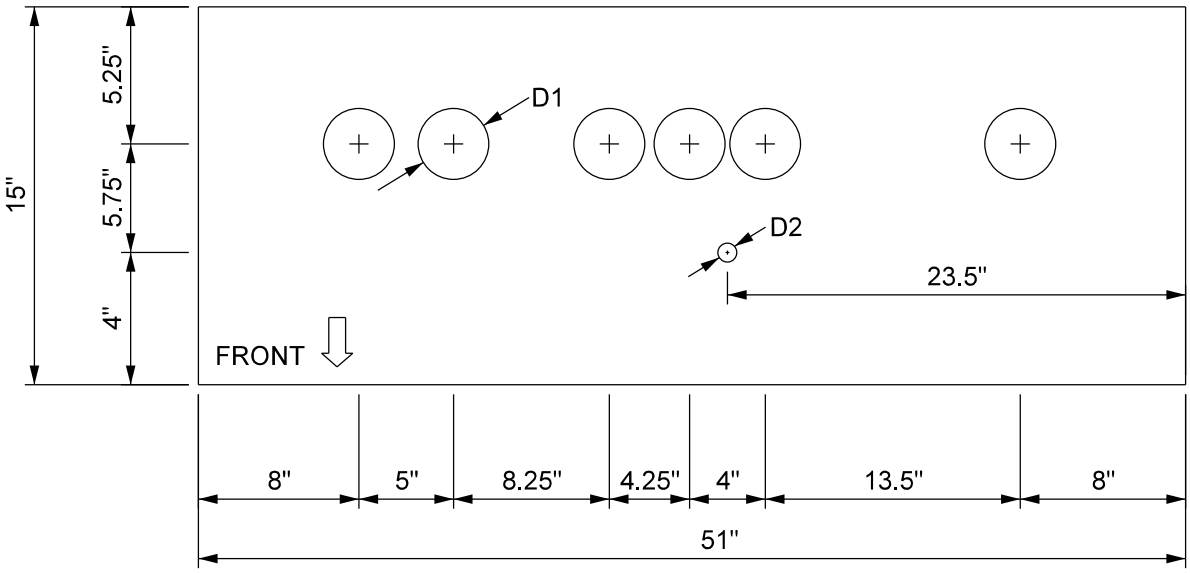
DESCRIPTION	
NOUN	BOLLARD
ADJECTIVE	REMOVABLE
SIZE	4" X 4'
TYPE	STEEL PIPE
USE	RESTRICT VEHICULAR ACCESS TO PROTECTED AREA OR MAINTAIN WORKSPACE FOR SES.
SPECIAL REF.	
APPROVED SUPPLIERS	**PART NUMBER**
RELIANCE-FOUNDRY	R-7901-SRP

MATERIAL AND CONSTRUCTION SPECIFICATION NOTES:

1. APPLY REFLECTIVE TAPE: WHITE BETWEEN THE RIBS OF THE DECORATIVE TOP. IN ADDITION, 6" WRAP OF YELLOW AND BLACK REFLECTIVE TAPE LOCATED 6" BELOW THE CHAIN EYES PER THE DIAGRAM.
2. REMOVABLE BOLLARD SHALL NOT EXCEED MAXIMUM LIFTING WEIGHT OF 50 LBS.
3. INSTALL 5/16" CHAIN EYES OFFSET 180 DEGREES OF LOCKING PIN.
4. THE EMBEDDED BASE/SLEEVE AND DROP-DOWN LID SHALL BE DESIGNED TO BE FLUSH WITH FINAL GRADE NOT TO EXCEED 1/4".
5. BUILT-IN LOCKING MECHANISM COMPATIBLE WITH SRP LOCK (MATERIAL ID# 5014608). SUBMIT LOCK REQUEST TO DISTRIBUTION DESIGN DEPARTMENT.
6. FOLLOW MANUFACTURE'S RECOMMENDED BACKFILL MATERIAL AND INSTALLATION GUIDE.



SRP MATERIAL ITEM NO. 5039124	
DESCRIPTION	
NOUN	SIGN
ADJECTIVE	HIGH VOLTAGE
SIZES	5" X 9"
TYPE	DANGER
USE	VARIOUS
SPECIAL REF.	
APPROVED SUPPLIERS	**PART NUMBER**
WILLIAM FRICK & CO	SRP-DHVI/KO-5X9



D1 = DIAMETER = 3.75"
D2 = DIAMETER = 1"

SRP Material Item No. 5096535	
Description	
Noun	Spacer
Adjective	Conduit Stub-up Form
Sizes	6-3.75" & 1-1" Dia. Holes, 15" X 51" Overall
Type	Recycled or New Plastic
Use	For Pad Mounted S&C Intellirupter
Special Ref.	Made from 200 mil. Polypropylene or Polyethylene. SM-64-5096535
Approved Suppliers	
	Rocky Mountain Template
	Underground Supply