



# **AT&T**

# **Specifications**

**Trenching**

**Conduit**

**Boxes and Manholes**

**Aerial Entrance Masts**

**Service Cabinets**

**Bonding and Grounding**

**A Guide for California Developers of  
Commercial Property**

**This guide consists of AT&T California specifications and diagrams for trenching, underground support structure, aerial installations, and other make ready work performed by developers and their agents as required by AT&T for installation of its copper communication facilities on commercial private property. Any deviation from the information provided in this document must be approved by the local AT&T Engineer.**

# TABLE OF CONTENTS

<u>AT&amp;T Planning and Design Requirements</u> .....	3
<u>General Construction Requirements</u> .....	4
<u>Trenching</u> .....	5
<u>Conduit</u> .....	6
<u>Material Requirements</u> .....	6
<u>Installation Requirements</u> .....	7
<u>Substructure</u> .....	8
<u>Material Specification</u> .....	8
<u>Installation Specifications</u> .....	8
<u>Manhole Specifications</u> .....	9
<u>MANHOLE DIAGRAM</u> .....	9
<u>Service Cabinets, Bonding and Grounding</u> .....	10
<u>Service Cabinet Diagram</u> .....	11
<u>Backboard Diagram</u> .....	12
<u>Aerial Installation Diagram (To Exterior Wall)</u> .....	13
<u>Aerial Installation Diagram (To Interior Wall)</u> .....	14

# AT&T Planning and Design Requirements

The California Public Utility Commission Tariff Schedule A2 defines specific responsibilities for both the Developer and AT&T to establish telephone service to your project. AT&T must approve the final plan for service prior to the start of construction for the telephone facilities. In order for AT&T to begin engineering to serve your project you must provide the following:

1. Two (2) scaled copies of the site plan, floor plan and electrical/telephone site plan (E-1) drawings *(AT&T Engineer may request your plans on a Compact Disk in lieu of hard copies)*
2. Two (2) scaled copies of off-site improvement plans
3. Address and telephone number of Developer/Owner, General Contractor, Electrical Consultant, and Electrician
4. Assessor Parcel Number and address of project
5. Approved parcel map issued by the governing municipality
6. Power company trench layout

After receipt of these items, AT&T will return to you a red-lined CD or scaled copy of your plans indicating the trench route and substructure requirements and a Service Connection Agreement Letter. This letter must be signed and returned prior to any detailed engineering work by AT&T. In order to best serve the telecommunication needs of you and your tenants, if available, please provide AT&T with the estimated number of voice, data, and facsimile lines for each commercial building. For advanced services, include estimated high speed data (T1) and fiber based services (DS3 and above).

# General Construction Requirements

1. Verify the location of AT&T and all other utility substructures and buried facilities two (2) days prior to excavation.

Call Underground Service Alert:  
North 1-800-227-2600  
South 1-800-422-4133

2. Provide supervision and coordination between the various contractors working within the project in order to prevent damage to AT&T facilities. The developer is responsible for the cost of repairs, replacement or relocation made necessary by damage to the AT&T facilities by other work operations.

3. Construct trench and place substructures according to AT&T plans and specifications.

4. Request and get authorization for any design change from the AT&T engineer or AT&T inspector prior to implementing the change.

