



Single Family Residential Types

Hereafter TELUS Communications Company will be referred to as TELUS.

The Owner/Developer Is Responsible For Providing The Following:

TELUS location and method of service entrance depend to some extent on the existing or proposed feeder route. The closest telephone facility may be either aerial or underground. An underground service must be in conduit as determined by TELUS specifications.

TELUS reserves the right to determine the point of connection on public R/W. The developer will pay for ALL excessive costs associated with providing service if he chooses to insist on a location other than the one determined by TELUS.

These standards will be required for all new construction. This section has been issued to provide the owner/developer/builder, with a definition of TELUS standards for the pathway, and other infrastructure needed to provide a service entrance up to and including the demarcation, which is the responsibility of the property owner. This information will cover single family dwellings (SFD), with and without suites, coach house, duplexes, and mobile homes on private property. TELUS has offered suggestions of how to prewire a residence for telephone, data and TV in the following [Section 5: Residential – Single Family Dwellings \(up to 3 Suites\)](#).

These standards came into effect on April 24, 1995 with the deregulation of single line inside wire. This section has tried to cover as many different types of developments as possible, if your project is not fully covered by the examples, please contact TELUS and a solution will be found. TELUS Engineering staff will provide you with clearly stated design requirements for each individual project.

TELUS is here to help implement this new competitive Inside Wire to the betterment of customers, contractors, and developers.

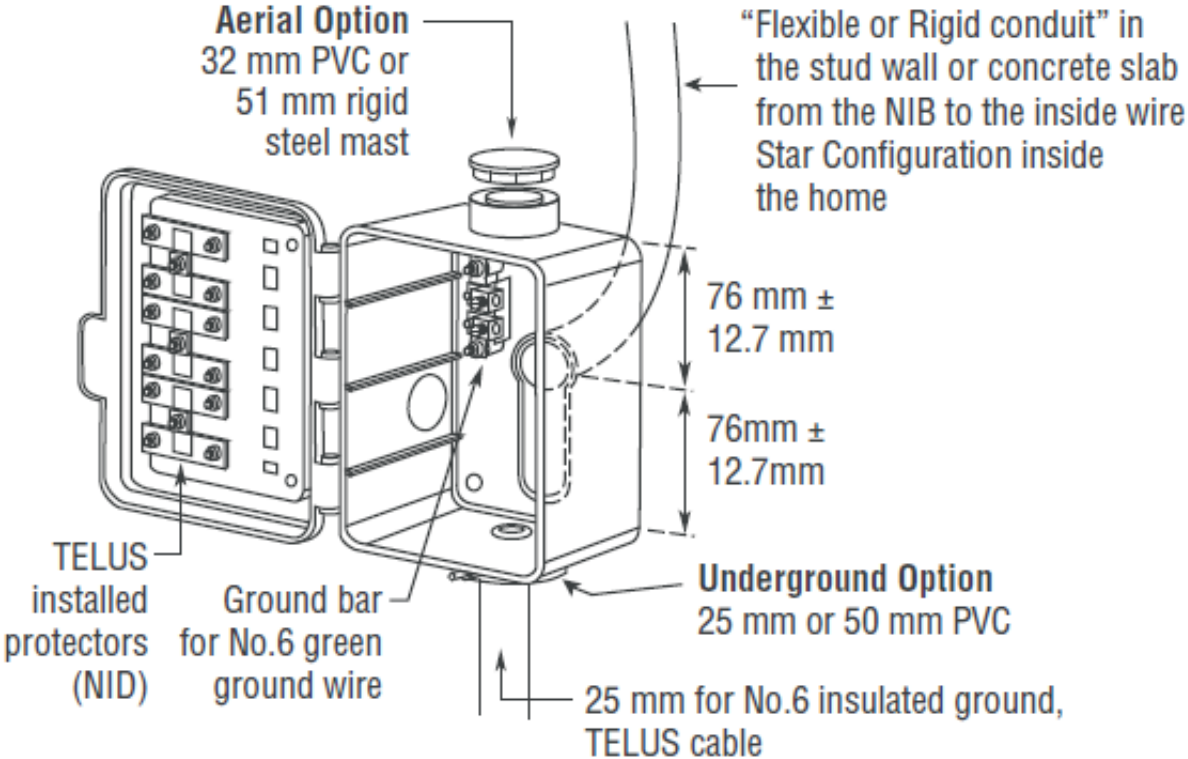
Copper Service Connection and Demarcation

In new homes, it is TELUS' policy to terminate the copper telephone entrance cable (aerial or underground) on a Network Interface Device (NID) installed in the Network Interface Box (NIB) on the first point of contact and entrance to the premise. This NIB is located on an outside wall of the single family residential buildings (figures 1) and is usually located close to the electrical meter and can either be installed in the wall or can be surface mounted. This is called the **demarcation point** and is terminated on a protection device like the tii 356 1I-00 (figure) which also serves as the test point where a customer can check for service if they find there is a fault inside their residence. All inside wires past this point becomes the responsibility of the owner to install and maintain, or TELUS can offer their service for cost.

