Overton Power District No. 5

Construction Standards and Specifications

Revised: January 2023

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GENERAL GUIDELINES FOR OBTAINING ELECTRICAL SERVICE

1.1 ABOUT OVERTON POWER DISTRICT NO. 5

Overton Power District No. 5 (District) is a non-profit special improvement district created in 1935 by the State of Nevada. The District's service area encompasses the Northeast quadrant of Clark County, Nevada, which includes the City of Mesquite and the unincorporated towns of Bunkerville, Glendale, Logandale, Moapa, and Overton. The District's service area also includes Valley of Fire State Park and portions of the Lake Mead National Recreation Area including Overton Beach and Echo Bay. The District maintains its headquarters in Overton, Nevada and a branch office in Mesquite, Nevada.

1.2 DEFINITIONS

City – The City of Mesquite, Nevada and its respective departments and political subdivisions.

Contractor – (1) A properly licensed individual or entity designated and employed by the customer to install electrical facilities in accordance with the District's specifications. (2) An unlicensed contractor designated and employed by the customer to install electrical facilities to the District's specifications, who is employed in accordance with the "right to work" laws of the State of Nevada. (3) A customer acting as an owner builder.

County – Clark County Nevada and its respective departments and subdivisions.

Customer – Individual or entity seeking electrical service

District – Overton Power District No. 5, its employees, policies, and regulations.

High Voltage – Greater than 600 volts AC.

High Voltage Distribution – 601 volts AC. to 24,900 volts AC. The District's high voltage

distribution system is operated at 12,470/7200 volts AC.

High Voltage Transmission – Greater than 24,900 volts AC.

Low Voltage – Less than 600 volts AC.

NEC – Current edition of the National Electric Code

NESC – Current edition of the National Electric Safety Code

Primary – High voltage

Primary Distribution – High Voltage Distribution

Secondary – Low voltage electrical facilities that are installed to provide electricity and associated energy to multiple customers. PVC conduit and wire from a transformer to a secondary vault are considered to be secondary facilities.

Secondary Connector – An insulated watertight connector that permits the connection of service wires in a hand hole or secondary vault. A secondary connector is also known as a secondary connector block, PED, and watertight URD connector.

Service – Low voltage electrical facilities including wire and PVC conduit that provide electricity and associated energy from the District's distribution high voltage or secondary facilities to the customer's point of service.

Service Panel – Meter center provided by the customer. The meter center as a minimum includes the meter socket, utility termination section, and customer distribution section. A service panel is also known as a combo, meter main, all in one, and a house panel. Additionally, the service panel designates the point of service.

Service Point / Point of Service – The metering location of the service. Typically, this point designates the end of the District's responsibility and the beginning of the customer's responsibility.

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Standards Committee	JJ/CD	3/12/2019

1.3 LINE EXTENSION POLICY

OPD-REG-SR-3.0
REVISED 11/17/1988
APPROVED 11/17/1988

OVERTON POWER DISTRICT NO. 5
REGULATION NO. SR 3.0
LINE EXTENSIONS

A. GENERAL REQUIREMENTS:

1. This line extension regulation shall become effective on the date of its adoption and is not applicable to line extension agreements entered into prior to the effective date of this regulation.

2. The District will construct line extensions only to applicants located within the District's boundaries and only upon District approval of an application for service. Such extensions shall be installed by the District and paid for by the applicant. Such payments shall be made in advance of construction.

3. The length(s) of an electric line extension will be the distance from the nearest existing facilities of the District having adequate, available capacity, as determined by the District in its sole discretion, to the applicant's point-of-service.

4. The construction of the line extension will be in conformance with generally accepted utility practice and shall be done in conformance with all applicable safety and utility codes.

5. The applicant shall pay to the District all federal income taxes arising from contributions made under the terms of this regulation, if any, including taxes owed and taxes required to be paid in accordance with this provision; and also, federal income taxes resulting from the loss of District's tax-exempt status that may result from District's receipt of the contributions-in-aid of construction required hereunder. Applicants shall also pay all applicable state and local taxes associated with the construction of these facilities.

B. RIGHTS-OF-WAY:

1. The applicant, upon application for service, shall grant the District the necessary rights-of-way for line extensions and appurtenances thereto across property owned or controlled by the applicant, as well as all necessary easements for ingress and egress for the properties of the applicant for the purpose of inspecting, installing, repairing, maintaining, or removing the District's property, reading meters or for other purposes incident to the performance of the line extension agreement or the provisions of electrical service thereafter.

2. In the event the District is required to use its power of eminent domain to obtain necessary rights-of-way, any and all costs associated therewith will be the responsibility of the applicant. The applicant shall advance to the District the estimated costs of acquiring said rights-of-way, and upon the entry of a final judgment, the District will provide an accounting of all costs incurred in such proceedings. In the event the District's actual costs and fees are different from the contribution

paid by the applicant, the District shall refund the excess to the applicant, or the applicant shall pay the shortage to the District within thirty (30) days after the applicant receives the accounting.

C. LINE EXTENSIONS:

1. Upon request by an applicant for a line extension, the District shall prepare a preliminary sketch and rough estimate of the costs of installation to be paid by the applicant. Such estimates shall be good for thirty (30) days, and are subject to revision thereafter.

2. In the event that the power requirements of the applicant exceed 1500 kW or cannot be served from the existing facilities of the District, then the applicant may, at the District's option, be served under a special contract which will set forth the terms and conditions under which service will be rendered.

3. Any applicant for a line extension requesting the District to prepare detailed plans, specifications or cost estimates, may be required to deposit with the District an amount equal to the estimated costs of preparation. The District shall, upon request, make available within ninety (90) days after receipt of the deposit referred to herein, such plans, specifications or cost of construction; otherwise, the deposit shall be nonrefundable. If the extension is to include over sizing of the District's facilities, appropriate details shall be set forth in the plan, specifications, and cost estimates.

4. The District's detailed plan specifications and cost estimates shall include, but not be limited to preparation, reviewing, and approving the plans and specifications for the necessary facilities to serve applicants; obtaining any necessary approvals from governmental authorities prior to construction of the facilities; the acquisition of rights-of-way; a transformer charge as detailed in Paragraph G below; professional and other services required by the District in conjunction with the installation and construction of the facilities.

5. In the event that said extension is from an existing facility, which was constructed under a previous extension contract, then an amount shall be included to equalize the cost of that portion of such existing facilities utilized by the applicant. Within five years of original extension.

6. Prior to the start of construction, the applicant shall be required to advance to the District the total estimated cost of the extension and to enter into a written line extension' agreement.

7. Following completion, final approval, and acceptance of the facilities, the District may provide to the applicant an accounting of the actual costs of construction and installation of the facilities. In the event the District's actual costs and fees are different from the contribution paid by the applicant pursuant to this regulation, the District shall refund the excess to the applicant, or the applicant shall pay the shortage to the District within thirty (30) days after the applicant receives the accounting. The total amount of such costs, as set forth on the accounting, shall be deemed a contribution.

8. If the applicant fails to pay any additional costs in accordance with this regulation or fails to comply with any of the requirements herein, the providing of electric service through such extension shall be terminated until such costs are paid in full or other such requirements are met.

D. REFUNDS:

If, within five (5) years from the date of completion of the construction of the line extension, a new consumer connects to the line extension, the applicant shall be entitled to a refund of a portion of the contribution on the following conditions:

1. If, after five (5) years from the District's receipt of the advance, any balance subject to refund not having been previously refunded, shall be considered a contribution-in-aid of construction and shall no longer be refundable.

2. No refunds on such extensions shall be made until all costs of any new extensions there from have been paid in full.

3. Any funds received by the District in accordance with the provisions of paragraph c-5 above will be refunded to the appropriate consumer(s).

E. CHANGE IN SERVICE:

1. In the event that an existing consumer requests a change in service, power requirements, or facilities, and such changes result in increased requirements of less than 1500 kW and can be served from existing the District facilities, as determined by the District, such change(s) shall be treated as a line extension under Paragraph C above, and consumer shall pay the costs' associated therewith.

2. If the requirements (total of existing and proposed) exceed 1500 kW or the load cannot be served from existing facilities of the District, then the consumer may, at the District's option, be served under a special contract which will set forth the terms and conditions under which service will be rendered.

F. CONSTRUCTION PRACTICES:

1. The District will select the size, type, and quality of the materials to be used, and will, in the design of the facilities, select the minimum size for materials, including conductors, required to provide the applicant with adequate service. The District, in its engineering and design, shall not be required to deviate from the standard materials, including conductor size and type normally stocked by the District. The use of such standard materials shall not constitute over sizing.

2. In the event that the District, in its engineering and design, specifies materials, including conductors, in excess of the minimum, all costs associated with said over sizing shall be at the District's expense.

3. At the option of the District, the applicant may provide the trenching, backfill (including any imported backfill required), compaction, repaving and any earthwork at the applicant's sole cost, expense, and responsibility. Any such services done by the applicant shall be in accordance with the District's timetable and in accordance with the District's specifications and shall be inspected by the District.

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Standards Committee	JJ / CD	3/12/2019

1.4 PROCESS FOR OBTAINING ELECTRICAL SERVICE

1. Determine if there is an existing electrical service or if a new installation is required. An existing electrical service is defined as having the PVC conduit, wire, and meter base installed from a transformer or secondary vault to the location where electrical service is required. A new installation requires the installation or modification of electrical service facilities.

2. Visit the local Overton Power District No. 5 (District) office. The District's main office is located at 615 North Moapa Valley Boulevard in Overton, Nevada. The District also maintains a branch office at 731 Turtleback Road in Mesquite, Nevada. Ask for an application for service at the reception desk.

3. Complete the application for service. To complete the application the following information is required:

- Name of the person, persons, or business that will be responsible for paying the fees and monthly power bills.
- Current mailing address, email and telephone number.
- Future street address or APN# (the location where electrical service is desired).
- Billing address (address that your monthly power bill will be sent to.)

4. Return the signed and completed application for service to the reception desk at the District office. When you return the application for service you will be asked to provide:

- Proof of ownership of your respective home or business. A deed of trust, bill of sale, or a closing statement including address is acceptable proof of ownership.
  -Or-
- A letter of credit from another utility. The letter must be current, within 90 days, and should indicate that there have been no credit problems during the past year.
  -Or-
- A $250.00 security deposit for a residential customer or a $200.00 security deposit for a business.

5. Subsequent to providing the information required herein, the District requires 24 hours' notice to transfer or connect a meter.

The following only apply to the installation of a new service.

6. Where new service is desired field staking is required. Ensure that desired point of service, property corners, lot lines, and other pertinent information is identified.

7. If installation of a new electrical service is required, one of the Districts' staking engineers must be contacted.

When meeting with the staking engineer you will be asked to provide:
- A copy of the application for service
- A copy of the plot map in AutoCAD format, from your surveyor or engineer
- Voltage requirements
- Amperage requirements
- Proposed location of the meter
- Applicable permits and right of way documents

-Or-

If electrical service is required for more than one customer you will be asked to provide:
- A copy of the application for service
- A copy of the Clark County Final Map in AutoCAD format, from your surveyor or engineer
- Voltage requirements
- Amperage requirements
- Proposed location of the meter
- Applicable permits and right of way documents
- Engineering fee of $250 or $500 as determined by the staking engineer.

8. Based on the information you provide, the District will calculate the estimated cost to install the electrical service as requested. The estimate is based on the District providing and installing as required:

- High voltage wire
- High voltage connections
- Poles
- Pole hardware
- High voltage switches
- Transformers
- Meter
  - Metering components (current transformers, potential transformers, meter wiring.)
- Other material as specified
- Fees
- Charges for the District's equipment
- Labor

Additionally, the estimate provided by the District is based on the contractor providing and installing the following, in accordance with the District's specifications:

- Surveying
- Right of way / easement

- Permits
- Requests for line location
- Trenching
- PVC conduit
- Primary vaults
- Switch covers
- Secondary vaults
- Secondary connectors
- Transformer pads
- Secondary wire
- Backfill
- Marker tape
- Secondary wire connections
- Grounding including ground rods
- Meter base, disconnects, and switch panels including test switches
- Labor
- Equipment

9. The estimate only includes costs for those facilities under the District's jurisdiction. The District has jurisdiction over all high voltage, secondary, and service facilities to the meter. The customer is responsible for the meter base and all electrical facilities on the customer side of the meter.

10. An estimate to complete the job will be mailed to you or a copy can be obtained from the office. The estimate must be paid in full for work to be scheduled. Payments can be remitted at the office reception desk. Depending on the District's workload, it may take from two (2) days to four (4) weeks to commence the job after a new installation is paid for and scheduled.

11. Call the staking engineer before construction begins to ensure that the job proceeds correctly. The staking engineer will identify the takeoff point, termination point, equipment locations, and other useful information required to complete the job.

12. The District has responsibility for all high voltage facilities, secondary facilities, and those facilities from the transformer to the customer's meter base. One of the District's inspectors must be scheduled two (2) working days in advance to inspect trench depth, trench location, and conduit installation before backfilling. The inspector shall again be notified to inspect wire type and wire installation, and final approval for meter installation.

13. A Clark County or City of Mesquite occupancy sticker must be provided, on the meter base, by the county or city inspector before a meter is installed.

14. If a meter was not installed when the District's crews completed their work you will need to call for a meter installation when an occupancy sticker is received. As the time for occupancy nears, please contact the staking engineer and let him know the tentative time frame. If you wait until the day you receive your occupancy sticker to notify the District, generally it is not possible to install a meter that day, as the District's work schedules are prepared one to two weeks in advance depending on the work load.

15. Please keep in mind that the estimate is just that, an estimate. When the project is completed, you will be billed for actual costs. If the estimate is higher than actual cost, excess monies will be refunded to you. If the estimate is less than actual cost, you will be required to pay the difference. Failure to pay the difference in cost will result in termination of the electrical service.

Important information:

For underground service alert (USA) one call
For line location requests call: 1-(800) 227-2600

City of Mesquite

City of Mesquite Building Department: (702) 346-2835

City of Mesquite Building Inspections: (702) 346-6156

Clark County Building Inspector
Northwest Rural Area, Overton: (702) 397-8089

Overton Power District No. 5, Main Office, Overton: (702) 397-2512

Overton Power District NO. 5 Branch Office, Mesquite (702) 346-5710

Important websites:

www.3M.com	www.alliedtube.com
www.carlon.com	www.carsonind.com
www.crouse-hinds.com	www.ctcjoslyn.com
www.cutler-hammer.com	www.fciconnect.com
www.jensenprecast.com	www.lhdottie.com
www.powerstrut.com	www.southwire.com
www.thomasandbetts.com	www.unistrut.com
www.utilco.com	

Overton Power District No. 5 construction and material specifications online.

www.opd5.com/construction.htm

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Standards Committee	RO, CD, KH	2/01/2023

1.5 RIGHT OF WAY AND EASEMENT REQUIREMENTS

1. Construction of power lines or installation of electrical facilities shall not begin before obtaining the proper right of way.

2. Right of way documents shall be recorded with the proper governing agency.

3. Overton Power District No. 5 shall be expressly named as the holder of the respective right of way on said documents.

4. The customer shall obtain right of way required by the District or the customer shall advance to the District the estimated cost to obtain and record said right of way.

5. The District maintains the right of ingress and egress to all its rights of way.

6. The customer shall not construct or place any shade cover, awning, building structure, loose material, fence, tree, shrubbery, or other obstacle in the right of way that limits or prohibits the District's right of ingress and egress.

7. The customer shall not place or construct a shade, awning, or cover, over or in front of the District's transformers, switches, poles, equipment, or other facilities.

8. The District reserves the right to trim trees or bushes that grow near energized power lines, transformers, switches, and vaults.

9. The District reserves the right to construct and maintain a power line maintenance road and staging areas as needed in the right of way.

10. A power line right of way and the associated power line maintenance road, if required, is not a public access route. The landowner retains all rights of ownership.

11. Minimum Right of Way Requirements:
    -Low Voltage (600 volts a.c. or less) – Not less than ten (10) feet if adjacent to a dedicated County or City road or not less than five (5) feet if along property side lot lines.

-Distribution High Voltage (601-24,900 volts a.c.) – Not less than twenty-five (25) feet or twelve and one half (12.5) feet if adjacent to a dedicated County or City road. Not less than seventy five (75) feet for areas requiring down guys and anchors.

-Transmission High Voltage (69,000 volts a.c.) - Not less than one hundred (100) feet or fifty (50) feet if adjacent to a dedicated County or City road. Not less than one hundred fifty (150) feet for areas requiring down guys and anchors.

- Transmission High Voltage (138,000 volts a.c.) - Not less than one hundred fifty (150) feet or seventy-five (75) feet if adjacent to a dedicated County or City road. Not less than two hundred (200) feet for areas requiring down guys and anchors.

- Transmission High Voltage (230,000 volts a.c.) - Not less than two hundred (200) feet or one hundred (100) feet if adjacent to a dedicated County or City road. Not less than two hundred (200) feet for areas requiring down guys and anchors.

12. Overhead power lines are typically constructed in the center of the right of way unless the power line is adjacent to a dedicated county or city road. The location of the power line is determined by the District.

13. Underground power lines are typically constructed along the edge of a right of way as specified by the District.

14. No water sprinklers are to be placed within 5 feet of any transformers, switches, secondary vaults, or poles. Any sprinklers placed at 5 feet or farther must be directed away from power equipment; i.e. transformers, vaults, switches, etc.

15. Only desert landscaping (small rock, gravel, and low shrubs) will be allowed within a 5-foot radius of transformers, switches, and secondary vaults.

16. A 10-foot clearance must be maintained in front of the doors of switches and transformers (front and back) for accessibility. No shrubs or bubblers should be placed in those areas. A 5-foot clearance must be maintained around secondary vaults for accessibility.

17. As plants and shrubs planted outside the 10-foot radius of equipment grow and mature, the branch growth needs to be kept outside that radius.

18. Trees are not permitted within the right-of-way of power lines.

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Standards Committee	MVC	10/2/2012

1.6 CLEARANCE

1. Clearances not specifically defined herein shall be maintained in accordance with the current National Electric Code and the National Electric Safety Code.

2. Where conflicts occur the more stringent rule shall apply.

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MVC	AKB	4/30/02

Underground Primary Distribution

Installation Guidelines

(High Voltage: 601 to 24,900 volts a.c.)

2.1 GENERAL GUIDELINES

1. The District owns and maintains the electrical high voltage facilities to the customer's meter.

2. The District assumes ownership of all electrical facilities installed under its jurisdiction subsequent to proper installation, inspection, and connection.

3. Work on facilities under the District's jurisdiction shall not begin without the consent and knowledge of an authorized representative of the District.

4. Notice to proceed on work under the District's jurisdiction may be obtained by contacting Overton Power District #5.

5. Contractors are responsible to know and follow the guidelines and requirements established by the District herein.

6. Contractors are responsible to know and follow the applicable national, state, county, and city, codes, guidelines, and policies.

7. A homeowner, as an owner builder, may act as his own contractor. The homeowner, as such, is required to know and follow the same guidelines and policies.

8. Electrical facilities constructed for commercial applications shall be installed by a licensed contractor.

9. The contractor shall obtain the proper permits, licenses, and permissions prior to commencing construction.

10. High voltage facilities shall be installed in a dedicated right of way or easement. The right of way or easement shall be clearly marked in the field and recorded on the County or City map.

11. All work shall be of high quality and neat in appearance.

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Standards Committee	RO, CD, KH	2/01/2023

2.2 INSPECTION

1. The District shall inspect the construction of all primary distribution power facilities.

2. Each phase of construction shall be inspected. Inspections are required after trenching, before backfill, and prior to connection by the District's crews.

3. The contractor is responsible for requesting inspections.

4. Inspections must be arranged two working days in advance.

5. Schedule inspections by calling Overton Power District No. 5. .

6. Work shall follow applicable guidelines and shall be of good quality and neat in appearance.

7. Property corners and property lines shall be established by a licensed engineer and shall be clearly marked at the time of inspection

8. Work that has not been inspected will be automatically rejected.

9. The District, at its discretion and at the contractor's expense, reserves the right to require an installation uncovered for inspection.

10. Power will not be connected to any service that has been rejected until corrections have been made and the work has been inspected to verify that the work meets the District's specifications.

11. The District reserves the right to reject any work found to be unsatisfactory.

12. Final approval of work will be given after the conductors have been energized.

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Standards Committee	RO, CD, KH	2/01/2023

2.3 TRENCHING

1. The District's staking engineer shall determine trench location and beginning and end points.

2. The District shall issue a staking sheet or design map showing proposed trench locations. Trenching for installation of any of the District's facilities prior to issuance of a map or staking sheet is prohibited.

3. The staking sheets shall be reviewed jointly in the field by the contractor and the staking engineer. At that time the contractor shall propose any desirable changes or clarifications. Any changes approved by the staking engineer shall be recorded on the staking sheets.

4. The contractor shall not make changes to the staking sheets.

5. The contractor shall have existing utilities located and marked prior to trenching. Line locates shall be scheduled through Underground Service Alert (USA) at least two working days prior to excavation. The trenching contractor shall call USA at 1-800-227-2600 to request line locates.

6. Surveyed property corners and lot lines shall be marked and clearly visible for trenching.
7. When practicable, the trench shall be dug in a straight line between staked points.

8. When turns are required, a slow bend is preferred to a sharp turn, thus reducing the number of elbows and fittings needed for the conduit. Heat bending the conduit is not recommended. The number of bends in any conduit run shall not contain more than the equivalent of four (4)-90 degree bends (360 degrees) per conduit run.

9. The trench shall be located in a designated easement.

10. The trench should be dug to allow conduit placement 1-3 feet from the property or easement line. (See figure 1.)

11. Minimum trench depth. The trench must be able to accommodate:
    a. Primary conductor: 4 – 4.5 feet from final grade to top of conduit.
    b. Secondary conductor: 3 – 3.5 feet deep from final grade to the top of conduit.
    c. A minimum of 1 foot of clearance between primary and secondary conductors.
    d. A minimum of 1 foot of clearance between power lines and any other conduit, cable, or obstruction.
    e. Addition of bedding sand if necessary.
    f. If the minimum trench depth cannot be met, contact an Overton Power District inspector or staking engineer.

12. The trench shall have a smooth floor of uniform grade. A six (6) inch layer of bedding sand is required to smooth the trench floor and protect the conduit from damage if large objects such as stones, concrete, or any other material that may damage the conduit, are present on the trench floor.

13. Any part of the trench dug excessively deep must be backfilled and compacted to grade.

14. Standing water in the trench is unacceptable.

15. The contractor or owner shall be responsible for repairs or cost of repairs for damage caused to existing utilities or facilities while trenching. Repairs shall be completed in a timely manner.

16. When trenching near a transformer, vault, pole, or any Overton Power District device, the device must be braced or supported. Straightening or leveling of the device shall be the responsibility of the contractor. It is the responsibility of the contractor to contact Overton Power District personnel to monitor the work site while trenching near live equipment.

17. Proper safety procedures including flagging, barricading, and shoring are the responsibility of the contractor.

18. When trenching across any road, the contractor is responsible for obtaining proper easements and permits. Road compaction and repairs shall be made in accordance with applicable guidelines.

19. The trench shall be backfilled immediately following inspection. Electrical service shall not be provided prior to proper backfill, compaction, and repair.

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Standards Committee	MVC	10/2/12

2.4 CONDUIT INSTALLATION

1. Overton Power District No. 5 shall issue a staking sheet or design map showing location, size, and number of conduits to be installed. Exceptions or revisions to the electrical plan shall be reported to Overton Power District's Engineering Dept. Overton Power District No. 5 shall approve all changes.

2. Only conduit and fittings approved by Overton Power District No. 5 shall be used.

3. Generally four (4) - three (3) inch PVC conduits are used for primary power underground installations.

4. Conduit should be clean, dry, straight, and free of all foreign matter.

5. Conduit should not be laid in soil that is excessively rocky, rough, or contains objects that may damage the conduit. If such conditions exist a six (6) inch layer of bedding sand or clean soil is required beneath the conduit.

6. Where bends are required, care should be taken not to damage or alter the size and shape of the conduit or the fittings. Altering the trench to prevent damage may be required. 36 inch radius 90-degree elbow shall be used where 90-degree turns are required.

7. Use of more than four (4) 90-degree elbows per conduit run should be avoided.

8. Change in conduit size may only be made in a pull box, vault, or transformer. Reducers cannot be used in a conduit run.

9. Machine compaction is not permitted within six (6) inches of the conduit.

10. Conduit shall not lay exposed to the sunlight longer than necessary. Conduits that have been damaged by excessive exposure to the sunlight shall be replaced.

11. Precautions shall be taken to allow for expansion or contraction of the conduit before backfilling.

12. Damaged conduit, bell ends, or fittings shall be removed and replaced prior to backfilling.

13. Cuts should be straight and burrs removed.

14. Any conduit that will be exposed to sunlight or extends above ground level from the trench to the service panel must be metal rigid conduit.

15. Metal rigid conduit exposed to the earth must be wrapped half lapped in 10-mil corrosion protective tape.

16. A test mandrel or conduit cleaner, equal in size to the conduit used, shall be pulled through

the duct way to prove the conduit.

17. Mule-tape or a 1/8" propylene-pulling chord shall be inserted in each conduit.

18. The conduit shall be plugged to prevent water, dirt, or other foreign matter from entering the conduit.

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Standards Committee	MVC	2/7/07

2.4.1 PLACEMENT OF CONDUIT IN PAD MOUNT TRANSFORMERS

1. The conduit shall be cut and the sweep glued to allow the conduit to extend straight from the trench into the pad opening. Pipe entering the pad opening at awkward angles will not be accepted.

2. The conduit carrying the primary cable shall rise from the trench and into the opening of the pad 10 – 11 inches from the left side of the pad and 8 – 10 inches from the front of the pad opening. (See figure 3.)

3. Any additional conduits for the primary cable will also be placed on the left side of the transformer-opening pad. The first conduit being in the center, additional conduits should be progressively added to the left.

4. Conduit designated to carry secondary cable should be placed on the right side of the slot 10 – 11 inches from the right side of the pad and 8 – 10 inches from the front of the pad opening.

5. Any additional conduits for secondary cable shall be placed on the right side of the transformer pad opening. The first conduit for secondary power being in the center, each additional conduit should be placed to the right.

6. Conduits serving transformers shall extend eight (8) inches above final grade.

7. Prior to backfilling a 5/8" x 8' copper clad ground rod shall be driven in the transformer pad opening midway between and level with the primary and secondary conduits. In the event that a ground rod cannot be driven, two (2) - 30 foot lengths of #2 stranded bare copper shall be placed in the trench with five (5) foot tails extending through the transformer pad opening between the primary and secondary conduits.

8. Any multi phase transformer larger than 300 kVA requires (2) – 5/8'' x 8' ground rods with a minimum of 6' spacing between them.

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Standards Committee	AKB	8/31/99

2.4.2 CONDUIT PLACEMENT FOR POLE RISERS

1. The pole riser conduit shall be placed against other riser conduits if pole riser conduits are already in place. (See figure 4.)

2. The conduit shall be cut and the sweep placed in the trench to allow the riser conduit to extend straight up the pole when placed on the Uni. -Strut. This requires that the conduit riser be (10) ten inches away from the closest edge of the pole.

3. A full ten (10) foot length of rigid pipe shall begin one (1) foot below finished grade. Where rigid pipe is in direct contact with soil, the pipe shall be wrapped, half-lapped with 10 mil. corrosion resistive tape.

4. The riser conduit shall extend straight up the pole. Work shall be neat in appearance.

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Standards Committee	AKB	8/31/99

2.4.3 CONDUIT PLACEMENT IN PRIMARY VAULTS

1. Conduit should enter the vault at the bottom most knockouts with additional conduits being added beside then above the first. (See figure 3.)

2. The end of the conduits shall be flush with the inside wall of the vault.

3. The conduit shall enter the vault straight and perpendicular to the wall of the vault. It is not

acceptable for the conduit to enter the vault at any angle that will inhibit the pulling of wire.

4. All conduits entering the vault will be straight for two (2) feet before entering the vault. Sweeps shall not enter directly into the vault

5. Conduits shall be a minimum of 4" off the floor of the vault.

6. Once the conduit is in place, grout or sealer shall be placed around the conduit to prevent dirt, water, or other foreign objects from entering the vault. Grout or sealer shall be applied on the outside and the inside of the vault to repair the conduit entrance. The grout or sealer shall be applied to form a tight seal.

7. Conduits shall be plugged to prevent dirt, water, or other foreign objects from entering the conduit.

8. Conduits shall only be glued into duct terminations of the proper size and type. It is not acceptable to glue a conduit bell end in a duct termination of a larger size.

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Standards Committee	MVC	7/21/05

2.5 PAD MOUNT TRANSFORMERS

1. Only transformer pads approved by the District shall be used.

2. Transformers are placed on the property of the customer. Transformers shall not be placed in a road easement. (See figure 3.)

3. The transformer pad shall be placed in a front corner of the property adjacent to and facing the road. Facing the road is defined as having the opening in the transformer pad closest to the road.

4. The transformer pad shall be at least two (2) feet from the front of the property, and two (2) feet from the side of the property line. A transformer shall not be placed on a property or lot line.

5. The transformer shall be square with the road or property lines and shall be placed in a manner that is neat in appearance.

6. Construction of or placement of any object within two (2) feet of the transformer pad that would prohibit proper access and maintenance of the transformer is not acceptable. Fences must jog around the transformer. Transformers shall not be fenced in.

7. There shall be a minimum of four (4) feet of clearance from the transformer to a fire hydrant.

8. Transformer pads should be placed no less than one (1) foot above final grade when measured from final grade to the top of the transformer pad.

9. In locations where there is frequently high water the transformer pad may be placed higher than one (1) foot when approved by the District.

10. A retaining wall around the pad is required when grade from the pad rises more than one (1) foot in three (3) feet.

11. In high traffic areas, or when otherwise deemed necessary, transformer protection barriers are required.

12. All transformer pads to be placed upon a minimum of 12” of properly compacted type II to 95% of the relative maximum density.

13. A five foot buffer of desert landscaping shall surround each pad mount transformer. Irrigation shall be directed away from pad mount transformers.

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2.6 POLE RISER CONSTRUCTION

1. Only construction materials approved by Overton Power District No. 5 shall be used.

2. Pole riser conduits shall be placed against pre-installed riser conduits when possible. (See figure 4).

3. If no other pole riser conduits exist, then pole riser conduits shall be placed on the backside of the pole in a specified easement. The riser shall be installed so that PVC conduits rise from the trench in line with the overhead wires. The conduits shall be installed in a straight line from the trench toward the center phase wire position. If possible the conduits should be installed directly away from approaching traffic.

4. A path up the backside of the pole should be selected that allows the conduit to be secured straight up the pole with no obstructions.

5. A conduit holder shall be placed on the pole one (1) foot above finished grade (see figure 4).

6. A second conduit holder should be placed approximately seven (7) feet above the first or approximately eight (8) feet above finished grade.