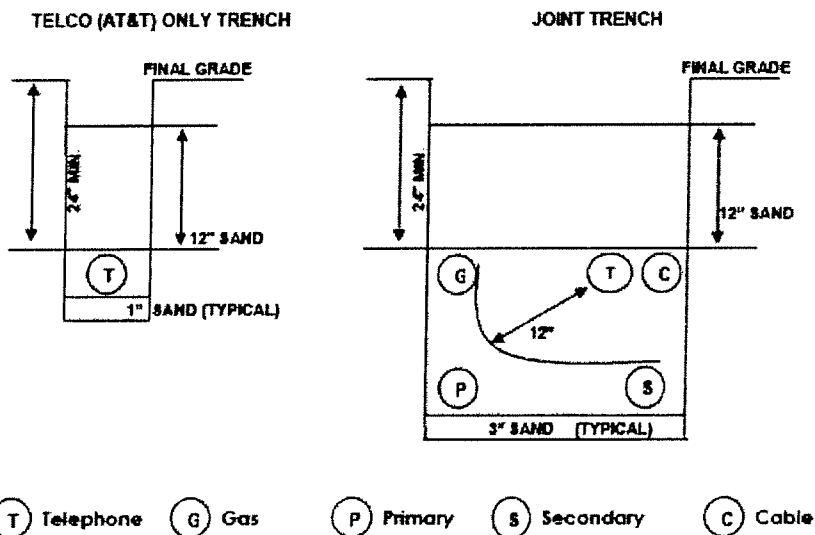
5. Provide "As Built" drawings with the footages to the AT&T engineer or AT&T inspector upon completion of the conduit system.

6. Call 559-739-6649 for inspection of building requirements at least 30 days prior to needing telephone service, including temporary alarm circuits.

7. AT&T facilities will not be placed until all developer requirements are completed to AT&T specification and meet AT&T approval.

# Trenching

1. Minimum radial clearance must be 12" from all trench occupants except CATV (C.P.U.C. Order 128), unless there is a prior signed agreement with AT&T.
2. Bends, sweeps or grade changes that have a radius of 80' or less or a grade change of 20% or more must be encased in 2500 psi concrete.
3. Minimum trench cover must meet the governing agency requirement and Cal P.U.C. GO 128.
4. All trench backfill material must be minimum Class B and compacted in accordance with governing agency specifications. Cover conduit with 12" of fine soil (import) before tamping.
5. Stake property corner for AT&T tie-in from the dedicated street or easement.



# Conduit

Conduit placed for AT&T must be for its exclusive use. AT&T will not occupy the same conduit with other utilities or foreign cable/communication systems. AT&T may refuse to occupy conduit that deviates from our plans and specifications. AT&T will specify the number and size of conduits for your project.

The developer is responsible for repairing or resolving any problems with the conduit they have installed that prevents AT&T from pulling its cable through the conduit using normal installation methods. All conduit sections must be rodded, cleared, and roped prior to AT&T pulling in cable. Mandrelling of conduit may be required.

## Material Requirements

1. Four inch (4") conduit must be type PTS 77 (C plastic) or Schedule 40.
  - Minimum sweep for 4" conduit is three (3) ft 90 degree radius.
  - Maximum of two (2) 90 degree bends
  - Three-eighth inch (3/8") minimum polypropylene pull line or equivalent strength Polyester Woven Mule Tape must be installed in terminated conduit end to end. Leave a minimum of 3' of secured rope in each box. Ropes must be one continuous length for each section and to the terminal room in the building (no tying or splicing of rope).
  
2. Two inch (2") conduit must be type PTS 66/DB 120 rigid plastic or Schedule 40.
  - Minimum sweep for 2" conduit is two (2) ft 90 degree radius.
  - Maximum of two (2) 90 degree bends
  - Three-eighth inch (3/8") or larger, polypropylene pull line or equivalent strength Polyester Woven Mule Tape must be installed in terminated conduit end to end.
  - Leave a minimum of 3' of secured rope in each box. Ropes must be one continuous length for each section and to the terminal room in the building (no tying or splicing of rope).
  