[Section 5: Residential – Single Family Dwellings \(up to 3 Suites\)](#) suggests wiring configurations from the "Inside Star" to best support the services that are and will be offered from TELUS. Pre-wiring a premise for today and the future minimizes any future costs and delays due to installation of additional wiring and makes the first day in a new home a quick and easy install for your TELUS services.

Figure 1

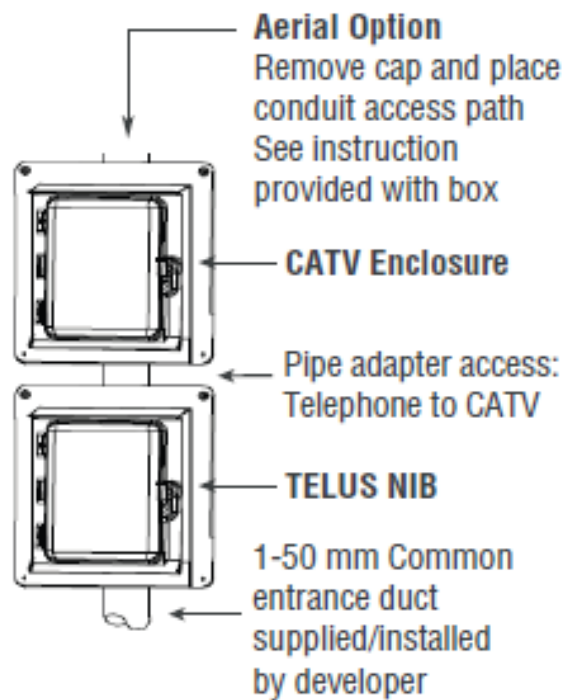
Exterior Surface Mounted Network Interface Box (NIB)



Alternate configuration of a Network Interface Box

Figure 2

Exterior Flush Mounted Network Interface Box (NIB) and Demarcation Boxes

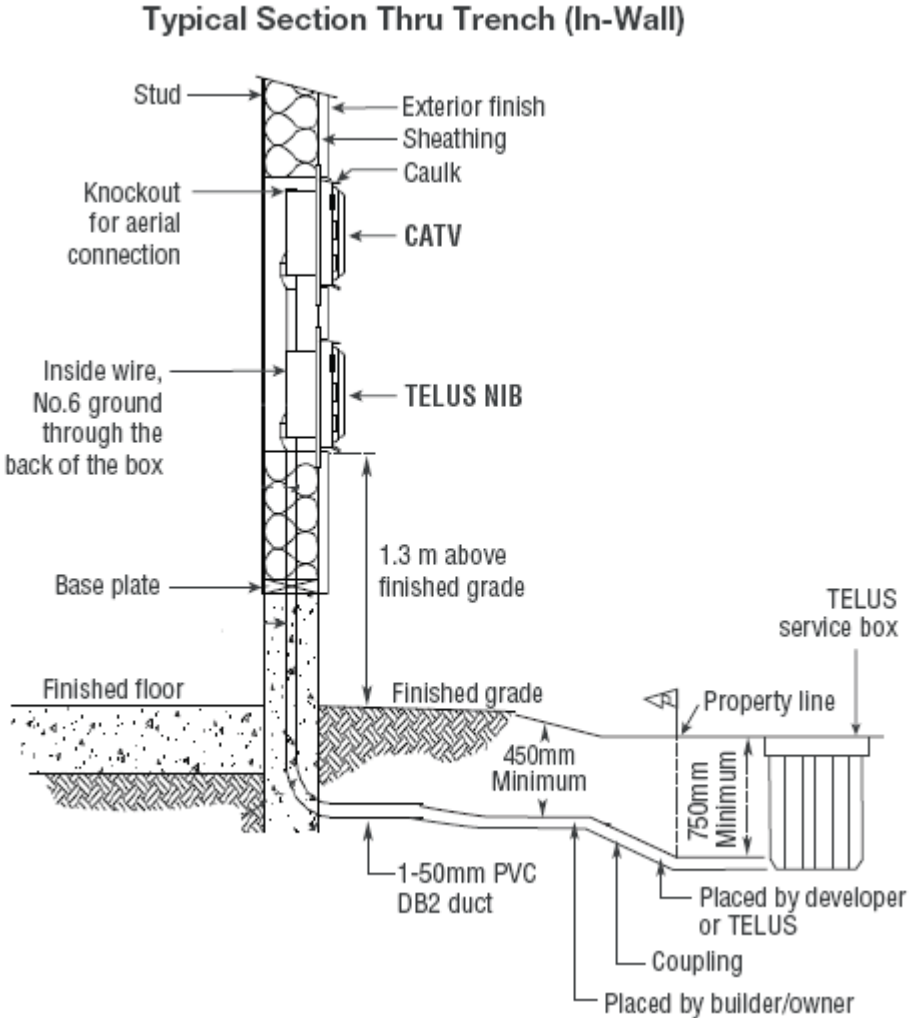


CSA approved box used for TELUS termination and CATV pull-thru (CATV terminations elsewhere) when TELUS and CATV are in the same entrance ducts.

