

# ELECTRICAL SERVICE REQUIREMENTS

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## OVERHEAD SERVICES, OH

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# ELECTRICAL SERVICE REQUIREMENTS

## OVERHEAD SERVICES, OH

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## **Overhead Service Availability**

Overhead service will not be supplied to any building or premises in an area designated by GWP as an Underground District.

In areas where both overhead and underground service facilities exist, GWP shall be consulted for determination of the type of service which will be supplied. In general an underground service is required when an underground stub-out is available at the property line. In no case, shall a building be served with two different types of services. A building shall either be served overhead or underground based on GWP's service requirements. GWP's approval is required in advance of construction for the locations and type of structures installed for GWP's use.

## **Single-Phase Service - 120/240 Volts**

The maximum service size for a single-phase, three wire 120/240V service is 400 amperes. *For services larger than 400 amperes, an on-site transformer facility is required, see PRI Section.*

## **Three-Phase Service - 240 Volt Three Wire Delta**

The maximum service size for a three-phase, 240 volt three wire delta service is 400 amperes. *For services larger than 400 amperes, an on-site transformer facility is required, see PRI Section.*

In order to avoid the purchase of unsuitable switchgear and/or improper utilization of this service type, close attention must be given to the following:

1. This is not a 4-wire service. No neutral is provided. A fourth service entrance conductor is required as a grounded conductor.
2. Only three-phase balanced loads can be applied to this service. No single-phase load is allowed.
3. Service equipment (meter panels) must be labeled for three-phase, three-wire. This must be stated on the manufacturer's factory supplied label.
4. A bolt in the bus link is needed in the metering transformer compartment for each phase.

5. All service equipment must conform to the **Electrical Utility Service Equipment Requirements Committee (EUSERC)** requirements.
6. Some manufacturers do not make equipment that conforms to the above requirements.
7. Any questions about the above requirements should be addressed to the Electrical Service Planner at (818) 548-3921.

**Three-Phase Service - 120/240 Volts Four-Wire Delta (if available)**

The maximum service size for a three-phase, four wire 120/240V Delta service is 400 amperes.

**General**

Upon an application for service, and where GWP's distribution pole line is located on the customer's premises, or on a street, highway, lane, alley, road or private easement immediately contiguous thereto, GWP will, at customer's expense, furnish and install service drop wires from its pole to the customer's first approved permanent support.

Customer service drop supports shall be of a type and so located that GWP service wires may be installed in accordance with good engineering practices, GWP requirements, and all applicable laws, ordinances, rules and regulations, including those governing clearances and points of attachment. Proper service drop support locations shall be verified by GWP. GWP is not, in any way, responsible for a location assumed by the contractor or the customer.

The customer shall, at his own expense, provide a new location or taller support for the termination of the existing service drop wires together with any necessary relocations of related service entrance conductors, whenever any modifications to an existing building are made or any object such as patio covers, air conditioning or swimming pools are installed which impair the service drop clearance.

When the installation of a new structure conflicts with the location of the existing utility service on the property served or existing customer service entrance conductors, it shall be the responsibility of the party making the new installation to clear the conflict.

**Single Point of Service Delivery for each Premise**

Only one point of service delivery will normally be established for each lot or continuous premises on which one or more buildings are to be served. All terminating enclosures for services for each of the types and phase and voltage classes of load to be served shall be grouped at this location.

In cases where single premises are abnormally extensive in area, GWP should be consulted with respect to the method by which service will be supplied, **see Service Heads, OH-103.**

**Exception**

Where a building extends more than 150 feet along GWP's distribution lines, additional services may be established. Services 150 feet or more apart may be metered separately, **see MTR-DWG-001.**

## Number of Service Drops at The Point of Service Delivery

Only one set of service drops will be installed by GWP to any one point of service delivery as permitted, for any single or multiple occupancy building for the same voltage and phase classification.

## Maximum Length

The maximum length of a service drop for services less than 200 ampere is 150 feet but there may be exceptions depending upon the slope or grade of the land, intervening trees or structures, the size of conductors used, and the height and strength of the customer's service drop support. In order to minimize the strain, the point of service drop termination on the building should be located as near to GWP's serving pole as practicable. Where questionable or extraordinary conditions exist, GWP should be consulted prior to the establishment of a point of service delivery. For 400 ampere services (including Class-320) the maximum length of service drop is 50 feet.

## Service Drop Termination on the Customer's Structure

The contractor shall provide a suitable landing at the point of service delivery adjacent to the service head which will permit the attachment of service drop conductors in a manner acceptable to GWP. This service drop support, together with its supporting building or structure shall have adequate strength to safely withstand the strain of the service drops. Where an unusually heavy service is involved, GWP shall be consulted with respect to the service drop support. Where the building does not provide sufficient strength to comply with requirements, the contractor shall install an adequate service pole adjacent to the building, **see OH-DWG-016.**

GWP will furnish and install only its standard insulators brackets or racks. Any special devices or structures when permitted or required shall be furnished and installed by the contractor and conform to all requirements and be acceptable to GWP.

**Height of Point of Service Drop Attachment on the Customer's Structure**

The height of the point of support or attachment of service drop conductors on the customer's structure shall be adequate to provide vertical clearances between service drop conductors and the ground, structures, roofs, stairways, windows, etc., as the values given in the text, tables and illustrations on **OH-106, OH-DWG-003, OH-DWG-006, OH-DWG-007, and OH-DWG-008**. Adequate allowance must be made for the lowest point of sag in the service drop conductors and for the grade or slope of the area over which they pass so that minimum clearance shall be met.

## General

A service drop supporting structure may consist of an angle iron or pipe rack, or an equivalent steel pipe or member. All types shall be securely braced where necessary and shall be bolted or lagged to the frame or to equally substantial members of the building. See **OH-DWG-004 & 005**.

## Vertical Risers

Where any type of vertical riser is installed on a building having brick, concrete block, adobe or similar walls, particular care shall be exercised to ascertain that its attachment will be made so that the wall will safely withstand the strain imposed thereon by the riser.

When a conduit riser is installed, GWP is not liable for damage to the building caused by roof leakage around such risers or from mechanical failure of the riser, its attachments to the building, or failure of any part of the building

## Location of Service Drop Supports or Point of Building Attachment

1. The point of attachment on the building or structure shall be located to permit the service drops to be run in a manner acceptable to GWP, unobstructed and free from interference from poles, flood lights, antenna masts, vent pipes, trees, etc. and so that clearances not less than those indicated in the tables and illustrations on **OH-106, OH-DWG-004, OH-DWG-006, OH-DWG-007, OH-DWG-008, OH-DWG-009, and OH-DWG-013** will be maintained between the drops and the ground, structures, roofs, stairways, balconies, walkways, windows, pools, etc.
2. The location must be such that the service drop will not cross adjoining premises. Where the service drops from GWP's pole will cross adjoining premises, customer requesting the upgrade or relocation of the electrical panel shall provide an authorization letter (Sample letter per OH-102 Page 4 of 4) from the owner giving permission to GWP to cross their property.
3. The location must be such that customer's wiring will not be less than three feet radially from the service or open service entrance conductors.
4. These requirements shall apply whenever existing service installations are upgraded.



5. Contact GWP Customer Service Engineering at (818) 548-3921 to determine the location of service drop supports and points of attachment. When service equipment is improperly located because GWP was not contacted in advance, the customer is responsible for all modifications.

## Specific Requirements

The service drop support or point of attachment shall be located on that exterior wall, exterior frame member, roof edge or verge on the side of the building or structure which is nearest the street, alley, public way or easement occupied by GWP's distribution pole or Underground distribution system from which service will be supplied. **See Figure 1, OH-DWG-001** for commercial and industrial buildings and **Figure 1, OH-DWG-002** for residential buildings.

The location shall be such that the service drops will not pass over any portion of the building served except small incidental roofs, balconies, walkways, stairways, fire escapes and other similar minor projections from the wall or frame on which the drops are terminated. **See OH-106, OH-DWG-004, OH-DWG-006, OH-DWG-007, OH-DWG-008 OH-DWG-009, and OH-DWG-013.**

## Exceptions

1. Where the service drops from GWP's pole will pass over only the premises served, will cross no intervening part of the building served, and will conform to all other provisions of these requirements, the service drop support or point of attachment may, where permitted by local ordinances, be on any exterior wall, exterior frame member, roof edge or verge provided that the maximum service drop length is not exceeded. **See Figure 2, OH-DWG-001.**

2. Where the nearest exterior wall to GWP's distribution pole is a shed or similar attachment to the building, and this shed or attachment does not afford sufficient height for a service drop support without a vertical extension installation. Another wall or building member of adequate height that faces the same distribution pole may be used as the point of service drop attachment. This other wall shall be permitted provided that the service drop will in no case pass over the low shed type attached part of the building for a distance of over 30 feet. The point of attachment shall be located so that the vertical clearance between the service drops and the portion of the building passed over will be the maximum practicable, and in no case less than the vertical clearances shown on the drawings. **See Figures 3, 4 & 6, OH-DWG-001** for commercial and industrial buildings and **Figure 2, OH-DWG-002** for residential buildings.
3. For residential service drops, the point of building attachment shall not be less than 18 inches above any non-metallic roof or similar surface and shall be located so that the service drops will, beyond four feet, from point of attachment have a vertical clearance from the building served of not less than three feet. **See Table 1, OH-106** for clearances over metallic roofs. **See also Figure 2, OH-DWG-002.**
4. For residential service drops, the point of attachment may be located so that the service drops will extend the minimum practicable distance beyond the building wall facing the pole line and will not extend more than 1/2 the depth of the building, or extend past the highest part of the section to which they are attached. In such cases the point of attachment to the building shall be located so that at least three feet vertical clearance will be maintained between the service drops and any incidental non-metallic roof of the building served, over which they pass. (A clearance of eight feet is required over metallic roofs of 3:8 pitch or less). **See Table 1, OH-106.**

**Where to bring the Letter:**

**City of Glendale *Water & Power*  
Electrical Services  
Customer Service Engineering  
141 N. Glendale Ave., 4th level  
Glendale, California 91206  
Telephone (818)548-3921  
Fax (818)240-4754**

**Sample of Authorization Letter**

Glendale *Water & Power* Customer Service Engineering:

I, \_\_\_\_\_, the owner/resident at  
\_\_\_\_\_ hereby grant permission to City of  
Glendale *Water & Power* to enter onto my property to install and maintain aerial service  
conductors, over my property, to provide electrical service to \_\_\_\_\_  
\_\_\_\_\_.

Signature: \_\_\_\_\_

Address: \_\_\_\_\_

Phone #: \_\_\_\_\_

Date: \_\_\_\_\_

**General**

For overhead services, an adequate service head shall be provided on the supply end of every service enclosure or service entrance cable.

**Maximum Number of Service Heads - Parallel Service Entrances**

Parallel service heads are not permitted for 400 ampere secondary services.

**Location of Service Head**

The service head shall be so located on the exterior of the structure served that only one point of attachment will be required for the service drop and shall be at least one foot above the level of the required point of service drop attachment. The location shall be such that the service entrance conductors may be conveniently connected to the service head. Adequate drip loops shall be formed in the open wires between the service head and the point of attachment.

Where two service heads for the same phase and voltage class of service are installed on a building, the service heads shall be located so that they may be supplied through a single service drop. The service heads of the same class shall be set twelve inches apart from each other and two feet apart from the service head of another class.

Where service heads for different phase and voltage classes of service are installed on a building on which a single point of delivery is established, such service heads shall be located as close together as practicable except as otherwise directed by the GWP representative.

A service head shall not be located on any wall or building member which faces and is less than three feet from a common property line.

**Height of Service Heads**

The service head shall be installed at a height which will maintain the conductor clearances above the ground and objects or structures required by GWP requirements, applicable laws, ordinances, rules and regulations, including those governing clearances and points of attachment. The height shall not be less than 10 feet and the maximum height above the exterior grade level nearest such head shall be subject to approval by GWP.

# SERVICE ENTRANCE CONDUCTORS AND RACEWAYS

OH-104

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## General

For each overhead service connection, the contractor shall furnish and install a set of service entrance conductors which shall conform to GWP requirements, applicable laws, local codes and ordinances.

## Service Entrance Conductors

1. Service conductors must be copper, U.L. rated, weatherproof and sunlight resistant.
2. The wire size shall not be less than No. 8 AWG.
3. The conductors shall be continuous without tap or splice, unless approved by GWP or Glendale Public Works Department, Building and Safety Section.
4. In cases where on commercial or industrial buildings, the service entrance conductors pass over the roof or firewall at a 12" minimum clearance, a three foot length of wire shall extend out of the service head to permit its connection to GWP's service. **See OH-106, and OH-DWG-008.**
5. GWP shall make the connections between its service drop conductors and the supply end of the customer's service entrance conductors.

## Service Entrance Raceways

1. No conductors except service entrance conductors shall be installed in the service raceway except where continuity bond wires are required to be so installed by Public Works-Building and Safety Section. Where a main service switch or disconnecting means is installed on the supply side of a group of meters, the conductors on the line and load side of such disconnecting means shall be considered service entrance conductors.
2. Auxiliary gutters and meter troughs containing service entrance conductors are considered a part of the raceway. Only service entrance conductors may run from such enclosures to metering equipment. Conductors from the load side of a meter or meter switch shall not re-enter the service entrance raceway except in a separately buried section.