3. Rigid plastic or steel conduit must be used in floor slabs.

4. Condulets, plumber's fittings, water and gas pipes are not acceptable.

5. Aerial installations require a 2" steel conduit and approved weather head fitting. See diagrams on pages 13 and 14.

### Installation Requirements

1. Minimum trench coverage is detailed on page 6.
2. Service conduit (2" or 4") must be terminated above distribution conduits (4") in the box to prevent water flowing from the box and down service conduit toward the building. Boxes must be ordered with the appropriate number of knockouts or terminators to accommodate the conduits.
3. Wall to wall measurements of terminated conduit between boxes and to the terminal room in the building is required (use Logan's line, Tru Tape®, mule or steel tape). Lengths must be included in the "As-Builts" and a copy provided to AT&T prior to installation of AT&T's cable.
4. Conduit in multiple duct designs must be installed using AT&T approved spacers.
5. Concrete encase (2500 psi) all bends with less than 80' radius.
6. *A maximum of two (2) 90 degree bends per section may be installed unless otherwise approved by AT&T. Pull boxes may be required. Straight 20' lengths may be used on 90 degree bends with a radius greater than 40'. Factory bends are required for all other bends.*
7. Underground entrance conduit in a building must terminate 2" above the floor. The terminal room should be planned so that AT&T's entrance cable WILL NOT EXCEED 50' beyond the point where it enters the building.
8. Rope all conduits (see material requirements on page 7). Use a temporary universal plug to keep conduit free of debris. Cap all stubbed conduit.

# Boxes and Manholes

## Material Specifications

All pull boxes, splice boxes and manholes placed by the developer that will be owned and maintained by the property owner must be approved for use by AT&T. The developer may purchase from any manufacturer that meets AT&T's specifications for boxes and manholes, and must include the appropriate racking, sump, bolt down cover, and pulling eyes. Boxes and manholes owned by the property owner must have a generic telephone emblem on the lid. The use of AT&T's name or logo is not permitted on a property owner's boxes and manholes.

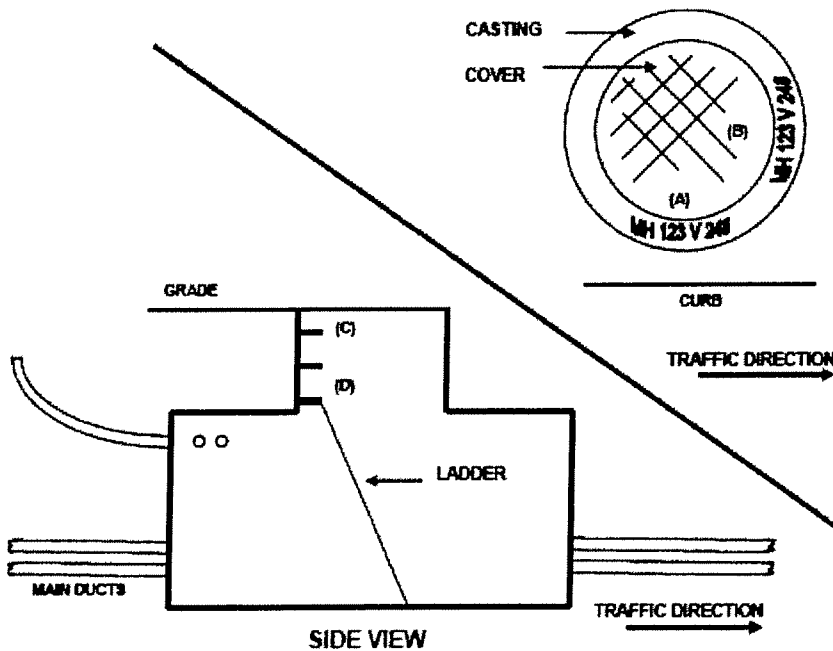
## Installation Specifications for Boxes

1. All boxes must be placed in areas outside of vehicular traffic. The AT&T engineer will specify the size and location of boxes. Manholes will be specified in areas that are exposed to vehicular traffic.
2. Placement of boxes and manholes must allow for the final grade of new sidewalk and parkways.
3. A minimum of six inches (6") of compacted sand, graded level is required under all pull boxes (hand holes) and splice boxes. Six inches (6") of gravel, drain rock or base rock is required for manholes. The floor must be level and free of debris.
4. Conduit must terminate at the end wall or side wall in a terminator or knockout as specified by the AT&T Engineer. Entry through the bottom of a box or the middle of a side wall is not acceptable.
5. All conduits entering knockouts in a plastic or polymer box must be cut within one inch (1") flush with the inside of the wall and sealed. All joints must be mortared and all unused ports and openings sealed. Use cement mortar, water plug cement or other approved prepared mortars.
6. Service conduits must be terminated above the main distribution conduits.