7. Care should be taken when cutting the conduit and gluing the sweep in the trench that the selected placement will allow the riser conduit to extend straight up the pole when placed in the conduit holders. This requires that the conduit riser be ten (10) inches away from the pole.

8. Channeled steel (or unistrut) shall be cut 18-24 inches long.

9. A full length of rigid pipe shall begin one (1) foot below finished grade, extend out of the ground, and shall be fastened in the conduit holders.

10. Steel rigid pipe shall be grounded according to National Electric Code Specifications and shall be wrapped half lapped with 10 mil. corrosion protective tape where in direct contact with the earth.

11. The riser conduit should be plugged to prevent water, dirt, or foreign object from entering the conduit.

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Standards Committee	AKB	8/31/99

2.7 PRIMARY VAULTS

1. Only vaults approved by the District shall be used.

2. The District shall designate vault size and location.

3. Generally a vault will be set 1-3 feet from the property or easement line. (See figure 5.)

4. A primary vault shall not be placed in a sidewalk.

5. The vault shall be set level and four (4) inches above the finished grade of the sidewalk. If no sidewalk exists, the vault shall be set level and six (6) inches above finished grade.

6. The vault shall be placed square with the road and property lines and shall be neat in appearance.

7. The vault shall be placed on a floor of smooth or undisturbed earth. Any part of the floor dug excessively deep shall be backfilled and compacted to floor grade.

8. Generally the vault should be level. In cases of extreme slope some compensation in angle may be made.

9. A retaining wall around the vault is required when grade from the vault lid rises more than one (1) foot in three (3) feet.

10. A minimum of five (5) – 5/8" drain holes shall be drilled in the center section of the vault floor.

11. In the center drain hole a 5/8" x 8' copper clad ground rod shall be driven in the vault. The ground rod shall extend 6-8 inches above the vault floor.

12. Watertight sealer shall be used between the vault and any rings or extensions that are added to the vault.

13. All vaults shall be placed upon a minimum of 12" of properly compacted type II to 95% of the relative maximum density.

14. A five foot buffer of desert landscaping shall surround each primary vault. Irrigation shall be directed away from primary vault.

15. All metal torsion shall be aluminum or hot dipped galvanized. Manhole covers shall be hot dipped galvanized.

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Standards Committee	RO, CD, KH	2/01/2023

2.8 BACKFILLING

1. A visual inspection of trench, conduit, and grounding by the District is required before shading and backfilling.

2. Care should be taken that the conduit is properly in place, no pipe or fittings are damaged, vaults are set properly, and ground rods have been driven in appropriate locations.

3. Precautions shall be made when backfilling that the conduit remains straight and level. Shading by hand may be required.

4. A bedding of clean soil is required within six (6) inches of the conduit. Clean sand shall be used for bedding if native soil contains rocks or other objects larger than three (3) inches in diameter.

5. Machine compaction should not be used within six (6) inches of the conduit.

6. Backfill shall be added in one (1) foot layers and compacted to 95% of the relative maximum density.

7. Backfill shall be moistened to aid in maximum compaction.

8. Marker tape shall be placed in the trench 18 inches below final grade.

9. Any damage caused to the conduit or cable during backfilling is the responsibility of the contractor.

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2.9 GROUNDING

2. Single-phase transformers 50 kVA and smaller shall be grounded with #4 stranded copper that is connected to one (1) - 5/8" x 8' ground rod.

3. Single-phase transformers 75 kVA to 167 kVA shall be grounded with #2 stranded copper that is connected to one (1) - 5/8" x 8' ground rod.

4. Three-phase transformers 75 kVA to 750 kVA shall be grounded with 1/0 stranded copper that is connected to two (2) - 5/8" x 8' ground rods with a minimum of 6' spacing between them.

5. Three-phase transformers 1000 kVA to 1500 kVA shall be grounded with 2/0 stranded copper that is connected to two (2) - 5/8" x 8' ground rods with a minimum of 6' spacing between them.

6. Primary vaults shall be grounded with 1/0 stranded copper that is connected to one (1) - 5/8" x 8' ground rod. The ground rod shall be driven in the center drain hole inside the vault.

7. High voltage switches shall be grounded on all four (4) corners with 1/0 stranded copper.

8. Where ground rods cannot be driven, a minimum of two (2) - 30 ft. lengths of #2 stranded copper shall be installed and backfilled in the trench.

9. Any multi phase transformer requires (2) – 5/8'' x 8' ground rods with a minimum of 6' spacing between them.

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2.10 TRAFFIC BARRIERS

1. Traffic barriers shall be installed in locations where the District's facilities such as switches and transformers are exposed to damage by vehicular traffic.

2. All materials and labor for traffic barriers shall be provided by the contractor.

3. Traffic barriers are subject to inspection and approval by the District.

4. The installation of traffic barriers shall be coordinated to prevent damage to electrical wire and conduit.

5. Traffic barriers shall be constructed of six (6) foot lengths of four (4) inch intermediate metal conduit (IMC).

6. Traffic barriers shall be placed 4.5 feet from the electrical equipment doors and 4.5 feet apart (see figure 6). Adequate clearance shall be provided to transformer cooling coils and equipment doors.

7. Traffic barriers are not required on sides that are not exposed to vehicular traffic.

8. Traffic barriers shall be installed in a one (1) foot diameter hole three (3) feet deep.

9. IMC pipe shall be installed in the hole. The hole and the IMC pipe shall be filled with concrete.

10. After the concrete dries each traffic barrier shall be painted with yellow street marking paint.

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Standards Committee	MVC	7/21/05

Underground Secondary and Service Installation Guidelines

(Low Voltage: 120 to 600 volts a.c.)

3.1 GENERAL GUIDELINES

1. The District owns and maintains all high voltage, secondary, and service facilities to the customer's meter.

2. The District assumes ownership of all electrical facilities installed under its jurisdiction subsequent to proper installation, inspection, and connection.

3. Work shall not begin on any facilities under the District's jurisdiction without the knowledge and consent of an authorized representative of the District.

4. Notice to proceed on work under the District's jurisdiction may be obtained by contacting Overton Power's engineering department.

5. Contractors are responsible to know and follow the guidelines and requirements established herein by Overton Power District # 5 (District).

6. Contractors are responsible to know and follow the applicable national, state, county, and city, codes, guidelines, and policies.

7. A homeowner, as an owner builder, may act as his own contractor. The homeowner, as such, is required to know and follow the same guidelines and policies as any other contractor.

8. Electrical facilities constructed for commercial applications shall be installed by a contractor possessing the appropriate Nevada State licenses.

9. The contractor shall obtain the proper permits, licenses, and permissions prior to commencing construction.

10. Construction shall only proceed on facilities approved by the District.

11. All work shall be of high quality and neat in appearance.

12. This section applies to all single phase and three phase commercial and residential applications.

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3.2 INSPECTION

1. The District shall inspect the construction of all secondary and service installations.

2. Each phase of construction shall be inspected. Inspections are required after trenching, before backfill, and prior to connection by the District's crews.

3. The contractor is responsible for requesting inspections.

4. Inspections must be requested two working days in advance.

5. Inspections may be arranged by contacting the main office or branch.

6. Work shall follow applicable guidelines and shall be of good quality and neat in appearance.

7. Property corners and property lines shall be established by a licensed surveyor. Locations shall be marked and clearly visible at the time of inspection.

8. Work that has not been inspected will be automatically rejected.

9. The District, at its discretion and at the contractor's expense, reserves the right to require an installation uncovered for inspection.

10. Power will not be connected to any service that has been rejected until corrections have been made and the work has been inspected to verify that the work meets the District's specifications.

11. The District reserves the right to reject any work found to be unsatisfactory.

12. Final approval of work will be given after the electrical wires have been energized.

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3.3 TEMPORARY SERVICE

1. The customer shall obtain a permit for temporary power from the city or county prior to meeting with the District regarding the installation of a temporary service.

2. The location of the temporary service shall be approved by the District.

3. The service wire may be direct buried if the temporary service is located adjacent to a transformer.

4. Splices, connectors, change of conduit size and change or wire size requires the installation of a secondary vault. The secondary vault shall be removed when the temporary service is removed.

5. A temporary service shall not be placed within four (4) feet of a fire hydrant.

6. The wire and PVC conduit used for a temporary service shall be sized for the permanent service to prevent retrenching and reinstallation of facilities.

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MVC	AKB	4/30/02

3.4 TRENCHING

1. The District's staking engineer shall determine trench location and beginning and end points.

2. The District shall issue a staking sheet or design map showing proposed trench locations. Trenching for installation of any of the District's facilities prior to issuance of a map or staking sheet is prohibited.

3. The contractor shall make no changes to the staking sheets.

4. The staking sheets shall be reviewed jointly in the field by the contractor and the staking engineer. At that time, the contractor shall propose any desirable changes or clarifications. Any changes approved by the staking engineer shall be recorded on the staking sheets.

5. Exceptions and problems shall be reported to the District's engineering department.

6. The contractor shall provide a competent representative to work with the District's staking engineer and inspector.

7. The contractor shall have existing utilities located and marked by calling Underground Service Alert (USA) at 1-800-227-2600, two working days prior to trenching.

8. Property corners and lot lines shall be visible when trenching.

9. The trench shall be dug in a straight line between staked points to the greatest extent possible. Generally, a path straight from the pole, pad mount transformer, or vault to the service panel shall be chosen. (See figure 7.)

10. If it is impossible to choose a path straight from the starting point to the service panel, then a path that requires as few 90 degree elbows as possible will be chosen. The number of bends in any conduit run shall not contain more than the equivalent of four (4)-90 degree bends (360 degrees) per conduit run.

11. Generally service trenches are located on the customer's private property and secondary trenches are located in a dedicated easement. A service trench may not cross more than one property line or lot line. If someone else's property must be crossed, that portion of trench shall be in a dedicated easement.

12. The trench shall have a smooth floor of uniform grade. A six (6) inch layer of bedding material is required if a large object such as stones, concrete, or any other material that may damage the conduit, is present on the trench floor.

13. Any part of the trench dug excessively deep must be backfilled and compacted to grade.

14. It is permissible to place other utilities in the power trench. Consideration should be given to the following depths to assure proper clearances. (See figure 1.)

15. Minimum trench Depth. The trench must be able to accommodate:
    a. Secondary conductor: 3-3.5 feet deep from final grade to the top of the conduit. (See figure 1.)
    b. Primary conductor: 4-4.5 feet deep from final grade to the top of the conduit.
    c. A minimum of 1 foot of clearance between primary and secondary conductors.
    d. A minimum of 1 foot of clearance between power lines and any other conduit, cable, or obstruction.
    e. Addition of bedding sand if necessary.
    f. If the minimum trench depth cannot be met, contact an Overton Power District inspector or staking engineer.

16. Standing water in the trench is unacceptable.

17. The trench should be no less than four (4) inches wide and generally should be 2 times wider than the conduit to allow for proper backfilling.

18. When trenching near a transformer, vault, pole, or any District device, the device must be braced or supported. Straightening or leveling of the device shall be the responsibility of the contractor.

19. Proper safety procedures such as flagging, barricading, and shoring are the responsibility of the contractor.

20. The contractor is responsible for repairs or cost of repairs for damage caused to existing utilities or facilities while trenching. Repairs shall be completed in a timely manner.

21. The trench shall be inspected prior to installation of the conduit.

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3.5 MINIMUM WIRE AND CONDUIT SIZE

Minimum wire size is calculated using wire runs less than one hundred fifty (150) feet in length. Wire runs greater than one hundred fifty (150) feet may cause power quality problems. The District shall determine minimum wire and conduit size for runs in excess of one hundred fifty (150) feet.

1. Single Phase Residential

Service Rating	Minimum Conduit Size	Number of Conduits	Minimum Wire Size (Triplex)	Number of Wire Runs
100-150 Amp	3 inch	1	2/0 Aluminum	1
200Amp	3 inch	1	2/0 Aluminum	1
225Amp	3 inch	1	4/0 Aluminum	1
300 Amp	3 inch	1	4/0 Aluminum	1
400 Amp	3 inch	1	350 MCM Aluminum	1
600 Amp	4 inch	1	500 MCM Aluminum	1
600 Amp	3 inch	2	350 MCM Aluminum	2

2. Single Phase Commercial

Service Rating	Minimum Conduit Size	Number of Conduits	Minimum Wire Size (Triplex)	Number of Wire Runs
100 Amp	3 inch	1	2/0 Aluminum	1
150 Amp	3 inch	1	2/0 Aluminum	1
200 Amp	3 inch	1	4/0 Aluminum	1
225 Amp	3 inch	1	4/0 Aluminum	1
300 Amp	3 inch	1	350 MCM Aluminum	1
400 Amp	4 inch	1	500 MCM Aluminum	1
600 Amp	4 inch	1	500 MCM Aluminum	1

3. Three Phase Commercial

Service Rating	Minimum Conduit Size	Number of Conduits	Minimum Wire Size (Quadraplex)	Number of Wire Runs
100 Amp	3 inch	1	2/0 Aluminum	1
150 Amp	3 inch	1	2/0 Aluminum	1
200 Amp	3 inch	1	4/0 Aluminum	1
225 Amp	3 inch	1	4/0 Aluminum	1
300 Amp	3 inch	1	350 MCM Aluminum	1
400 Amp	4 inch	1	500 MCM Aluminum	1
600 Amp	4 inch	2	350 MCM Aluminum	2
800 Amp	4 inch	3	350 MCM Aluminum	3
1000 Amp	4 inch	3	500 MCM Aluminum	3
1200 Amp	4 inch	4	350 MCM Aluminum	4

Conduit and wire for installations greater than 1200 Amps as determined by the District.

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3.6 CONDUIT INSTALLATION

1. Only conduit and fittings that meet or exceed the District's specifications shall be used.

2. The District shall issue a staking sheet or plot map showing location, size, and number of conduits to be installed. Exceptions or revisions to the electrical plan shall be reported to the District's Engineering Department. The District shall approve all changes.

3. The District has approved the use of three (3) inch, and four (4) inch PVC (grey type) conduit for use in secondary and service installations. PVC conduit size is determined by the secondary wire size specified for the installation.

4. Conduit should be clean, dry, straight, and free of all foreign matter.

5. Conduit shall not be placed in soil that is excessively rocky, rough, or contains objects that may damage the conduit. A six (6) inch layer of clean bedding sand or clean soil may be required.

6. Where bends are required, care should be taken not to damage or alter the size and shape of the conduit or fittings. Heat bending of the conduit is not allowed. Altering the trench to prevent damage may be required.

7. The use of more than four (4)-90 degree elbows in a conduit run should be avoided. The number of bends in any conduit run shall not contain more than the equivalent of four (4) 90-degree elbows (360 degrees total) in any conduit run.

8. Change in a conduit size may only be made in a pull box, vault, or transformer. Reducers shall not be used in a conduit run.

9. Machine compaction is not permitted within six (6) inches of the conduit.

10. Conduit should not lay exposed to the sunlight longer than necessary.

11. Precautions should be taken to allow for expansion or contraction of the conduit after backfilling.

12. Cuts should be straight and burrs removed. Fittings such as elbows and couplers shall not be cut or altered to facilitate installation.

13. Damaged conduit, bell ends, or fittings shall be removed and replaced prior to backfilling.

14. Any conduit that will be exposed or extends from the trench to the pole or service panel must be rigid conduit.

15. Metal rigid conduit exposed to earth shall be wrapped half lapped in 10 mil. corrosion protective tape.

16. All conduits will have a test mandrel pulled through to prove joint integrity. Pulling string or mule tape will be blown in and left in conduit.

17. Conduit ends shall be plugged or sealed until wire is installed in the conduit.

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3.6.1 CONDUIT PLACEMENT FOR POLE RISERS

1. The conduit riser shall be placed against other riser conduits if pole riser conduits are already in place.

2. The conduit shall be cut and the sweep placed in the trench to allow the riser conduit to extend straight up the pole when fastened to the unistrut. This requires that the conduit riser be ten (10) inches away from the pole. (See figure 4.)

3. A full ten (10) foot length of rigid pipe shall begin one (1) foot below finished grade.

4. The riser conduit shall extend straight up the pole. Work shall be neat in appearance.

5. Riser pipe shall be wrapped half-lapped with 10 mil. corrosion protective tape from lower coupler to one foot above ground level.

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3.6.2 CONDUIT PLACEMENT IN SECONDARY VAULTS

1. Conduit shall rise vertically from the trench straight into the secondary vault.

2. Conduit shall be bundled together at one end of the vault, 2’ 8” back of the front property line and 3’ 4” in from the side of property or lot line. As conduits are added they may progressively be added working from the center most portion of the vault outward.

3. Conduit shall be cut (4) to eight (8) inches below finished grade. Cuts shall be made prior to wire installation. (See figure 8.)

4. Fittings such as elbows and couplers shall not be cut to facilitate installation.

5. 24 inch radius 90-degree elbows shall be used to extend upward from the trench to the secondary vault.

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3.6.3 CONDUIT PLACEMENT IN TRANSFORMERS

1. The conduit shall be cut and the 90-degree elbow set to allow the conduit to extend straight from the trench into the pad opening. Pipe entering the pad opening at awkward angles will not be accepted.

2. Conduit designated to carry secondary wire should be placed on the left side of the slot 10-11 inches from the left side and 8-10 inches from the front side of the transformer pad. (See figure 3.)

3. Any additional conduits for secondary wire shall also be placed on the left side of the transformer pad opening. The first conduit for secondary power being in the center, each additional conduit should be placed to the left.

4. Conduits serving transformers shall extend eight (8) inches above final grade or two (2) inches below the top of the transformer pad.

5. Fittings such as elbows and couplers shall not be cut to facilitate installation.

6. 24 inch radius 90-degree elbow shall be used to extend upward from the trench to the transformer opening.

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3.6.4 CONDUIT PLACEMENT FOR RECESSED PANELS

1. The District's staking engineer shall approve the location of the service panel.

2. Recessed service panels require installation of conduit inside the wall. The contactor shall install the proper conduit size and conduit type at the approved service panel location prior to the concrete work.

3. Intermediate metal conduit (IMC) or PVC rigid shall be installed in the footing to establish a clear raceway to the recessed service panel.

4. Elbows or bends shall not be installed in the concrete footing.

5. The conduit shall be sized in accordance with the service panel rating.

6. The conduit from the transformer to the service panel shall be of uniform size.

7. The District's staking engineer shall determine the number of conduits installed.

8. A residential customer typically installs only one conduit for a service panel.

9. Intermediate metal conduit, flexible metal conduit, or PVC rigid shall be installed from the concrete footing to the recessed panel conduit and wire entrance.

10. Conduit shall rise vertically from the footing to the service panel.

11. Burrs and rough edges shall be removed from the conduit prior to installation.

12. Do not remove more knockout rings from the panel, than are necessary for the threaded end to enter the underground service entrance of the panel.

13. A threaded fitting shall be installed on the conduit or a threaded conduit end shall be used to enter the underground service entrance of the panel (see figure 9).

14. Two (2) metal locknuts shall be installed on the conduit threads for fastening of the conduit to the panel.

15. If more knockout rings are removed than necessary, two (2) knockout reducing washers shall be used to hold the conduit firmly in place.

16. The metal locknuts shall be tightened to secure the conduit firmly in place.

17. A threaded plastic insulated bushing shall be installed to prevent the conduit threads from damaging the wire.

18. Nails, screws, and other sharp objects shall not enter the wire pulling section of the service panel. All sharp objects shall be removed prior to the installation of wire in the service panel.

19. Sharp objects shall be removed prior to the installation of wire in the service panel.

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3.6.5 CONDUIT PLACEMENT FOR NON-RECESSED PANELS

1. The District's staking engineer shall approve the location of the service panel.

2. Non-recessed service panels require the installation of the conduit on the exterior of the wall.

3. The contractor shall ensure that the service panel be installed with sufficient spacing to allow the entry of the conduit vertically into the panel after the addition of the exterior wall cover.

4. Intermediate metal conduit (IMC) shall be installed from the trench to the service panel.

5. If necessary the contractor shall remove the exterior wall cover to allow the IMC to enter the service panel vertically if there is not sufficient spacing.

6. Any portion of the intermediate metal conduit exposed to the soil shall be wrapped, half lapped in ten (10) mil. corrosion protective tape.

7. The conduit shall be sized in accordance with the service panel rating.

8. The conduit from the transformer to the service panel shall be of uniform size.

9. The District's staking engineer shall determine the number of conduits installed.

10. A residential customer typically installs one conduit from the transformer to the service panel.

11. Burrs and rough edges shall be removed from the conduit prior to installation.

12. Do not remove more knockout rings from the panel, than are necessary for the threaded end to enter the underground service entrance of the panel.

13. A threaded fitting shall be installed on the conduit or a threaded conduit end shall be used to enter the underground service entrance of the panel (see figures 10 and 11).

14. Two (2) metal locknuts shall be installed on the conduit threads for fastening of the conduit to the panel.

15. If more knockout rings are removed than necessary, two (2) knockout reducing washers shall be used to hold the conduit firmly in place.

16. The metal locknuts shall be tightened to secure the conduit firmly in place.

17. A threaded plastic insulated bushing shall be installed to prevent the conduit threads from damaging the wire.

18. Nails, screws, and other sharp objects shall not enter the wire pulling section of the service panel.

19. Sharp objects shall be removed prior to the installation of wire in the service panel.

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3.7 POLE RISER CONSTRUCTION

1. Only construction materials approved by the District shall be used.

2. Pole riser conduits shall be placed against previously installed pole riser conduits when possible. (See figure 4.)

3. If no other pole riser conduit exists, then pole riser conduits shall be placed on the backside of the pole. The backside of the pole is defined as the side of the pole directly away from approaching traffic.

4. A path up the backside of the pole should be selected that allows the conduit to be secured straight up the pole with no obstructions.

5. A conduit holder shall be placed on the pole one (1) foot above finished grade (see figure 4).

6. A second conduit holder should be placed seven (7) feet above the first or eight (8) feet from finished grade.

7. Care should be taken when cutting the conduit and setting the sweep in the trench that the selected placement will allow the riser conduit to extend straight up the pole when placed in the conduit holders. This requires that the conduit be ten (10) inches away from the pole.

8. Channeled steel shall be cut 14" minimum for a single conduit and 24" minimum for four conduits, to fasten conduits to the pole bracket.

9. A full ten (10) ft. length of rigid shall begin 1 foot below finished grade, extend out of the ground, and be fastened in the conduit holders.

10. Steel rigid pipe shall be grounded according to National Electric Code Specifications and shall be wrapped half lapped in 10 mil. corrosion protective tape when in direct contact with the earth.

11. The riser conduit shall be plugged to prevent water or foreign objects from entering the conduit.

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3.8 SECONDARY VAULTS

1. Only secondary vaults that meet or exceed the District's specifications shall be used.

2. Secondary vaults shall have a locking or bolt down cover.

3. The District shall determine vault locations.

4. Generally, secondary vaults shall be placed two (2) feet back from sidewalk or easement or (2) feet from front property line (without easement) and two (2) feet in from the side of property. (See figure 8)

5. Conduit shall rise vertically from the trench straight up into the secondary vault.

6. Conduits shall be bundled together on one end of the vault, 2' 8" back of the front property line and 3' 4" in from the side of property line. As conduits are added they may progressively be added working from the center most portion of the vault outward.

7. Conduits shall be cut (4) to eight (8) inches below finished grade and within 6" of one end of the vault.

8. The vault shall be set with the cover at finished grade.

9. A secondary vault shall not be placed in the sidewalk easement.

10. If the vault is placed in a location where finished grade is not known, the vault shall be set with the cover being a minimum of six (6) inches above ground level.

11. A retaining wall around the vault is required if the grade or slope rises more than one (1) feet in three (3) feet.

12. When pulling conductor, leave a coil (generally five (5) feet) of extra wire inside the vault for each conductor pulled.

13. The number of wires and size of wires required shall be determined by the staking engineer.

14. A five foot buffer of desert landscaping shall surround each secondary vault. Irrigation shall be directed away from secondary vault.

Revised By:	**Approved By:**	**Effective Date:**
Standards Committee	MVC	9/27/11

3.9 SERVICE PANELS

1. The District's staking engineer shall approve the location of the service panel.

2. Service panel minimum rating and type are specified by the applicable City or County agency.

3. The panel shall be provided and installed by the contractor. The contractor is responsible for selecting a panel of proper ampere rating as required by the electrical permit. The service panel shall satisfy applicable city or county building codes.

4. The panel shall include a meter base, main disconnects, an underground service entrance, wire terminations, and provisions to seal the utility service entrance.

5. When practicable, the panel shall be installed on the side of the structure that is closest to the transformer, vault, or pole that will provide electrical service. (See figure 7.)

6. The panel shall not be more than ten (10) feet from the front corner of the structure.

7. The panel shall be accessible from the front of the property (see figure 7).

8. The panel shall not be fenced in or enclosed in the building structure.

9. The panel shall not be installed under a porch, in a carport, breezeway, or under rain spouts or drains.

10. A clear standing and working space shall be provided in front of the panel.

11. The panel shall be installed so that the meter is no higher than six (6) feet from final grade and no lower than four (4) feet six (6) inches from final grade. (See figure 12.)

12. Any exposed conduit that extends from the trench to the service panel must be rigid intermediate metal conduit.

13. Establishing a proper ground is the responsibility of the contractor and shall be done in accordance with applicable city or county guidelines.

14. All panels shall be inspected before connections are made to insure that the meter base disconnects, and connection points are sound and in safe working condition. Any panel deemed to be unsafe shall not be installed or connected.

15. Enough conductor shall be pulled so the pull section of the panel and the transformer or secondary vault will have one coil, generally five (5) feet, of extra conductor inside.

16. Connections should be free of insulation; conductor should be wire brushed, and oxide inhibitor applied. Setscrews, lugs, bolts, and compression terminations shall be installed and tightened according to manufacturer's specifications by the contractor.

17. The pull section cover shall be replaced and meter base covered.

18. The main disconnect or sum of service disconnects can't exceed the service panel rating.

Revised By:	**Approved By:**	**Effective Date:**
Standards Committee	MVC	8/18/14

3.10 SERVICE PEDISTALS

1. The District's staking engineer shall approve the location of the service pedestal.

2. Service pedestal minimum rating and type are determined by the applicable City or County agency.

3. A pedestal shall be provided and installed by the contractor. The contractor is responsible for selecting a pedestal of proper ampere rating as required by the electrical permit. The service pedestal shall satisfy applicable city or county building codes.

4. The pedestal shall include a meter base, main disconnect, and underground service entrance. The pedestal shall include provisions for sealing the utility service entrance.

5. The pedestal shall be inspected prior to connections being made to insure that the meter base, disconnects, and connection points are sound and in safe working condition. A pedestal determined to be unsafe shall not be installed or connected.

6. A pedestal shall not be placed in a location where it may be subject to traffic, water, or any other type of damage.

7. The pedestal shall be accessible from the front of the property. The pedestal shall not be fenced in or enclosed in a structure.

8. A minimum of three feet of clear working and standing space shall be provided in front of the pedestal.

9. The pedestal should face a direction that will protect the meter from sun, wind, and water damage as well as providing easy access for monthly reading of the meter.

10. A pedestal must be placed a minimum of five (4) feet from any transformer or electrical apparatus.

11. Care should be taken that the pull section of the pedestal remains above ground and clear of obstructions, allowing access to the termination lugs.

12. The pull section of the pedestal and the transformer or secondary vault shall have one-coil, generally five (5) feet, of conductor inside.

13. The contractor shall supply and install connectors to the service pedestal manufacturer's specifications.

14. The contractor shall make connections in the service pedestal according to the manufacturer's specifications and in accordance with applicable codes and guidelines.

15. Connections shall be free of insulation. Aluminum conductor should be wire brushed, and an

oxide inhibitor shall be applied. The contractor shall tighten setscrews, lugs, and compression connectors according to the manufacture's specifications.

16. Connections found to be unsatisfactory shall be repaired and replaced at the contractor's own expense.

17. Proper grounding is the responsibility of the contractor and shall follow all applicable city or county guidelines.

18. The pedestal should be stable and able to stand freely. Irrigation shall be directed away from pedestal.

19. The pull section cover shall be replaced and meter base covered.

Revised By:	**Approved By:**	**Effective Date:**
Standards Committee	AKB	10/2/12

3.11 BACKFILLING

1. Prior to backfilling, the conduit shall be inspected and approved by the District's inspector.

2. Care should be taken that the conduit is properly in place, no pipe or fittings are damaged and that conduit depth and location have been noted on the plot map or as built-staking sheet.

3. Precautions shall be made when backfilling that the conduit remains straight and level. Shading by hand may be required.

4. A bedding of clean soil is required within six (6) inches of the conduit. Six (6) inches of clean bedding sand shall be used if native soil contains rocks or other objects larger than three (3) inches in diameter.

5. Natural backfill shall be added in one (1) foot layers and compacted to 95% of the relative maximum density.

6. Machine compaction should not be used within six (6) inches of the conduit.

7. Water shall be added to the backfill material to aid in maximum compaction.

8. Marker tape shall be placed in the trench 15-18 inches below final grade.

9. Any damage caused to the conduit or cable during backfilling is the responsibility of the owner or the contractor.

Revised By:	**Approved By:**	**Effective Date:**
Standards Committee	MVC	2/7/07

3.12 WIRE INSTALLATION

1. The staking engineer shall determine the wire size and PVC conduit size for each installation. Refer to section 3.5 for minimum wire and PVC conduit sizes.

2. Only wire approved by the District shall be used. Refer to section 4.22 for approved wire.

3. Only new wire shall be installed. Wire installed at another location and then removed is susceptible to damage and shall not be used.

4. The service panel shall be installed prior to wire installation

5. All wires of wire run, including the neutral, shall be installed in the same conduit.

6. Wire shall be installed in accordance with the manufacture's specifications.

7. Care should be taken in the storage, transportation, and handling of the wire that it is not bent, scuffed, or damaged in any way.

8. Wire shall be inspected for damage. If any damage is found that section of wire shall be removed.

9. Wire that is spliced shall not be installed.

10. When pulling wire a high performance lubricant shall be used. Choose a lubricant that is compatible with the conductor being used. Care should be taken that the lubricant will not weaken or destroy the plastic jacket or insulation.

11. Wax base lubricants are unacceptable.

12. Use lubricant according to the manufacturer's specifications. If no instructions are given, use ½ gallon for every 100 feet of straight conduit and add ¼ gallon for every bend.

13. Cable or wire rope should be used to pull the conductor. Ropes made of synthetic fiber shall not be used.

14. Care should be taken that pulling tension does not exceed the manufacturer's guidelines.

15. A sufficient amount of wire should be pulled to allow for a five (5) ft. coil at each end after the removal of any conductor damaged by the pulling grip.

16. The wire shall be connected to the service panel, pedestal, or secondary termination in a timely manner after wire installation.

17. Connections shall be free of insulation; conductor should be wire brushed, and oxide inhibitor applied. Setscrews, lugs, bolts, and compression terminations shall be installed and tightened according to manufacturer's specifications by the contractor.