# **SERVICE ENTRANCE CONDUCTORS AND RACEWAYS**

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**OH-104**

3. The main grounding connection from the grounding electrode or water pipe to the neutral conductor of the service may be made in an auxiliary gutter or meter trough where more than one meter is involved, provided the installation is made so as to minimize interference with equipment in the enclosure. Bonding conductors may be installed as required by City of Glendale Public Works Division, Building and Safety Section.

# CUSTOMER OWNED SERVICE AND METER POLES FOR PERMANENT AND TEMPORARY SERVICES, 0-600 VOLTS

OH-105

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## General

The detailed minimum requirements for customer owned service and meter poles to which temporary or permanent service is to be extended by GWP are shown on **OH-DWG-010, OH-DWG-012, & OH-DWG-015.**

Service will not be connected to any customer owned service pole or service and meter pole which does not at least meet the minimum requirements shown on these pages.

Customer owned service clearance poles must meet the requirements shown on **OH-DWG-016.**

**OH-DWG-010** illustrates a typical socket meter installation for single phase 120/240 volt service. The actual arrangement of the meter socket and service equipment shall meet all the requirements of the Electrical Service Requirements. Three-phase service and metering equipment in the 0-600 volt class may be installed on customer owned service poles in accordance with these Electrical Service Requirements.

All customer owned service poles by which GWP's overhead service conductors are supported are subject to the rules for Overhead Line Construction of the Public Utilities Commission, except those poles which are attached to, or which are incorporated into a building or structure that they are not capable of being climbed.

The following is presented for assistance in correct and uniform interpretation of the requirements for customer owned service and meter poles as specified on **OH-DWG-010.** These requirements are minimum with relation to the nature and composition of approved materials, together with clearances, dimensions, and other features. Deviations from these requirements including substitution of any type of material other than specified, is not allowed. Electrical service will not be connected to any installation that does not meet these requirements.

# CUSTOMER OWNED SERVICE AND METER POLES FOR PERMANENT AND TEMPORARY SERVICES, 0-600 VOLTS

OH-105

## Customer's Wood Service and Meter Pole

A "self-supporting timber" is required for the customer's service pole. No particular variety or grade of timber is specified, but it is intended that it shall be sound, and free from large knots or other imperfections which would cause undue impairment of its strength.

A timber is by definition, "a squared or dressed piece of wood, usually of large dimensions." Any wood pole type structure laminated or assembled as a group of separate pieces, does not comply with this requirement. A single timber only, complies. The pole butt shall be treated with **pentachlorophenol**.

Customer's overhead conductors **are permitted** to be extended from the pole.

## Customer's Metal Service and Meter Pole

A metal pole may be used for a customer's service and meter pole provided that its strength complies with the rules of the Public Utilities Commission and it is properly self-supporting when set in the ground. All requirements of **OH-DWG-010** shall be complied with except that covering of conduit risers and blocks over the tops of the risers will not be required, provided that the pole is grounded and the conduits are metallicity connected thereto. Metal poles must be made of galvanized 4" or 5" schedule 80 galvanized pipes, as per **OH-DWG-015** and follows:

<b>Dimension H</b>	<b>Dimension D</b>	<b>Pipe Size</b>
15'	4'	4" Grade A
20'	4 1/2'	4" Grade B
25'	5'	5" Grade A

A metal cap shall be required for all metal poles. Consult a GWP representative if a metal pole will be used.



# MINIMUM ALLOWABLE SERVICE DROP CLEARANCES (0-600 VOLTS)

OH-106

**Table 1**

Minimum Clearance for 0-750 Volt Service Drops above Residential Buildings

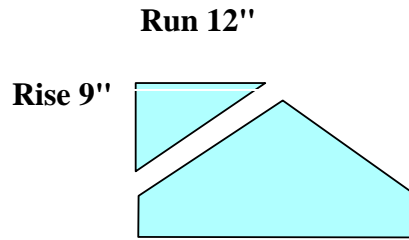
## Requirements for Supply Lines

	Weather-Resistant Covered Conductors 0-750 V	Insulated Conductors 0-750 V
<b>Vertical Clearance Above:</b>		
1. All portions of buildings including metallic or non-metallic cornice, decorative appendage, eaves, roof or parapet wall of the building served.	8 ft.	(a) (b)
2. Metallic or non-metallic non-walkable overhang, patio cover or other structure.	8 ft.	(a) (b)
3. Other buildings on the same premises.	8 ft.	2 ft.
4. Buildings on other premises (GWP approval required).	8 ft.	8 ft.(c)
<b>Horizontal &amp; Radial Clearances:</b>		
1. From fire escapes, exits, windows, and doors.	3 ft.	3 ft.

- a) Reduce to 2 feet but the greatest practicable clearance should be obtained.
- b) The point of attachment of the service drop for industrial and commercial premises is not to be more than 18 inches from the back of the front face of the building wall facing the pole line from which the service drop originates.
- c) Reduce to 2 feet for non-metallic roofs when roof slope exceeds 9 inches of rise per 12 inches of run (see sketch on the next page).

# MINIMUM ALLOWABLE SERVICE DROP CLEARANCES (0-600 VOLTS)

OH-106



**Table 2**

The following minimum clearances apply to the lowest point of service drop sag.

SERVICE DROP	MIN
Crossing above private driveways, or other areas accessible to vehicles.	
Commercial and Industrial Premises. <b>See OH-DWG-008</b>	16 ft.
Residential Premises. <b>See OH-DWG-007</b>	12 ft.
If insulated service conductor is used Residential clearances may be reduced to	10 ft.
Crossing above areas accessible to pedestrians only.	
Commercial and Industrial Premises. <b>See OH-DWG-008</b>	12 ft.
Residential Premises. <b>See OH-DWG-007</b>	10 ft.
If insulated service conductor is used clearance may be reduced to	8 ½ ft.
Crossing above thoroughfares. <b>See OH-DWG-007 &amp; OH-DWG-008</b>	18 ft.

## Utility Pole Clearances (Pole Notch)

1. Where structures extend below natural grade the structures shall maintain a 5'-0" x 5'-0" clear area from the utility pole or from the property lines, but dimensioned from the property line. See **OH-DWG-014**. If the pole is on the subject property the notch will be measured from the face of the pole and dimensioned from the property line. For excavations deeper than 5'-0" Structural design may be required by a licensed Structural Engineer and the size of this notch may be required to be increased. All measurements will be to the outside of structures and will include the foundations. This pole notch shall remain at natural grade.
2. Structures on grade (carports, garages, etc.) shall maintain a 5'-0" x 5'-0" clear area from the utility pole or from the property lines, but dimensioned from the property line. A clear unobstructed access way of 5'-0" minimum width shall be provided from the street to the pole. GWP must approve notch and access before approving building permit, this pole notch and access way shall be at natural grade and may be paved with asphalt concrete or remain as earth.
3. For clearance around anchor rods and down guys GWP shall be consulted.
4. No stairs, landings, walkways (concrete), or cantilevered structures will be permitted in the pole notch area.
5. No block walls, either retaining or surface, or other Portland concrete structures will be permitted in the pole notch area. This rule includes foundations on the surface or underground.
6. If a boundary wall or fence is required by other jurisdictions only wood or chain link fence will be permitted in the pole notch area. This wall or fence cannot be attached to the utility pole.
7. No trees or other large plants may be planted in the pole notch area.
8. Requirement numbers 4, 5, and 6 must be shown as written notes on any plan sheet showing the subject area.

## Overhead Line Clearances

1. All structures must meet or exceed the required minimum clearances for overhead conductors as specified by General Order 95 of the State of California Public Utility Commission, the National Electric Safety Code, Title 8 of the State of California Division of Industrial Safety, and any other safety or clearance codes that pertain; during and after construction.
2. Roof access ladders which could extend into the overhead line clearance area will not be permitted.

## Notes

1. GWP Customer Service Engineering Section must receive and approve plans for any changes to be made in the pole notch area or to the structures in the overhead clearance area.
2. Owners, contractors, architects are reminded that State and Federal safety codes and regulations prohibit the use of scaffolds, cranes, derricks, drilling rigs and other overhead construction equipment within 10'-0" of any overhead electric conductors.
3. All dimensional requirements are given as minimums.
4. **See Drawing No. OH-DWG-014.**

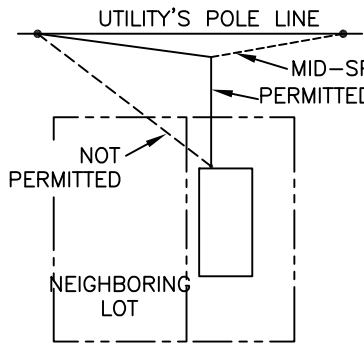
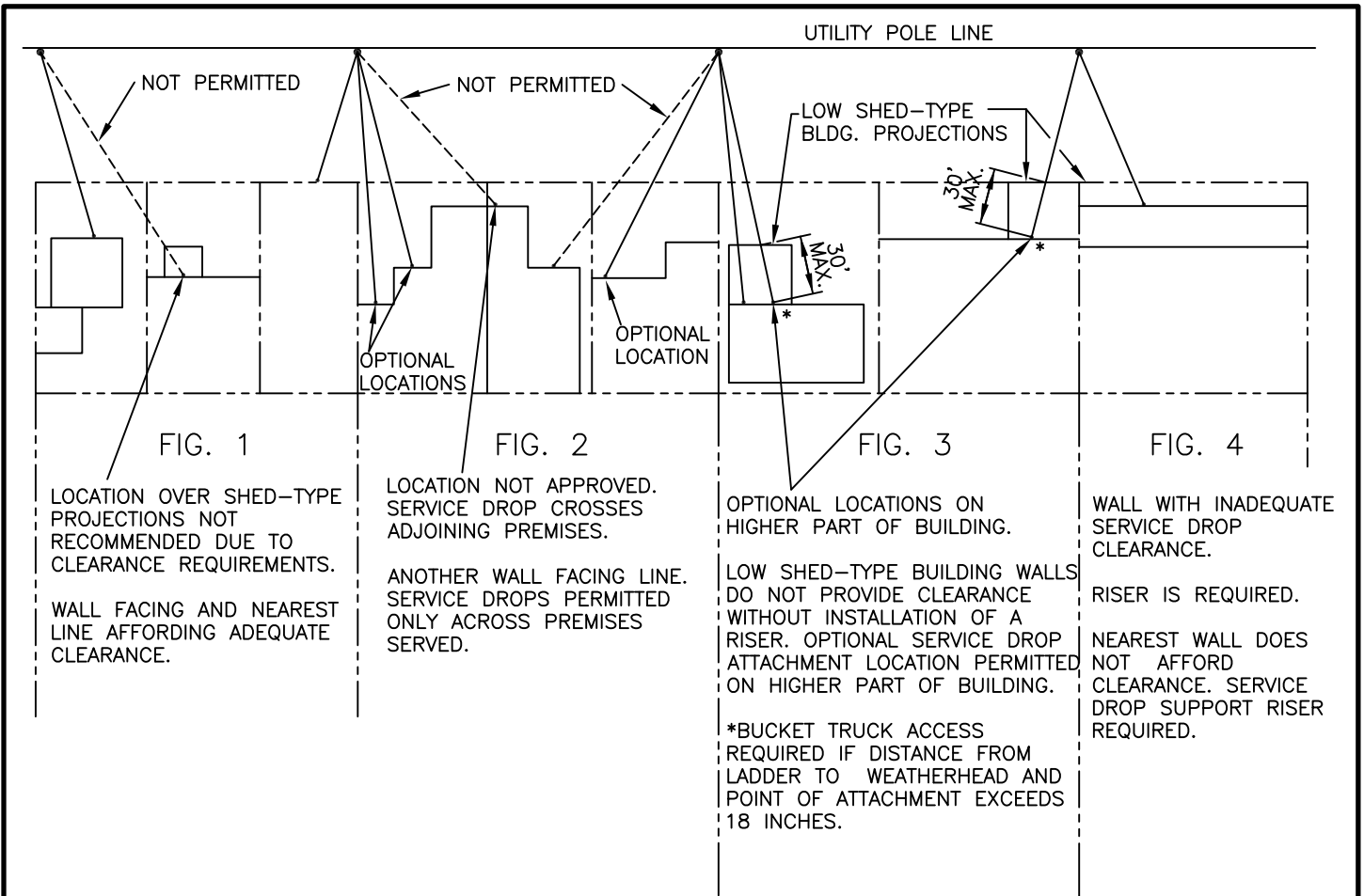


FIG. 5

SERVICE DROP ATTACHMENT TO BE LOCATED WHERE DIRECTED BY THE UTILITY.

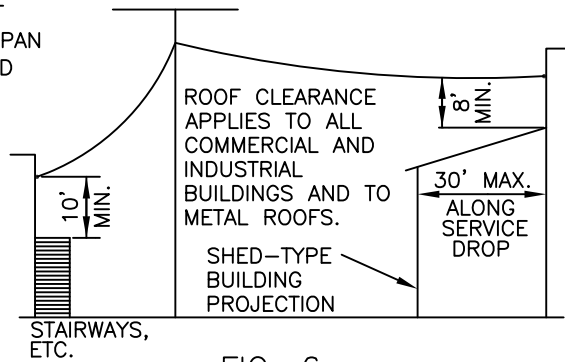


FIG. 6

SERVICE DROP CLEARANCE OVER STAIRWAYS AND SHED-TYPE BUILDING PROJECTIONS

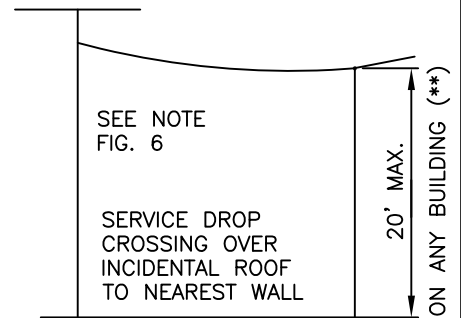


FIG. 7

MAXIMUM HEIGHT SERVICE DROP ATTACHMENT

\*\*HIGHER SERVICE DROP ATTACHMENT ARE ALLOWED WHEN ACCESSIBLE TO BUCKET TRUCK.