## Installation Specifications for Manholes

1. Conduits must be terminated in the manufactured terminators only. Main conduits must be placed in lower terminators first. From each terminator, a minimum of 5' of straight conduit is required (no bends). Manholes are not to be cored without prior AT&T approval.
2. Steps and ladder must face oncoming traffic. Steps: First step 6"-17" from grade to step (C). All other steps 12" separation from each other (D). All steps must be concreted in place and extended 6" from MH wall.
3. Cover from grade to MH roof must be a minimum of 24" and a maximum of 60", unless otherwise indicated by the AT&T engineer.
4. Floor of MH must be level.

MANHOLE DIAGRAM



## **Service Cabinets, Bonding and Grounding**

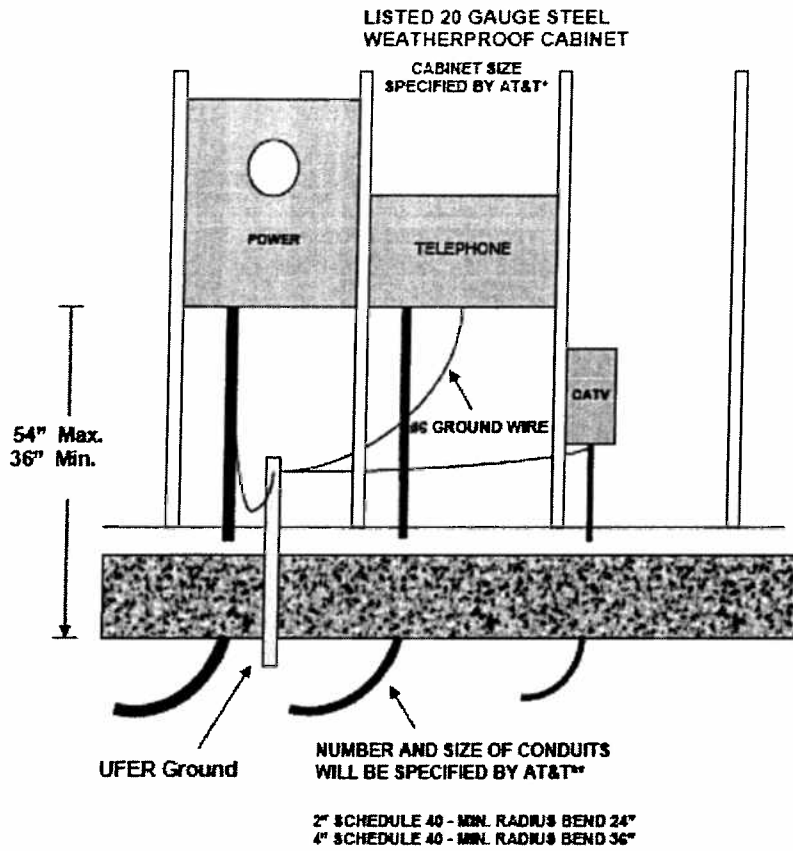
All service cabinet, bonding, and grounding requirements must meet the National Electrical Code. The list of requirements below provides the minimum specifications accepted by AT&T.

- 20 Gauge Steel Weatherproof Listed Cabinet. The cabinet must be listed by a Nationally Recognized Testing Laboratory, such as UL, and must meet the following UL 50 Standard for Safety Criteria:  
Number 3 R for Exterior Use Protection Against Corrosion  
Overlap Requirements
- Cabinet size specified by AT&T Engineer
- Equipped With ¾" Plywood Backboard
- Allow 3' Minimum Clearance In Front Of Cabinet

**Grounding Options For AT&T Facilities Are Listed In Order of AT&T Preference:**

1. #6 copper ground wire to Electrical Power Service Grounding Electrode, Service Grounding Electrode Conductor or Service Panel
2. #6 copper ground wire to a Concrete-Encased Electrode meeting the requirements of the NEC (UFER Ground)
3. #6 copper ground wire to a Ground Ring meeting the requirements of the NEC or to the metal frame of the building which is effectively grounded.
4. If the building does not have a grounding electrode means, connect a #6 copper ground wire to a driven ground rod that is a minimum of 12.7 mm (0.50 in) in diameter and 1.5m (5 ft) long. The rod must be installed at least 1' to 2' from the outside wall and a minimum of 6' from power or lightning ground rods.