Revised By:	**Approved By:**	**Effective Date:**
Standards Committee	MVC	2/7/07

3.13 SECONDARY WIRE TERMINATIONS (SECONDARY VAULTS)

1. When installing secondary wire terminations (PED's) the source feed shall be installed in the left most position, with the setscrews facing you. If the secondary wire termination is labeled the left most position is generally labeled as position #1.

2. The water seal shall be cut to proper wire size, if left out or cut improperly, the work will be rejected.

3. All wire connections will be wire brushed and anti-oxidant joint compound shall be used.

4. Setscrews shall be tightened to manufacturer specifications.

5. Temporary service wire shall be installed in the right most position with the setscrews facing you.

6. Service wires shall be marked to indicate location of building lot or power meter. Transformer to vault and vault to meter.

7. No irrigation within five feet of the Districts equipment. Only exception drip system for landscaping. All irrigation to be directed away from vault.

Revised By:	**Approved By:**	**Effective Date:**
Standards Committee	AKB	8/31/07

Approved Underground Construction Material

4.1 BUSHINGS – INSULATED PLASTIC

Thomas & Betts

Rigid and Intermediate Metal Conduit Fittings

Threaded Insulated Grounding Bushing
Plastic Insulating Bushings

Dimension Information In F.P.S (U.S)

Display in metric standards (C.G.S)

Catalog No	Dim A (In.)	Dim B (In.)	Conduit Size
227	2.781	0.625	2"
229	4.063	0.750	3"
231	5.125	0.875	4"

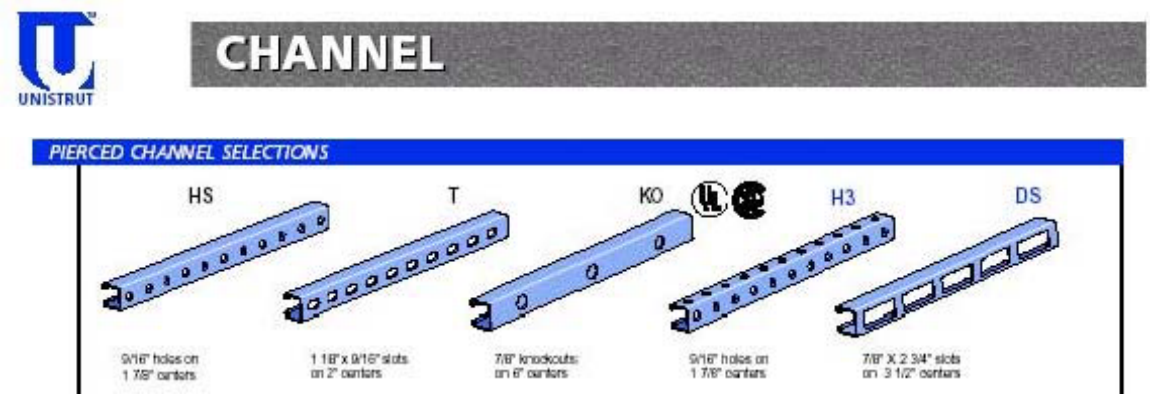
Flame retardant. U.L. Rated 94V-1.

4.2 CHANNELED STEEL

Description Manufacturer Part Number

Channeled Steel Unistrut Part No.P1000T

Unistrut Part No. P1000HS

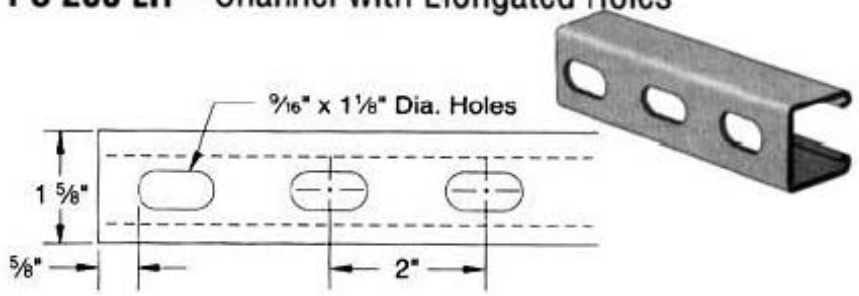


Description Manufacturer Part Number

Channeled Steel POWERSTRUT PS 200 EH Green

POWERSTRUT CHANNEL

PS 200 EH – Channel with Elongated Holes



Weight: 185 lbs./100 ft.

4.3 COUPLINGS / COUPLERS

Couplings

Couplers Carlon Electrical Rigid PVC Schedule 40
Non-metallic NEMA TC-2

Size	Part No.	Size	Part No.	Size	Part No.
2"	E940J	2"	E942J	2"	E943J
3"	E940L	3"	E942L	3"	E943L
4"	E940N	4"	E942N	4"	E943N

Size Part No. Size Part No. Size Part No.

2" E940J 2" E942J 2" E943J
3" E940L 3" E942L 3" E943L
4" E940N 4" E942N 4" E943N

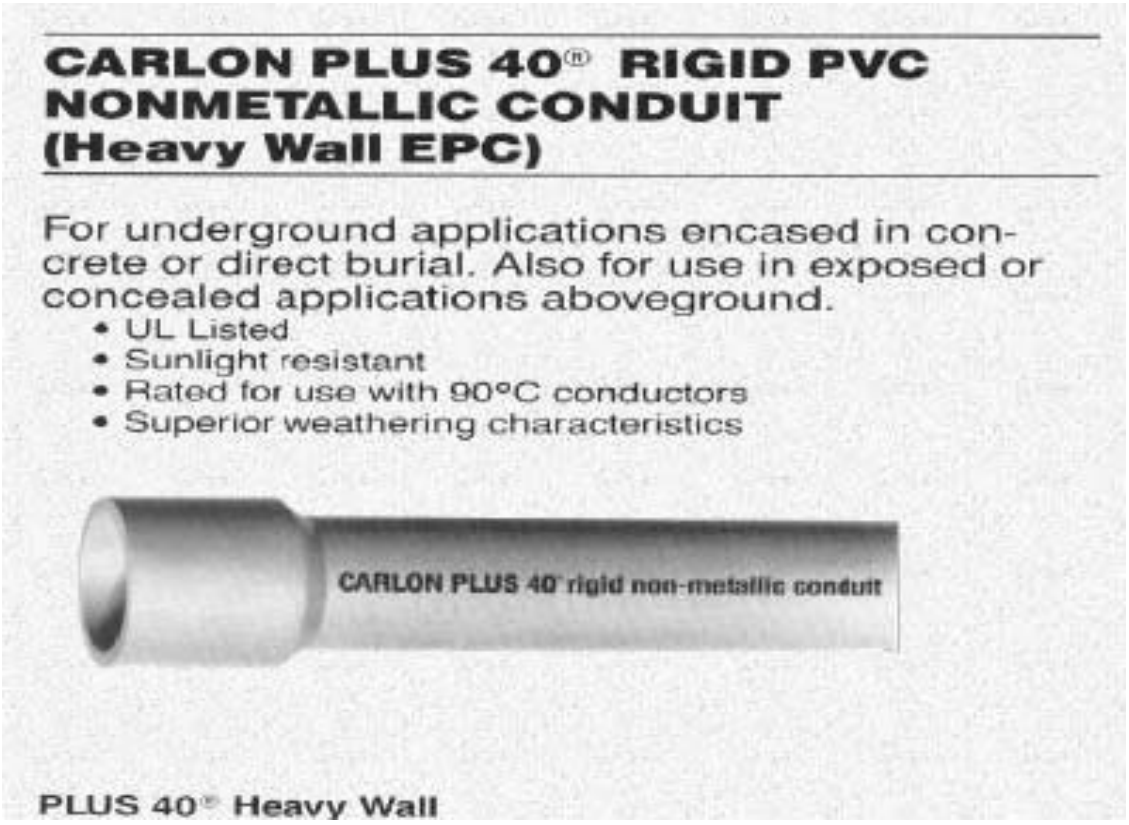
4.4 CONDUIT - PVC

Description Manufacturer Specifications

2” PVC Conduit Carlon 2” Electrical Rigid PVC Schedule 40
Non-metallic NEMA TC-2

3” PVC Conduit Carlon 3” Electrical Rigid PVC Schedule 40
Non-metallic NEMA TC-2

4” PVC Conduit Carlon 4” Electrical Rigid PVC Schedule 40
Non-metallic NEMA TC-2



Nom. Size	Part No.	O.D.	I.D.	Wall	Wt. Per 100 Feet
2	49011	2.375	2.067	.154	76
3	49013	3.500	3.066	.216	164
4	49015	4.500	4.026	.237	234

4.5 CONDUIT – RIGID METAL

Intermediate Metal Conduit (IMC)

ALLIED'S IMC

QUALITY, LONG-LASTING INTERMEDIATE METAL TUBING

Weights and Dimensions for Intermediate Metal Conduit					
Trade Size (inches)	Approximate Weight per 100 ft. (pounds)	Nominal Outside Diameter (inches)	Minimum Wall Thickness (inches)	Master Bundles	
				Quantity (ft.)	Approx. Weight (pounds)
2	256	2.360	0.095	800	2048
3	543	3.476	0.140	300	1629
4	700	4.466	0.140	240	1680

*Outside diameter tolerances: +/- .005 in. (.13mm) for trade sizes 1/2" (16mm) through 1" (27mm) +/- .0075 in. (.19mm) for trade sizes 1-1/4" (36mm) through 2" (51mm) +/- 0.10 in. (.28mm) for trade size 2-1/2" (63mm) through 4" (103mm).

†Wall thickness tolerances: + 0.15 in. (.38mm) and - .000 for trade sizes 1/2" (13mm) through 2" (53mm) + 0.20 in. (.51mm) and - .000 for trade sizes 2-1/2" (63mm) through 4" (103mm).

NOTE: Length = 10 ft. (3.05m) with a tolerance of +/- .25" (6.35mm).

* NEMA Standard

allied TUBE & CONDUIT ELECTRICAL

4.6 ELBOWS - PVC

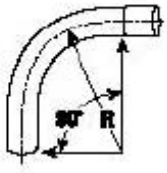
Fitting Manufacturer Specifications

Elbows Carlon Electrical Rigid PVC Schedule 40

Non-metallic NEMA TC-2

90° Elbow			
Plain End Part No.	Belled End Part No.	Nom Diam.	Radius (inches)
UA9AJ	UA9AJB	2"	Standard
UA9CJ	UA9CJB	2"	18
UA9DJ	UA9DJB	2"	24
UA9AL	UA9ALB	3"	Standard
UA9CL	UA9CLB	3"	18
UA9DL	UA9DLB	3"	24
UA9AN	UA9ANB	4"	Standard
UA9DN	UA9DNB	4"	24

90° Elbow

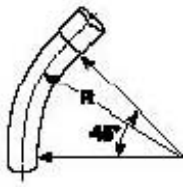


45° Elbow			
Plain End Part No.	Belled End Part No.	Nom Diam.	Radius (inches)
UA7AJ	UA7AJB	2"	Standard

UA7CJ	UA7CJB	2"	18
UA7DJ	UA7DJB	2"	24
UA7AL	UA7ALB	3"	Standard
UA7CL	UA7CLB	3"	18
UA7DL	UA7DLB	3"	24
UA7AN	UA7ANB	4"	Standard
UA7DN	UA7DNB	4"	24

ALLIED'S IMC MANUFACTURER

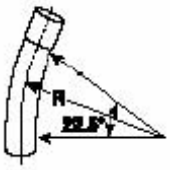
45° Elbow



CARLON MANUFACTURER

22 1/2° Elbow			
Plain End Part No.	Belled End Part No.	Nom Diam.	Radius (inches)
UA5AJ	UA5AJB	2"	Standard
UA5CJ	UA5CJB	2"	18
UA5DJ	UA5DJB	2"	24
UA5AL	UA5ALB	3"	Standard
UA5CL	UA5CLB	3"	18
UA5DL	UA5DLB	3"	24
UA5AN	UA5ANB	4"	Standard
UA5DN	UA5DNB	4"	24

22 1/2° Elbow



4.7 GROUND RODS

Description Specifications Application
Ground Rod 5/8” x 8’ Copper Clad Steel Rod Single Phase

ERITECH® Copper bonded Ground Rods

For Three Phase Applications:

Josly - GROUND RODS

COPPERBONDED

Catalog No.	Rod Size (Diameter x Length)	
J8338-13 (E)	5/8" X 8'	705

(E) REA Accepted

4.8 KNOCKOUT REDUCING WASHERS

KNOCKOUT REDUCING WASHERS – STEEL

Catalog Number	Size
369	3”-2”
375	4”-2”
377	4”-3”

Catalog

Number Size

369 3”-2”
375 4”-2”

377 4”-3”

4.9 LAG SCREWS

Lag Screw Joslyn ½" x 5"
Part No. J8755P

Joslyn – LAG SCREWS

HOT DIP GALVANIZED

Gimlet Point Lag Screws can either be wrenched or driven like a nail for speedier installation without sacrificing any of the holding gimlet point lag threads. Twist Drive Lags are furnished with a drive point for additional starting ease and accuracy. This feature is also available on most sizes of Fetter Drive lags. All Joslyn lag screws have rolled threads. Below the head is an upset shoulder with the same outside diameter as the threads to provide a snug fit in hardware mounting holes.

4.10 LOCKNUTS / LOCK RINGS

Thomas & Betts

Rigid and Intermediate Metal Conduit Fittings

Locknuts

Locknuts

Aluminum624

Dimension Information In F.P.S (U.S)

Display in metric standards (C.G.S)

Catalog No	Catalog No Alum	Catalog No Stl Mi	Dim A (In.)	Dim B (In.)	Conduit Size
146	146AL	146	3.000	0.219	2"
148	148AL	148	4.188	0.406	3"
150	150AL	150	5.313	0.469	4"

* Hex shape ** Case hardened locknuts Aluminum locknuts comply with federal standard of copper free aluminum; less than .5% copper. Available with DURA-PLATE? Finish.

Thomas & Betts

Rigid and Intermediate Metal Conduit Fittings

Locknuts

Bonding Locknuts

Steel or malleable iron (steel thru 2").

Use anywhere an ordinary locknut is installed to insure positive bonding of conduit to box and prevent loosening due to vibration. Also can be used for Service Entrance applications in conformance with Code. T&B rigid conduit and E.M.T. (thin wall) fittings comply with Federal Specification WF 408c.

Dimension Information In F.P.S (U.S)

Display in metric standards (C.G.S)

Catalog No	Dim A (In.)	Dim B (In.)	Conduit Size
111	3.000	0.187	2"
113	4.813	0.375	3"
115	5.438	0.438	4"

Listed / Certified By

UL Listed

(Catalog# 106,107,108,109,111 112-TB, 113-TB, 114,115-TB)

(File# 3060)

(Catalog# 106,107,108,109,111 112-TB, 113-TB, 114,115-TB)

(File# 638088,2884330)

4.11 PANELS

RP31F01A.TIF

Description Specifications
100 Ampere 100 Amp Main Disconnect
Single Phase Must Meet Applicable City or County Codes
Three Wire Meter Socket – 4 Jaw Plug In
Underground Service Entrance
Sealable Meter and Utility Wire Pull Sections
Utility Wire Size Range: #2 – 1/0
Meets EUSERC Requirements
NEMA 3R – Rainproof
UL Rating

200 Ampere 200 Amp Main Disconnect
Single Phase Must Meet Applicable City or County Codes
Three Wire Meter Socket – 4 Jaw Plug In
Underground Service Entrance
Sealable Meter and Utility Wire Pull Sections
Utility Wire Size Range: #1 – 300 MCM
Meets EUSERC Requirements

NEMA 3R – Rainproof
UL Rating

300 Ampere 300 Amp Main Disconnect
Single Phase Must Meet Applicable City or County Codes
Three Wire Meter Socket – 4 Jaw Plug In
Underground Service Entrance
Sealable Meter and Utility Wire Pull Sections
Utility Wire Size Range: #2/0 – 500 MCM
Meets EUSERC Requirements
NEMA 3R – Rainproof
UL Rating

400 Ampere 400 Amp Main Disconnect
Single Phase Must Meet Applicable City or County Codes
Three Wire Meter Socket – With Bypass Link
Underground Service Entrance
Sealable Meter and Utility Wire Pull Sections
Utility Wire Size Range: #2/0 – 500 MCM
Meets EUSERC Requirements
NEMA 3R – Rainproof
UL Rating

200 Ampere 200 Amp Main Disconnect
Three Phase Must Meet Applicable City or County Codes
7 Jaw Meter Socket
Underground Service Entrance
Sealable Meter and Utility Wire Pull Sections
(Must submit approval drawing to Overton Power)

Above 200 Ampere NEMA-3R Enclosure
Three Phase Dead Front
Underground Service Entrance
Instrument Transformer Compartment
Hinged Socket Meter Panel with 13 Jaw Meter Base
And 10 Position Secondary Test Switch Block

Must Meet Applicable City or County Codes
(Must submit approval drawing to Overton Power)

Utility Meter
Section

Utility Wire

Termination Section

4.12 PEDESTALS

Description Specifications
100 Ampere 100 Amp Main Disconnect
Single Phase Must Meet Applicable City or County Codes
Three Wire Meter Socket – 4 Jaw Plug In
Underground Service Entrance
Direct Buried
Sealable Meter and Utility Wire Pull Sections
Utility Wire Size Range: #2 – 1/0

200 Ampere 200 Amp Main Disconnect
Single Phase Must Meet Applicable City or County Codes
Three Wire Meter Socket – 4 Jaw Plug In
Underground Service Entrance
Direct Buried
Sealable Meter and Utility Wire Pull Sections
Utility Wire Size Range: #1 – 300 MCM

4.13 PIPE CLAMPS

PIPE & CONDUIT CLAMPS

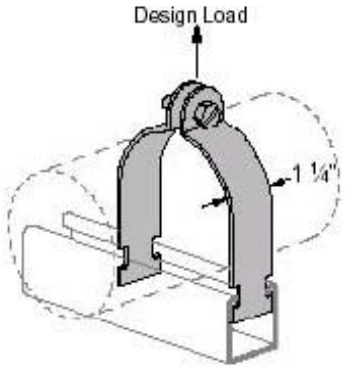
General Information

Finish: Electro-galvanized
Order By: Part No. & Size

POWER-STRUT

PS 1100, PS 1116, PS 1117 – Standard Pipe Clamp (GRC and IMC)

PS 1100SS - Type Standard Pipe Clamp



Pipe Size	Stock Thickness	Hanging Load Rating / lbs.
2"	.105	800
3"	.105	800
4"	.125	1,000

Manufacturer Product Part Number Pipe/Conduit Size

Unistrut Pipe/Conduit Clamp P1117 2 inch

Unistrut Pipe/Conduit Clamp P1119 3 inch

Unistrut Pipe/Conduit Clamp P1121 4 inch

4.14 POLE BRACKETS

Pole Ladder Bracket Unistrut Wall Ladder Bracket Part No. P1207

Power strut PS2407 HG Thomas & Betts AN-270-4

Thomas & Betts

Fittings & Brackets

AN-270

Hole Spacing 13/16" From End Hole Spacing 1 7/8" Centers Hole Size 9/16" Diam. Material Thickness 1/4" Material Width 1 5/8"

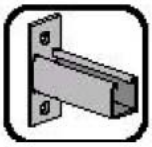
Dimension Information In F.P.S (U.S)

Catalog No. A (in.) B (in.) Material Finish
AN-270-4 8 3/8 12.000 Standard Steel Gold Galv.

BRACKETS

General Information

Finish: Painted green or Hot Dipped Galvanized
Order By: No., Size & Finish



POWER-STRUT®

Catalog Number	Dimension A (in.)	Dimension B (in.)
PS2407 HG	8 3/8	12.00

Catalog Dimension
Number A (in.) B (in.)

PS2407 HG 8 3/8 12.00

4.15 SECONDARY CONNECTORS

Wire Sizes Manufacturer Specifications

#2, 2/0, 4/0, 350 MCM Utilco 4 Position Utilco AAX
PED4-350SS
350 MCM-10 AWG AL-CU
Submersible
Port Holes w/ oxide inhibitor

#2, 2/0, 4/0, 350 MCM Utilco 6 Position Utilco AAX
PED6-350SS
350 MCM-10 AWG AL-CU
Submersible
Port Holes w/ oxide inhibitor

#2, 2/0, 4/0, 350 MCM Utilco 8 Position Utilco AAX
PED6-350SS
350 MCM-10 AWG AL-CU
Submersible
Port Holes w/ oxide inhibitor

500 MCM Utilco 4 Position Utilco AAX
PED4-500SS
500 MCM-2 AWG AL-CU
Submersible
Port Holes w/ oxide inhibitor

500 MCM Utilco 6 Position Utilco AAX
PED6-500SS
500 MCM-2 AWG AL-CU
Submersible
Port Holes w/ oxide inhibitor

500 MCM Utilco 8 Position Utilco AAX
PED8-500SS
500 MCM-2 AWG AL-CU
Submersible
Port Holes w/ oxide inhibitor

Pedestal & Handhold
Type PED-SS Pedestal & Handhold

Connector fabricated from high strength aluminum alloy 6061-T6. Clear plated for low contact resistance. Dual rated for use with both copper and aluminum conductors. EPDM cover has dielectric strength of 240 volts per mil. Nominal thickness is 125 mils.

PED-350-SS PED-500-SS

PED-750-SS

Catalog No.	No. Of Cond.	Conductor Range	Overall Length.	Height	Width Incl. Webb
PED4-350-SS	4	-	4.822	2.7	4.26
PED6-350-SS	6	350-10	7.135	2.7	4.26
PED8-350-SS	8	-	9.447	2.7	4.26
PED4-500-SS	4	-	6.042	3.16	5.25
PED6-500-SS	6	-	8.979	3.16	5.25
PED8-500-SS	8	-	11.917	3.16	5.25
PED6-750-SS	6	750-2	10.351	3.53	6.50
PED8-750-SS	8	-	13.729	3.53	6.50
For packaging with inhibitor add suffix "P".					
Extra screw closure caps and extra conductor plugs available. REA Listed					

UTILCO 4730 Madison Road, Cincinnati, OH 45227 Phone: 800-776-9775 (513) 533-6200 Fax: (513) 871-4084 E-Mail: sales@ilsco.com World Wide Web: http://www.ilsco.com

UTILCO, Division of ILSCO of Canada, Ltd., 1050 Lakeshore Rd. East, Mississauga, Ontario, L5E 1E4 Phone (905) 274-2341, Fax (905) 274-8763

4.16 SWITCH PADS

Description Manufacturer Part Number

Switch Pad for MES-103 Jensen Pre-Cast USP-103

on a 4878-TA Primary Vault

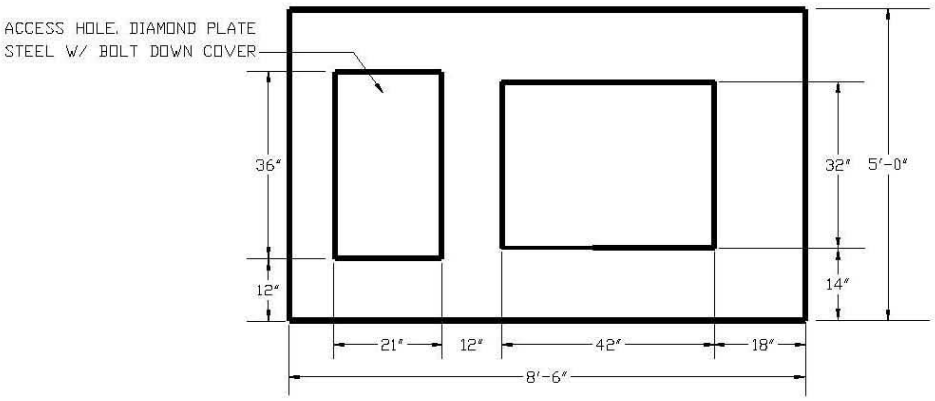
Switch Pad for MES-105 Jensen Pre-Cast USP-105
on a 4878-TA Primary Vault

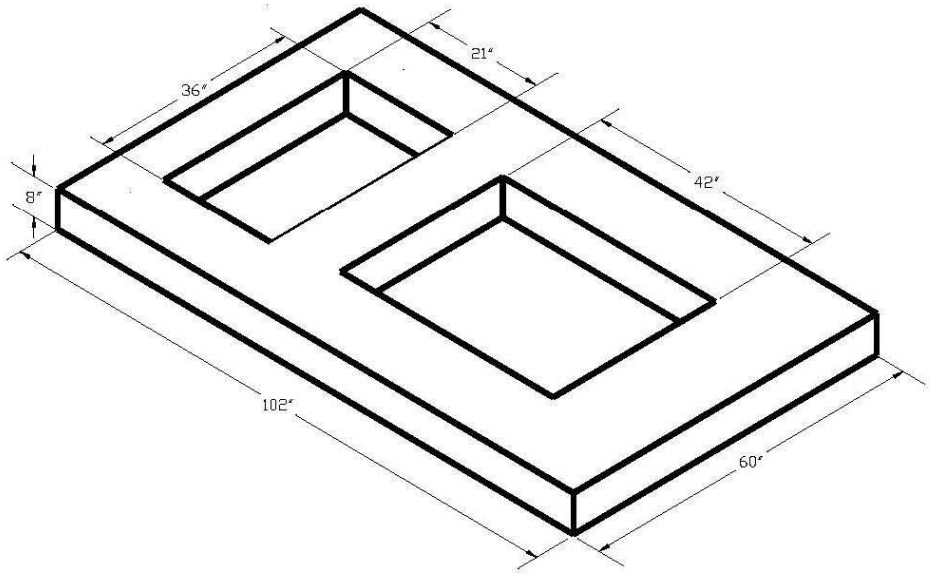
Switch Pad for MES-109-115 Jensen Pre-Cast USP-109-115
on a 4878-TA Primary Vault

Switch Pad for MES-109-115 Jensen Pre-Cast USP-109-115A
on a 4686-TA Primary Vault

Note: Products of equal or superior quality are acceptable.

PLAN VIEW





NOTES:

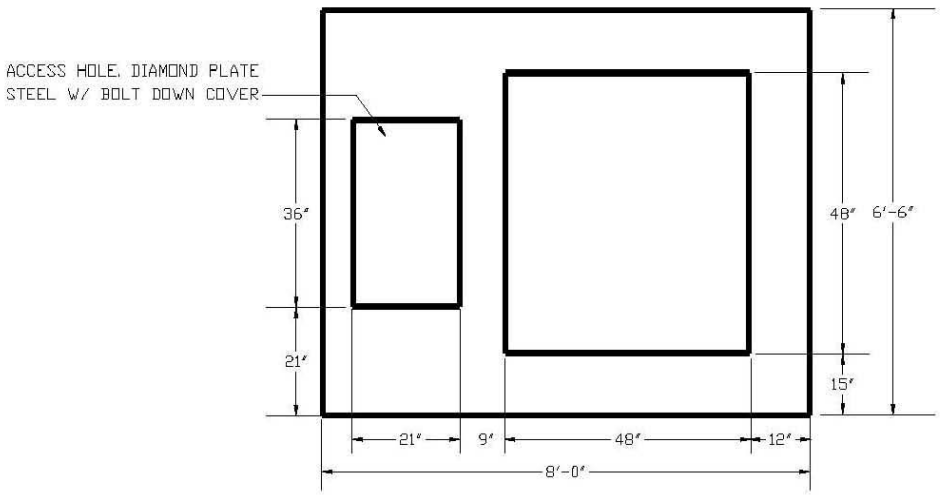
1. Switch pad is designed for placement on a 466-TA (4' x 6') primary vault.
2. Switch pad is to be used for a MES-105 padmounted switch.

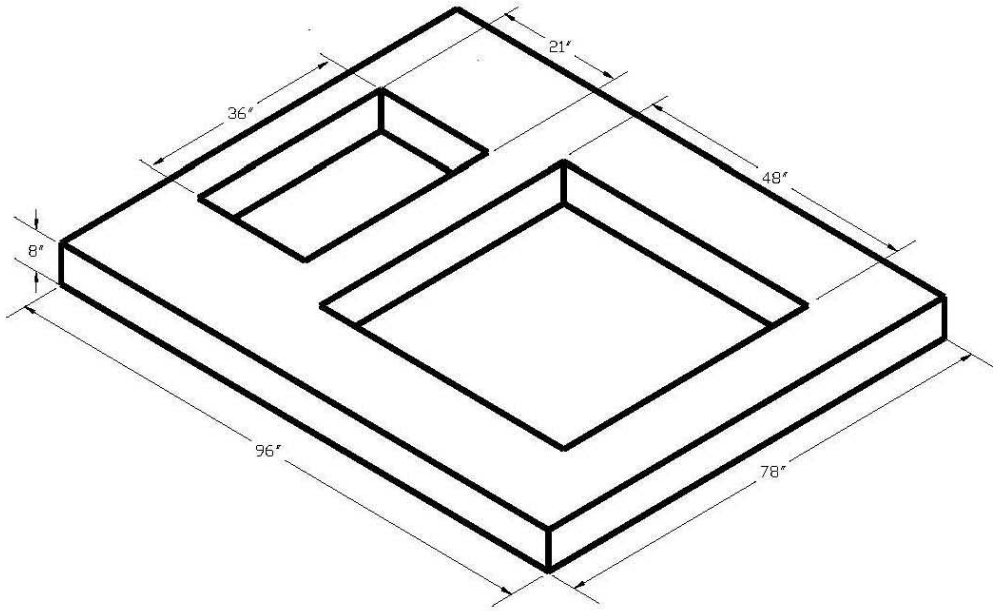
SWITCH PAD SPECIFICATIONS:

1. Top, front and sides shall be clean, smooth, and level.
2. All edges shall be rounded or beveled.
3. Two threaded holes (4 total) shall be located on each side to accommodate 5/8" lifting bolts.
4. One 1" course threaded hole on top for a 1", 3100 lb. rated, lifting eye bolt.
5. Nevada Power Company RS-28 transformer pad strength requirements shall be met.

Overton Power District No. 5	USP-105 SWITCH PAD FOR MES-105 PADMOUNTED SWITCH	**Drawn:** 4-14-00 **Revised:** **Revision #:**	**ASSEMBLY NUMBER** USP-105

PLAN VIEW





NOTES:

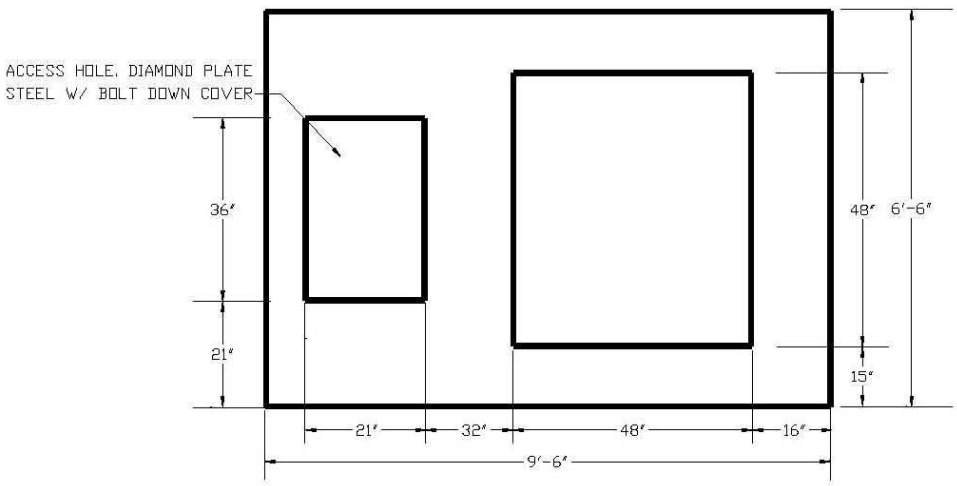
1. Switch pad is designed for placement on a 466-TA (4' x 6') primary vault.
2. Switch pad may be used for a MES-109, MES-110, MES-111, or MES-112 padmounted switch.
3. This pad and vault combination may be used with 1/0 high voltage wire.