DATE	REV.	DESCRIPTION	BY	CHK'D	APP.



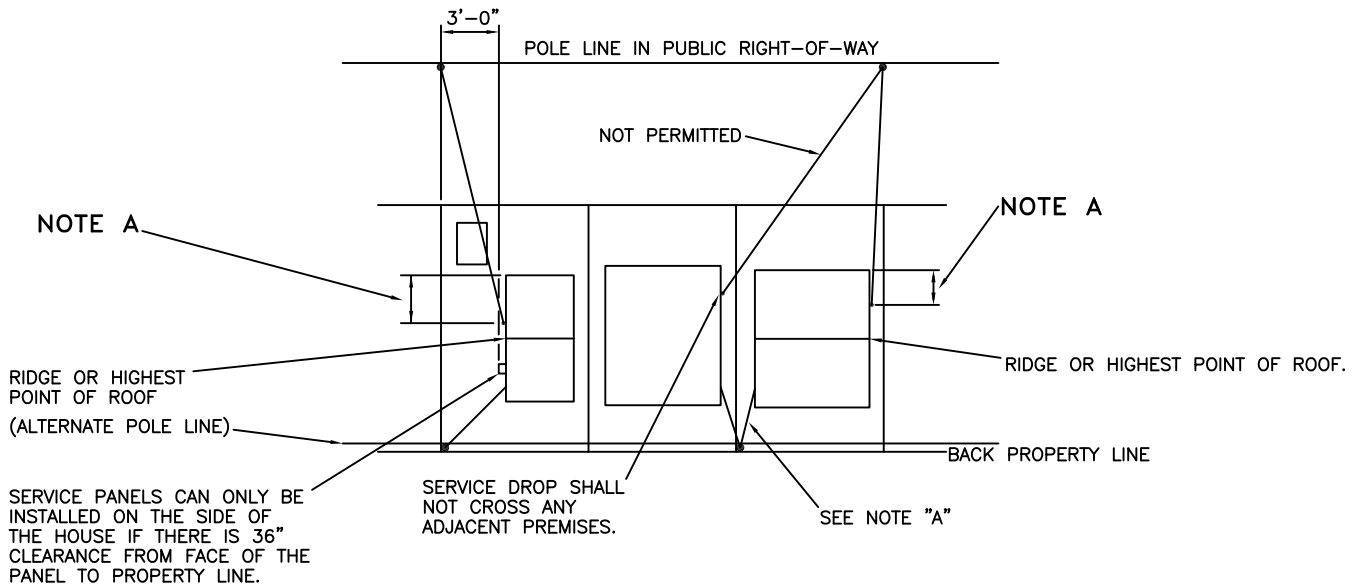
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DATE 01/14/05  
DRAWN BY: BALUYOT  
APPROVED BY: HRA

CITY OF GLENDALE WATER & POWER

POINTS OF SERVICE DROP ATTACHMENT  
(COMMERCIAL & INDUSTRIAL BUILDINGS)

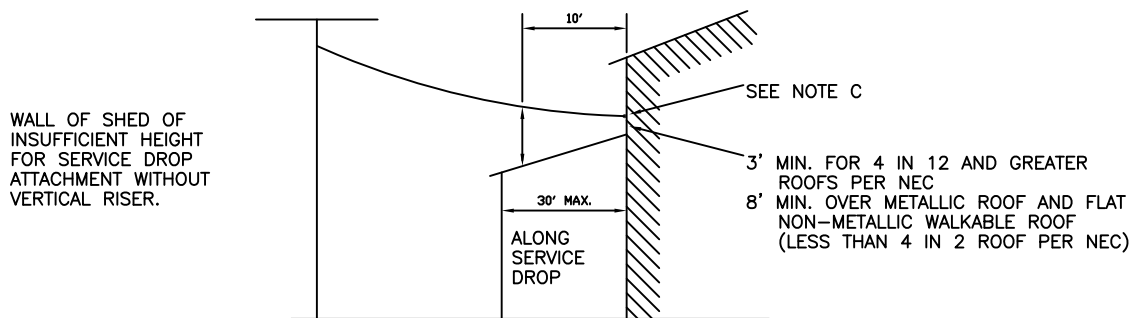
OH-DWG-001  
PAGE 1 of 1

CUSTOMER SERVICE ENGINEERING



**SERVICE DROPS APPROACHING RESIDENTIAL BUILDING AT EXTERIOR HORIZONTAL ANGLE**

**FIG. 1.**



**SERVICE DROP PASSING OVER SHED TYPE ATTACHMENT TO A RESIDENTIAL BUILDING. (PER NEC 230-24)**

**FIG. 2.**

- Notes: A) The distance from meter panel to face of the building shall be the minimum practicable, not more than one-half the depth of the building and not beyond the highest point of roof. In all cases the point of service attachment shall be accessible by a ladder.
- B) Points of service drop attachment illustrated are acceptable only under the conditions specified in the text.

DATE	REV.	DESCRIPTION	BY	CHK'D	APP.



REV. NO.  
DATE 11/18/02  
DRAWN BY: BALUYOT  
APPROVED BY: HRA

CITY OF GLENDALE WATER & POWER  
**POINTS OF SERVICE DROP ATTACHMENT  
(RESIDENTIAL BUILDINGS)**

OH-DWG-002  
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CUSTOMER SERVICE ENGINEERING

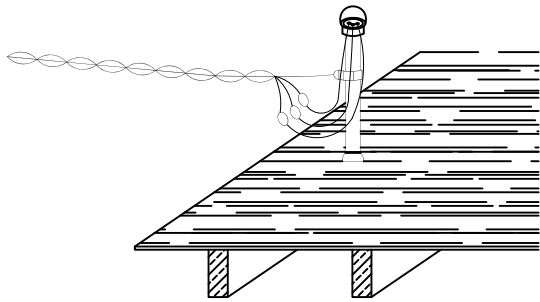


FIG. 1

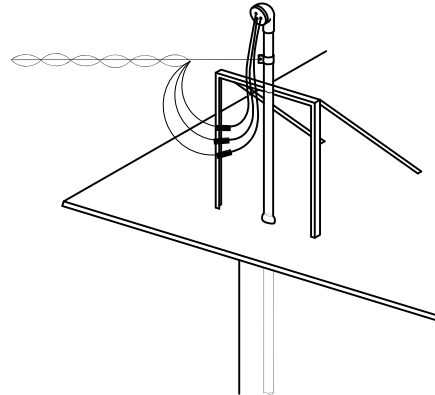


FIG. 2

NOTES:

1. THE SERVICE HEAD WHEREVER PRACTICABLE SHOULD BE LOCATED ONE FOOT ABOVE THE LEVEL OF THE POINT PROVIDED FOR SERVICE DROP ATTACHMENT.
2. DRIPLOOPS SHALL BE FORMED AND CONNECTIONS SHALL BE MADE BELOW THE SERVICE ENTRANCE WEATHERHEAD TO PREVENT THE ENTRANCE OF MOISTURE INTO THE SERVICE CONDUIT.

DATE	REV.	DESCRIPTION	BY	CHK'D	APP.



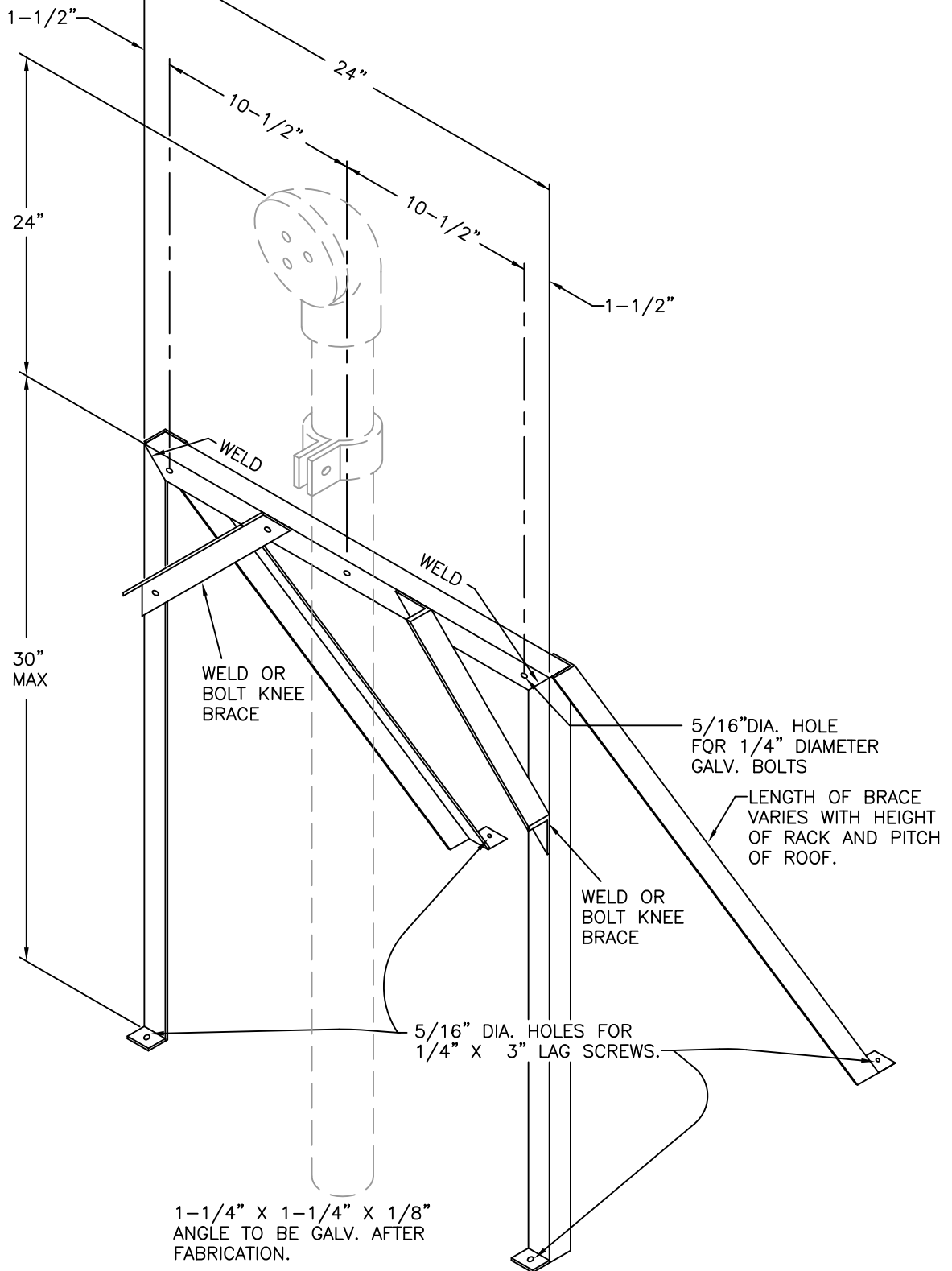
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APPROVED BY: HRA

CITY OF GLENDALE WATER & POWER

METHODS OF ATTACHING  
SERVICE DROPS

OH-DWG-003  
PAGE 1 of 1

CUSTOMER SERVICE ENGINEERING



DATE	REV.	DESCRIPTION	BY	CHK'D	APP.