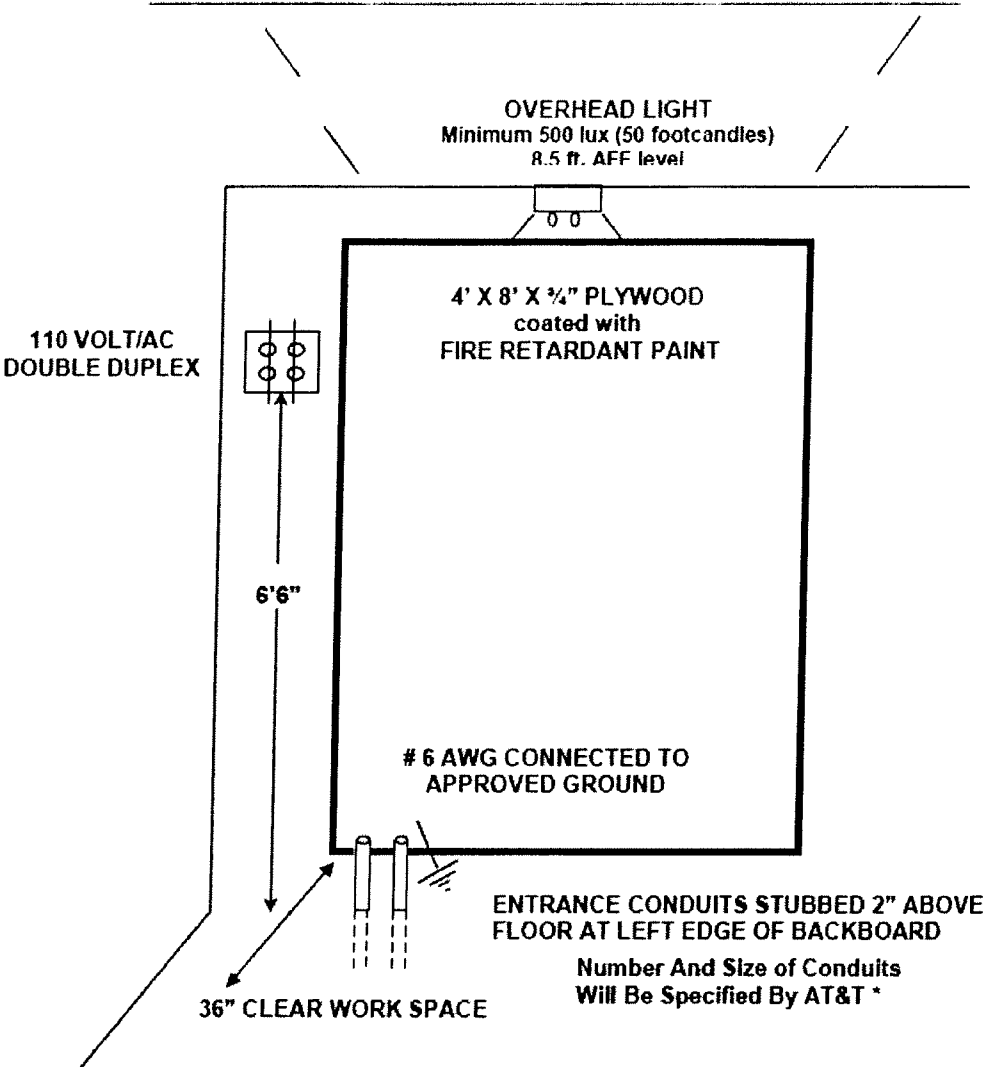
# SERVICE CABINET DIAGRAM



\*CABINET SIZE H=      W=      D=  
 \*\*CONDUIT SIZE =      Number =

**NOTE:** Grounding source options are Electrical Power Service Grounding Electrode, Service Grounding Electrode Conductor or Service Panel, UFER, ground ring, or driven ground rod. See Details on page 10.