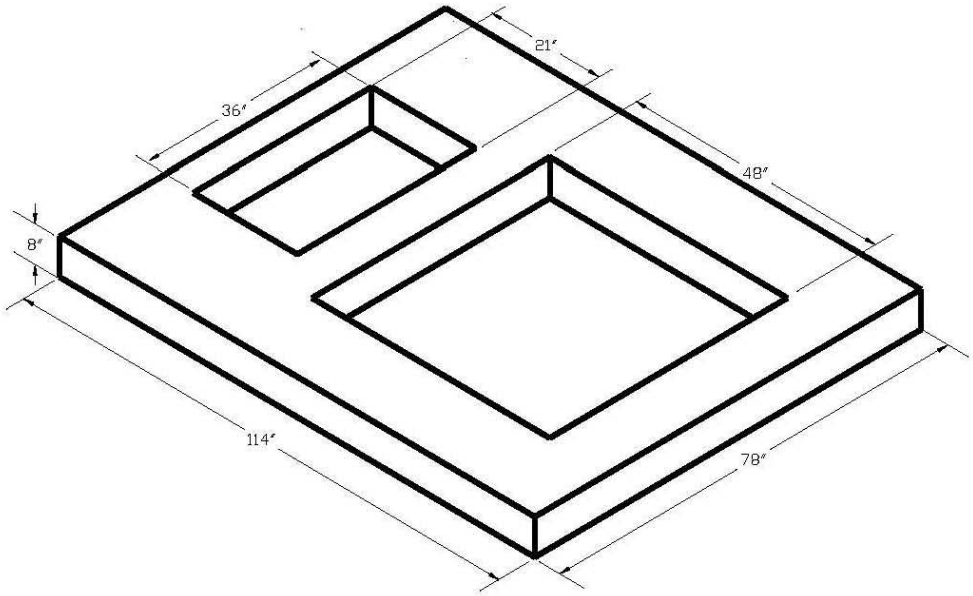
SWITCH PAD SPECIFICATIONS:

1. Top, front and sides shall be clean, smooth, and level.
2. All edges shall be rounded or beveled.
3. Two threaded holes (4 total) shall be located on each side to accommodate 5/8" lifting bolts.
4. One 1" course threaded hole on top for a 1", 3100 lb. rated, lifting eye bolt.
5. Nevada Power Company RS-28 transformer pad strength requirements shall be met.

Overton Power District No. 5	USP-109 SWITCH PAD FOR FOUR BAY PADMOUNTED SWITCHES 4 x 6 VAULT	**Drawn:** 4-14-00 **Revised:** **Revision #:**	**ASSEMBLY NUMBER** USP-109

PLAN VIEW





SWITCH PAD SPECIFICATIONS:

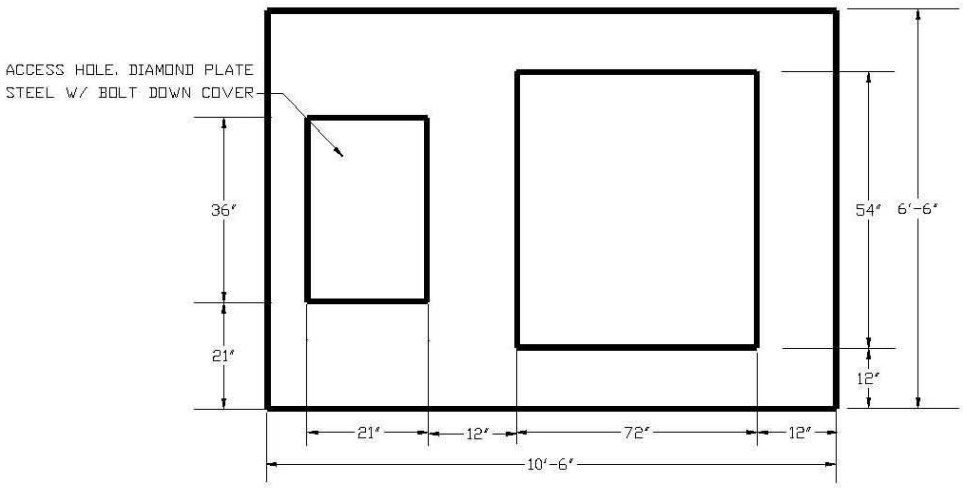
1. Switch pad is designed for placement on a 4686 (4'-6" x 8'-6") primary vault.
2. This switch pad may be used for a MES-109, MES-110, MES-111, or MES-112 padmounted switch.
3. This pad and vault combination shall be used with 4/0 and 500 MCM high voltage wire.

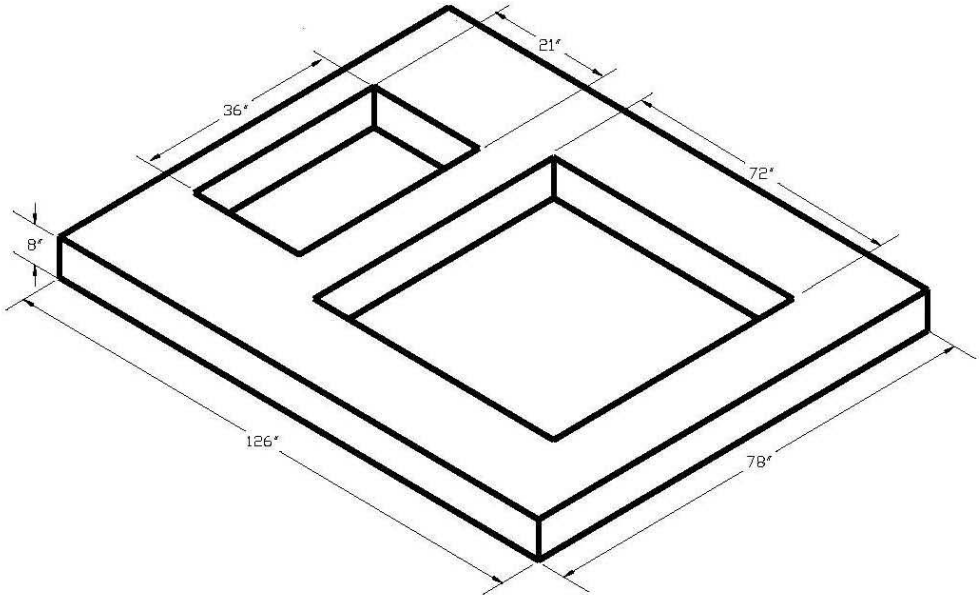
SWITCH PAD SPECIFICATIONS:

1. Top, front and sides shall be clean, smooth, and level.
2. All edges shall be rounded or beveled.
3. Two threaded holes (4 total) shall be located on each side to accommodate 5/8" lifting bolts.
4. One 1" course threaded hole on top for a 1", 3100 lb. rated, lifting eye bolt.
5. Nevada Power Company RS-28 transformer pad strength requirements shall be met.

Overton Power District No. 5	USP-110 SWITCH PAD FOR FOUR BAY PADMOUNTED SWITHCES LARGE VAULT	**Drawn:** 8-21-01 **Revised:** **Revision #:**	**ASSEMBLY NUMBER** USP-110

PLAN VIEW





NOTES:

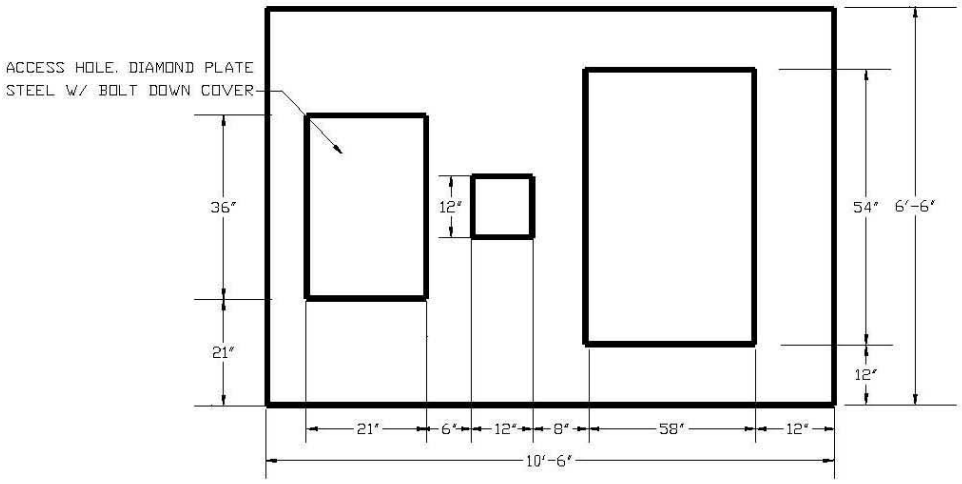
1. Switch pad is designed for placement on a 4686 (4'-6" x 8'-6") primary vault.
2. This switch pad may be used for a Trayer 8 bay padmounted switch.
3. This pad and vault combination shall be used with 4/0 and 500 MCM high voltage wire.

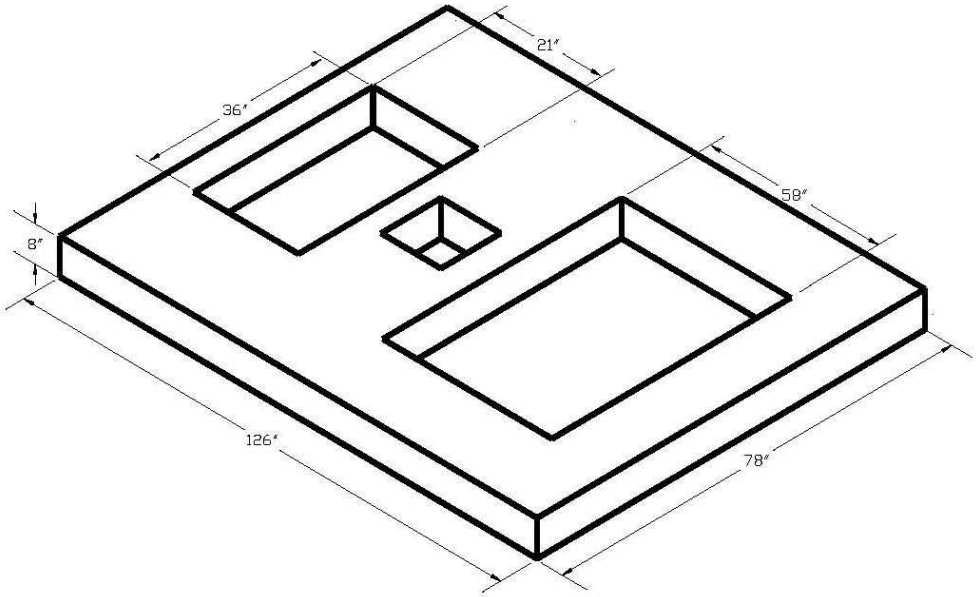
SWITCH PAD SPECIFICATIONS:

1. Top, front and sides shall be clean, smooth, and level.
2. All edges shall be rounded or beveled.
3. Two threaded holes (4 total) shall be located on each side to accommodate 5/8" lifting bolts.
4. One 1" course threaded hole on top for a 1", 3100 lb. rated, lifting eye bolt.
5. Nevada Power Company RS-28 transformer pad strength requirements shall be met.

Overton Power District No. 5	USP-111 SWITCH PAD FOR EIGHT BAY PADMOUNTED SWITCH LARGE VAULT	**Drawn:** 10-12-00 **Revised:** **Revision #:**	**ASSEMBLY NUMBER** USP-111

PLAN VIEW





NOTES:

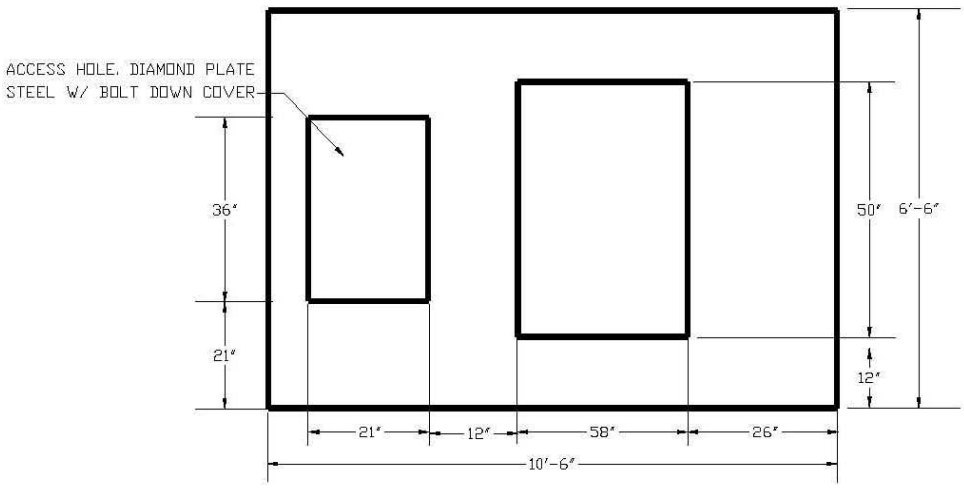
1. Switch pad is designed for placement on a 4686 (4'-6" x 8'-6") primary vault.
2. This switch pad may be used for a Trayer 8 bay padmounted switch.
3. This pad and vault combination shall be used with 4/0 and 500 MCM high voltage wire.

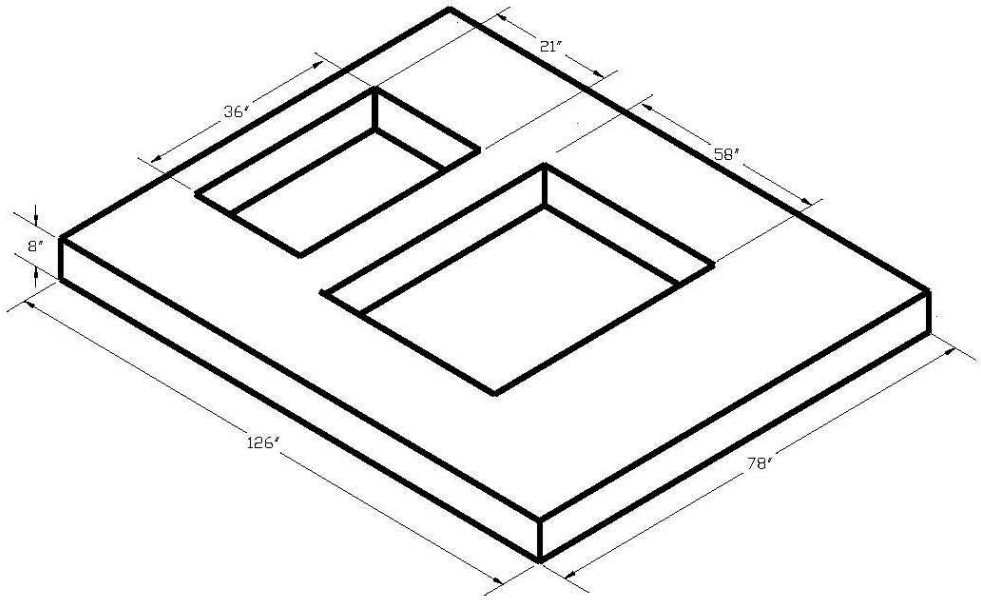
SWITCH PAD SPECIFICATIONS:

1. Top, front and sides shall be clean, smooth, and level.
2. All edges shall be rounded or beveled.
3. Two threaded holes (4 total) shall be located on each side to accommodate 5/8" lifting bolts.
4. One 1" course threaded hole on top for a 1", 3100 lb. rated, lifting eye bolt.
5. Nevada Power Company RS-28 transformer pad strength requirements shall be met.

Overton Power District No. 5	USP-112 SWITCH PAD FOR A 6 BAY PADMOUNT SWITCH WITH EXTERNAL FUSE BAY LARGE VAULT	**Drawn:** 02-21-01 **Revised:** **Revision #:**	**ASSEMBLY NUMBER** USP-112

PLAN VIEW





NOTES:

1. Switch pad is designed for placement on a 4686 (4'-6" x 8'-6") primary vault.
2. This switch pad may be used for a Trayer 8 bay padmounted switch.
3. This pad and vault combination shall be used with 4/0 and 500 MCM high voltage wire.

SWITCH PAD SPECIFICATIONS:

1. Top, front and sides shall be clean, smooth, and level.
2. All edges shall be rounded or beveled.
3. Two threaded holes (4 total) shall be located on each side to accommodate 5/8" lifting bolts.
4. One 1" course threaded hole on top for a 1", 3100 lb. rated, lifting eye bolt.
5. Nevada Power Company RS-28 transformer pad strength requirements shall be met.

Overton Power District No. 5	USP-113 SWITCH PAD FOR A FOUR BAY PADMOUNTED SWITCH 4 x 6 VAULT	**Drawn:** 02-22-01 **Revised:** **Revision #:**	**ASSEMBLY NUMBER** USP-113

4.17 TAPE – BARRICADE, MARKING, AND WARNING

Type YT and RT Warning Tape for Buried Electric Cables

TYPE YT AND RT

Features

• Minimize dig-ins on U.D. lines with brilliant yellow or red warning tape; installed approximately 8" below ground level; Type YT or RT is a positive, unmistakable alert that lines lie below

• Made of lightweight but rugged polyethylene to resist high or low pH conditions

• Can be installed over new or existing lines

• Available with special imprint with order of 12 rolls, or more

Dottie

Caution Tape	Barricade Underground & Detectable	Various Legends	3" x 1000' 6" x 1000'

Scotch

300 Series Barricade Tapes

300 Series Barricade Tapes

Product	Color	Thickness	Width	Length	Text
Scotch 302	red	4-mil	3 in.	1000 ft.	Caution Buried Electric Line Below
Scotch 303	red	4-mil	3 in.	300 ft.	Caution Buried Electric Line Below

Product Color Thickness Width Length Text

Scotch 302 red 4-mil 3 in. 1000 ft. Caution Buried Electric Line Below

Scotch 303 red 4-mil 3 in. 300 ft. Caution Buried Electric Line Below

4.18 TAPE – CORROSION RESISTANT

3M™ Scotch rap™ 50 All-Weather Corrosion Protection Tape

This 10 mil tape with PVC backing is all-weather performance and corrosion resistant and has a high quality adhesive. Apply this tape over a wide temperature range and is resistant to impact, abrasions and punctures.

3M™ Scotch rap™ 50 Corrosion Protection Tape is used for corrosion protection on pipes, conduits and fittings, etc. UV resistance is excellent and has a temperature rating of 176°F (80°C). NOTE: 3M™ Scotch rap™ Pipe Primer should be used with all corrosion protection tapes.

Features - Advantages - Benefits		
Scotchrap 50 All-weather Corrosion Protection Tape		
10 mils, PVC backing	Flexible	Easy to use, which saves time
Excellent moisture and abrasive resistance,	Resists pipe corrosion	Cuts down on replacement costs
High quality adhesive	Excellent quick stick	Easy to use
NOTE: Scotch rap Pipe Primer should be used with all corrosion protection tapes		

4.19 TRANSFORMER PADS

Description Manufacturer Specifications

Small Single Phase Pad Jensen Pre-Cast UPAD 4242

Large Single Phase Pad Jensen Pre-Cast UPAD 4852

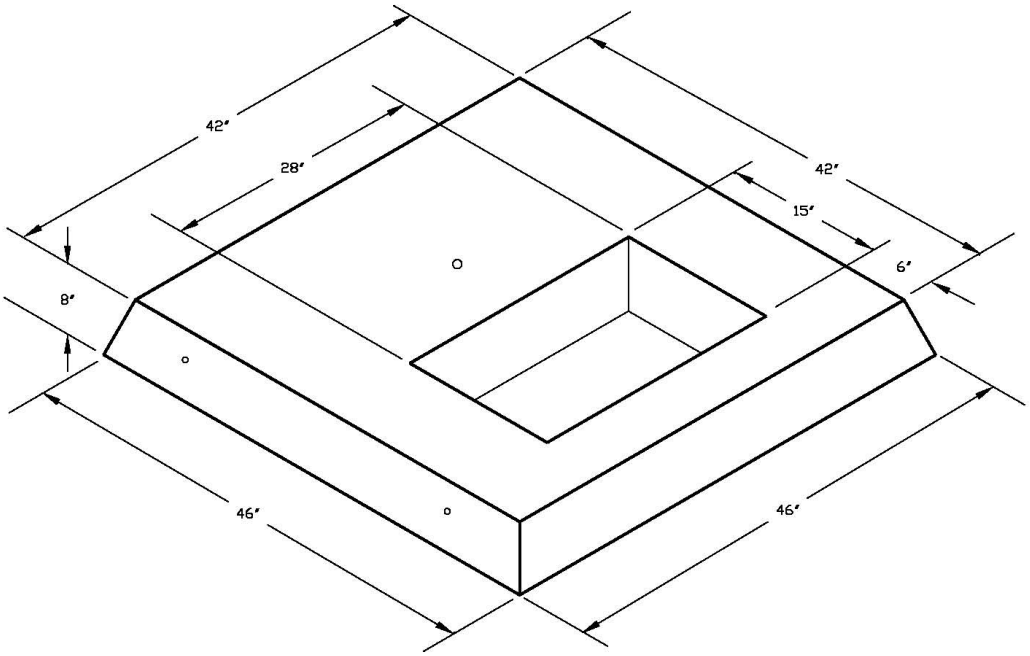
Small 3 Phase Pad Jensen Pre-Cast UPAD 56

Medium 3 Phase Pad Jensen Pre-Cast UPAD 67

Large 3 Phase Pad Jensen Pre-Cast UPAD 77

Extra Large 3 Phase Pad Jensen Pre-Cast UPAD 88

Note: Products of equal or superior quality are acceptable.



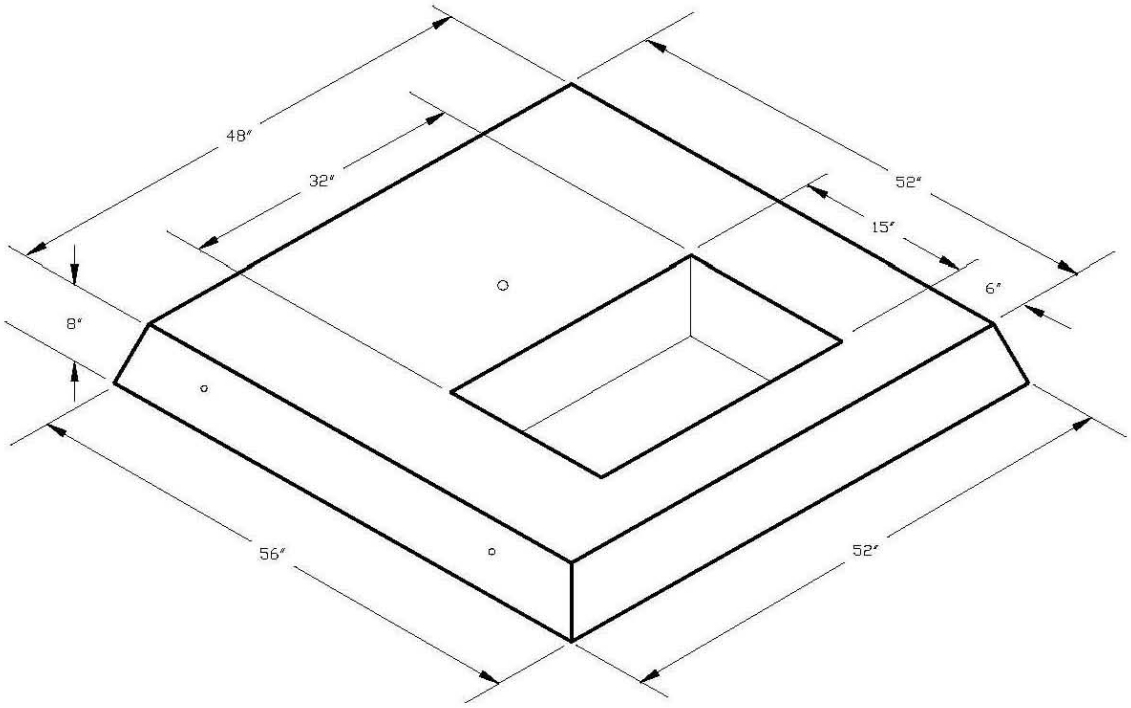
NOTES:

1. Transformer pad to be used with 50 kVA single phase padmounted transformer.

TRANSFORMER PAD SPECIFICATIONS:

1. Top, front and sides shall be clean, smooth, and level.
2. All edges shall be rounded or beveled.
3. Two threaded holes (4 total) shall be located on each side to accommodate 5/8" lifting bolts.
4. One 1" course threaded hole on top for a 1", 3100 lb. rated, lifting eye bolt.
5. Nevada Power Company RS-28 transformer pad strength requirements shall be met.

Overton Power District No. 5	UPAD 4242 SINGLE PHASE TRANSFORMER PAD SMALL	**Drawn:** 4-14-00 **Revised:** **Revision #:**	**ASSEMBLY NUMBER** UPAD 4242



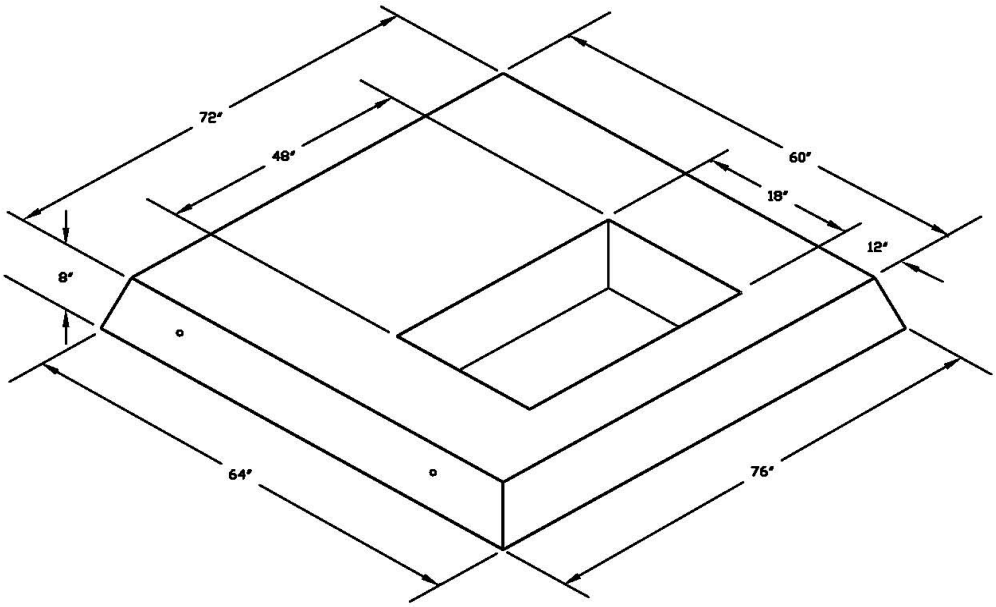
NOTES:

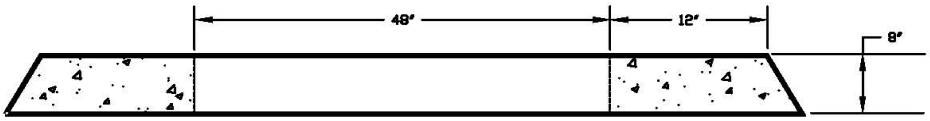
1. This transformer pad to be used with 100 and 167 kVA single phase padmounted transformers.

TRANSFORMER PAD SPECIFICATIONS:

1. Top, front and sides shall be clean, smooth, and level.
2. All edges shall be rounded or beveled.
3. Two threaded holes (4 total) shall be located on each side to accommodate 5/8" lifting bolts.
4. One 1" course threaded hole on top for a 1", 3100 lb. rated, lifting eye bolt.
5. Nevada Power Company RS-28 transformer pad strength requirements shall be met.

Overton Power District No. 5	UPAD 4852 SINGLE PHASE TRANSFORMER PAD	**Drawn:** 4-14-00 **Revised:** **Revision #:**	**ASSEMBLY NUMBER** UPAD 4852





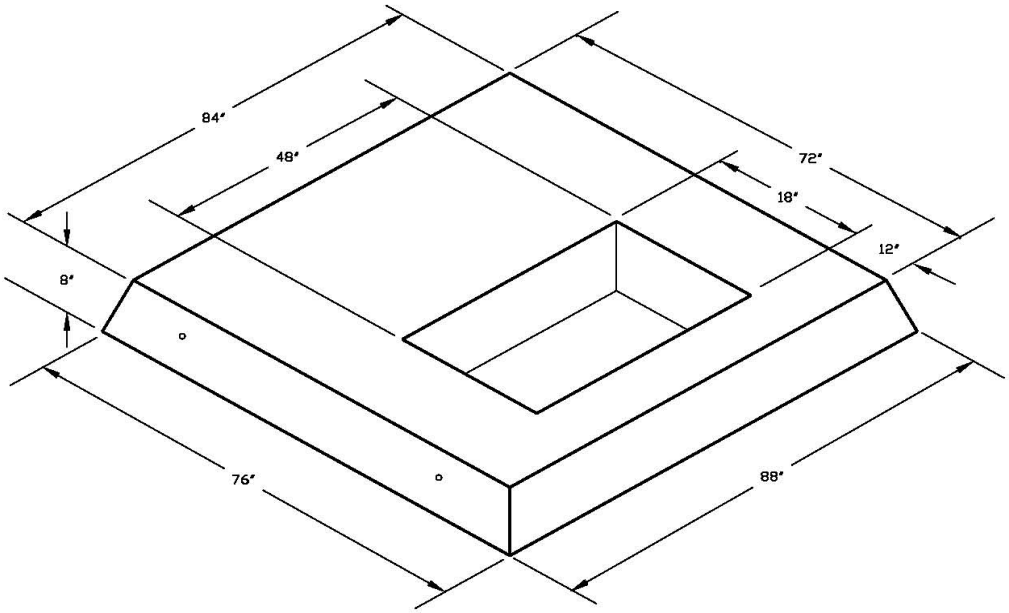
NOTES:

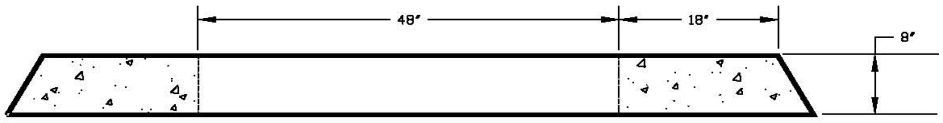
1. This transformer pad is to be used with three phase padmounted transformers.