REV. NO. 1  
DATE 09/29/98  
DRAWN BY:  
APPROVED BY: HRA

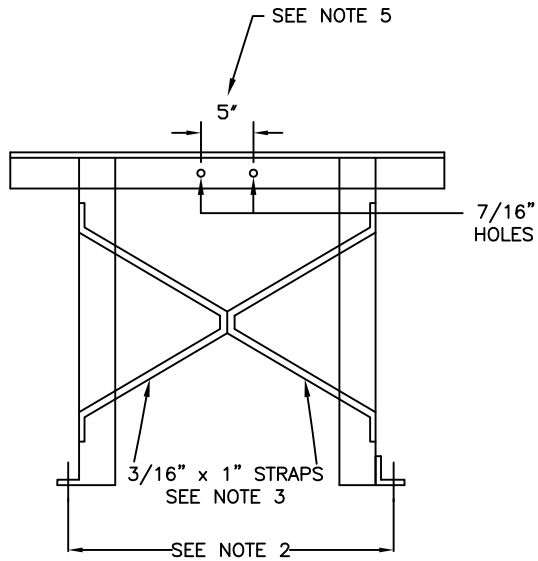
CITY OF GLENDALE WATER & POWER

**SERVICE MAST ATTACHMENT RACK 100A OR LESS (COMMERCIAL AND INDUSTRIAL)**

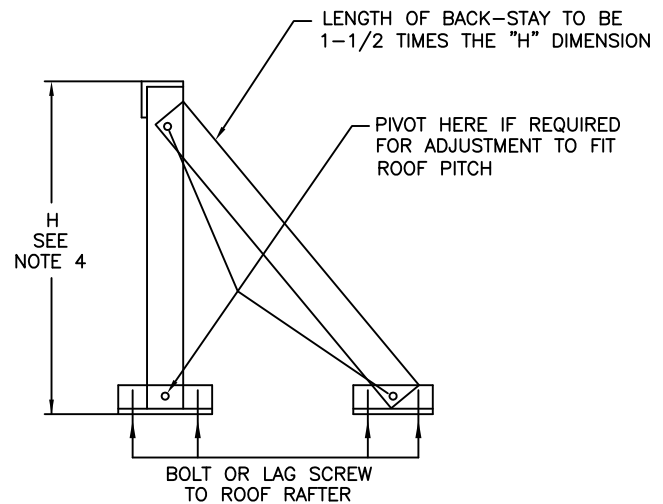
OH-DWG-004  
PAGE 1 of 1

CUSTOMER SERVICE ENGINEERING





FRONT VIEW



SIDE VIEW

ANGLE IRON SIZE	(H) EXTENSION ABOVE ROOF	MAXIMUM SIZE OF SERVICE
1-1/4" x 1-1/4" x 1/8"	0" - 30"	100A
1-1/4" x 1-1/4" x 1/4"	0" - 60"	200A
1-1/4" x 1-1/4" x 1/4"	61" - 96"	200A
2" x 2" x 1/4"	0" - 96"	400A
CONSULT DEPARTMENT	EXCEEDING ABOVE MAXIMUMS	

1. ANGLE IRON RACK MEMBERS SHALL BE HOT-DIPPED GALVANIZED AFTER FABRICATION.
2. THE DIMENSION OF THE RACK SHALL BE SUFFICIENT TO PERMIT THE ANCHOR PLATES TO BE BOLTED OR LAGGED TO THE ROOF RAFTERS. LAG SCREWS SHALL HAVE A 3/8-INCH (MINIMUM) DIAMETER AND SHALL HAVE SUFFICIENT LENGTH TO PENETRATE THE ROOF RAFTERS BY NOT LESS THAN 2-1/2 INCHES.
3. GALVANIZED STRAP CROSS-BRACE IS NECESSARY WHERE SERVICE DROP CONDUCTORS WILL APPROACH THE RACK AT A HORIZONTAL ANGLE OF LESS THAN 30-DEGREES. THE RACK CONSTRUCTION ILLUSTRATED WILL BE SUITABLE FOR THE ATTACHMENT OF THE SERVICE DROPS WHERE BUILT AS SPECIFIED IN THE TABLE ABOVE.
4. EXTENSION ABOVE ROOF NEEDED TO PROVIDE THE REQUIRED SERVICE DROP CLEARANCE.
5. SPACING TO BE PER THE SERVICE MAST OUTSIDE DIMENSION.

DATE	REV.	DESCRIPTION	BY	CHK'D	APP.
7/1/09	1	REMOVED LENGTH OF DROP FROM RACK TABLE	CC	VMP	HRA



REV. NO. 1  
DATE 03/05/09  
DRAWN BY: HRA  
APPROVED BY: HRA

CITY OF GLENDALE WATER & POWER  
**SERVICE MAST ATTACHMENT RACK 100A TO 400A (COMMERCIAL AND INDUSTRIAL)**

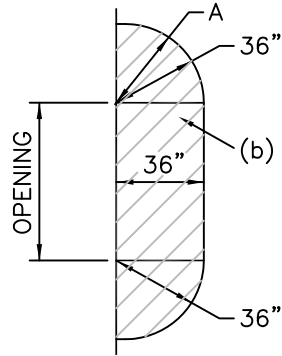
OH-DWG-005  
PAGE 1 of 1

CUSTOMER SERVICE ENGINEERING

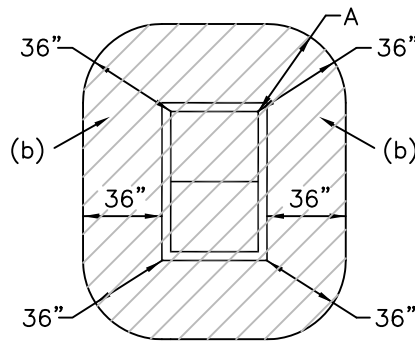
**THE HORIZONTAL, VERTICAL AND RADIAL SERVICE DROP CONDUCTOR  
CLEARANCES FROM DOORS, EXITS, WINDOWS, FIRE ESCAPES,  
BALCONIES, ETC.**

**Minimum  
Clearance**

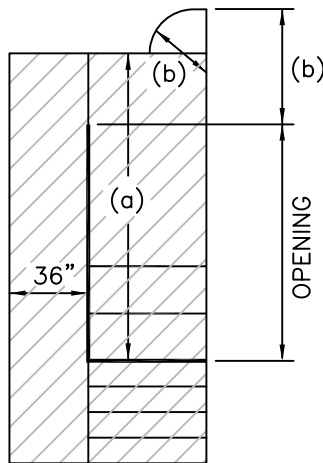
- (a) Vertically above walkable surfaces of fire escapes, balconies, stairways, and walkways ..... 10 feet
- (b) Horizontally and radially from fire escapes, exits, openable windows, doors and other points at which human contact might be expected ..... 3 feet



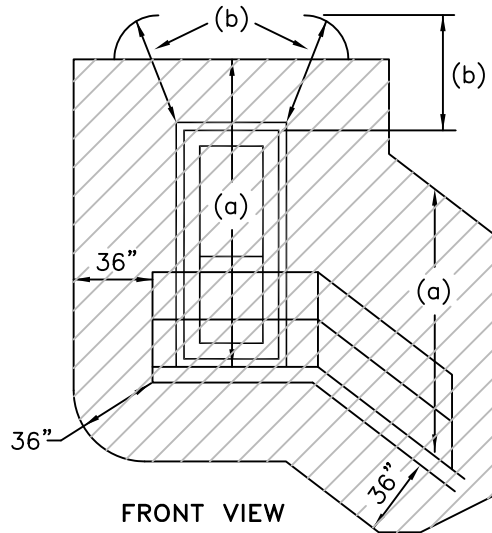
SIDE VIEW



FRONT VIEW



SIDE VIEW



FRONT VIEW

**NOTES:**

1. Service drop conductors not permitted within shaded zones.
2. The porch rail illustrated is not considered a walkable surface. The clearance will be measured from the porch deck.
3. Dimension "A" may be less than 36" but shall be the maximum practicable.

DATE	REV.	DESCRIPTION	BY	CHK'D	APP.



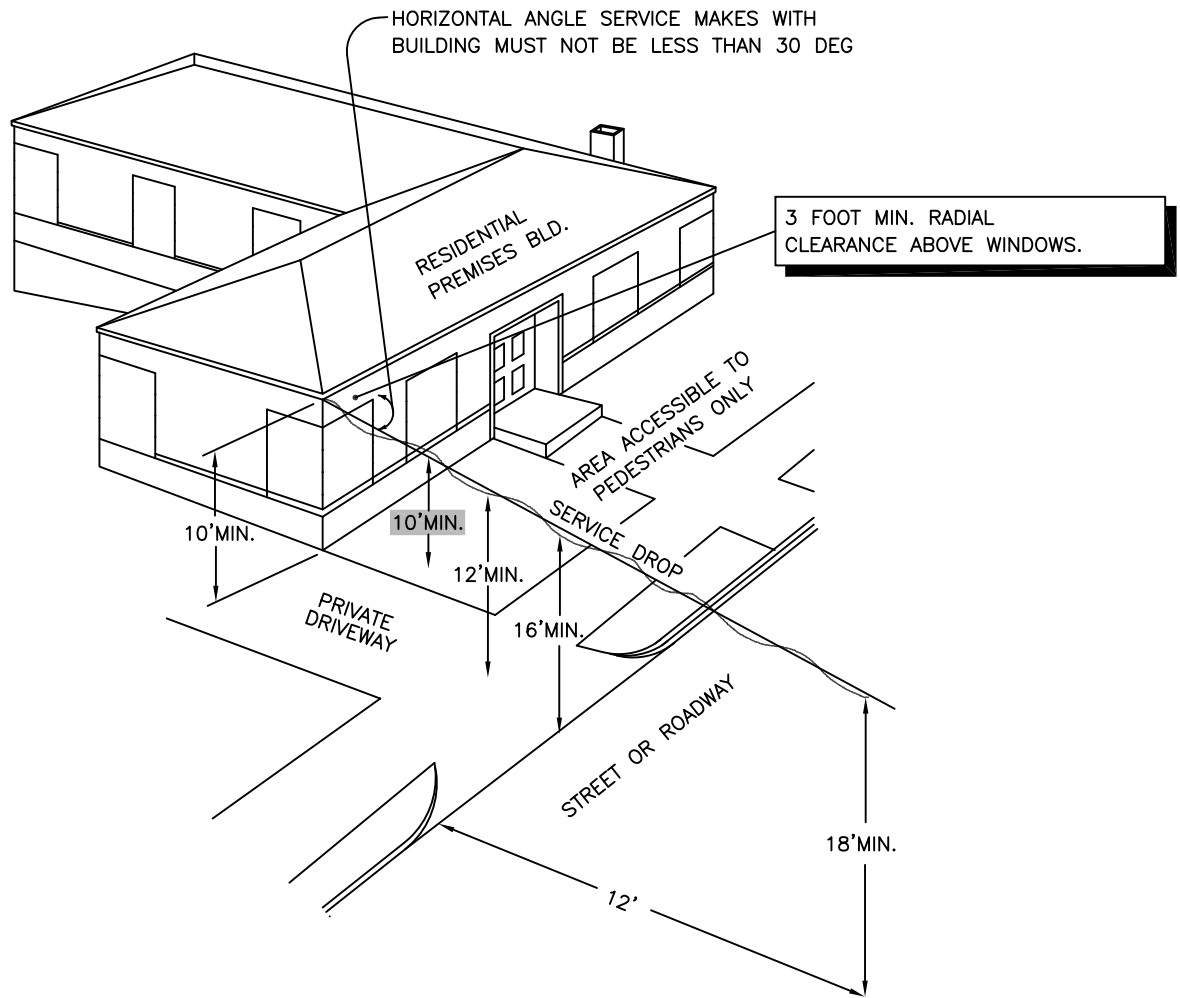
REV. NO.  
DATE 05/06/98  
DRAWN BY: P MEZA  
APPROVED BY: HRA

CITY OF GLENDALE WATER & POWER

**SERVICE DROP CLEARANCES (DOORS,  
EXISTS, WINDOWS, FIRE ESCAPES, ETC.)**

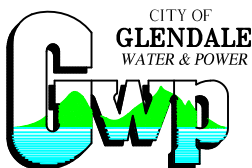
OH-DWG-006  
PAGE 1 of 1

CUSTOMER SERVICE ENGINEERING



1. The minimum clearances apply to the lowest point of service drop sag.
2. The radial clearance between supply service drop conductors and communication service drop conductors shall not be less than 24 inches. Where within 15 feet of the point of attachment of either service drop on a building. This clearance may be further reduced but shall not be less than 12 inches.
3. Service head shall in no case be less than ten feet or more than 20 feet above the exterior grade level nearest such head. Unless accessible by a bucket truck.
4. Minimum clearances indicated are as required by the rules for overhead line construction of the California Public Utilities Commission. The Commission has ruled that a three unit or larger apartment house is a commercial building and, therefore, requires commercial service clearances. Commercial clearance shall be provided over private or public driveways to three or more houses.
5. Where service masts or racks are used to support the service drop conductors, only power service drop conductors can be attached to the service mast.