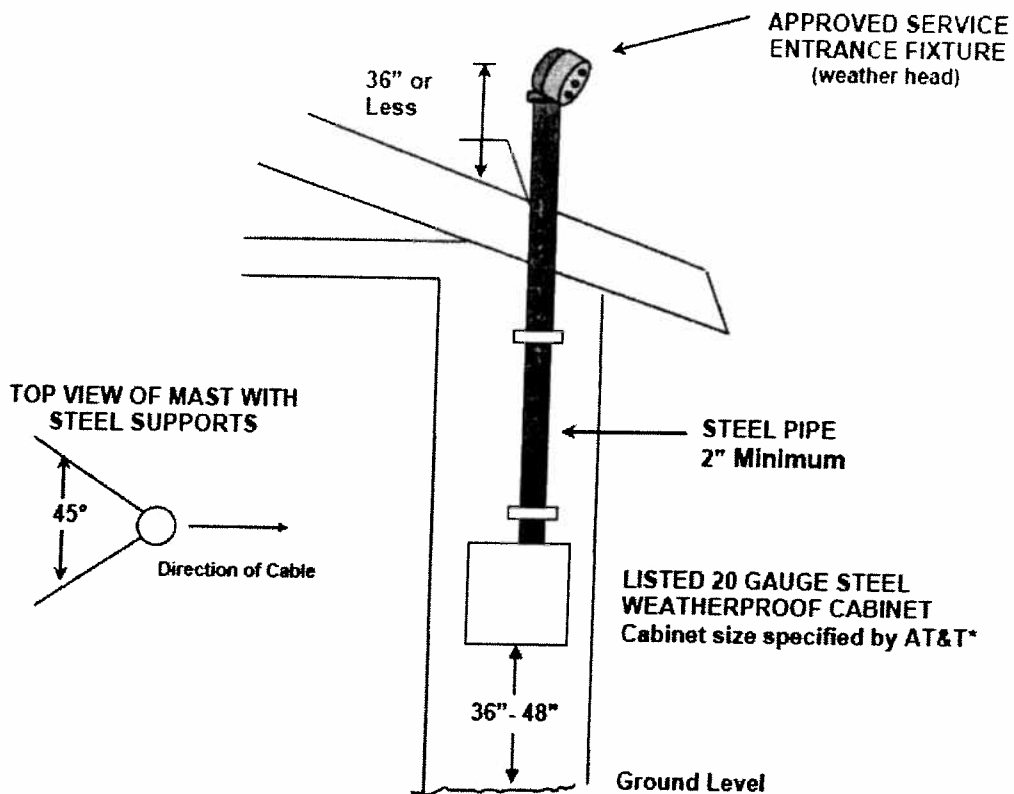
# BACKBOARD DIAGRAM



\*CONDUIT SIZE = NUMBER =

**NOTE:** Grounding source options are Electrical Power Service Grounding Electrode, Service Grounding Electrode Conductor or Service Panel, UFER, ground ring, or driven ground rod. See page 11 for Details.