TRANSFORMER PAD SPECIFICATIONS:

1. Top, front and sides shall be clean, smooth, and level.
2. All edges shall be rounded or beveled.
3. Two threaded holes (4 total) shall be located on each side to accommodate 5/8" lifting bolts.
4. One 1" course threaded hole on top for a 1", 3100 lb. rated, lifting eye bolt.
5. Nevada Power Company RS-41 transformer pad strength requirements shall be met.

Overton Power District No. 5	UPAD 56 THREE PAHSE TRANSFORMER PAD	**Drawn:** 04-14-00 **Revised:** 10-3-11 **Revision #:** 1	**ASSEMBLY NUMBER** UPAD 56





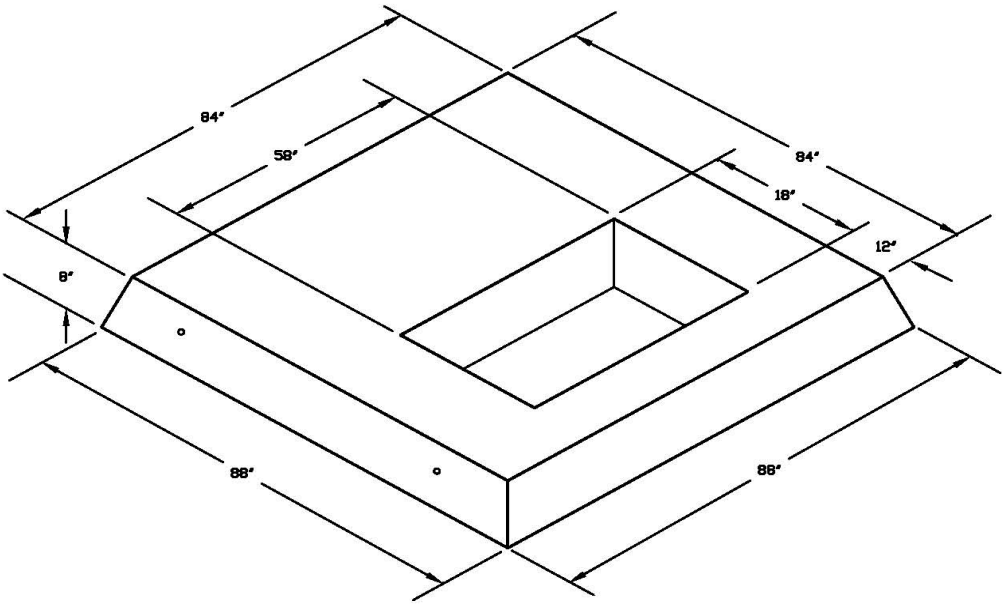
NOTES:

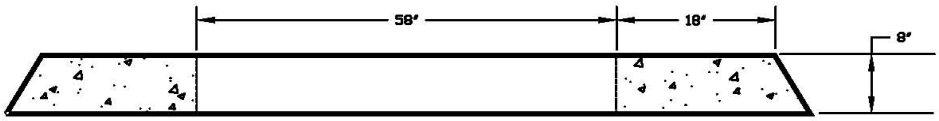
1. This transformer pad is to be used with three phase padmounted transformers.

TRANSFORMER PAD SPECIFICATIONS:

1. Top, front and sides shall be clean, smooth, and level.
2. All edges shall be rounded or beveled.
3. Two threaded holes (4 total) shall be located on each side to accommodate 5/8" lifting bolts.
4. One 1" course threaded hole on top for a 1", 3100 lb. rated, lifting eye bolt.
5. Nevada Power Company RS-41 transformer pad strength requirements shall be met.

Overton Power District No. 5	UPAD 67 THREE PHASE TRANSFORMER PAD	**Drawn:** 4-14-00 **Revised:** 10-3-11 **Revision #:** 1	**ASSEMBLY NUMBER** UPAD 67





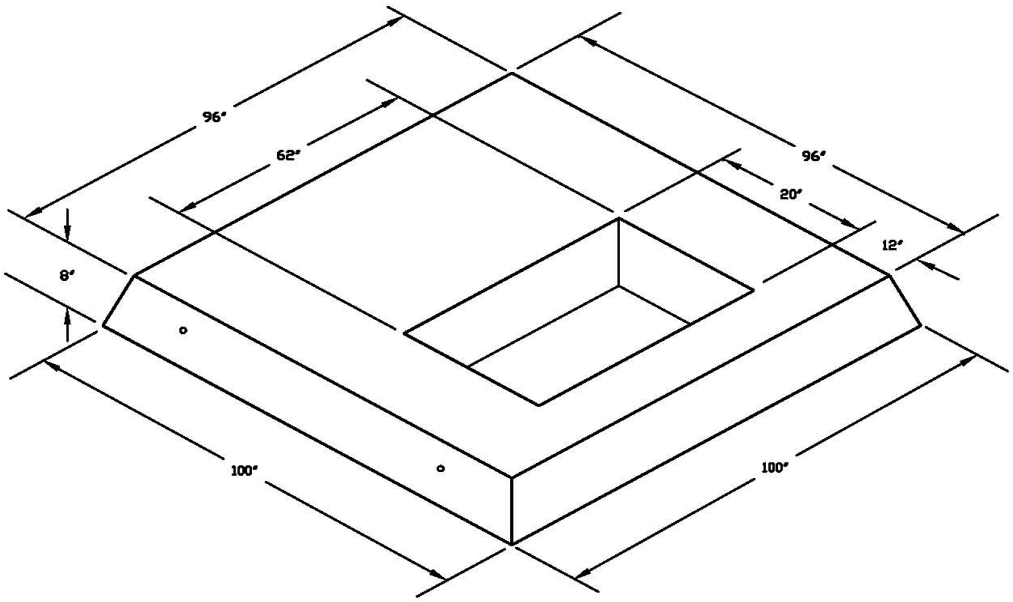
NOTES:

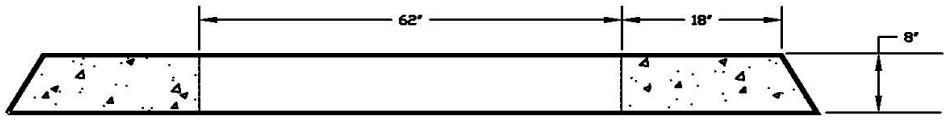
1. This transformer pad is to be used with three phase padmounted transformers.

TRANSFORMER PAD SPECIFICATIONS:

1. Top, front and sides shall be clean, smooth, and level.
2. All edges shall be rounded or beveled.
3. Two threaded holes (4 total) shall be located on each side to accommodate 5/8" lifting bolts.
4. One 1" course threaded hole on top for a 1", 3100 lb. rated, lifting eye bolt.
5. Nevada Power Company RS-41 transformer pad strength requirements shall be met.

Overton Power District No. 5	UPAD 77 THREE PHASE TRANSFORMER PAD	**Drawn:** 4-14-00 **Revised:** 9-28-11 **Revision #:** 1	**ASSEMBLY NUMBER** UPAD 77





NOTES:

1. This transformer pad is to be used with three phase padmounted transformers.

TRANSFORMER PAD SPECIFICATIONS:

1. Top, front and sides shall be clean, smooth, and level.
2. All edges shall be rounded or beveled.
3. Two threaded holes (4 total) shall be located on each side to accommodate 5/8" lifting bolts.
4. One 1" course threaded hole on top for a 1", 3100 lb. rated, lifting eye bolt.
5. Nevada Power Company RS-41 transformer pad strength requirements shall be met.

Overton Power District No. 5	UPAD 88 THREE PHASE TRANSFORMER PAD	**Drawn:** 4-14-00 **Revised:** 9-28-11 **Revision #:** 1	**ASSEMBLY NUMBER** UPAD 88

4.20 VAULTS - PRIMARY

Description Manufacturer Part Number

Primary Vault- 4x 6 Jensen Pre-Cast 466-TA

4’ x 6’-6” Vault w/ adjustable cover

12” Riser for 466-TA Jensen Pre-Cast Model 466R-12

24” Riser for 466-TA Jensen Pre-Cast Model 466R-24

Primary Vault-2’-6”x4 Jensen Pre-Cast 3048 NP

2’-6” x 4’ Vault w/ cover

12” Riser for 3048 NP Jensen Re-Cast

Primary Vault-4’-6”x8’-6” Jensen Pre-Cast 4686

4’-6” x 8’-6” x 6’-7” Vault w/ cover

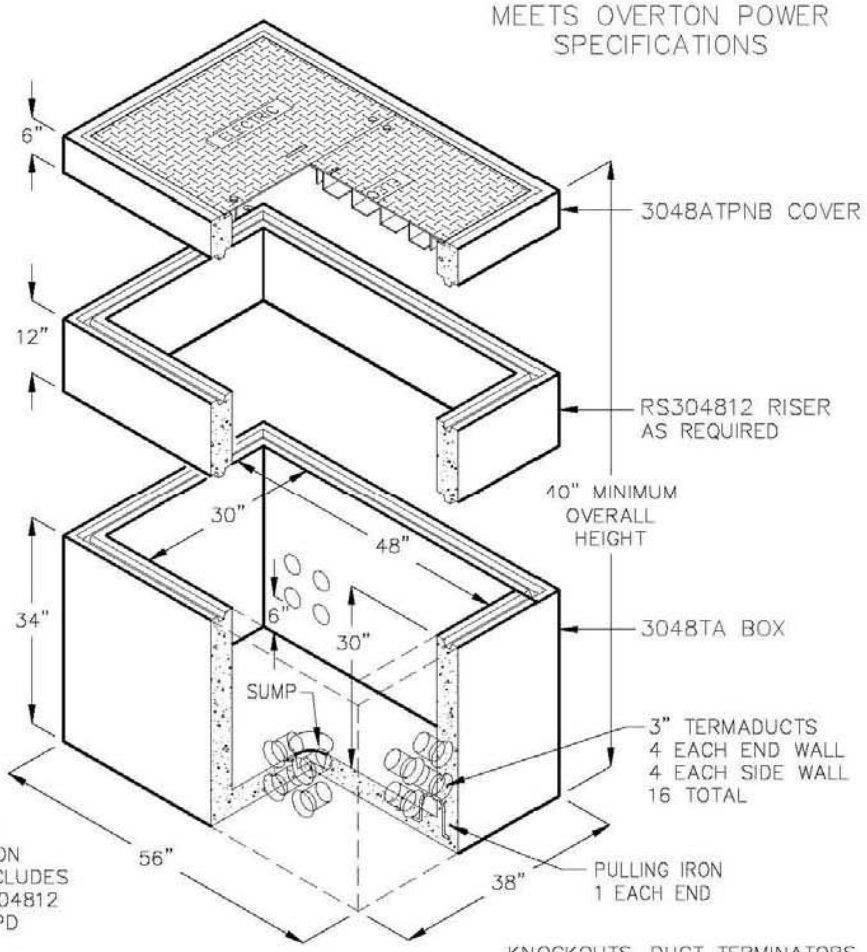
Primary Vault 48” x 78” Jensen Pre-Cast 4878

4’-0” x 6’-6” x 5’-0” Vault w/cover

Note: Products of equal or superior quality are acceptable.

OPD 3048 VAULT

30" WD. x 48" LG. x 30" H.
(INSIDE DIMENSIONS)
MEETS OVERTON POWER SPECIFICATIONS



WHEN ORDERING:
THE STANDARD OVERTON POWER 3048TA KIT INCLUDES THE 3048TA BOX, RS304812 RISER, AND 3048TA OPD COVER. FOR OTHER COMPONENTS, ORDER BY CATALOG NUMBER

KNOCKOUTS, DUCT TERMINATORS, PULLING IRONS, ETC.
PER CURRENT OVERTON POWER SPECIFICATIONS.

*STANDARD 3048TA KIT (SHOWN ABOVE)

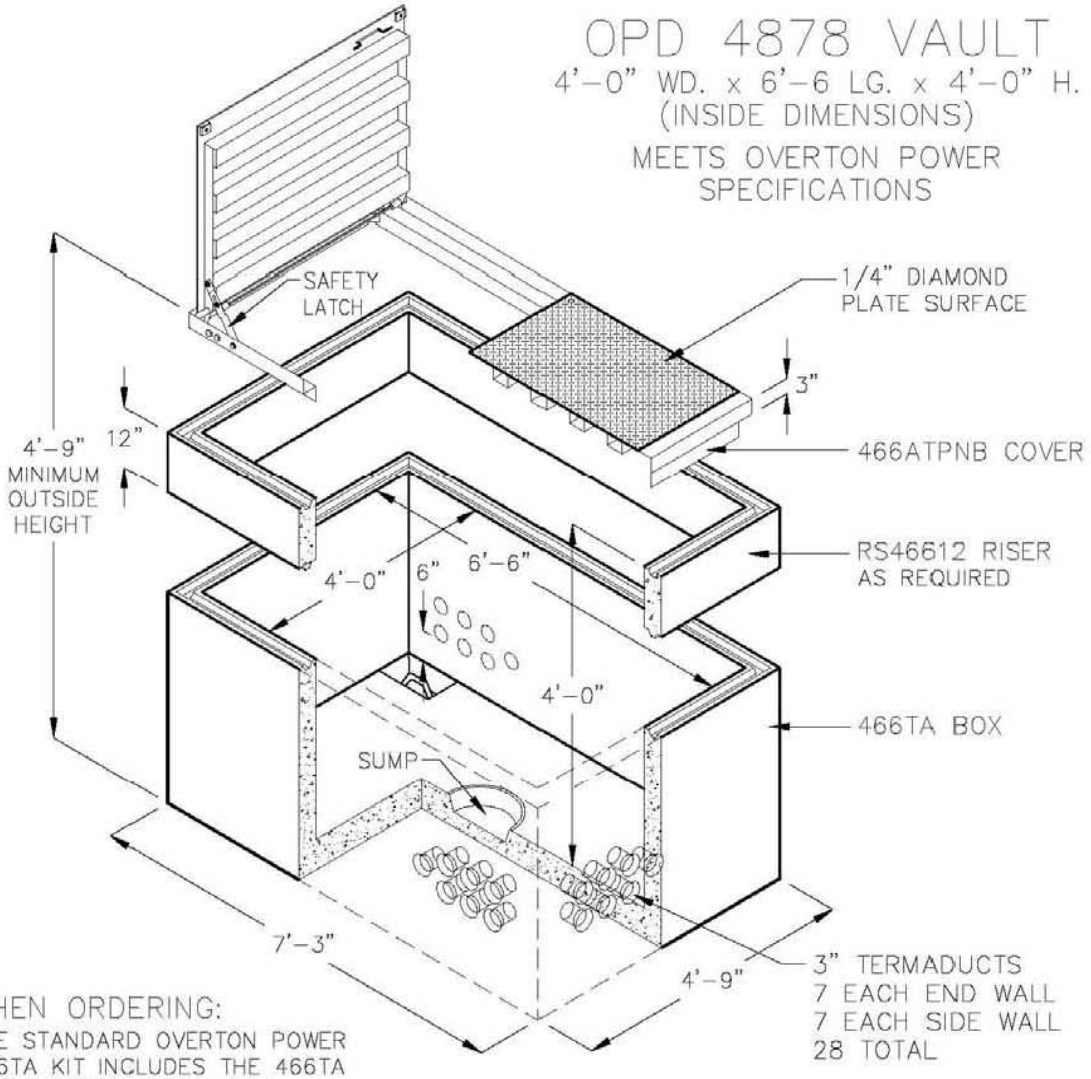
CATALOG NUMBER	PRODUCT	DESCRIPTION	APPROX. WT. (LBS.)
*PB3048TA	BOX	REINFORCED CONCRETE	2650
CA3048C6P	COVER	BOLT DOWN, PEDESTRIAN	490
CA3048C6I	COVER	BOLT DOWN, INCIDENTAL H-20	560
RS304806	RISER	6" HIGH REINFORCED CONCRETE	283
*RS304812	RISER	12" HIGH REINFORCED CONCRETE	567

OPD_4878_VAULT.dwg
JENSEN PRECAST Since 196

OPD 4878 VAULT

4'–0" WD. x 6'–6 LG. x 4'–0" H.
(INSIDE DIMENSIONS)

MEETS OVERTON POWER SPECIFICATIONS



WHEN ORDERING:
THE STANDARD OVERTON POWER 466TA KIT INCLUDES THE 466TA BOX, RS46612 RISER, AND 466TA OPD COVER.
FOR OTHER COMPONENTS, ORDER BY CATALOG NUMBER

KNOCKOUTS, DUCT TERMINATORS, PULLING IRONS, ETC.
PER CURRENT OVERTON POWER SPECIFICATIONS.

*STANDARD 466TA KIT (SHOWN ABOVE)

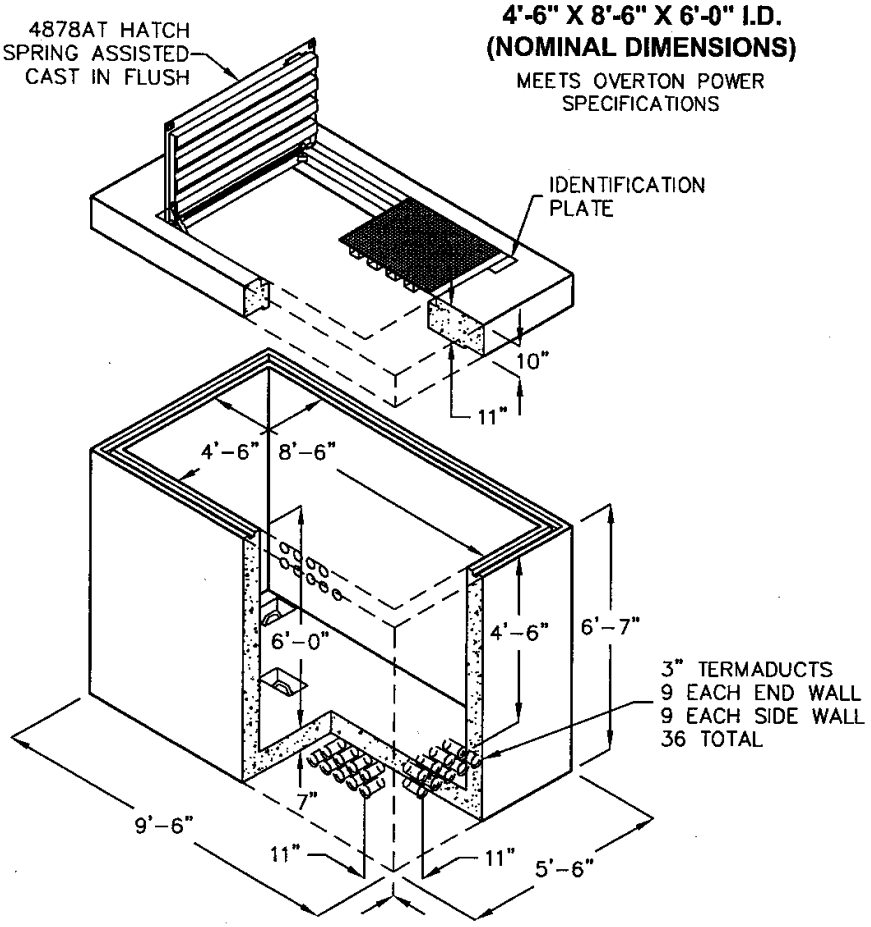
CATALOG NUMBER	PRODUCT	DESCRIPTION	APPROX. WT. (LBS.)
*PB466TA	BOX	REINFORCED CONCRETE	5415
CA466ATIOPD	COVER	TORSION SPRING ASSIST, INCIDENTAL H–20	783
RS46606	RISER	6" HIGH REINFORCED CONCRETE	646
*RS46612	RISER	12" HIGH REINFORCED CONCRETE	1190

OPD_4878_VAULT.dwg
JENSEN PRECAST® Since 196

OPD 4686 VAULT

4'-6" X 8'-6" X 6'-0" I.D.
(NOMINAL DIMENSIONS)

MEETS OVERTON POWER SPECIFICATIONS



CATALOG NUMBER	PRODUCT	DESCRIPTION	APPROX. WEIGHT
VB4686OPD	BOX	REINFORCED CONCRETE	17,200 LBS.
CA4686ATOPD	COVER	COVER SLAB WITH HATCH CAST IN	4390 LBS.
RS468612	RISER	12" HIGH REINFORCED CONCRETE	2100 LBS.

DESIGN LOAD: INCIDENTAL H–20 TRAFFIC SUITABLE
FOR OFF STREET LOCATIONS AWAY FROM HIGH DENSITY TRAFFIC.

KNOCKOUTS, DUCT TERMINATORS, PULLING IRONS, ETC. PER CURRENT OVERTON POWER SPECIFICATIONS.

FOR COMPLETE DESIGN AND PRODUCT INFORMATION
CONTACT JENSEN PRECAST.

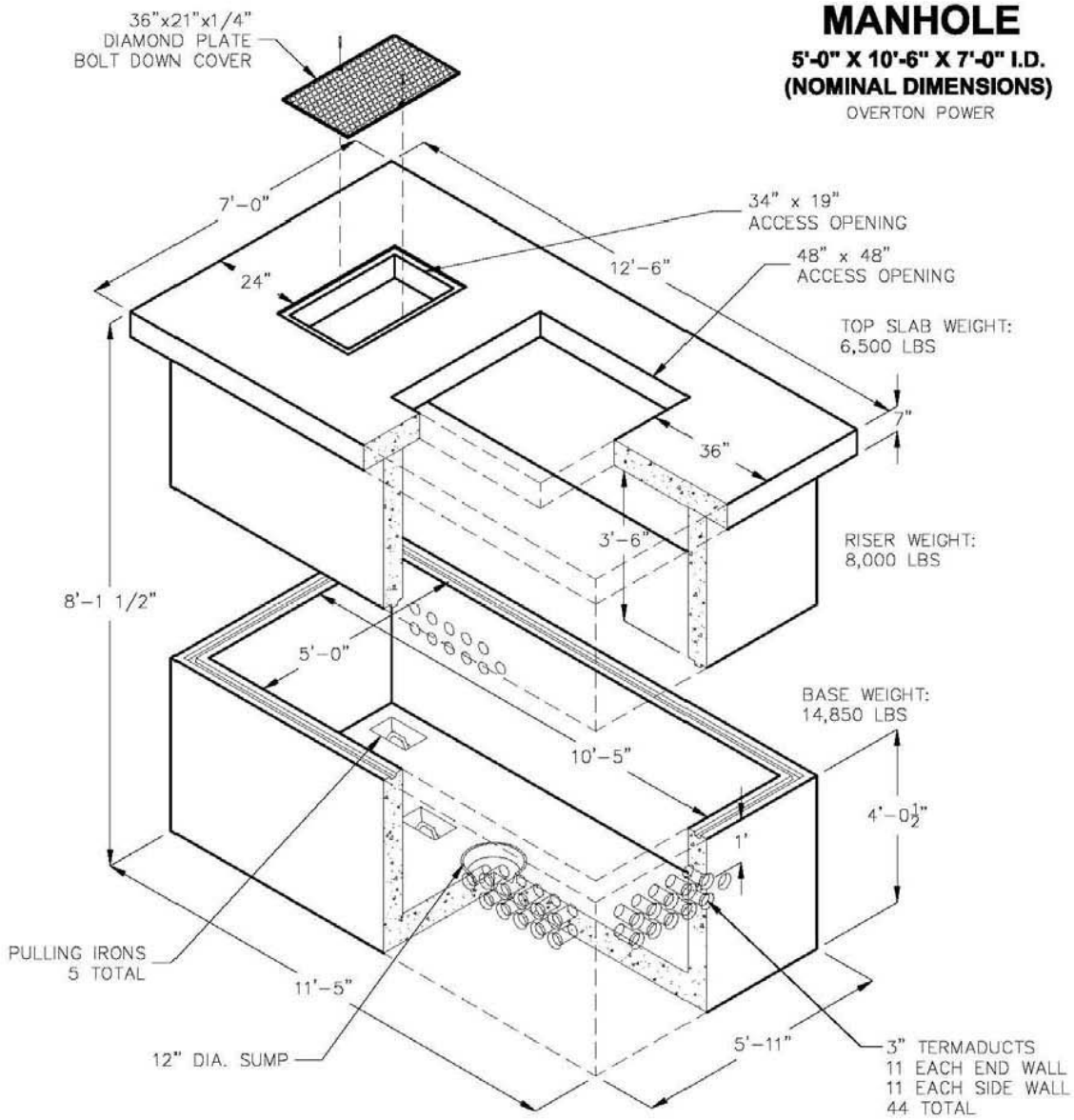
9/21/07
OP_4686_B.dwg

JENSEN PRECAST

OPD-97 SWITCH & FUSE CABINET MANHOLE

5'-0" X 10'-6" X 7'-0" I.D.
(NOMINAL DIMENSIONS)

OVERTON POWER



FOR COMPLETE DESIGN
AND PRODUCT INFORMATION
CONTACT JENSEN PRECAST.

OPD_4878_VAULT.dwg

JENSEN PRECAST Since 1968

4.21 VAULTS - SECONDARY

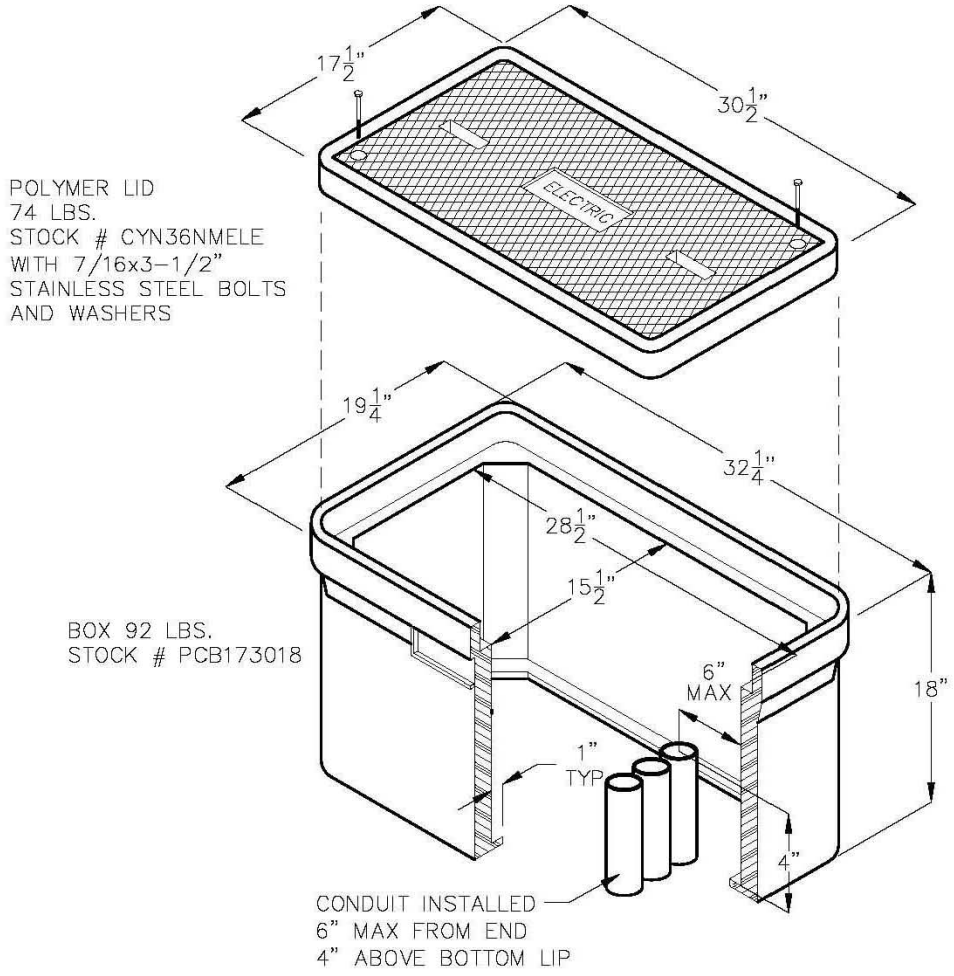
Description	Manufacturer	Part Number
Pre-Cast Traffic Rated Large Secondary Vault 17” x 30” x 18” Deep Box	Jensen Pre-Cast	JRS-1

Note: Products of equal or superior quality are acceptable.

JRS-1 HANDHOLE

17" X 30" X 18" I.D.
(NOMINAL DIMENSIONS)

MEETS OVERTON
POWER HANDHOLE
SPECIFICATIONS



LOAD RATING: 22,568# VERTICAL TEST LOAD OVER A 10" X 10" TEST AREA.

FOR USE IN SIDEWALKS, ROADWAY MEDIANS AND BEHIND CURB LOCATIONS WHERE NO DELIBERATE VEHICULAR TRAFFIC IS PLANNED.

FOR COMPLETE DESIGN AND PRODUCT INFORMATION, CONTACT JENSEN PRECAST.

WHEN ORDERING:
STANDARD OVERTON POWER
RS1 KIT INCLUDES BOX & LID AS SHOWN.
ITEMS MAY BE ORDERED INDIVIDUALLY FOR REPLACEMENT. REFER TO INDIVIDUAL STOCK NUMBER WHEN ORDERING.

5/24/07
OP_JRS1_B.dwg

JENSEN PRECAST

4.22 WIRE / CABLE

Triplex 600 volt Secondary Wire (Single Phase)

Description Manufacturer Specifications
.

2/0 URD Triplex Southwire 2/0 Aluminum, 600 Volt Secondary
(Converse or Hunter) UD Cable, Triplex, VIP Insulated, USE
Rating, Full or Half Size
Neutral w/ Triple Yellow Stripe

Must be made in the U.S.A.

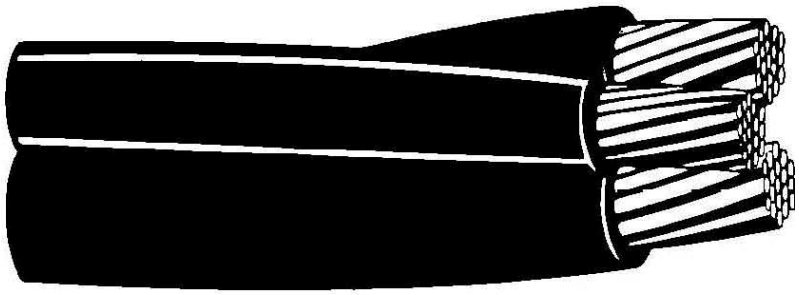
4/0 URD Triplex Southwire 4/0 Aluminum, 600 Volt Secondary
(Sweetbriar or Monmouth) UD Cable, Triplex, VIP Insulated, USE
Rating, Full or Half Size
Neutral w/ Triple Yellow Stripe
Must be made in the U.S.A.