DATE	REV.	DESCRIPTION	BY	CHK'D	APP.
1/1/11	1	CORRECTED CLEARANCE OVER AREA ACESIBLE TO PEDESTRIANS ONLY	CC	VMP	HRA



REV. NO.  
DATE 11/19/02  
DRAWN BY: NAVAS  
APPROVED BY: HRA

CITY OF GLENDALE WATER & POWER  
**SERVICE DROP CLEARANCES (RESIDENTIAL DRIVEWAYS, PEDESTRIAN AREAS, ETC.)**

OH-DWG-007  
PAGE 1 of 1

CUSTOMER SERVICE ENGINEERING

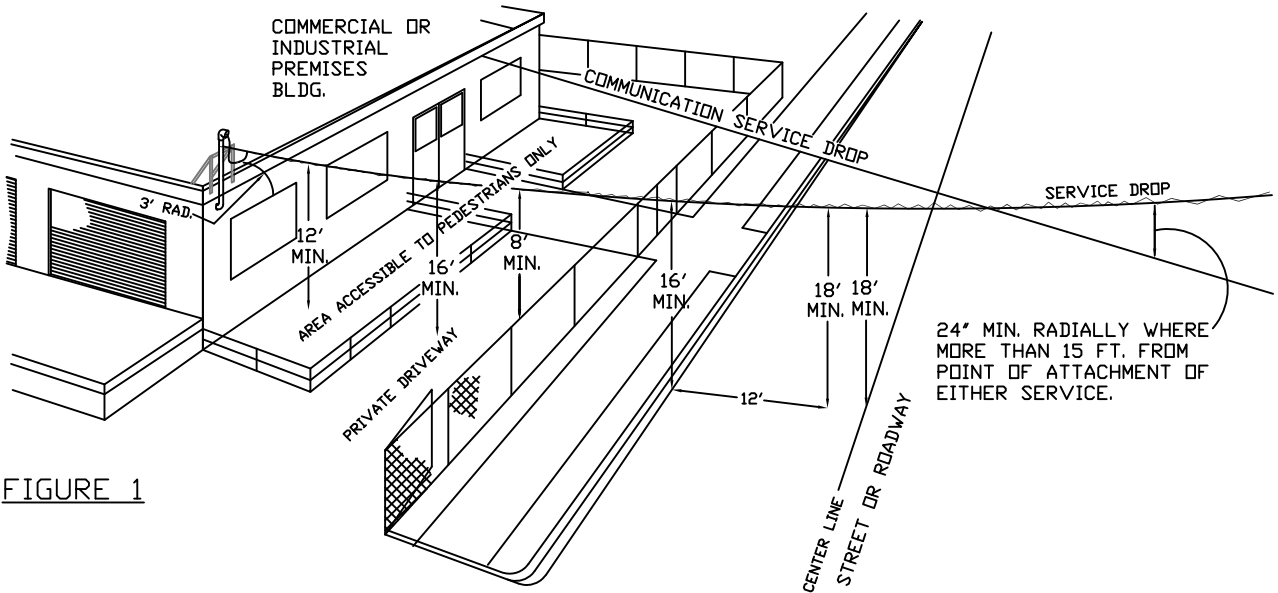


FIGURE 1

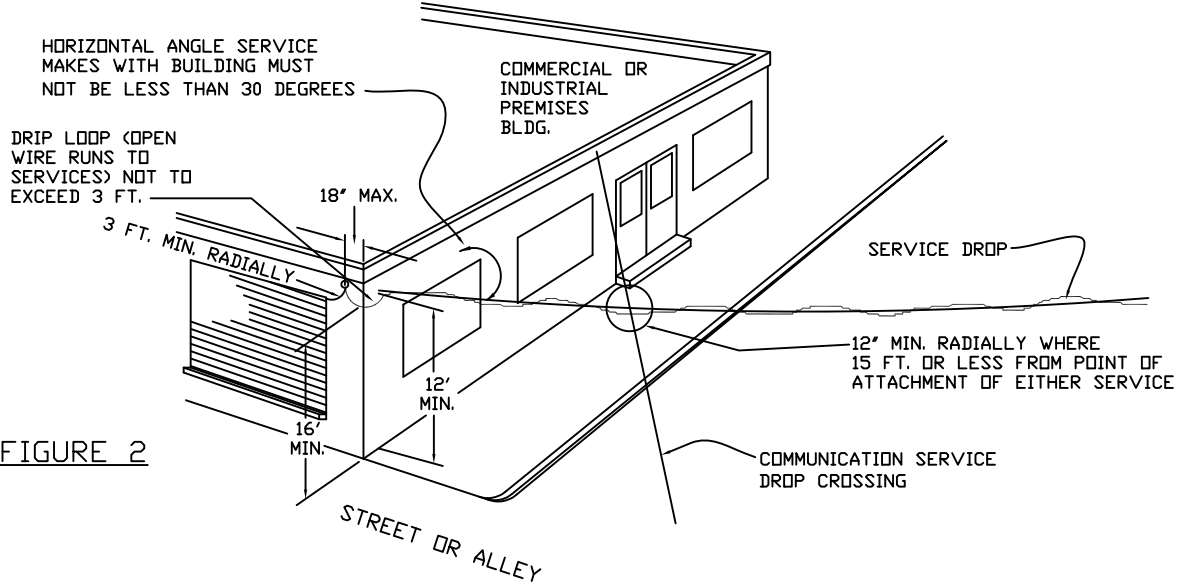
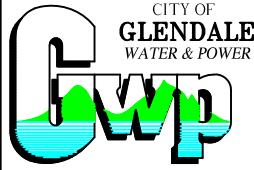


FIGURE 2

1. For clearances of 0-600 Volt service drop conductors from doors, windows, exits, fire escapes, etc. see OH-DWG-006.
2. For clearances of 0-600 Volt service drop conductors over Industrial and commercial buildings see OH-106, pages 1 & 2.
3. Where service drops approach a building wall at an angle of less than 60 degrees, the spacing of the insulators at the point of attachment in horizontal configuration should be increased so as to provide at least six inches conductor separation. Vertical configuration is normally preferable where the angle between the service drop and the wall is less than 60 degrees and is acceptable for any angle.

DATE	REV.	DESCRIPTION	BY	CHK'D	APP.



**CITY OF GLENDALE WATER & POWER**

**SERVICE DROP CLEARANCES (COMMERCIAL AND INDUSTRIAL DRIVEWAYS, PEDESTRIAN AREAS ETC.)**

**CUSTOMER SERVICE ENGINEERING**

REV. NO. DATE 10/13/98 DRAWN BY: NAVAS APPROVED BY: HRA		OH-DWG-008 PAGE 1 of 1
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**OVERHEAD SERVICE DROP CLEARANCE FROM  
SWIMMING POOLS AND DIVING BOARDS**

1. Installation of 0 – 600 volt service drop conductors above a public or private swimming pool and adjacent recreational area shall be avoided. Service conductors shall be routed around these areas at a horizontal clearance sufficient to provide for human safety, and to avoid contamination and nuisance caused by "droppings" from birds resting on conductors. Sufficient horizontal clearance defined is a clearance dimension as conditions warrant to prevent persons in the pool area from coming into accidental contact with service conductors, or bringing conducting materials into contact with service conductors by use of pool cleaning or maintenance equipment.
  
2. Where it is not practicable to clear a swimming pool and recreational area at a horizontal clearance as specified, service drop conductors shall be maintained at a radial and vertical clearance of not less than illustrated on page OH-DWG-009, page 2 of 2.
 

"PRACTICABLE" defined by the Rules for Overhead Line Construction means, "capable of being accomplished by reasonably available and economic means".
  
3. Contact GWP to obtain an acceptable point of service drop attachment whenever a swimming pool is proposed to be constructed in an area between the utility's pole line and the building to be served, or a swimming pool has been constructed creating a service drop clearance infraction.
  
4. The Glendale Water & Power Requirements are illustrated on page OH-DWG-009, page 2 of 2.
  
5. Clearance for spas, hot tubs, etc. shall conform to OH-DWG-009 page 2 of 2.
  
6. Swimming pools, spas, hot tubs, etc are not allowed under electrical lines greater than 600V.

DATE	REV.	DESCRIPTION	BY	CHK'D	APP.
7/1/09	1	REVISED NOTE 5 AND ADDED NOTE 6	CC	VMP	HRA



<b>CITY OF GLENDALE WATER &amp; POWER</b>	
REV. NO. DATE 05/25/98 DRAWN BY: P MEZA APPROVED BY: HRA	<b>SERVICE DROP CLEARANCES (SWIMMING POOLS AND DIVING BOARDS)</b>
OH-DWG-009 PAGE 1 of 2	
<b>CUSTOMER SERVICE ENGINEERING</b>	

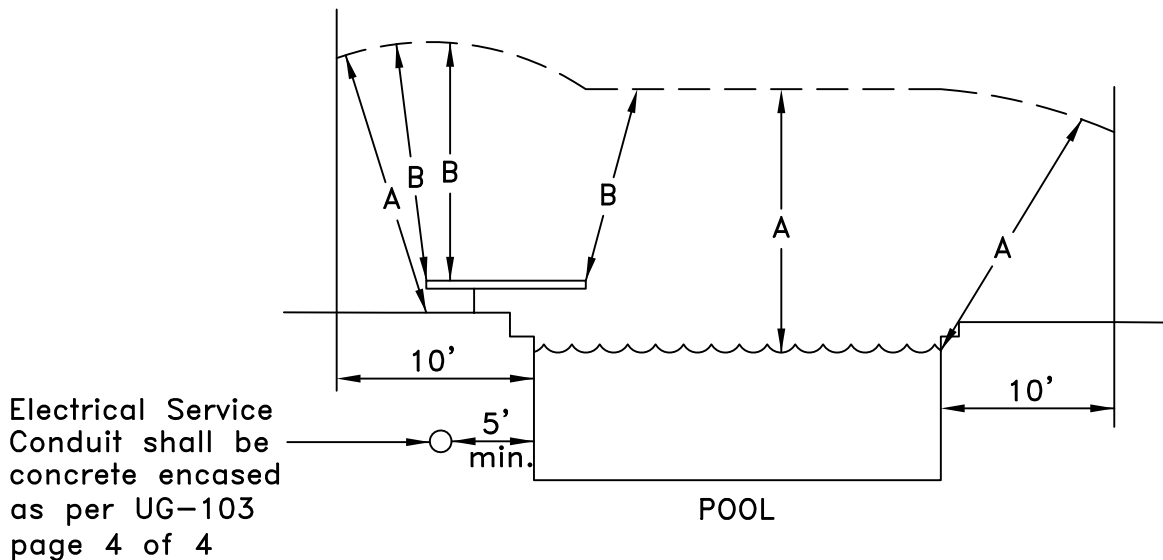
**OVERHEAD SERVICE DROP CLEARANCE FROM  
SWIMMING POOLS AND DIVING BOARDS**

The following parts of swimming and wading pools shall NOT be placed under existing service drop conductors or any other open overhead wiring; nor shall such wiring be installed above the following:

- (a) Swimming and wading pools and the area extending 10 feet horizontally from the inside of the walls of the pool.
- (b) Diving structure.
- (c) Observation stands, towers or platforms.

EXCEPTION: Structures listed in (a), (b) and (c) above shall be permitted under utility owned, operated and maintained supply lines or service drops where such installations provide clearances:

	Insulated supply or service drop cables, 0-600 volts to ground, supported on and cabled together with an effectively grounded bare messenger
A. Clearance in any direction to the water surface, base of diving platform or permanently-anchored raft	<b>18' feet</b>
B. Clearance in any direction to the diving platform or tower	14 1/2' feet



DATE	REV.	DESCRIPTION	BY	CHK'D	APP.
1/1/11	2	MODIFIED DIMENSION A	CC	VMP	HRA

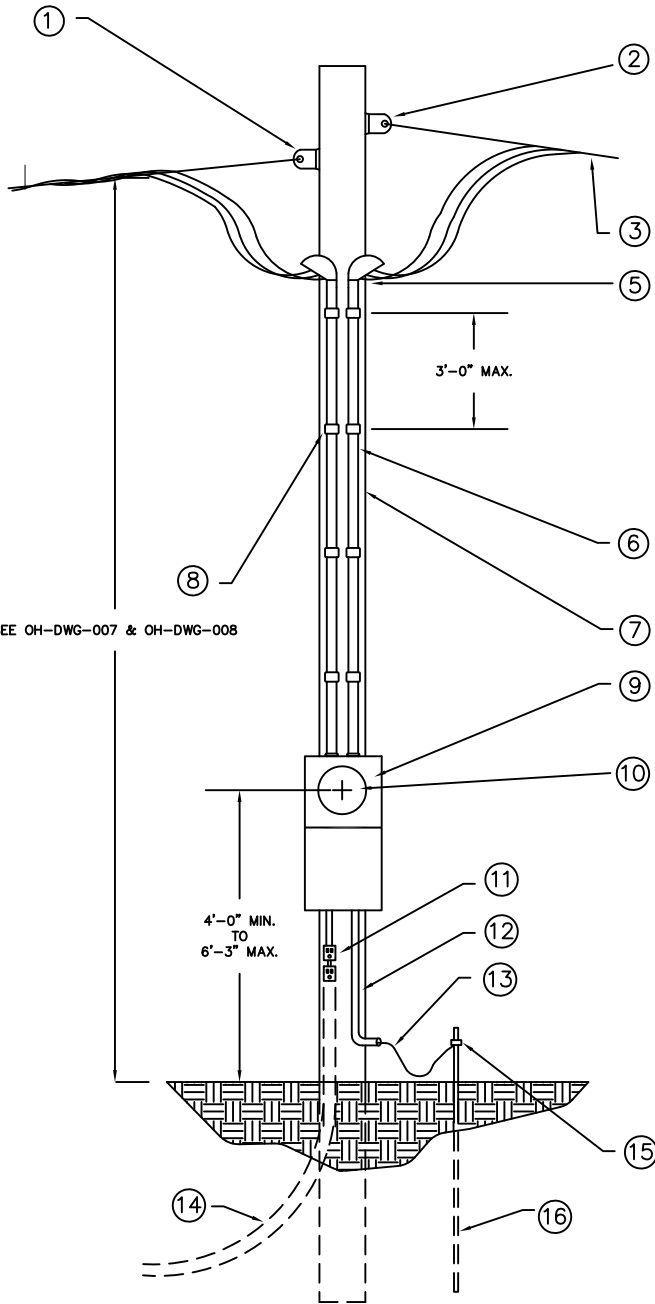


REV. NO.  
DATE 02/26/97  
DRAWN BY: P MEZA  
APPROVED BY: HRA

CITY OF GLENDALE WATER & POWER  
**SERVICE DROP CLEARANCES  
(SWIMMING POOLS AND DIVING BOARDS)**

OH-DWG-009  
PAGE 2 of 2

CUSTOMER SERVICE ENGINEERING



SEE OH-DWG-007 & OH-DWG-008

**Notes**

1. Service drop and wire holder or service rack furnished and installed by GWP. GWP service drop maximum span length is 50 feet.
2. Wire holder or rack furnished and installed by the customer.
3. Customer's line.
4. Not less than 18" of wire outside service head.
5. Weatherproof service entrance caps.
6. Minimum 3/4" polyvinyl chloride plastic conduit schedule 40.
7. Self supporting timber 6" x 6" x 20'-0" min. or a 25'-0" pole with a 5" min. top diameter. Must be treated with chemical preservative.
8. Fasten conduit securely to pole.
9. For type of meter receptacle, and the number of socket terminals, see Metering Equipment Chapter (MTR), MTR-DWG-002.
10. Meter will be furnished and installed by GWP. A safety socket box with factory installed test bypass blocks, as detailed in Metering Equipment Chapter (MTR), MTR-108, "Factory Wired Safety Socket Boxes" shall be provided for all three phase installations.
11. Weatherproof boxes and GFI receptacles.
12. Armored ground wire or minimum of 1/2" Rigid conduit or wood molding over ground wire.
13. Ground wire to be No. 8 A.W.G., minimum.
14. Where customer's feeder is to be underground, install conduit as indicated by dashed lines and as required by the NEC.
15. Approved ground clamp and fitting must be accessible. Conduit must extend to ground rod to protect ground wire from mechanical injury.
16. Ground wire from pole to electrode shall be enclosed in galvanized rigid conduit, or equivalent mechanical protection. If a ground rod is used, the following minimum requirements apply:  
Diameter of rod: 3/4", if iron rod or galvanized pipe, 1/2" if solid rod of brass, copper, or copper covered steel. Drive to minimum depth of 8'-0" below ground surface.