## AERIAL INSTALLATION DIAGRAM (To Exterior Wall)

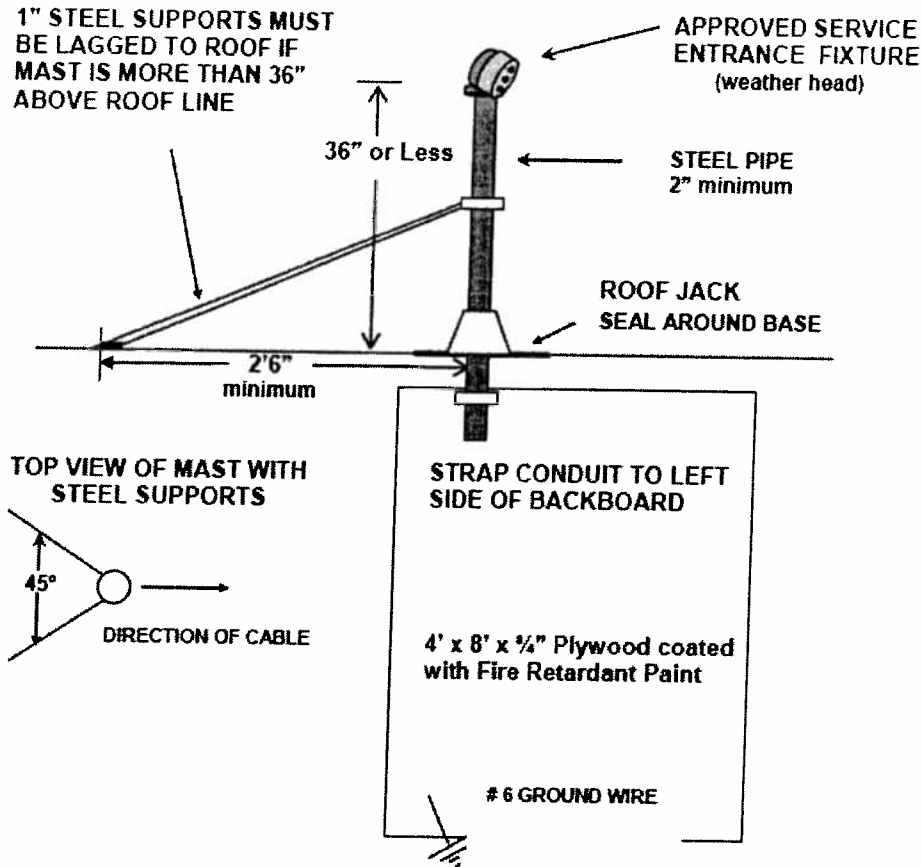


\*CABINET SIZE H=      W=      D=

### NOTES

1. Slack span from pole to mast not to exceed 100'
2. Masts over 36" require 1" steel supports secured to roof with lag screw
3. Attach mast to studding with pipe straps
4. Steel conduit must be grounded
5. Minimum distance from Power is 12" per Cal P.U.C. GO 95
6. Minimum 36" clearance in front of telephone cabinet
7. Cabinet must be equipped with plywood backboard

## AERIAL INSTALLATION DIAGRAM (To Interior Wall)



### NOTES

1. Slack span from pole to mast not to exceed 100'
2. Masts over 36" require 1" steel supports secured to roof with lag screw
3. Attach mast to studding with pipe straps
4. Steel conduit must be grounded
5. Minimum distance from Power is 12" per Cal P.U.C. GO 95
6. Minimum 36" clearance in front of telephone backboard

## OUTSIDE CABINET MANUFACTURERS

The following are the manufacturer's that have been listed by Underwriters Laboratories for UL 1863, UL 497 and have met the additional specifications as recommended by Pacific Bell for terminal housing cabinets:

BENNER NAWMAN	800-528-5502
CIRCLE A PRODUCTS	503-620-6635
RELIANCE COM TECH	510-226-1163
SUNWEST ENGINEERING	800-635-3658
SUPERIOR METAL PRODUCTS	206-455-9159
U.S. PRECISION STEEL METAL	714-861-1944

These cabinets can be ordered directly from the manufacturer or purchased through local electrical suppliers.

Standard cabinet sizes: (Minimum) 24"W x 26"H x 6 3/4" D (25-50 pair terminal)  
(Typical) 30"W x 36"H x 6 3/4" D (100 pair terminal)

**CONTACT THE SBC ENGINEER FOR CORRECT CABINET SIZE IF NOT SPECIFIED ON ELECTRICAL/TELEPHONE PLAN.**