350 MCM URD Triplex Southwire 350 MCM Aluminum,
(Wesleyan) 600 Volt Secondary UD Cable, Triplex, VIP
Insulated, USE Rating, Full or Half Size
Neutral w/ Triple Yellow Stripe
Must be made in the U.S.A.

500 MCM URD Triplex Southwire 500 MCM Aluminum,
(Holyoke or Rider) 600 Volt Secondary UD Cable, Triplex, VIP
Insulated, USE Rating, Full or Half Size
Neutral w/ Triple Yellow Stripe
Must be made in the U.S.A.

Triplex 600V Secondary UD

Aluminum Conductors Cross-linked Polyethylene (XLP) Insulation.



APPLICATIONS

Used for secondary distribution and underground service at 600 volts or less, either direct burial or in ducts.

SPECIFICATIONS

Southwire's triplex or paralleled 600 volt secondary UD cable meets or exceeds the following applicable ASTM specifications:

- B-230 Aluminum, 1350-H19 Wire for Electrical Purposes.
- B-231 Aluminum 1350 Conductors, Concentric-Lay-Stranded.
- B-786 19-Wire Combination Unilay-Stranded Aluminum 1350 Conductors for Subsequent Insulation.

Southwire's triplex 600 volt secondary UD cable meets or exceeds all applicable requirements of ICEA S-66-524 for cross-linked polyethylene insulated conductors and UL standard 854 for Type USE-2.

CONSTRUCTION

Conductors are stranded, compressed 1350-H19 aluminum, insulated with vulcanized interlinked polyethylene (VIP[1]), Southwire's cross-linked polyethylene. Neutrals are triple yellow extruded stripe. Cables with "YES" neutrals have sequential footage markers. Conductors are durably surface printed for identification. Two phase conductors and one neutral conductor are cabled together to produce the triplex cable configuration. Conductors are also available paralleled.

[1] VIP is a registered trademark of Southwire Company for cross-linked polyethylene (XLP).

Triplex 600V Secondary UD

Code Word	Phase Conductor			Neutral			Diameter (mils)		Weight Per 1000 feet (lbs.)	Allowable Ampacities+	
	Size (AWG or kcmil)	Strand-ing	Insul. Thick. (mils)	Size (AWG or kcmil)	Strand-ing	Insul. Thick. (mils)	Single Phase Cond.	Complete Cable		Direct Burial	In Ducts
TRIPLEXED WITH YELLOW EXTRUDED STRIPE NEUTRAL											
Erskine/VIP/YES	6	7	60	6	7	60	298	644	143	95	70
Vassar/VIP/YES	4	7	60	4	7	60	345	745	202	125	90
Stephens/VIP/YES	2	7	60	4	7	60	403	871	262	165	120
Ramapo/VIP/YES	2	7	60	2	7	60	403	871	292	165	120
Brenau/VIP/YES	1/0	19	80	2	7	60	512	1106	406	215	160
Bergen/VIP/YES	1/0	19	80	1/0	19	80	512	1106	463	215	160
Converse/VIP/YES	2/0	19	80	1	19	80	555	1199	501	245	180
Hunter/VIP/YES	2/0	19	80	2/0	19	80	555	1199	559	245	180
Hollins/VIP/YES	3/0	19	80	1/0	19	80	603	1303	606	280	205
Rockland/VIP/YES	3/0	19	80	3/0	19	80	603	1303	677	280	205
Sweetbriar/VIP/YES	4/0	19	80	2/0	19	80	658	1421	737	315	240
Monmouth/VIP/YES	4/0	19	80	4/0	19	80	658	1421	826	315	240
Pratt/VIP/YES	250	37	95	3/0	19	80	748	1616	888	345	265
Wesleyan/VIP/YES	350	37	95	4/0	19	80	850	1837	1157	415	320
Holyoke/VIP/YES	500	37	95	300	37	95	979	2115	1591	495	395
Rider/VIP/YES	500	37	95	350	37	95	979	2115	1646	495	395

+Ampacity: 90°C conductor temperature, 28°C ambient, RHO 90, 100% load factor for three conductor triplex with neutral carrying only unbalanced load.
Technical data for cable with solid black neutral is identical to yellow extruded stripe data except for "YES" suffix to code word.
Also available in paralleled construction.
All Yellow Extruded Stripe, "YES" suffix cable is VIP insulation.

Southwire

One Southwire Drive
Carrollton, GA 30119 USA
770/832-4242
www.southwire.com

Quadraplex 600 volt Secondary Wire (Three Phase)

2/0 URD Quad Southwire 2/0 Aluminum, 600 Volt Secondary
(Syracuse or Lafayette) UD Cable, Quadraplex, VIP Insulated, USE
Rating, Full or Half Size
Neutral w/ Triple Yellow Stripe
Must be made in the U.S.A.

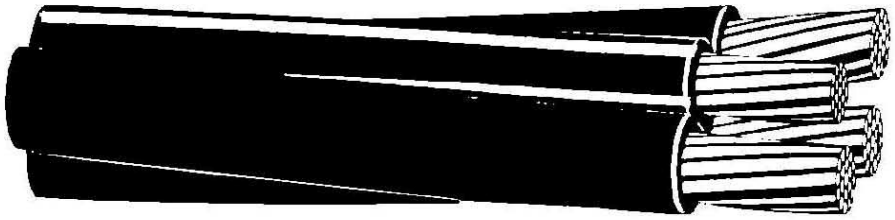
4/0 URD Quad Southwire 4/0 Aluminum, 600 Volt Secondary
(Wake Forest or Earlham) UD Cable, Quadraplex, VIP Insulated, USE
Rating, Full or Half Size
Neutral w/ Triple Yellow Stripe
Must be made in the U.S.A.

350 MCM URD Quad Southwire 350 MCM Aluminum,
(Slippery Rock) 600 Volt Secondary UD Cable, Quadraplex,
VIP Insulated, USE Rating,
Full or Half Size
Neutral with Triple Yellow Stripe
Must be made in the U.S.A.

500 MCM URD Quad Southwire 500 MCM Aluminum,
600 Volt Secondary UD Cable, Quadraplex,
VIP Insulated, USE Rating, Full or Half
Size Neutral with Triple Yellow Stripe
Must be made in the U.S.A.

Quadruplex 600V Secondary UD

Aluminum Conductors Cross-linked Polyethylene (XLP) Insulation.



APPLICATIONS

Used for secondary distribution and underground service at 600 volts or less, either direct burial or in ducts.

SPECIFICATIONS

Southwire's quadruplex or paralleled 600 volt secondary UD cable meets or exceeds the following applicable ASTM specifications:

- B-230 Aluminum, 1350-H19 Wire for Electrical Purposes.
- B-231 Aluminum 1350 Conductors, Concentric-Lay-Stranded.
- B-786 19-Wire Combination Unilay-Stranded Aluminum 1350 Conductors for Subsequent Insulation.

Southwire's quadruplex 600 volt secondary UD cable meets or exceeds all applicable requirements of ICEA S-66-524 for cross-linked polyethylene insulated conductors and UL standard 854 for Type USE-2.

CONSTRUCTION

Conductors are stranded, compressed 1350-H19 aluminum, insulated with vulcanized interlinked polyethylene (VIP[1]), Southwire's cross-linked polyethylene. Neutrals are triple yellow extruded stripe. Cables with "YES" neutrals have sequential footage markers. Conductors are durably surface printed for identification. Three phase conductors and one neutral conductor are cabled together to produce the quadruplex cable configuration.

[1] VIP is a registered trademark of Southwire Company for cross-linked polyethylene (XLP).

Quadruplex 600V Secondary UD

Code Word	Phase Conductor			Neutra			Diameter (mils)		Weight Per 1000 feet (lbs.)	Allowable Ampacities+	
	Size (AWG or kcmil)	Strand-ing	Insul. Thick. (mils)	Size (AWG or kcmil)	Strand-ing	Insul. Thick. (mils)	Single Phase Cond.	Complete Cable		Direct Burial	In Ducts
QUADRUPLEX WITH YELLOW EXTRUDED STRIPE NEUTRAL											
Tulsa/VIP/YES	4	7	60	4	7	60	345	832	269	120	85
Dyke/VIP/YES	2	7	60	4	7	60	403	974	359	155	115
Wittenberg/VIP/YES	2	7	60	2	7	60	403	974	389	155	115
Notre Dame/VIP/YES	1/0	19	80	2	7	60	512	1236	560	200	150
Purdue/VIP/YES	1/0	19	80	1/0	19	80	512	1236	617	200	150
Syracuse/VIP/YES	2/0	19	80	1	19	80	555	1340	687	225	170
Lafayette/VIP/YES	2/0	19	80	2/0	19	80	555	1340	745	225	170
Swarthmore/VIP/YES	3/0	19	80	1/0	19	80	603	1456	832	250	195
Davidson/VIP/YES	3/0	19	80	3/0	19	80	603	1456	903	250	195
Wake Forest/VIP/YES	4/0	19	80	2/0	19	80	658	1588	1012	290	225
Earlham/VIP/YES	4/0	19	80	4/0	19	80	658	1588	1101	290	225
Slippery Rock/YES	350	37	95	4/0	19	80	850	2053	1598	385	305

+Ampacity: 90°C conductor temperature, 20°C ambient, RHO 90, 100% load factor for three conductor triplex with neutral carrying only unbalanced load.
Technical data for cable with solid black neutral is identical to yellow extruded stripe data exceptfor "YES" suffix to code word.
Also available in paralleled construction.
All Yellow Extruded Stripe, "YES" suffix cable is VIP insulation.

Southwire

One Southwire Drive
Carrollton, GA 30119 USA
770/832-4242
www.southwire.com

Bare Copper Wire and Cable

Bare Copper Conductor. Solid and Stranded.

APPLICATIONS

Solid and stranded (classes AA and A) bare copper are suitable for overhead transmission and distribution applications. Stranded conductor of greater flexibility (classes B and C) are suitable for uninsulated hook up, jumpers, and grounds in electrical construction.

SPECIFICATIONS

Southwire's bare copper wire and cable meets or exceeds the following ASTM specifications:

- B-1 Hard-Drawn Copper Wire.
- B-2 Medium-Hard Copper Wire.
- B-3 Soft or Annealed Copper Wire.
- B-8 Concentric-Lay-Stranded Copper Conductors, Hard, Medium-Hard, or Soft.

CONSTRUCTION

Bare copper, solid or stranded. Available in tempers hard, medium-hard, or soft. Stranded conductors are concentrically stranded.

Bare Copper Wire and Cable

Size (AWG)	Weight Per 1000 ft. (lbs.)	Diameter (mils)	Circular Mil Area (cmils)	Hard-Drawn		Medium-Hard Drawn		Soft-Drawn (Annealed)		Allowable Ampacity+
				Min. Ultimate Strength (lbs.)	DC Resistance Ohms/ 1000 ft. @ 20°C	Min. Ultimate Strength (lbs.)	DC Resistance Ohms/ 1000 ft. @ 20°C	Max. Ultimate Strength (lbs.)	DC Resistance Ohms/ 1000 ft. @ 20°C	
SOLID										
14	12.4	64.1	4110	213.5	2.626	166.6	2.613	124.2	2.525	--
13	15.7	72.0	5180	268.0	2.083	208.8	2.072	156.6	2.003	--
12	19.8	80.8	6530	336.9	1.652	261.6	1.643	197.5	1.588	--
11	24.9	90.7	8230	422.9	1.310	327.6	1.303	249.0	1.260	--
10	31.4	101.9	10380	529.2	1.039	410.4	1.033	314.0	0.999	--
9	39.6	114.4	13090	661.2	0.824	514.2	0.820	380.5	0.792	--
8	50.0	128.5	16510	826.0	0.653	643.9	0.650	479.8	0.628	95
7	63.0	144.3	20820	1030.0	0.518	806.6	0.515	605.0	0.498	105
6	79.4	162.0	26240	1280.0	0.411	1010.0	0.409	762.9	0.395	125
5	100.2	181.9	33090	1591.0	0.326	1265.0	0.324	961.9	0.313	145
4	126.3	204.3	41740	1970.0	0.258	1584.0	0.257	1213.0	0.249	170
3	159.3	229.4	52620	2439.0	0.205	1984.0	0.204	1530.0	0.197	195
2	200.9	257.6	66360	3003.0	0.163	2450.0	0.162	1929.0	0.156	225
1	253.3	289.3	83690	3688.0	0.129	3024.0	0.128	2432.0	0.124	260

+Ampacity based on 75°C conductor temperature; 25°C ambient temperature; 2 ft./sec. wind in sun.

Size (AWG or kcmil)	Strand-ing	Strand-ing Class	Weight Per 1000 ft. (lbs.)	Diameter (mils)		Hard-Drawn		Medium-Hard Drawn		Soft-Drawn (Annealed)		Allowable Ampacity+
				Indi-vidual Wires	Com-plete Cable	Min. Ultimate Strength (lbs.)	DC Resistance Ohms/ 1000 ft. @ 20°C	Min. Ultimate Strength (lbs.)	DC Resistance Ohms/ 1000 ft. @ 20°C	Max. Ultimate Strength (lbs.)	DC Resistance Ohms/ 1000 ft. @ 20°C	
STRANDED												
8	7	B	51.0	48.6	146	777	0.6663	610	0.6629	499	0.6408	95
6	7	B	81.0	61.2	184	1228	0.4191	959	0.4169	794	0.4030	130
4	7	A,B	128.9	77.2	232	1938	0.2636	1505	0.2622	1320	0.2534	170
3	7	A,B	162.5	86.7	260	2433	0.2090	1885	0.2079	1670	0.2010	200
2	7	A,B	204.9	97.4	292	3050	0.1660	2360	0.1650	2110	0.1578	230
1	7	A	258.4	109.3	328	3801	0.1316	2955	0.1309	2552	0.1252	265
1/0	7	A,AA	326.1	122.8	369	4752	0.1042	3705	0.1037	3221	0.1002	310
2/0	7	A,AA	411.0	137.9	414	5926	0.08267	4640	0.08224	4062	0.07949	355
2/0	19	B	410.9	83.7	419	6690	0.08267	4765	0.08224	4024	0.07949	355
3/0	7	A,AA	518.1	154.8	465	7366	0.06556	5812	0.06522	5118	0.06304	410
4/0	7	A,AA	653.3	173.9	522	9154	0.05199	7278	0.05172	6459	0.04999	480
4/0	19	B	653.3	105.5	528	9617	0.05199	7479	0.05172	6453	0.04999	480
250	19	A	771.9	114.7	574	11360	0.04400	8836	0.04378	7627	0.04231	530
250	37	B	771.9	82.2	575	11600	0.04400	8952	0.04378	7940	0.04231	530
300	19	A	926.3	25.7	628	13510	0.03667	10530	0.03648	9160	0.03526	590
350	19	A	1080.6	135.7	679	15590	0.03143	12200	0.03127	10680	0.03022	650
400	19	A,AA	1235.0	145.1	726	17810	0.02750	13950	0.02736	12200	0.02645	710
500	37	A,B	1543.8	116.2	814	22510	0.02200	17550	0.02189	15240	0.02116	810
600	37	A,AA	1853.0	127.3	891	27020	0.01834	21060	0.01825	18300	0.01763	910
750	61	A,B	2315.6	110.9	998	34090	0.01467	26510	0.01459	22890	0.01410	1040
1000	61	A,B	3087.5	128.0	1152	45030	0.01100	35100	0.01094	30500	0.01058	1240

+Ampacity based on 75°C conductor temperature; 25°C ambient temperature; 2 ft./sec. wind in sun.

Southwire®

One Southwire Drive
Carrollton, GA 30119 USA
770/832-4242
www.southwire.com

Metering Requirements

METERING REQUIREMENTS

5.1 GENERAL INFORMATION AND REQUIREMENTS

1. Metering requirements are determined by Overton Power District No. 5 (District) based upon the voltage, current, and phase requirements of the owner.

2. Metering requirements can be obtained by contacting Overton Power District No. 5.

3. Construction shall only proceed on facilities approved by the District.

4. Overton Power District No. 5 (District) shall own and maintain all electrical service facilities to the customer's meter.

5. The District assumes ownership of all electrical facilities installed under its jurisdiction subsequent to proper installation, inspection, and connection.

6. Owners are responsible to know and follow the guidelines and requirements established herein by the District.

7. Owners are responsible to know and follow the applicable National, State, County, and City, codes, guidelines, and policies.

8. Electrical facilities constructed for commercial applications shall be installed by a contractor possessing the appropriate Nevada State licenses.

9. The owner shall obtain the proper permits, licenses, and permissions to complete the meter installation prior to commencing construction.

10. The District shall not connect to its system; any meter installation constructed without the proper approvals, permits or permissions and maintains the right to reject unsatisfactory or unsafe work.

11. Exceptions to the metering requirements must be approved in writing by the District prior to installation.

12. The District's tariffs and rate schedules require the delivery of capacity and energy to each class and type of electrical service through one meter, to one customer, at one location.

13. After receiving notice to proceed from the District, owners shall not relocate, rewire, or change the meter installation without prior written consent from the District.

14. Owners shall not perform work that interferes with the reading and operation of the meter.

15. Only District employees shall make the permanent connection or disconnection of the District's electric service. Services shall not be energized by jumpers or by bypassing the meter prior to local inspection and permanent connection by the District.

16. The District shall own, install, and maintain the meters, test switches, current transformers, and potential transformers.

17. All work shall be of high quality and neat in appearance.

18. This section applies to all single phase and three phase commercial and residential metering applications.

Revised By:	**Approved By:**	**Effective Date:**
Standards Committee	RO, CD, KH	2/01/2023

5.1.1 DEFINITIONS

CT- Current transformer. Used for instrument rated meters.

EUSERC – Electric Utility Service Equipment Requirements Committee

Gang Style Meter Panel – A gang style meter panel provides multiple meter sockets, associated main disconnects, and a utility wire pulling section in locations where multiples meters are required. A gang style meter panel is typically used for apartment buildings, condominiums, and commercial projects such as strip malls when a building is divided into separate individual units.

Instrument Rated Meter- An instrument rated meter utilizes a CT to transform current and/or a PT to transformer potential when current and /or potential exceed the ratings of a self contained meter. Services requiring more than 400 amps at the rated voltage require instrument rated metering.

Main Disconnect- A circuit breaker, fused switch, or other approved means of disconnecting the load from the meter. The main disconnect also provides over current protection for the owner's metered loads.

Meter Cabinet- A meter cabinet is cabinet, box, enclosure, or standing section constructed for the specific purpose of housing an instrument rated meter, CT's, PT's, test switches, main disconnect, and service entrance conductors for an instrument rated service.

Meter Panel – Known by several names depending on the panel manufacturer and the application. The meter panel is a combination meter socket load center with main disconnect. It may also be known as a ring type main panel with main disconnect or as a meter base with main disconnect.

Owner - The owner is the person, persons, company, or corporation requiring the installation of electrical facilities to provide capacity and associated energy to facilities they own. The term "owner" is also defined as and applies to the owner's designated representative, project manager, developer, and contractor.

PT- Potential transformer. Used for instrument rated meters.

Self –Contained Meter – A self-contained meter carries rated line voltage and current without the aid of a CT or PT. A self contained meter carries 400 amps or less at the rated voltage.

Revised By:	Approved By:	Effective Date:
Standards Committee	MVC	8/13/09

5.1.2 SERVICE TYPE AVAILABLE

1. The District shall determine required electrical facilities based on the service type information provided by the customer.

2. Available electric service is 60-hertz, alternating current, single phase or three-phase. Each meter location requires the installation of a self contained or instrument rated meter.

3. Self contained meters shall be a single phase or three phase service requiring 400 amps or less.

4. The nominal secondary voltages and requisite configurations for self contained meters are:

Rated Voltage	Rated Amps	Phase	Wires	Meter Clips or Jaws
120/240	0-400	Single-phase	3 wire	4 jaw
120/208	0-400	Three-phase	4 wire	7 jaw
277/480	0-400	Three-phase	4 wire	7 jaw
120/240	0-400	Three-phase	4 wire	7 jaw

5. Instrument rated meters shall be a single phase or three phase service requiring more than 400 amps. Each instrument rated meter requires current transformer metering.

6. The nominal secondary voltages and associated configuration for instrument rated meters are:

Rated Voltage	Rated Amps	Phase	Wires	Meter Clips or Jaws
120/240	Over 400	Single-phase	3 wire	13 jaw
120/240	400-750	Three-phase	4 wire	13 jaw
120/208	Over 400	Three-phase	4 wire	13 jaw
277/480	Over 400	Three-phase	4 wire	13 jaw

7. Primary metering is available for customers requiring more than 600 volts. Primary meters require instrument rated metering.

8. A customer may make a written request to the District if additional service voltages are desired. The District shall provide written approval and an estimate of the additional costs associated with such request if the District determines that the requested service will be provided.

Revised By:	Approved By:	Effective Date:
Standards Committee	MVC	8/13/09

5.1.3 METER LOCATION REQUIREMENTS

1. The District's engineering and operations staff shall determine the location of the meter.

2. The location of the meter shall not be moved or changed without the written approval of the District.

3. The meter shall be placed in a location that is accessible to the District at all times.

4. **Meters and metering equipment shall be located outdoors.**

5. A meter panel or meter cabinet minimum rating and type are specified by the applicable governing agency. The District shall determine the meter size based on this information.

6. A meter panel or meter cabinet shall be provided and installed by the owner. The owner is responsible for selecting a meter panel or meter cabinet of proper ampere rating as required by the electrical permit. The meter panel or meter cabinet shall satisfy applicable governing building codes and the main disconnect or sum of service disconnects can't exceed the service panel rating.

7. A meter panel shall include at a minimum, a meter base, main disconnects, an underground service entrance, wire terminations, and provisions to seal the utility service entrance.

8. When practicable, the meter panel or meter cabinet shall be installed on the side of the structure that is closest to the transformer, vault, or pole that will provide electrical service (see figure 7).

9. The meter panel shall not be more than ten (10) feet from the front corner of the structure for residential applications.

10. The meter panel shall be accessible from the front of the property (see figure 7) for residential applications.

11. The meter panel shall not be placed in a fenced area or inside a building for residential applications.

12. The meter panel shall not be installed under a porch, in a carport, breezeway, or under rain spouts or drains.

13. The meter panel shall not be installed over window wells, steps in stairways, inside carports, or in other unsafe or inconvenient locations. Shrubs and landscaping shall not be placed in areas that obstruct access to the meter.

14. A clear standing and working space shall be provided in front of the meter panel.

15. The meter panel shall be installed so that the meter is no higher than six (6) feet from final grade and no lower than four (4) feet six (6) inches from final grade (see figure 12).

16. The minimum unobstructed wall space required for a single meter is 75" high, 36" deep, and 36" wide. Additionally, a 48" deep working space is required for installations using cabinets. The

use of current transformers requires a larger space. Minimum dimensions are 75" high by 36" deep (48" deep for meters in a cabinet), and 70" wide.

17. Gang style meter panels shall be set with the center of the lowest meter socket to no less than 36" above final grade.

18. The District will not install meters on mobile structures such as trailers, barges, cranes, dredges, draglines, mobile pumping equipment, or on any floating dwelling units such as houseboats.

19. Meter installation shall maintain proper clearance from other utilities and hazards as identified in the National Electric Code, the National Electric Safety Code, and other applicable codes and guidelines.

20. When vehicles or other equipment may be near the District's equipment, barrier posts are required. The customer is responsible for providing barrier posts for the protection of electrical equipment (see figure 6)
21. If these conditions cannot be met, the customer shall contact the District to determine a suitable location of the customer's metering equipment.

22. If prior written approval to locate the meters and/or metering equipment indoors (in a meter room) is granted by the District, the meter and equipment shall be installed at the main level or ground floor of the customer's building.

    a. Meter rooms should be located on the side of the building that is closest to the distribution transformer.

    b. Entry doors to service equipment rooms which contain the District's metering or termination equipment shall open outward and shall be accessible from the outside and fitted with a building owner supplied lock box for the District's use.

    c. If required, the owner/builder shall provide provisions for meter reading equipment, such as repeaters or collectors, on the outside of structure.

23. Establishing a proper ground is the responsibility of the owner and shall be done in accordance with applicable governing guidelines.

24. The District retains the right to inspect all panels before connections are made to insure that the meter base disconnects, and connection points are sound and in safe working condition. Any panel deemed to be unsafe shall not be installed or connected until remedied by the owner.

25. For additional information please refer to section 3.9.

Revised By:	**Approved By:**	**Effective Date:**
Standards Committee	MVC	8/18/14

5.1.4 OWNERSHIP OF METERING FACILITIES

1. The meter designates the point of change of ownership from the District to the owner unless specified otherwise by special contract.

2. The District shall own, maintain, and operate the meter and all facilities on the utility side of the meter. With the exception of the meter, the District's ownership and responsibility ends at the end of the service conductors in the utility section of the meter panel connection point.

3. The District shall own operate and maintain the meter, current transformers, potential transformers, test switches, service conductors, and other utility facilities on the utility side of the meter.

4. The owner shall own and maintain the meter panel and all of its internal workings including but not limited to the meter socket, meter panel bus work, main disconnect, breakers, conductor connections, service risers, meter poles, pedestals, and all other facilities on the customer side of the meter.

Revised By:	**Approved By:**	**Effective Date:**
Standards Committee	MVC	8/13/09

5.1.5 POINT OF DELIVERY

1. The meter is the point of delivery where capacity and associated energy are delivered to the owner.

2. The point of delivery or service point refers to the location where the customer connects to the District's system.

3. The District shall provide capacity and associated energy at rated voltage and current in accordance with national guidelines to the delivery point.

4. Loss of power, equipment failure, and power quality problems on the customer side of the delivery point shall be remedied by the owner.

5.2 RESIDENTIAL SINGLE PHASE METER REQUIREMENTS FOR SELF-CONTAINED (400 Amps or Less)

1. The District's engineering and operations staff shall specify the meter location.

2. The owner shall provide and install a meter panel for a self contained meter of the appropriate size and rating for the application.

3. The meter panel shall be rated for single phase three wire 120/240 volts A.C. and shall meet UL and EUSERC requirements.

4. The meter panel shall include:
    a. A four jaw meter socket
    b. A main disconnect.
    c. Provisions for underground service entrance unless otherwise specified.
    d. A separate and dedicated utility wire service entrance.
    e. Provisions for sealing all utility compartments.

5. The owner shall install the meter panel in accordance with the governing agency requirements and in accordance with the District's specifications.

6. The owner shall provide terminations for connecting service conductors to the meter panel.

Revised By:	**Approved By:**	**Effective Date:**
Standards Committee	MVC	8/8/12

5.3 RESIDENTIAL SINGLE PHASE METERING REQUIREMENTS FOR A CT SERVICE (400-600 Amps)

1. The District's engineering and operations staff shall specify the meter location.

2. The owner shall provide and install a meter cabinet for an instrument rated meter of the appropriate size and rating for the application.

3. The meter panel shall be rated for single phase three wire 120/240 volts A.C. and shall meet UL and EUSERC requirements.

4. The meter cabinet shall be a weather tight metallic NEMA 3R cabinet with sealable door securely mounted on a rigid surface.

5. The meter cabinet shall include:
    a. A 13 jaw meter socket.
    b. A main disconnect.
    c. Provisions for underground service entrance unless otherwise specified.
    d. A separate and dedicated utility wire service entrance.
    e. A CT compartment.
    f. An approved current transformer mounting base rated 50,000 ampere fault duty.
    g. A mounting perch drilled and tapped for a test switch.
    h. Provisions for sealing all utility compartments.

6. The owner shall install the meter cabinet in accordance with the governing agency requirements and in accordance with the District's specifications.

7. The owner shall provide terminations for connecting service conductors to the meter panel.

Revised By:	Approved By:	Effective Date:
Standards Committee	MVC	8/8/12

5.4 RESIDENTIAL THREE PHASE METER REQUIREMENTS

1. All self contained three-phase meter sockets shall have safety sockets.

2. A meter panel shall be rated for three phase four wire and shall meet UL and EUSERC requirements.

3. A seven jaw four wire meter base is required for residential three phase installations.

Revised By:	Approved By:	Effective Date:
Standards Committee	MVC	8/13/09

5.5 RESIDENTIAL SINGLE PHASE GANG STYLE METER REQUIREMENTS

1. The District's engineering and operations staff shall specify the meter location.

2. The owner shall provide and install a gang meter panel for self contained meters of the appropriate size and rating for the application.

3. The meter panel shall be rated for single phase three wire 120/240 volts A.C. and shall meet UL and EUSERC requirements.

4. The gang style meter panel shall include:
   a. The appropriate number of four jaw meter sockets.
   b. An appropriately sized main disconnect for each meter socket.
   c. Provisions for underground service entrance unless otherwise specified.
   d. A separate and dedicated utility wire service entrance.
   e. Provisions for sealing all utility compartments.

5. The owner shall install the gang style meter panel in accordance with the governing agency requirements and in accordance with the District's specifications.

6. The owner shall provide terminations for connecting service conductors to the meter panel.

7. The National Electric Code requires a main disconnect when more than six meters are connected in gang style meter panel. If an existing installation expands beyond six services, a main disconnect shall be installed.

8. A cable pulling (pull box) section is required and must be sized for the District's service conductors. Refer to section 6.10.9 for more details pertaining to the pull box.

9. Vacant meter positions shall be securely sealed or the meter shall be in position before the panel is energized.

Revised By:	**Approved By:**	**Effective Date:**
Standards Committee	MVC	8/13/09

5.6 COMMERCIAL SINGLE PHASE METER REQUIREMENTS (400 Amps or Less)

1. The District's engineering and operations staff shall specify the meter location.

2. The owner shall provide and install a gang meter panel for self contained meters of the appropriate size and rating for the application.

3. The meter panel shall be rated for single phase three wire 120/240 volts A.C. and shall meet UL and EUSERC requirements.

4. The gang style meter panel shall include:
    a. The appropriate number of four jaw meter sockets.
    b. An appropriately sized main disconnect for each meter socket.
    c. Provisions for underground service entrance unless otherwise specified.
    d. A separate and dedicated utility wire service entrance.
    e. Provisions for sealing all utility compartments.

5. The owner shall install the gang style meter panel in accordance with the governing agency requirements and in accordance with the District's specifications.

6. The owner shall provide terminations for connecting service conductors to the meter panel.

Revised By:	**Approved By:**	**Effective Date:**
Standards Committee	MVC	8/13/09

5.7 COMMERCIAL SINGLE PHASE METER REQUIREMENTS (400-600 Amps)

1. The District's engineering and operations staff shall specify the meter location.

2. The owner shall provide and install a meter cabinet for an instrument rated meter of the appropriate size and rating for the application.

3. The meter panel shall be rated for single phase three wire 120/240 volts A.C. and shall meet UL and EUSERC requirements.

4. The meter cabinet shall be a weather tight metallic NEMA 3R cabinet with sealable door securely mounted on a rigid surface.

5. The meter cabinet shall include:
    a. A 13 jaw meter socket.
    b. A main disconnect.
    c. Provisions for underground service entrance unless otherwise specified.
    d. A separate and dedicated utility wire service entrance.
    e. A CT compartment.
    f. An approved current transformer mounting base rated 50,000 ampere fault duty.
    g. A mounting perch drilled and tapped for a test switch.
    h. Provisions for sealing all utility compartments.