DATE	REV.	DESCRIPTION	BY	CHK'D	APP.
7/1/09	1	SERVICE DROP LENGTH & POLE SIZE. COMBINED DWG 10 & 11.	EN	VMP	HRA



REV. NO. 1  
DATE 08/28/01  
DRAWN BY:JCW/HRA  
APPROVED BY:HRA

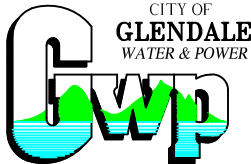
CITY OF GLENDALE WATER & POWER

CUSTOMER OWNED  
TEMPORARY SERVICE POLES

OH-DWG-010  
PAGE 1 of 1

CUSTOMER SERVICE ENGINEERING

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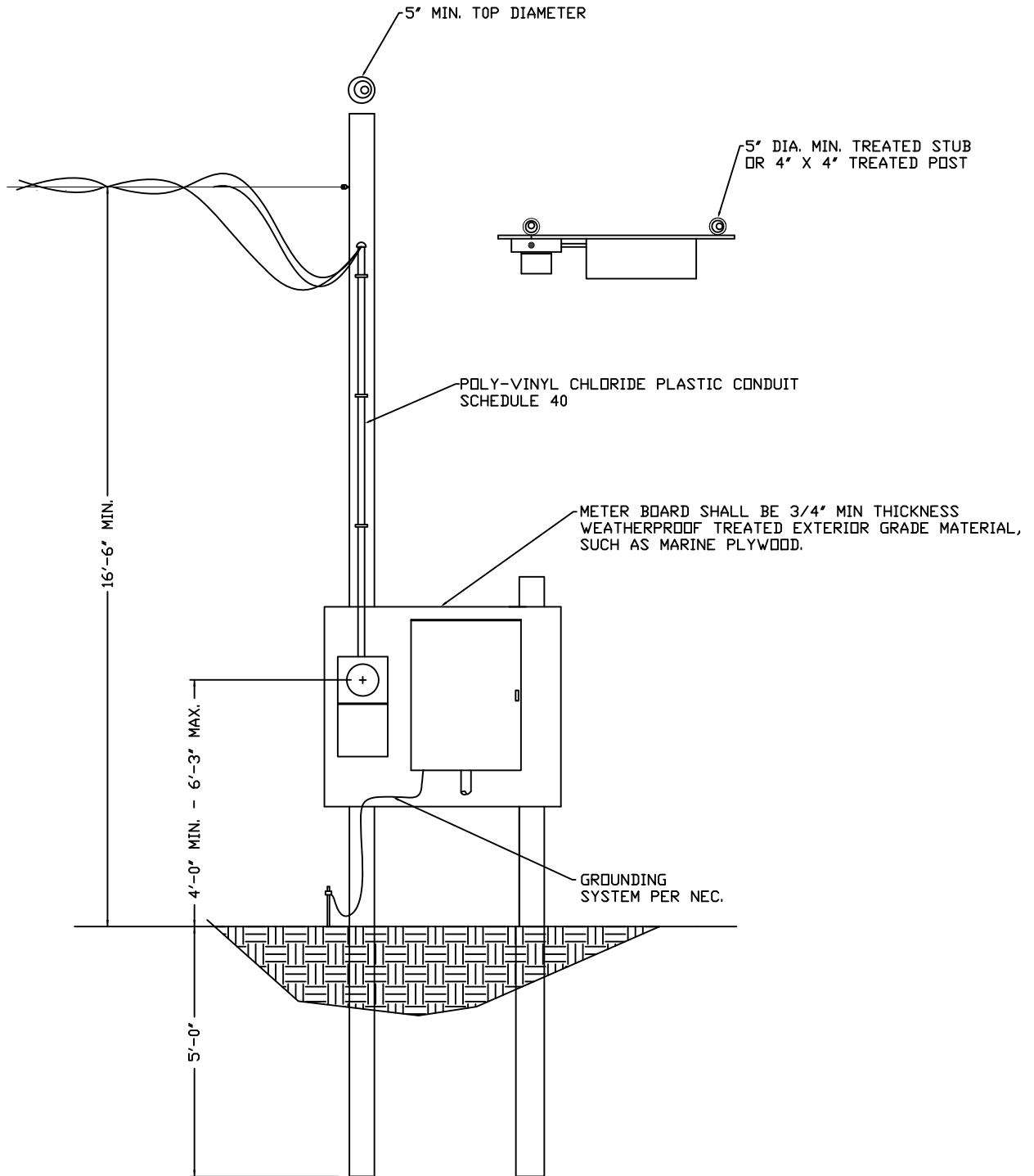
CITY OF GLENDALE WATER & POWER

REV. NO.  
DATE  
DRAWN BY  
APPROVED

OH-DWG-011  
PAGE 1 of 1

CUSTOMER SERVICE ENGINEERING



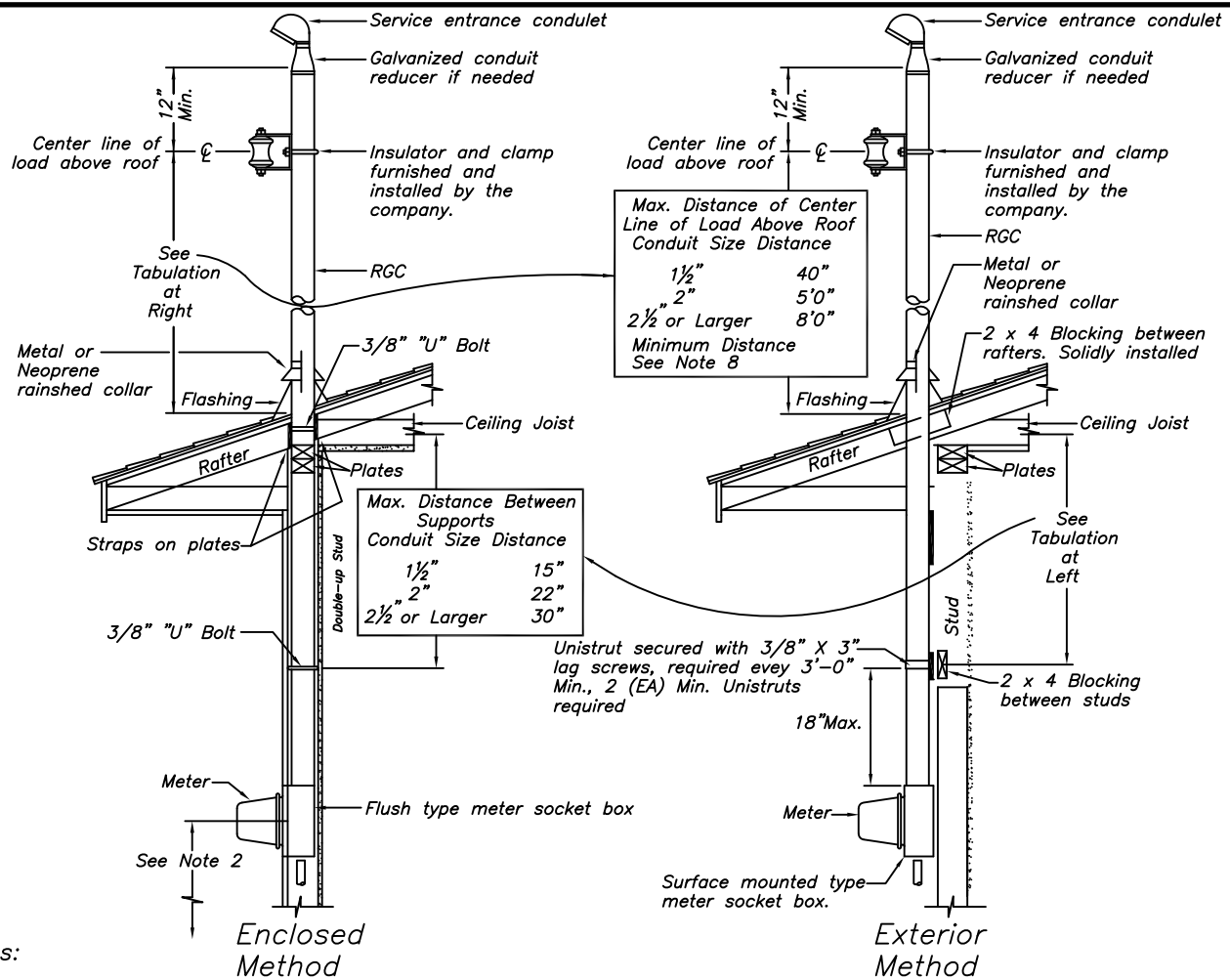


THIS TYPE OF SERVICE IS NOT ALLOWED IN ALL LOCATIONS. FOR ANY QUESTIONS CONSULT GWP AT 818.548.3921

DATE	REV.	DESCRIPTION	BY	CHK'D	APP.



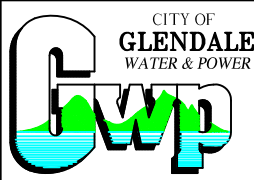
<b>CITY OF GLENDALE WATER &amp; POWER</b>		
REV. NO. 1 DATE 01/14/05 DRAWN BY P MEZA APPROVED BY:HRA	OPTIONAL CUSTOMER OWNED SERVICE AND METER POLE (PERMANENT OR TEMPORARY)	OH-DWG-012 PAGE 1 of 1
CUSTOMER SERVICE ENGINEERING		



Notes:

1. The above is a suggested method to obtain the required ground and roof clearances as required by California State General Order 95. When this method is used, it will be acceptable to the company provided the dimensions and construction details are compiled with the dimensions shown and are based on a service drop length of not more than 100 feet. Any service length greater than 100 feet must be approved by Glendale Water and Power Department.
2. The meter must be between the minimum of 4'-0" and 6'-3" maximum above grade. The height may be reduced to 3'-0" when meter is enclosed in a meter closet.
3. Glendale Water & Power will not be responsible for any damage to the building caused by rain or structural failure.
4. The riser should be on or not more than 18" back of the front face of the wall facing GWP'S line.
5. Install rigid galvanized conduit only for this application.
6. No couplings will be permitted between the top of the riser and the lowest point of support.
7. Only power service drop shall be permitted to be attached to a service mast or riser per N.E.C. section 230-28.
8. The minimum distance of centerline of load above roof is specific to each location. In all cases, this distance shall not be less than 12 inches minimum.

DATE	REV.	DESCRIPTION	BY	CHK'D	APP.