Typical Installations of NIB

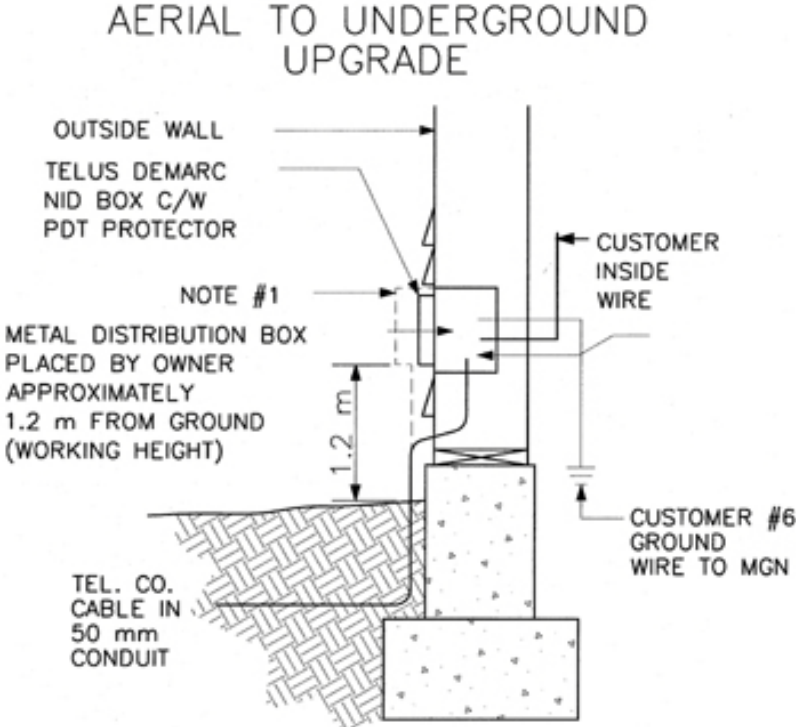
Typical for BC

Figure 3



Entrance Cable Configuration Change

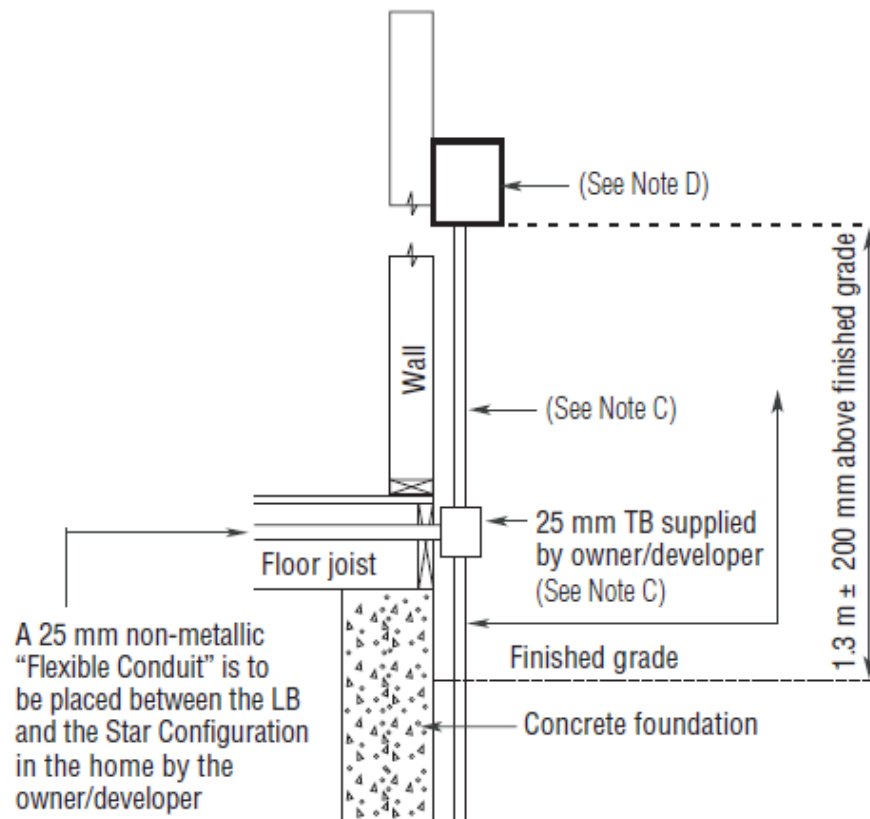
Figure 4



Configuration for Buried Services

Typical for Alberta

Figure 5



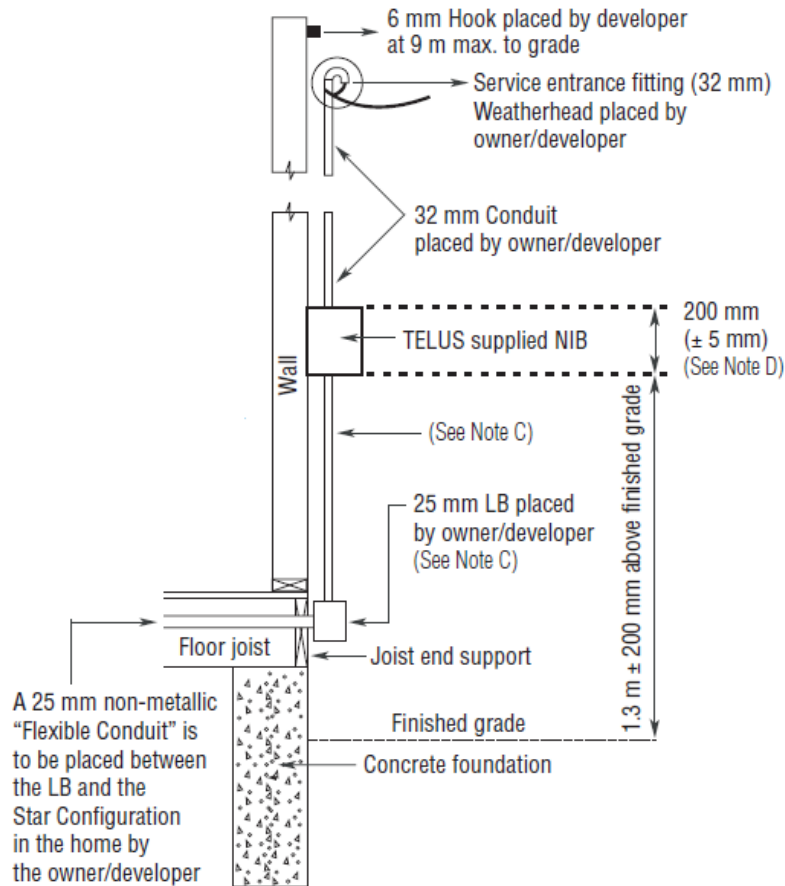
Notes:

- A. A No. 6 green insulated ground wire to be placed from power ground by owner/developer to TELUS NIB.
- B. The inside wiring should be done in a "star configuration" where the individual set runs from each telephone jack and TV location collect at a common location within the home. Two CAT5e set runs are to be placed between the star configuration location and the NIB on the outside of the home.