6. The owner shall install the meter cabinet in accordance with the governing agency requirements and in accordance with the District's specifications.

7. The owner shall provide terminations for connecting service conductors to the meter panel.

5.8 COMMERCIAL SINGLE PHASE GANG STYLE METER REQUIREMENTS

1. The District's engineering and operations staff shall specify the meter location.

2. The owner shall provide and install a gang meter panel for self contained meters of the appropriate size and rating for the application.

3. The meter panel shall be rated for single phase three wire 120/240 volts A.C. and shall meet UL and EUSERC requirements.

4. The gang style meter panel shall include:
    a. The appropriate number of four jaw meter sockets.
    b. An appropriately sized main disconnect for each meter socket.
    c. Provisions for underground service entrance unless otherwise specified.
    d. A separate and dedicated utility wire service entrance.
    e. Provisions for sealing all utility compartments.

5. The owner shall install the gang style meter panel in accordance with the governing agency requirements and in accordance with the District's specifications.

6. The owner shall provide terminations for connecting service conductors to the meter panel.

7. Each meter socket and main disconnect shall be permanently labeled to identify the address or unit # it serves. The label must be permanently attached to the top half of the meter enclosure. The service will not be energized until the label is permanently attached.

8. The National Electric Code requires a main disconnect when more than six meters are connected in gang style meter panel. If an existing installation expands beyond six services, a main disconnect shall be installed.

9. A cable pulling (pull box) section is required and must be sized for the District's service conductors. Refer to section 6.10.9 for more details pertaining to the pull box.

10. Vacant meter positions shall be securely sealed or the meter shall be in position before the panel is energized.

Revised By:	**Approved By:**	**Effective Date:**
Standards Committee	MVC	8/13/09

5.9 COMMERCIAL THREE PHASE SELF CONTAINED METER REQUIREMENTS(400 Amps or Less)

1. The District's engineering and operations staff shall specify the meter location.

2. The owner shall provide and install a meter panel for a self contained meter of the appropriate size and rating for the application.

3. The meter panel rating shall not exceed 400 amps.

4. All self contained 480 volt three-phase meter installation shall have "Safety Socket Test Bypass" meter panels.

5. "Safety Socket Test Bypass" are the only approved link bypass meter panels.

6. Lever bypass meter panels shall not be used.

7. The meter panel shall include:
    a. A seven jaw four wire meter socket
    b. A main disconnect.
    c. A Safety Socket Bypass for all 480 volt applications.
    d. Provisions for underground service entrance unless otherwise specified.
    e. A separate and dedicated utility wire service entrance.
    f. Provisions for sealing all utility compartments.

8. The high power (wild) leg conductor must be identified by orange marking and located on the right hand side of the meter socket for four wire delta connections.

Revised By:	**Approved By:**	**Effective Date:**
Standards Committee	MVC	8/13/09

5.10 COMMERCIAL THREE PHASE INSTRUMENT RATED METER REQUIREMENTS

1. The District's engineering and operations staff shall specify the meter location.

2. All comercial three phase meter installations greater than 400 amps are required to utilize instrument rated meters.

3. A 13 jaw four wire meter base is required for all instrument rated meter installations.

4. Meter cabinets and standing sections shall be a weather tight metallic NEMA 3R cabinet sealable with door securely mounted on a rigid surface (2"x 4" minimum).

5. An approved current transformer mounting base rated 50,000 ampere fault duty shall be provided in each meter cabinet or standing section.

6. All CT sections shall be grounded per the national Electric Code.

7. A main disconnect, clearly marked, and shall be included in each meter cabinet and standing section.

8. A CT cabinet or section shall be included in each meter cabinet and standing section. The CT cabinet shall meet the following requirements:

    a. Only conductors associated with metering shall be permitted in the CT enclosure. No connections shall be made in any CT enclosure to supply any other meter.

    b. A CT cabinet may be used as a combination CT and utility underground service terminating pull box. The owner's conductors shall exit the enclosure on the load side of the current transformers. The owner's conductors will not be permitted in the District's terminating and pull space. For other underground service applications, a separate terminating pull box will be provided for the District's service lateral.

    c. The cabinet must be mounted in a readily accessible location acceptable to the District. The top of the meter shall not be more than 6' above floor level.

    d. The cabinet access cover may be removable or hinged. When hinged, the cover shall also be removable and equipped with a device to hold the cover in the open position at 90 degrees or more. The cover shall be sealable, and equipped with two handles.

    e. A clear work space of 78" high x 70" wide x 48" deep is required in front of this cabinet. The hinged door, when open, shall not block access and egress from the room. The preferred location of cabinets shall be on the ground floor.

However, if the ground floor is found to be unsuitable by the District, stairs only (not ladders) shall provide access to CT cabinet and must have written approval by the District prior to installation.

f. The enclosure must have approved provisions for bus bar type current transformers.

g. The owner shall provide approved connectors to terminate the load side service conductors in all CT compartments. The owner shall connect his conductors to the line and load-side of the approved mounting base.

h. The owner shall provide a meter socket enclosure for current transformer metering with a space reserved for the District's test switch 9 1/2 inches in length. Use the following guidelines for the enclosure and meter socket.

   i. Verify that the enclosure contains a mounting perch, drilled and tapped, for a test switch. The District will furnish and install the test switch.

   ii. The meter socket will also be a 13 jaw base. The use of meter sockets with automatic circuit closers is prohibited.

   iii. The enclosure shall have factory installed provisions for bus bar type current transformers.

   iv. This enclosure is to be used for metering only. All unused openings must be covered and secured by the owner.

9. The pull section of the cabinet or standing section shall meet the following requirements:

   a. The pull section sizing shall meet the national Electric Code requirements.

   b. A pull section, separate termination enclosure, or a bottom feed service section shall be provided for all standing section with underground services.

   c. Bus bars, with provisions for termination lugs are required from the pull section into the service section, when the main switch is rated above 800 amperes, or when multiple metering is to be supplied.

   d. Side or rear entry of the service cable into the pull section may require a greater dimension in accordance with the National Electric Code.

   e. All pull and termination sections shall have full front access. Cover panels shall be removable, sealable, provided with two lifting handles and limited to a maximum size of nine (9) square feet in area.

f. Customer shall provide a drawing with dimensions of proposed service equipment.

10. The customer shall provide a conduit between the meter socket and the current transformer cabinet. Use the following guidelines to install the conduit.

    a. Use rigid steel, IMC or EMT conduit. A minimum of 1” and 2” maximum is required with proper fittings and bushings to protect metering conductors.

    b. Conduit must be of sufficient length to insure a minimum distance of 10" between the center of the meter socket and the current transformer cabinet.

    c. If the standard location is not suitable or workable, an alternate location may be approved. Any alternate location must have prior written approval by the District and must adhere to the following guidelines.

    d. Conduit runs must be 50’ or less, no more than three bends totaling 270 degrees or any one bend greater than 90 degrees will be allowed.

    e. Use rigid steel or IMC conduit (1" minimum). EMT conduit will be allowed for runs less than 10 feet.

    f. Run conduit in a manner as to not have any exposed junction boxes, however if you do have to use junction boxes, secure all removable conduit fittings with 1/4" x #20 metal screws with sealing provisions. (LB's are not allowed without prior written approval by the District.)

    g. Customer shall supply and install a pulling rope (capable of withstanding 210 pounds tensile strength) with 6 feet extending from each end of the conduit run.

11. A standing section is required for installations of 800 amps and greater.

12. Standing sections shall meet the following requirements:

    a. The owner will provide the standing section, instrument transformer mounting base, panels, meter socket, and provisions for a test switch.

    b. Standing section metering is required when the service entrance rating is greater than 800 amperes and may also be used for single-phase and three-phase service over 320 amperes.

    c. The metering current transformers will be located in the CT compartment. The meter and test switch may be mounted on the compartment's hinged cover or located remotely.

d. The area below this compartment's barrier may be used as a main switch (breaker) compartment, a load distribution compartment, or a bottom-fed terminating pull section. The metering compartment shall be on the supply side of the main switch or breaker.

e. The mounting pad for all switchboard metering enclosures shall be a concrete pad a minimum of four (4) inches thick.

f. For underground service, the owner will terminate the line side service conductors using the District's approved connectors, provided and installed by customer on lug landings in the pull section.

g. The owner locking means for the metering enclosure must provide for independent access by the District.

h. Terminating bolts must be secured in place and shall be provided with nuts, flat washer, and a spring washer, and all parts must be plated to prevent corrosion. Buss bars are required from the pull section into the service section.

i. The clear work space shall be provided in front of metering equipment in accordance with the National Electric Code.

j. Grounding shall meet National Electric Code requirements. Lugs for terminating the owner's ground wire (or other grounding conductors) shall be located outside of the sealable section and shall be designed to readily permit the customer's neutral system to be isolated, when necessary, from the District's neutral.

k. All removable panels and covers to the compartments used for terminating or routing conductors shall have sealing provisions.

l. All pull and termination sections shall be 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.

Revised By:	**Approved By:**	**Effective Date:**
Standards Committee	MVC	8/13/09

5.11 PRIMARY METER REQUIREMENT

1. Primary metering installations shall be designed and engineered by the District.

2. A primary meter installation typically requires a minimum of 12-16 weeks lead time for the purchase of specialized equipment.

3. The District has the ability to provide primary metering at 7.2 kV single phase, 12.47 kV three phase, and 69 kV three phase.

4. An owner may request primary metering by providing written notice to the District prior to the District's engineering and design of the utility electrical system.

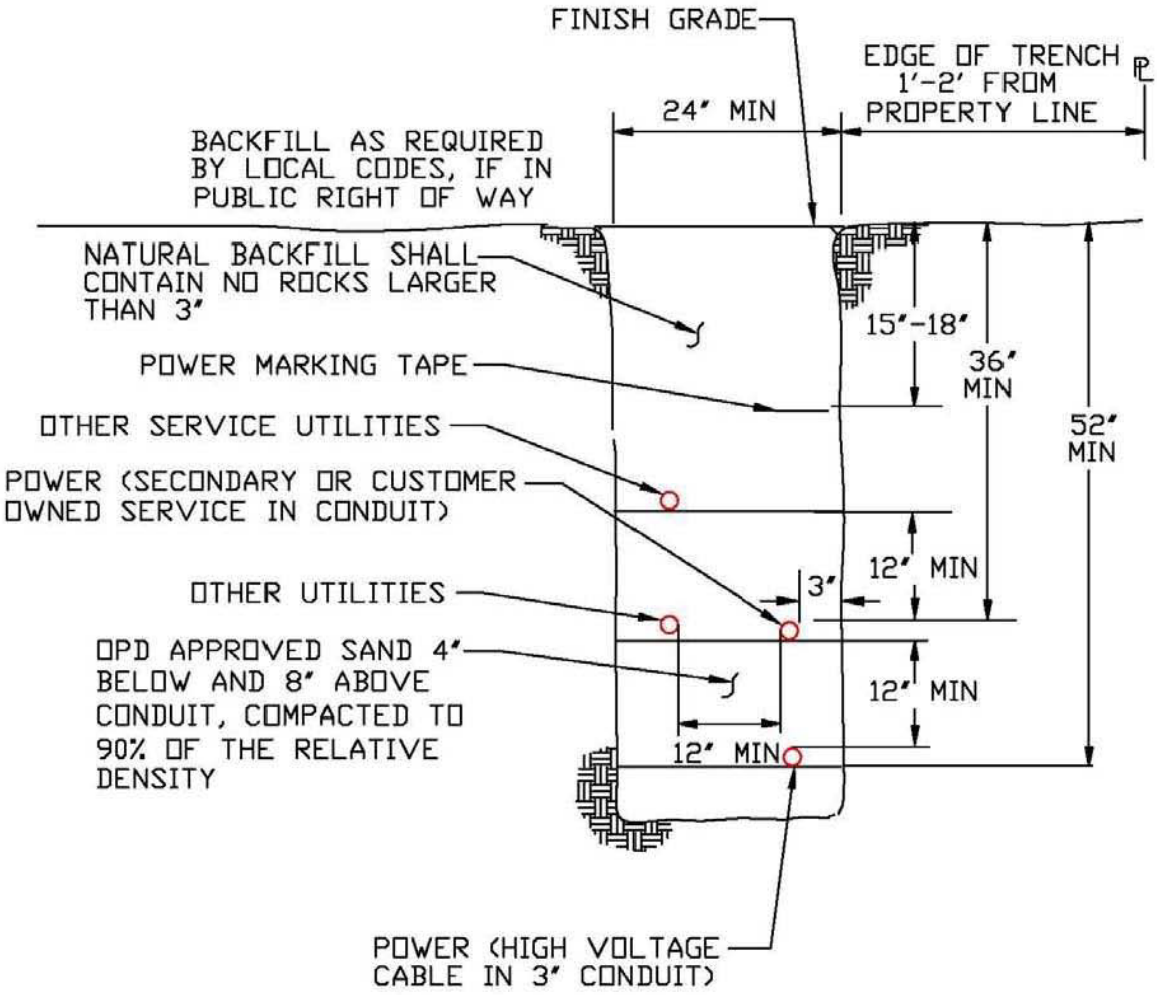
5. The Distrtict shall review requests for primary metering to determine the suitability for primary meter installations. The District reserves the right to refuse the installation of primary metering, without cause.

6. Primary metering shall only be installed through special contract between the District and the owner.

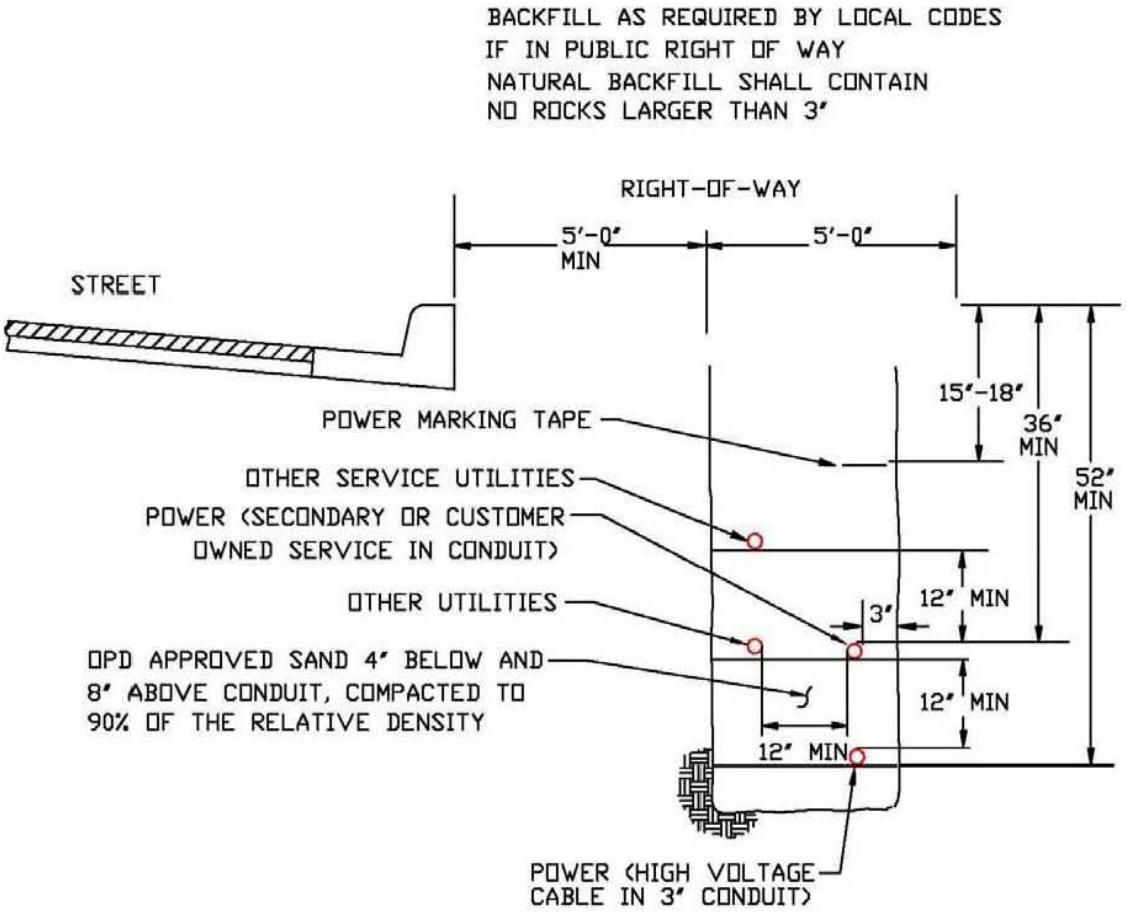
Revised By:	**Approved By:**	**Effective Date:**
Standards Committee	RO, CD, KH	2/01/2023

Construction Drawings and

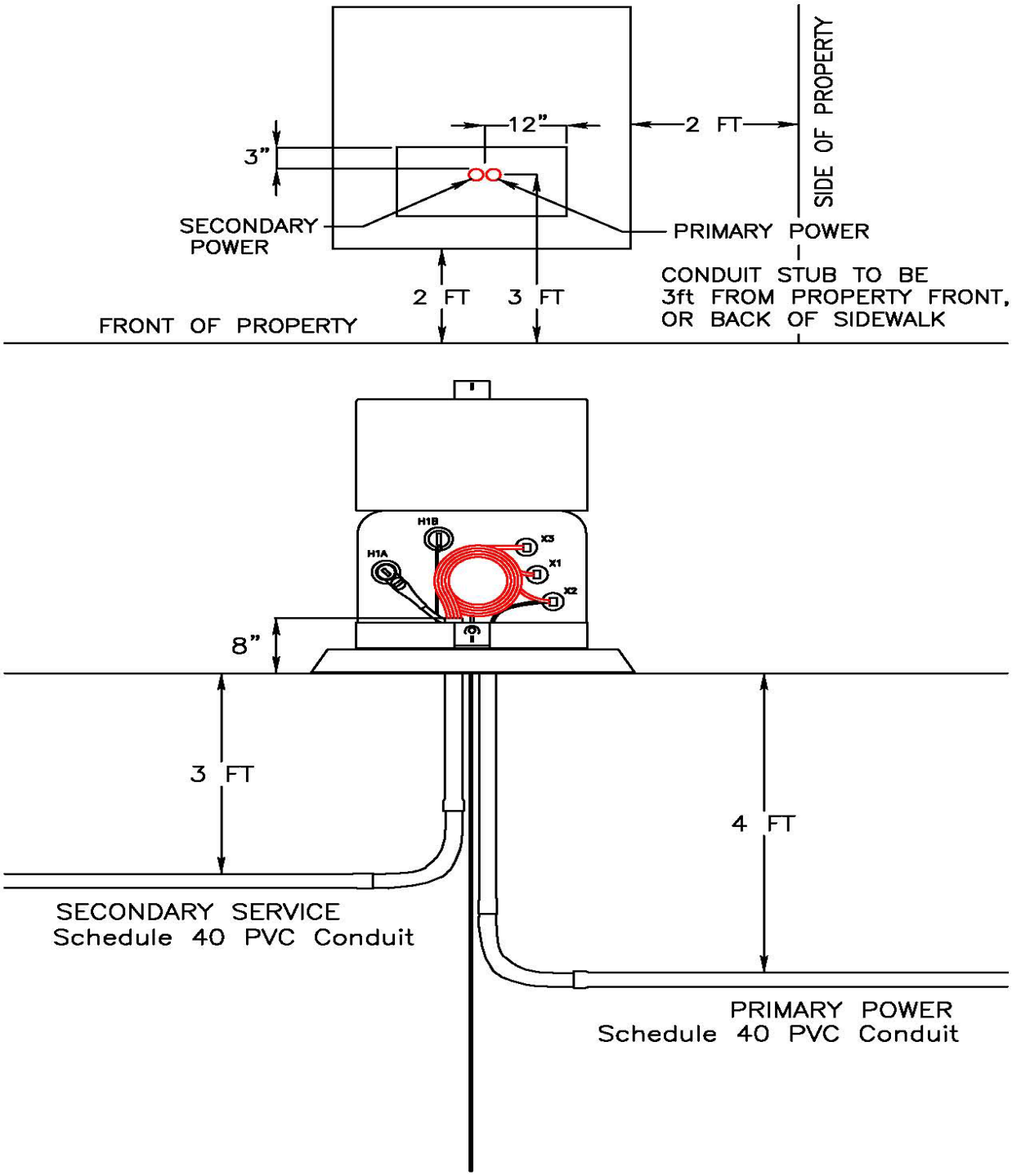
Material Cut Sheets



Overton Power District No. 5	TYPICAL JOINT USE TRENCH (NO OFFSITE IMPROVEMENTS) FIGURE 1	**Drawn:** 4-8-98 **Revised:** **Revision #:**	**ASSEMBLY NUMBER**

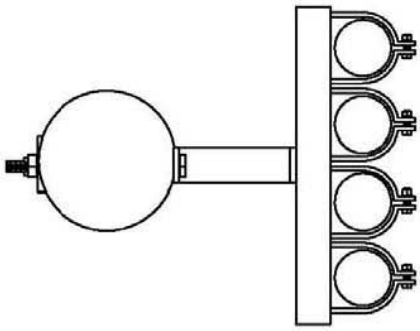


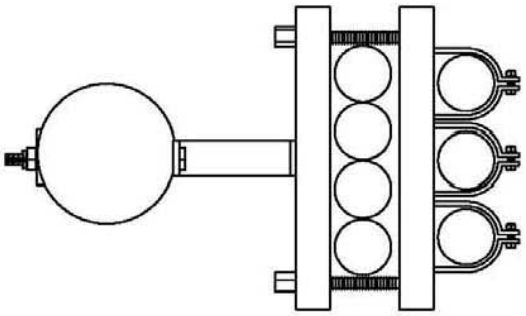
Overton Power District No. 5	TYPICAL JOINT USE TRENCH (WITH OFFSITE IMPROVEMENTS) FIGURE 2	**Drawn:** 4-8-98 **Revised:** **Revision #:**	**ASSEMBLY NUMBER**

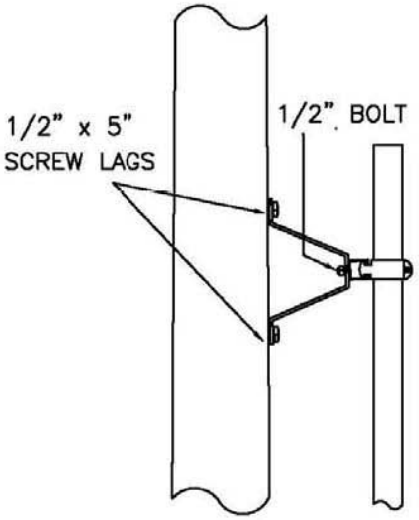


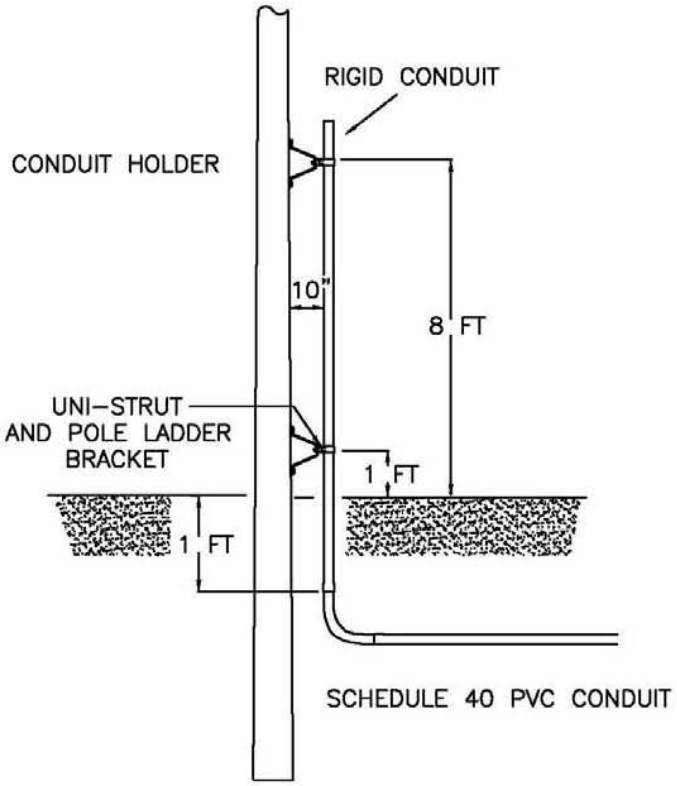
Overton Power District No. 5	CONDUIT PLACEMENT FOR A PADMOUNT TRANSFORMER FIGURE 3	**Drawn:** 4-8-98 **Revised:** 8-21-12 **Revision #:** 1	**ASSEMBLY NUMBER**

CHANNELED STEEL SHALL BE CUT FOR FOUR CONDUITS WITH 1-1/2" OF OVERHANG ON EACH END.

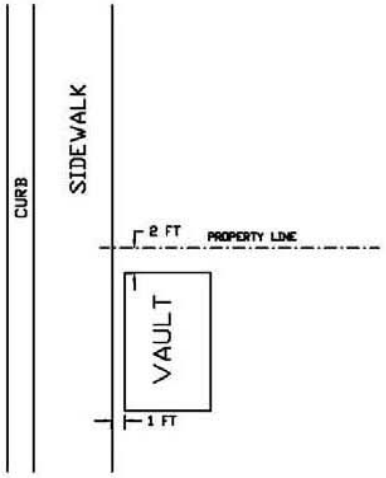


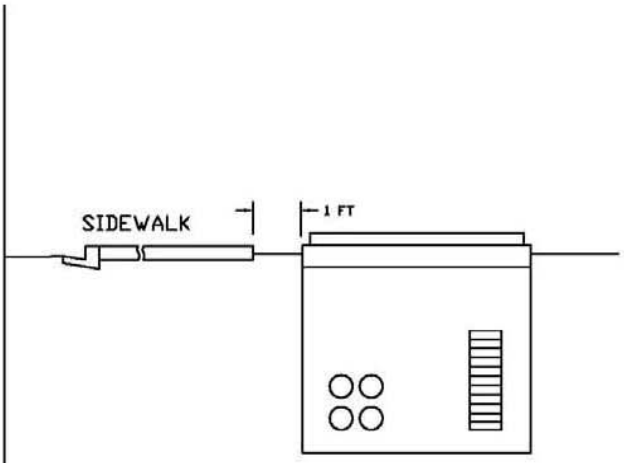






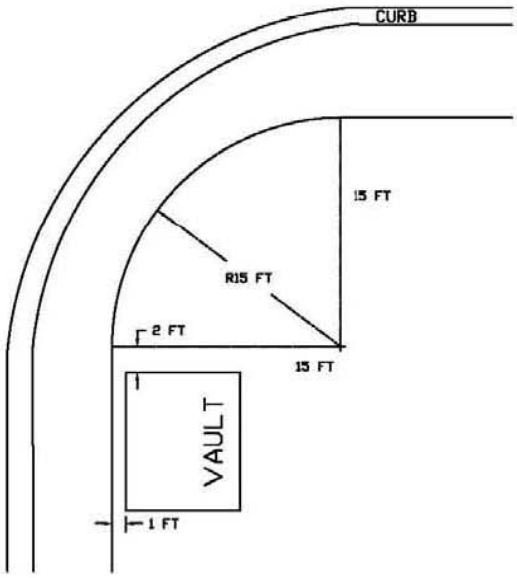
Overton Power District No. 5	CONDUIT INSTALLATION POLE RISER & CONDUIT HOLDER FIGURE 4	**Drawn:** 9-8-98 **Revised:** **Revision #:**	**ASSEMBLY NUMBER**





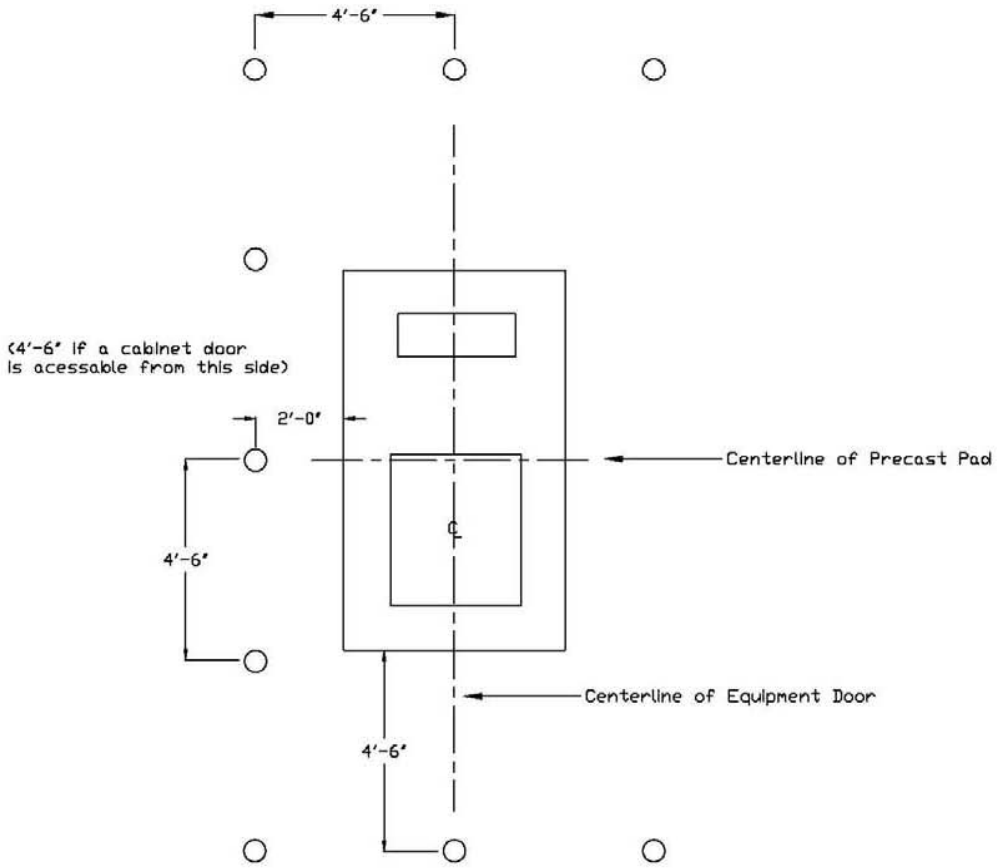
VAULT

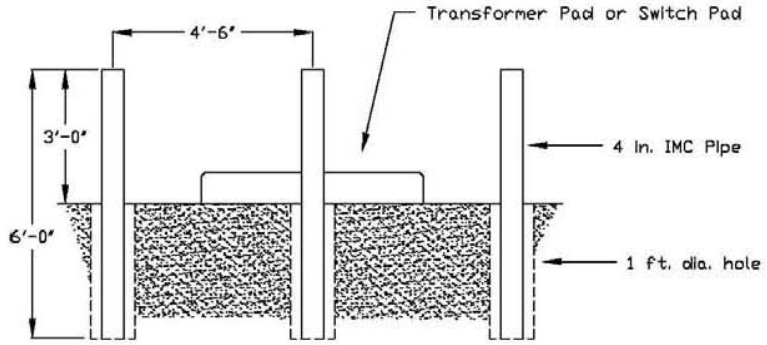
The top concrete portion of the vault shall be level with the sidewalk so that when the lid is placed on the vault the top of the lid will be four inches (4") above the top of the sidewalk.