**CITY OF GLENDALE WATER & POWER**

REV. NO. DATE 01/26/99 DRAWN BY NAVAS APPROVED BY:HRA	<b>CONDUIT SERVICE DROP ATTACHMENT RISERS (PERISCOPE)</b>	OH-DWG-013 PAGE 1 of 1
<b>CUSTOMER SERVICE ENGINEERING</b>		

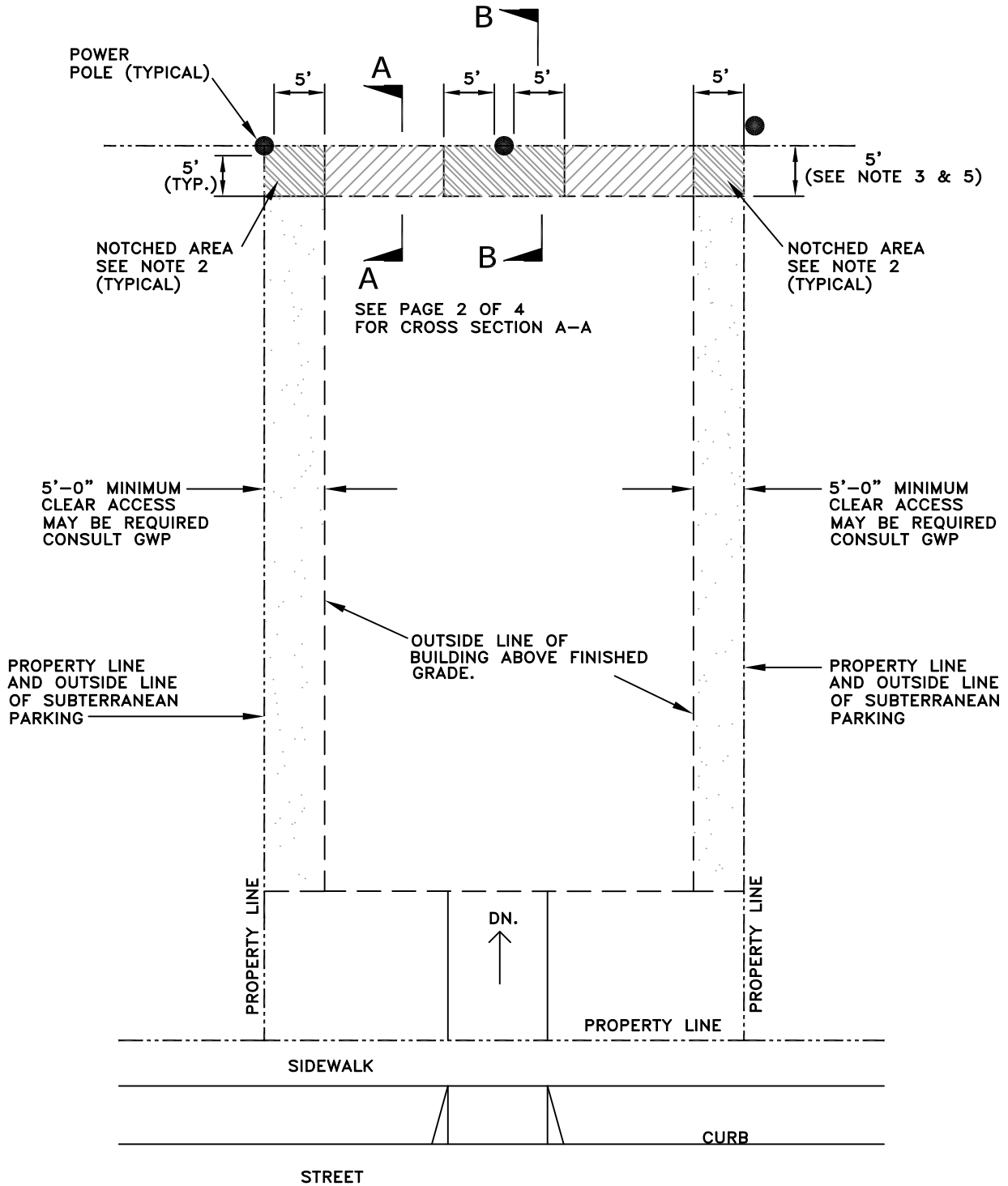


NO STRUCTURES ALLOWED IN NOTCHED AREA, EITHER ABOVE OR BELOW FINISHED GRADE.

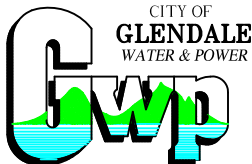


NO STRUCTURES ABOVE FINISHED GRADE ALLOWED IN CROSSHATCHED AREA.

SEE PAGE 3 OF 4 FOR CROSS SECTION B-B



DATE	REV.	DESCRIPTION	BY	CHK'D	APP.



REV. NO.  
DATE 01/14/05  
DRAWN BY E.Navas  
APPROVED BY:HRA

CITY OF GLENDALE WATER & POWER

OVERHEAD CONDUCTORS AND  
POWER POLE MINIMUM CLEARANCES

OH-DWG-014  
PAGE 1 of 4

CUSTOMER SERVICE ENGINEERING

10' RADIAL CLEARANCE FROM PRIMARY CONDUCTOR PER FEDERAL AND STATE REGULATIONS (SEE NOTE 6)

12' PLUS 2' FOR SAG (SEE NOTE 1)

ROOF

8' PLUS 2' FOR SAG (SEE NOTE 1)

ALLOW 2' FOR SCAFFOLDING

3' (SEE NOTE 1)

SECOND FLOOR

5' MINIMUM

FIRST FLOOR

SUBTERRANEAN PARKING

6' (SEE NOTE 1) 5'

HIGH VOLTAGE

PRIMARY ARM (NOMINAL)  
40' POLE--PRI AT 34'  
45' POLE--PRI AT 38'  
50' POLE--PRI AT 43'

SECONDARY ARM

NO STRUCTURES ALLOWED IN CROSSHATCHED AREA (SEE NOTES 3 & 5)

PROPERTY LINE

FINISHED GRADE

**CROSS SECTION A-A**  
SEE PAGE 4 OF 4 FOR NOTES

DATE	REV.	DESCRIPTION	BY	CHK'D	APP.
7/1/09	2	MODIFIED 10' PRIMARY RADIAL CLEARANCE DESCRIPTION	CC	VMP	HRA

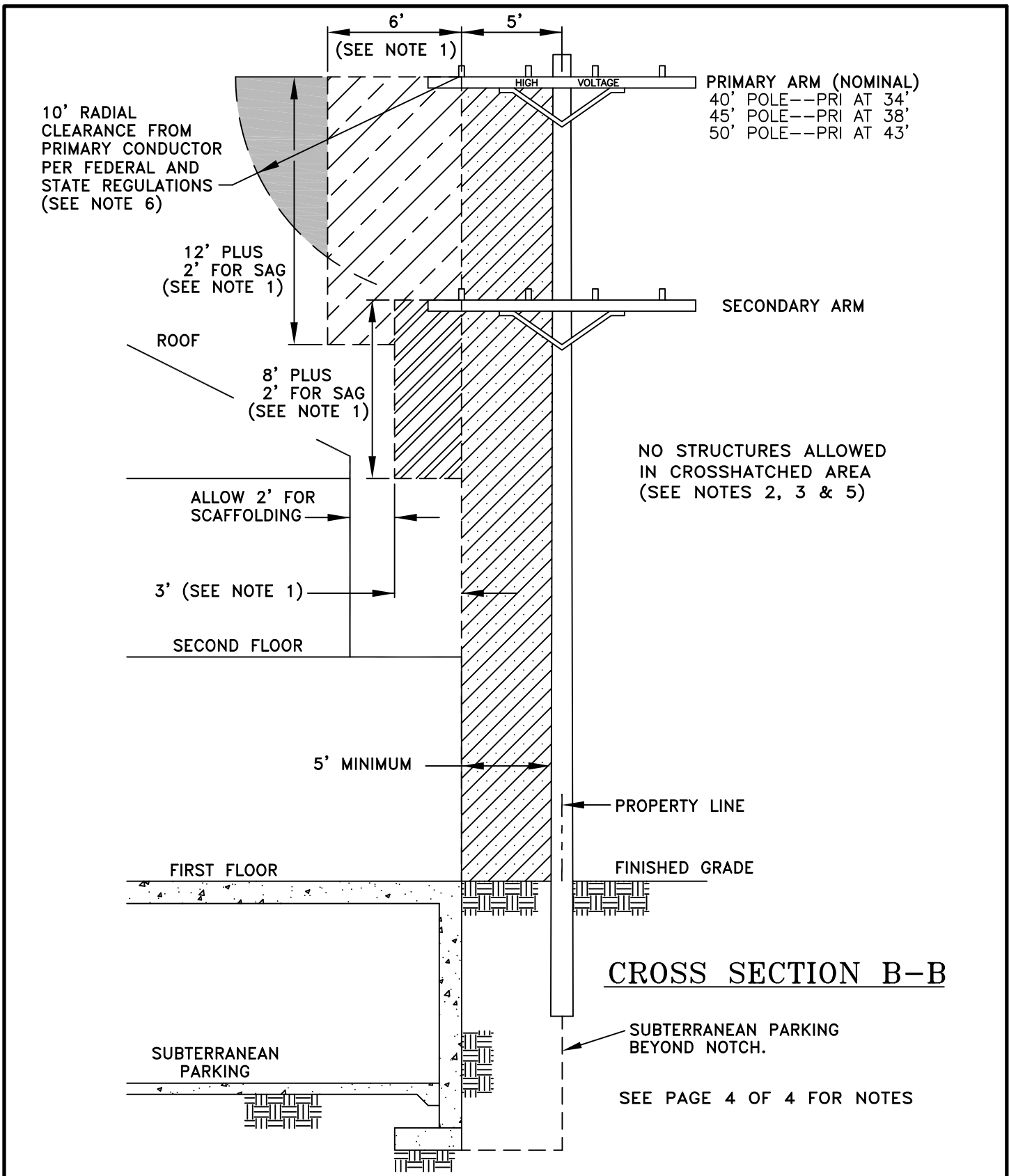


REV. NO. 1  
DATE 01/31/05  
DRAWN BY P MEZA  
APPROVED BY:HRA

CITY OF GLENDALE WATER & POWER  
**OVERHEAD CONDUCTORS AND  
POWER POLE MINIMUM CLEARANCES**

OH-DWG-014  
PAGE 2 of 4

CUSTOMER SERVICE ENGINEERING



DATE	REV.	DESCRIPTION	BY	CHK'D	APP.
7/1/09	2	MODIFIED 10' PRIMARY RADIAL CLEARANCE DESCRIPTION	CC	VMP	HRA

	CITY OF GLENDALE WATER & POWER REV. NO. 1 DATE 01/31/05 DRAWN BY P MEZA APPROVED BY:HRA		CITY OF GLENDALE WATER & POWER <b>OVERHEAD CONDUCTORS AND          POWER POLE MINIMUM CLEARANCES</b>		OH-DWG-014 PAGE 3 of 4
	CUSTOMER SERVICE ENGINEERING				

NOTE:

- 1.- ALL MEASUREMENTS ARE FROM THE CONDUCTOR PER GENERAL ORDER No. 95
- 2.- 5' NOTCH (OPEN TO THE SKY) FROM FACE OF POLE OR PROPERTY LINE (WHICHEVER IS GREATER), WITH CONTRACTOR PROVIDING APPROVED SHORING DURING EXCAVATION.
- 3.- ACCESS TO THE POWER POLE AND FUTURE POLE REPLACEMENT ARE THE FIRST PRIORITIES REGARDING POLE CLEARANCES. PROJECT TO PROVIDE CLEAR FLAT LEVEL ACCESS TO POLES. CONSULT GWP FOR EVERY PROJECT.
- 4.- GWP ENGINEERING SHALL BE CONSULTED FOR CLEARANCE REQUIREMENTS ON DOWN GUYS AND ANCHORS.
- 5.- CHECK WITH CITY OF GLENDALE PLANNING DEPARTMENT FOR PROPER SETBACKS AND ZONING REQUIREMENTS
- 6.- THE MAINTENANCE OF THE RADIAL CLEARANCE DURING CONSTRUCTION IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR. THE CONTRACTOR SHALL NOTIFY GWP, ELECTRICAL ENGINEERING, AT (818) 548-3923 IF THERE IS A NEED TO WORK WITHIN THE 10' RADIAL CLEARANCE.

DATE	REV.	DESCRIPTION	BY	CHK'D	APP.
1/13/14	3	CHANGED DOWN GUY & ANCHOR CLEARANCE REQUIREMENTS	CC	VMP	VA



CITY OF  
**GLENDALE**  
WATER & POWER

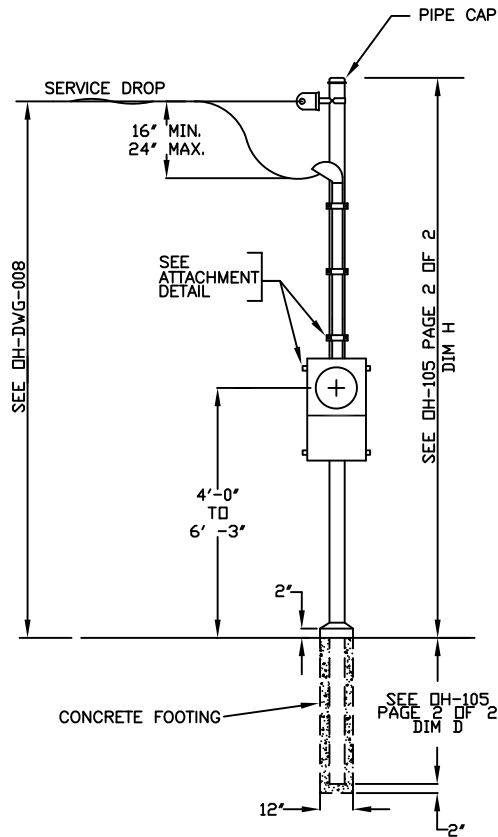
REV. NO. 1  
DATE 01/31/05  
DRAWN BY P MEZA  
APPROVED BY:HRA

CITY OF GLENDALE WATER & POWER

*OVERHEAD CONDUCTORS AND  
POWER POLE MINIMUM CLEARANCES*

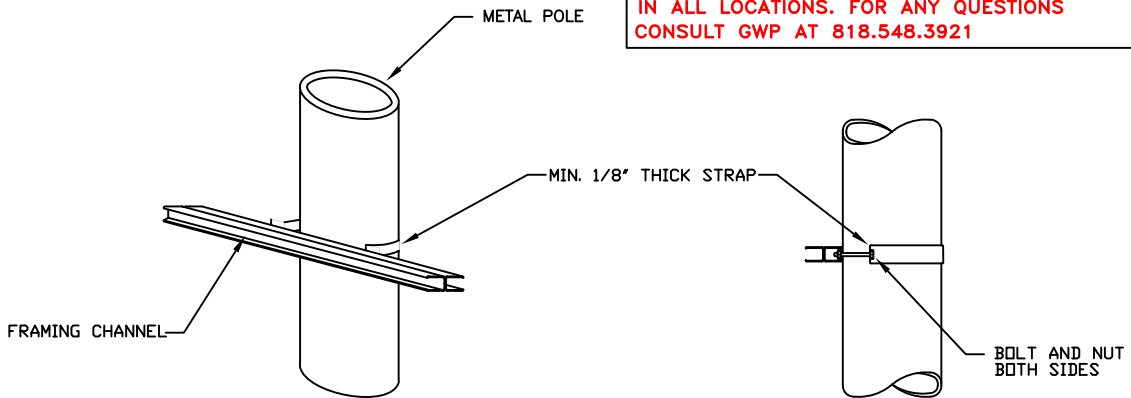
OH-DWG-014  
PAGE 4 of 4

CUSTOMER SERVICE ENGINEERING



GALVANIZED STEEL POLE

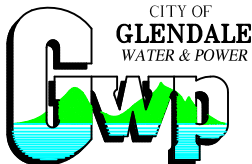
**THESE TYPES OF SERVICES ARE NOT ALLOWED IN ALL LOCATIONS. FOR ANY QUESTIONS CONSULT GWP AT 818.548.3921**



ALL ATTACHMENTS TO THE METAL POLE SHALL BE MADE WITH DEVICES THAT WILL NOT REQUIRE DRILLING, WELDING, OR IN ANY WAY AFFECT THE STRENGTH OR INTEGRITY OF THE POLE.