See also City & County sight zones.

Overton Power District No. 5	PRIMARY VAULT DETAIL FIGURE 5	**Drawn:** 4-8-98 **Revised:** **Revision #:**	**ASSEMBLY NUMBER**



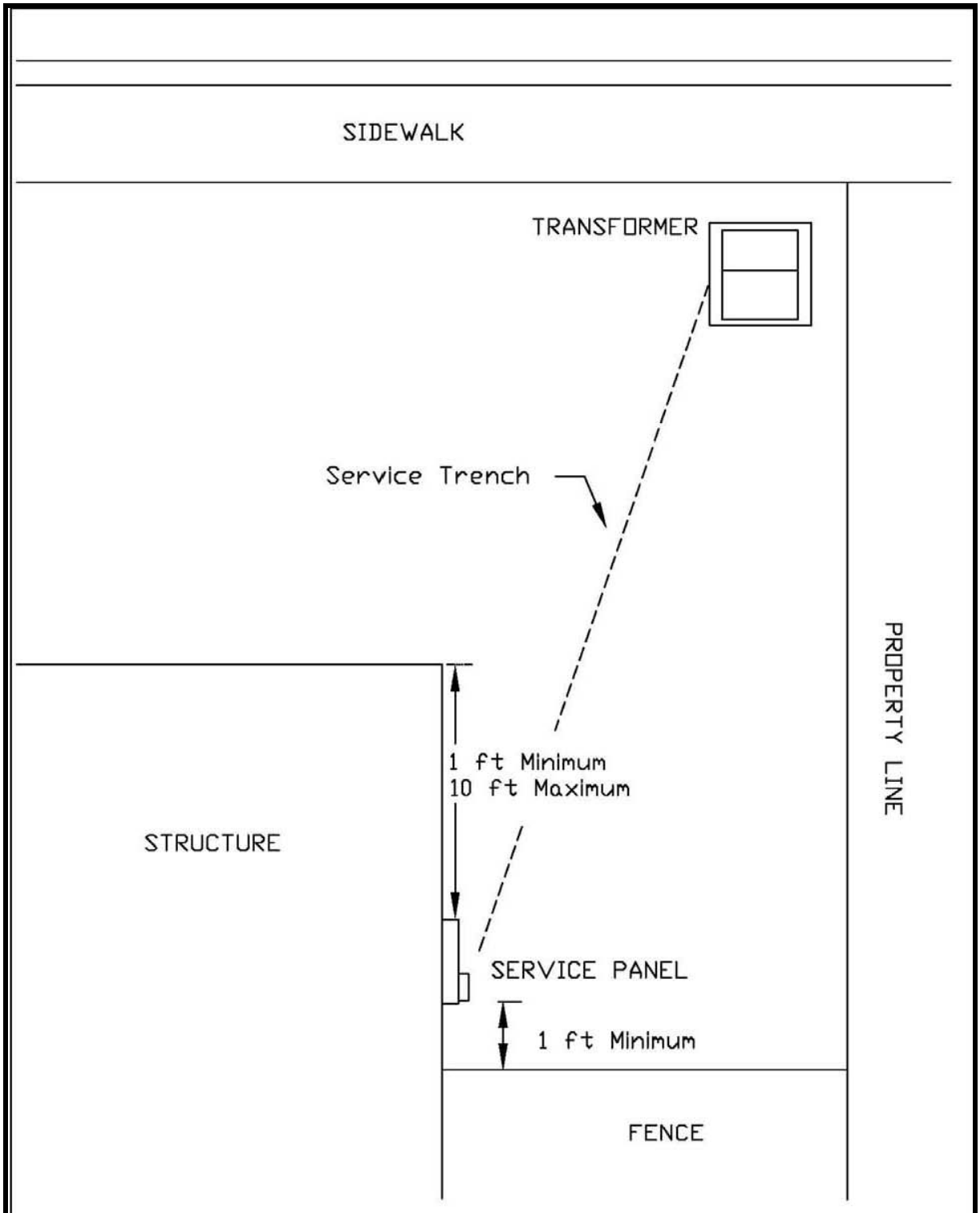


1- Traffic barriers may be omitted on sides that are not accessible to vehicular traffic.

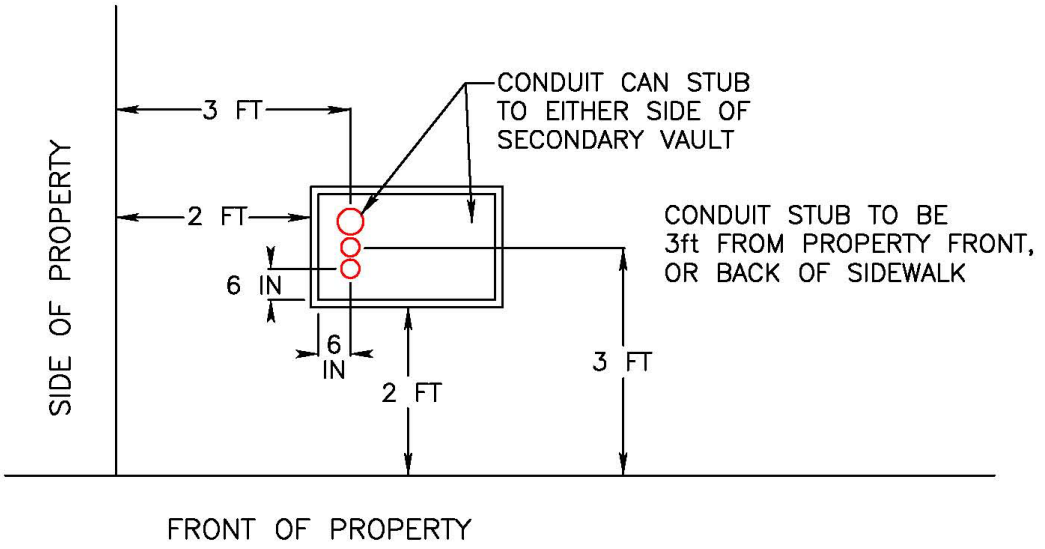
2- Holes and IMC pipe are to be filled with concrete.

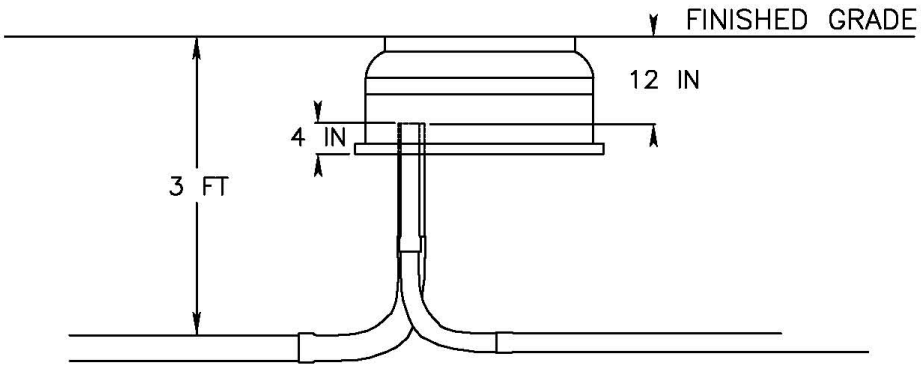
3 - Traffic barriers are to be painted with yellow street marking paint.

Overton Power District No. 5	TRAFFIC BARRIER FIGURE 6	**Drawn:** 5-23-02 **Revised:** **Revision #:**	**ASSEMBLY NUMBER**



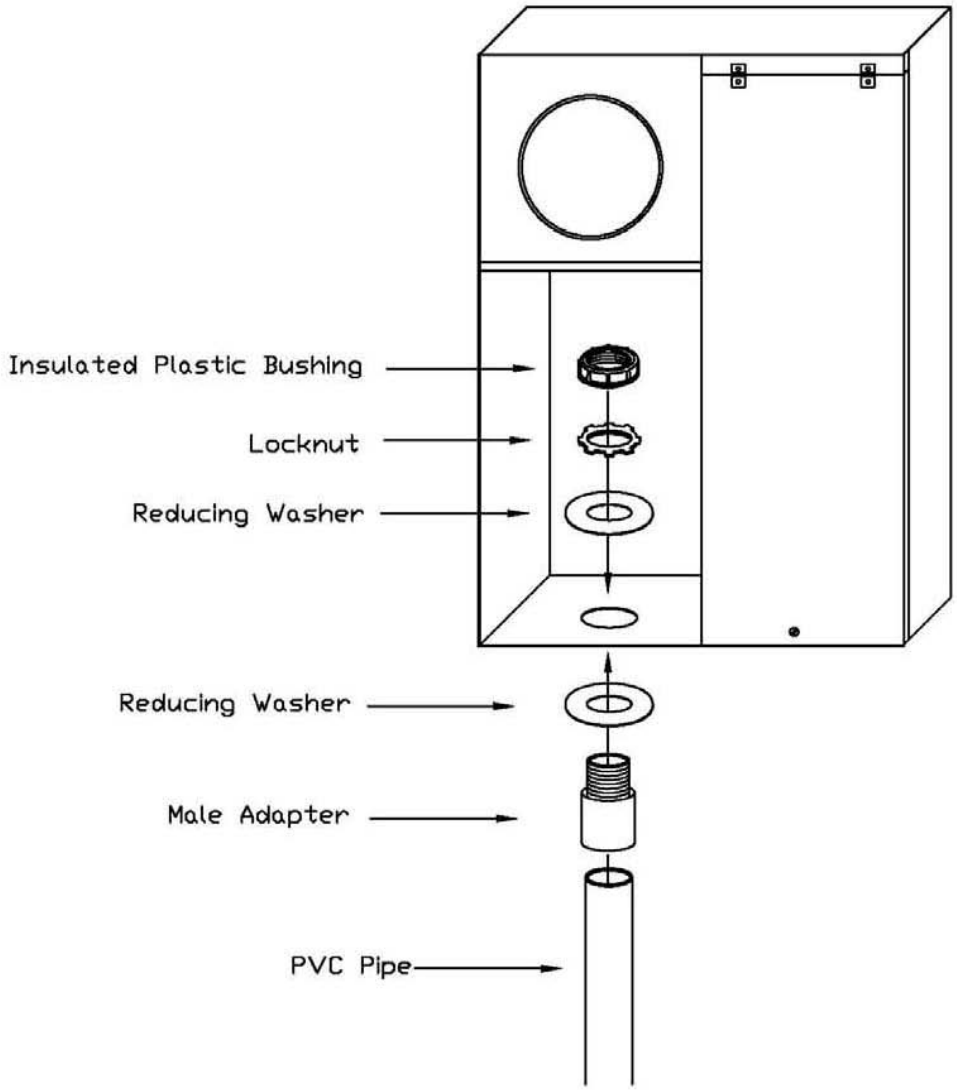
Overton Power District No. 5	SERVICE PANEL LOCATION FIGURE 7	**Drawn:** 04-08-98 **Revised:** **Revision #:**	**ASSEMBLY NUMBER**





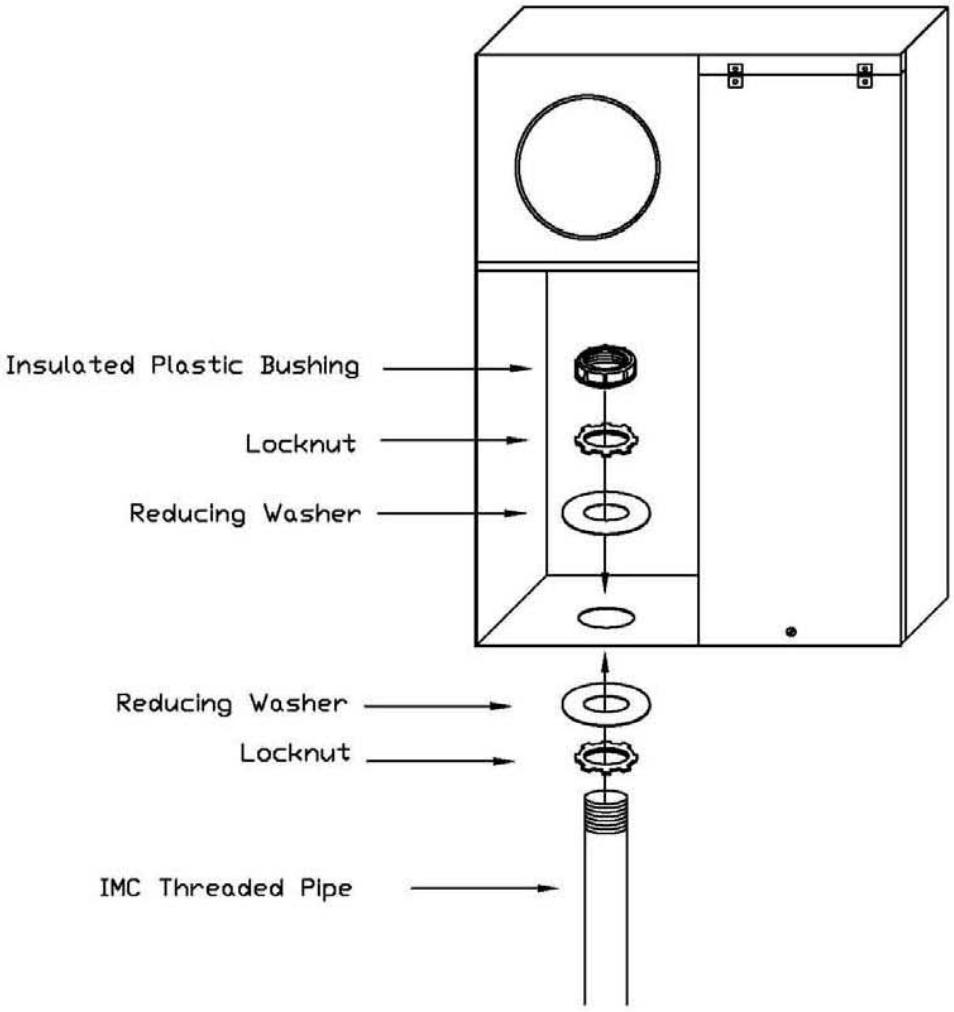
SCHEDULE 40 PVC CONDUIT

Overton Power District No. 5	SECONDARY VAULT DETAIL PLACEMENT OF PVC CONDUIT FOR SECONDARY VAULT FIGURE 8	**Drawn:** 4-8-98 **Revised:** 9-27-11 **Revision #:** 2	**ASSEMBLY NUMBER**



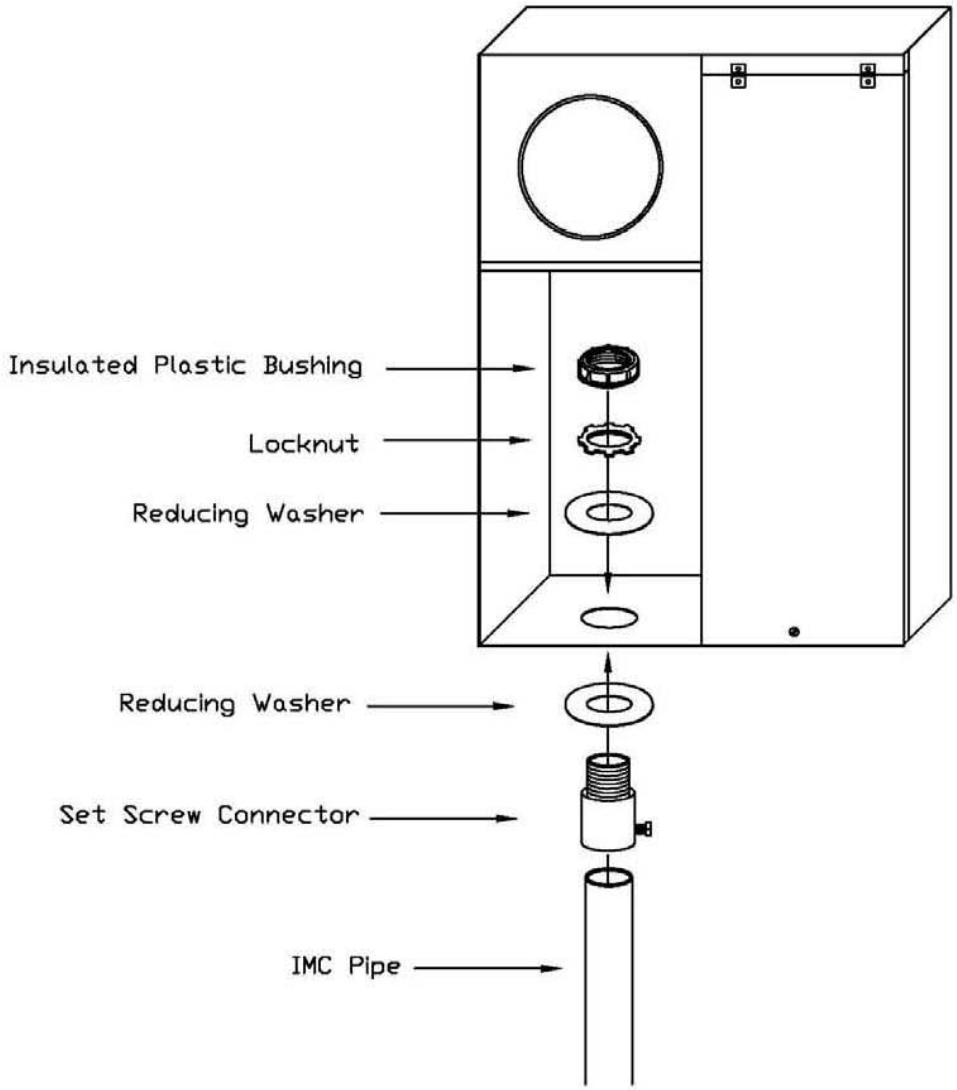
1- PVC pipe shall be installed as a complete system and shall be securely fastened.

Overton Power District No. 5	CONDUIT TO RECESSED PANEL CONNECTION WITH MALE ADAPTER & PVC PIPE- WALL INTERIOR ONLY FIGURE 9	**Drawn:** 5-23-02 **Revised:** **Revision #:**	**ASSEMBLY NUMBER**



1- IMC pipe shall be installed as a complete system and shall be securely fastened.

Overton Power District No. 5	CONDUIT TO EXTERIOR MOUNT PANEL CONNECTION WITH THREADED IMC PIPE FIGURE 10	**Drawn:** 5-23-02 **Revised:** **Revision #:**	**ASSEMBLY NUMBER**

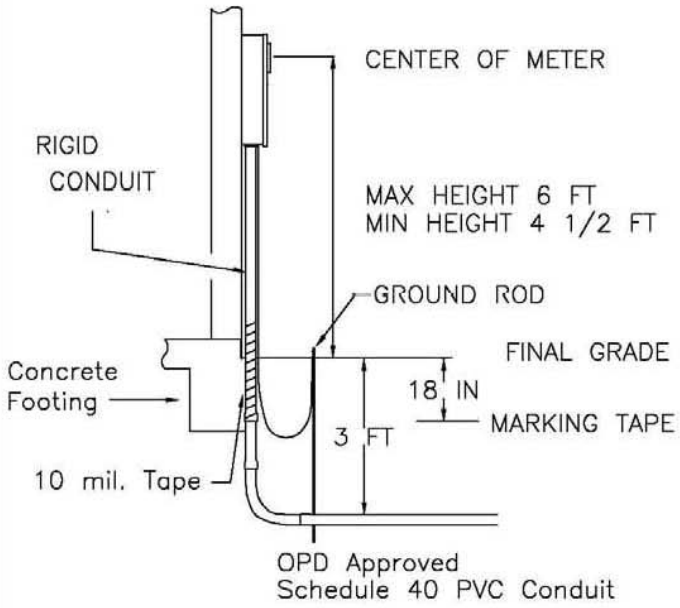


1- IMC pipe shall be installed as a complete system and shall be securely fastened.

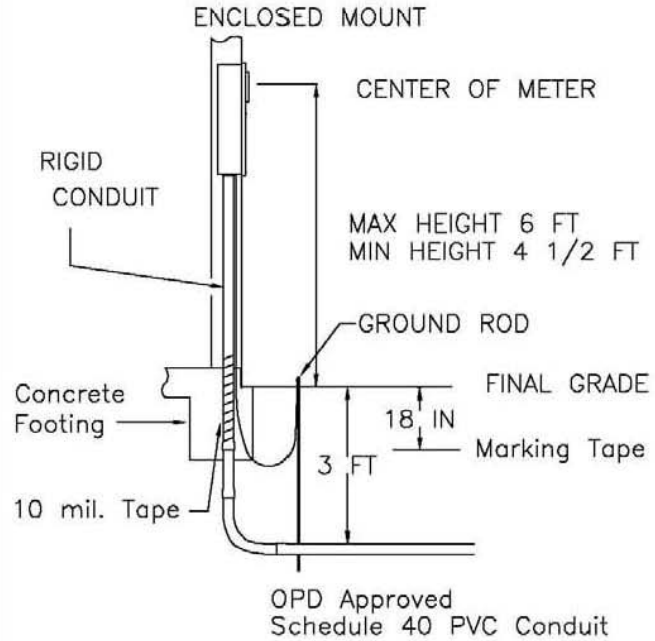
2- IMC pipe shall be grounded in acoordance with the National Electric Code.

Overton Power District No. 5	CONDUIT TO EXTERIOR MOUNT PANEL CONNECTION USING SET SCREW CONNECTOR FIGURE 11	**Drawn:** 5-23-02 **Revised:** **Revision #:**	**ASSEMBLY NUMBER**

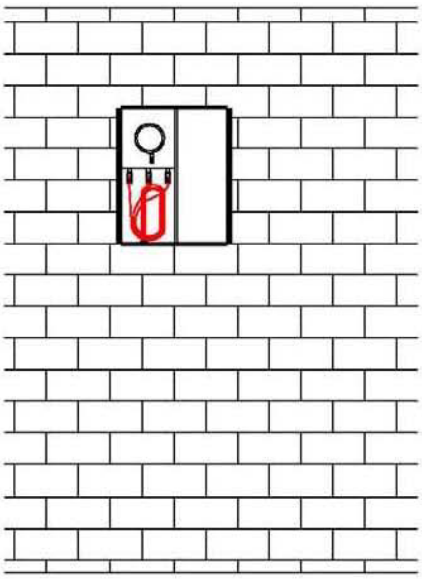
EXTERIOR MOUNT



ENCLOSED MOUNT

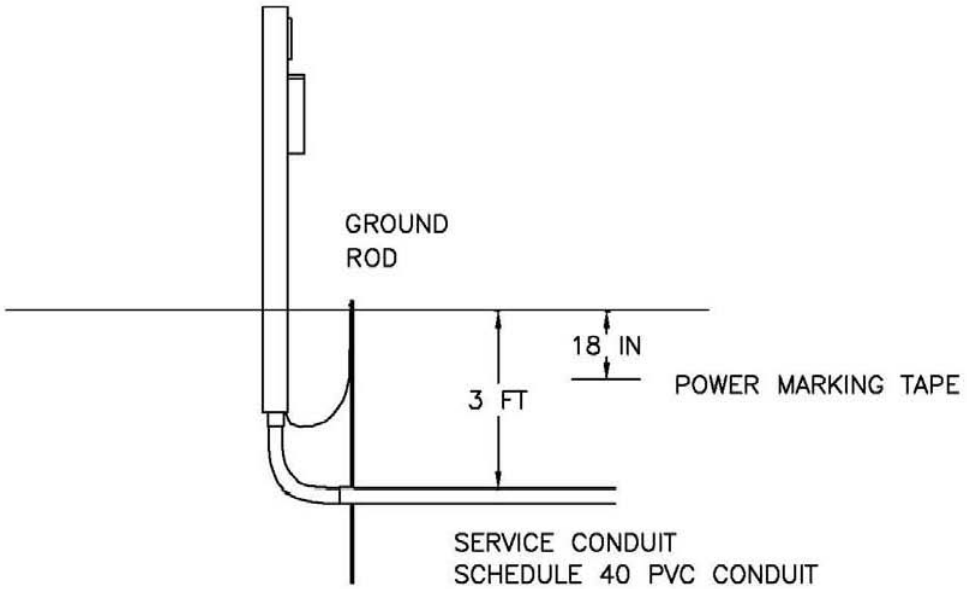


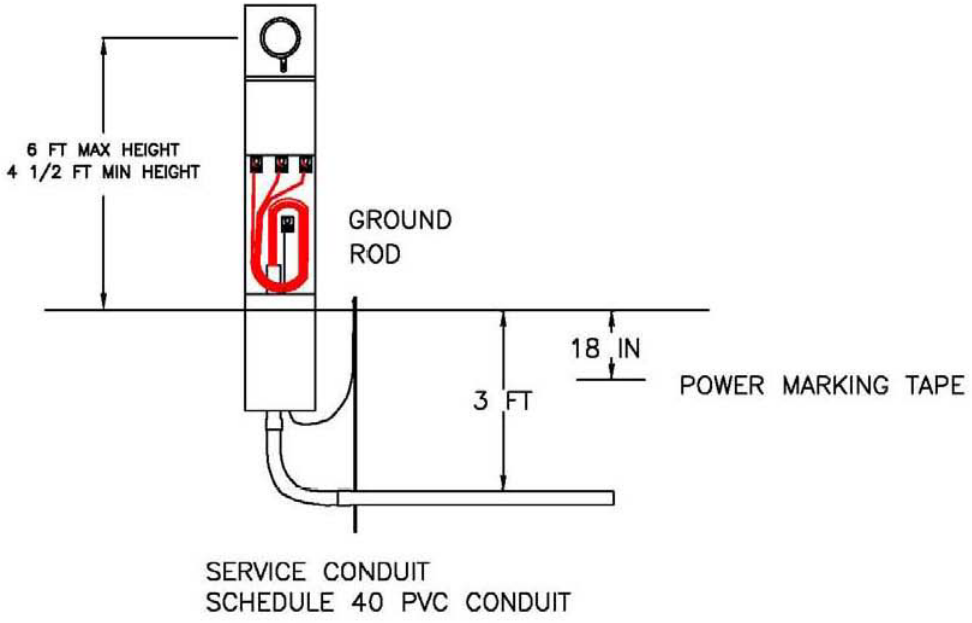
ENCLOSED MOUNT



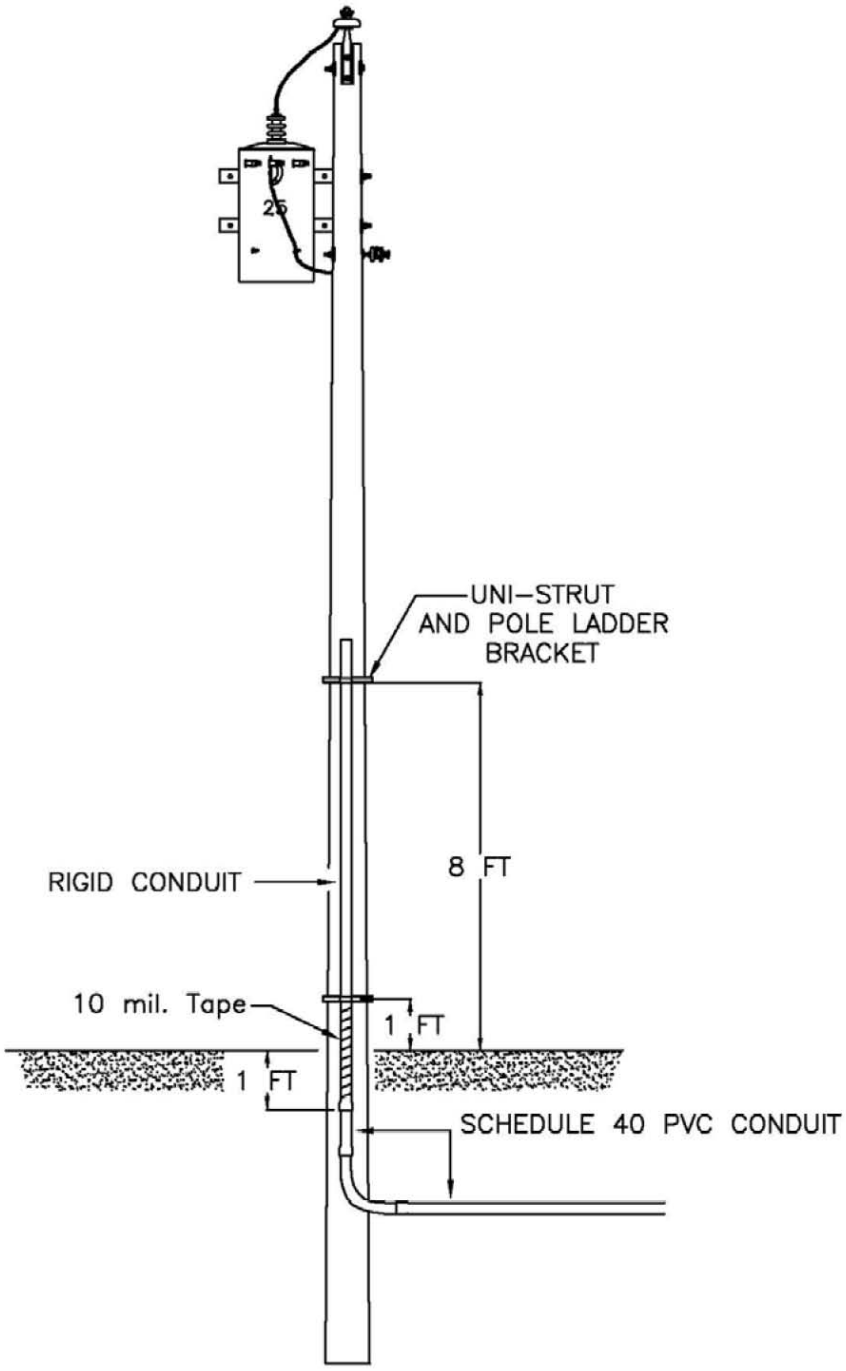
NOTE:
PULL SECTION OF PANEL SHOULD HAVE ONE COIL OF CONDUCTOR INSIDE. THE CONNECTORS SHOULD BE TIGHTENED TO MANUFACTURERS SPECIFICATIONS.

Overton Power District No. 5	SERVICE PANEL DETAIL FIGURE 12	**Drawn:** 4-8-98 **Revised:** **Revision #:**	**ASSEMBLY NUMBER**





Overton Power District No. 5	SERVICE PEDESTAL AND RISER DETAIL FIGURE 13	**Drawn:** 4-8-98 **Revised:** **Revision #:**	**ASSEMBLY NUMBER**



Overton Power District No. 5	POLE RISER FIGURE 14	**Drawn:** 4-8-98 **Revised:** **Revision #:**	**ASSEMBLY NUMBER**