ATTACHMENT DETAIL

DATE	REV.	DESCRIPTION	BY	CHK'D	APP.
7/1/09	1	REMOVED WOOD POLE DETAIL	EN	VMP	HRA



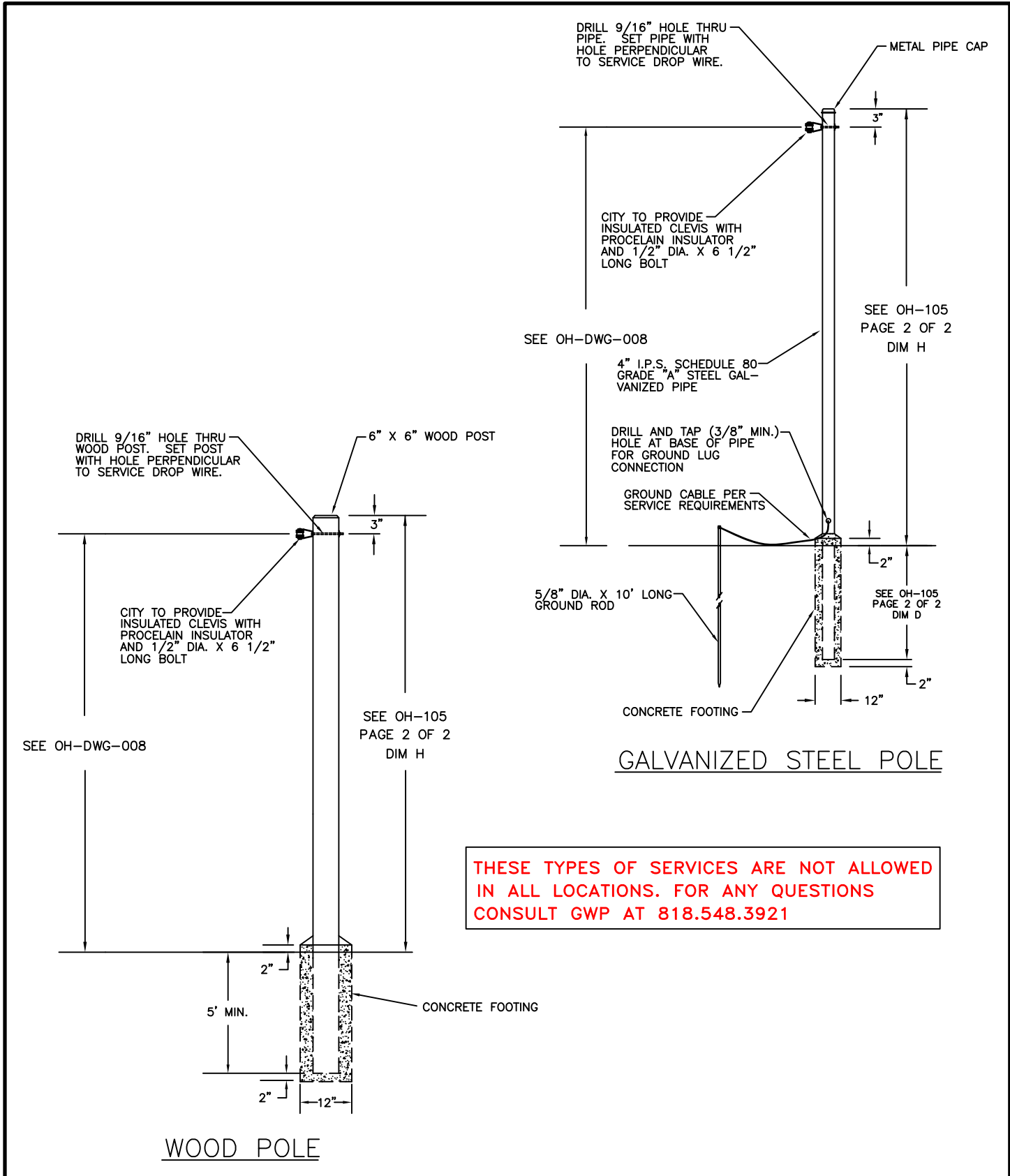
REV. NO. 1  
DATE : 01-14-05  
DRAWN: JCW/HRA  
APPROVED BY:HRA

CITY OF GLENDALE WATER & POWER

*CUSTOMER OWNED PERMANENT SERVICE POLE  
(0-200 AMPERES, MAX. SERVICE SPAN 150 FT.)*

OH-DWG-015  
PAGE 1 of 1

CUSTOMER SERVICE ENGINEERING



DATE	REV.	DESCRIPTION	BY	CHK'D	APP.



CITY OF GLENDALE WATER & POWER

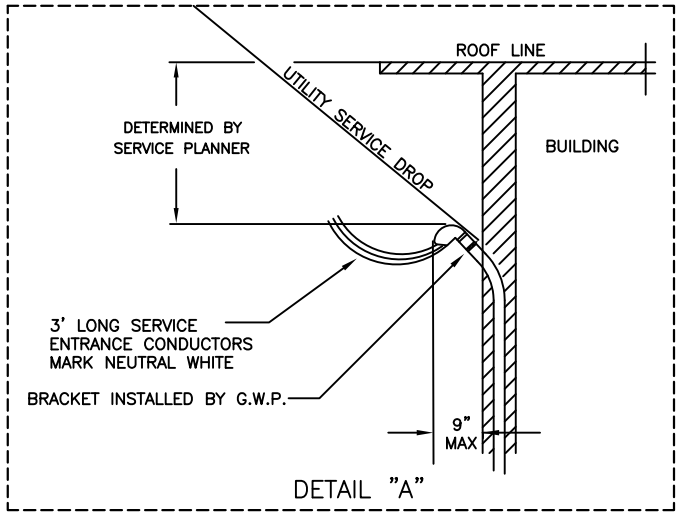
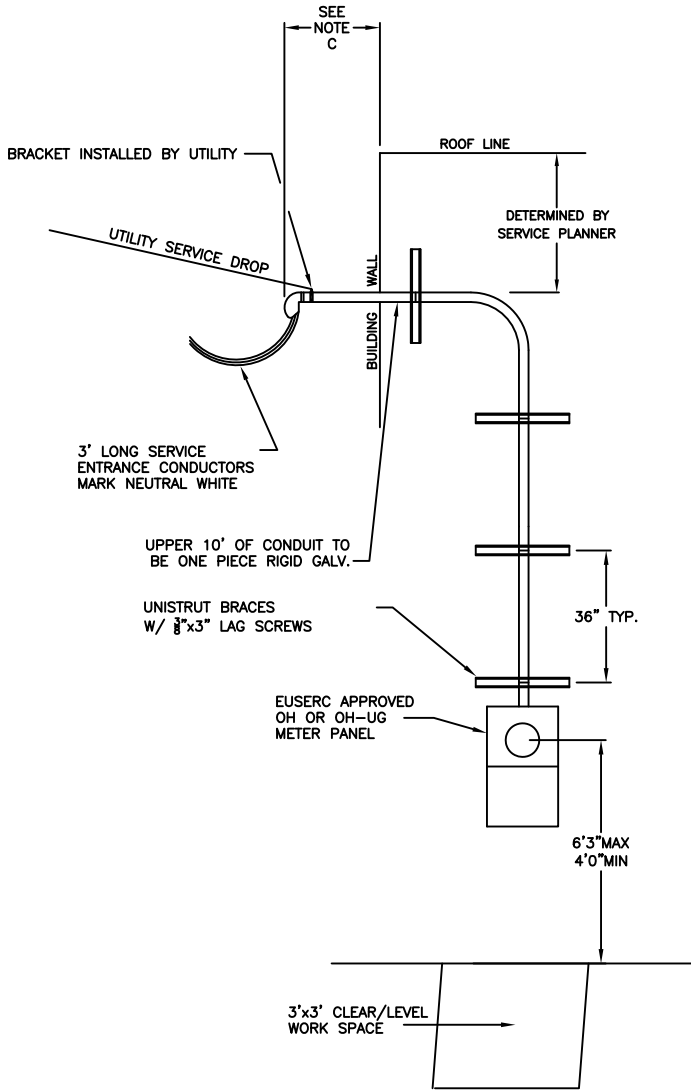
REV. NO. 0  
DATE 09-08-01  
DRAWN BY VMP  
APPROVED BY:HRA

**CUSTOMER OWNED CLEARANCE POLE  
(0-200 AMPERES, MAX. SPAN 150 FT.)**

CUSTOMER SERVICE ENGINEERING

OH-DWG-016  
PAGE 1 of 1



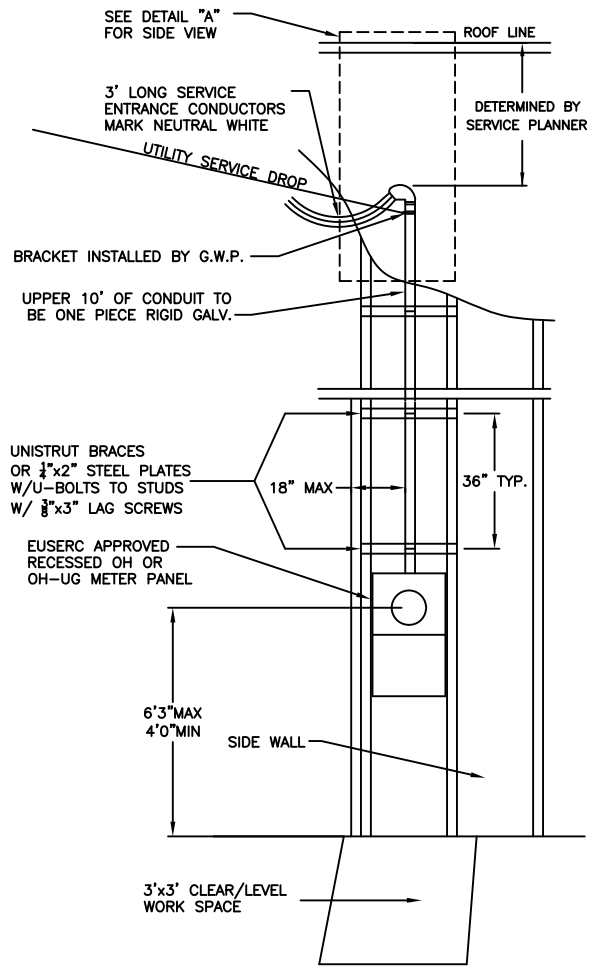


**THIS METHOD OF ATTACHEMENT IS USED WHEN:**

1. THE SERVICE HEAD EXCEED 20'
2. THE SERVICE HEAD LOCATION WILL NOT BE ACCESSIBLE TO GWP SERVICE CREWS
3. WHERE THE SIDE YARD IS LESS THAN 7'-0" AND THERE IS NO OBSTRUCTION IN THE WORK AREA.
4. THE PROTRUSION THROUGH THE ROOF IS AVOIDED FOR TWO STORY BUILDINGS.

**DESIGN CRITERIA FOR SERVICE HEADS ON SIDE WALL**

- A. THE MINIMUM CONDUIT CLEARANCE TO WALL SHALL BE 1 5/8"
- B. THE MINIMUM CLEARANCE BELOW ROOFLINE 12"
- C. THE SERVICE ENTRANCE CONDUIT EXTENDING HORIZONTALLY FROM A BUILDING.
  1. SHALL EXTEND OUT 36" IF SERVICE CONDUIT IS BEING PULLED AGAINST THE BUILDING TO MAINTAIN PROPER CLEARANCE.
  2. SHALL EXTEND OUT 18" IF CONDUCTOR IS BEING PULLED AWAY FROM BUILDING.
- D. THE NUMBER OF SUPPORTS IS DETERMINED BY SERVICE SIZE AND DISTANCE BETWEEN SERVICE POLE & SERVICE HEAD.



DATE	REV.	DESCRIPTION	BY	CHK'D	APP.



CITY OF  
**GLENDALE**  
WATER & POWER

REV. NO.  
DATE 12/04/02  
DRAWN BY: E.N.  
APPROVED BY: HRA

CITY OF GLENDALE WATER & POWER

**ALTERNATIVE METHODS OF ATTACHING SERVICE DROPS**

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CUSTOMER SERVICE ENGINEERING