- C. A 3 m length of 'working slack' TELUS entrance wire must extend from the end of the 25 mm conduit and a 1 m length of 'working slack' for the No. 6 green insulated ground wire and 4-pair CAT5e inside wire if not placed by TELUS.
- D. This space is required for the TELUS supplied Network Interface Box (NIB).

Aerial Installation

Typical for Alberta

Figure 6



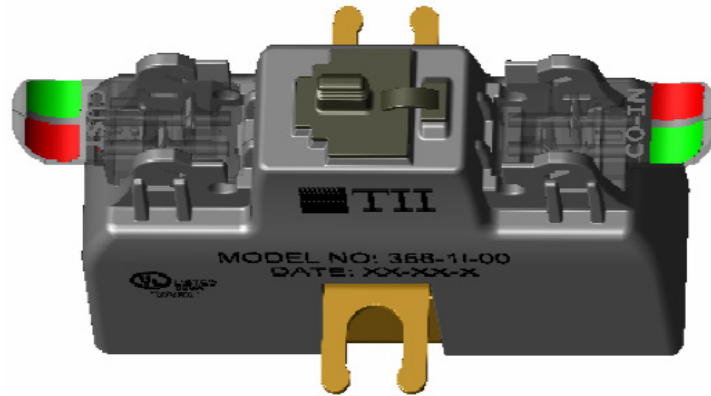
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D. This space is required for the TELUS supplied Network Interface Box (NIB).

Primary Protection / Demarcation Device – Residential

Figure 7



TII 356-11-00

1. The Tii 356-11-00 is a Single Line Protection Unit that is equipped with a Jack-Ended Test Device that the customer will use for demarcation.
2. One of its notable features includes “dual ground lugs” that allow this unit to always have the “CO-IN” side to the LEFT and the “Customer” side to the RIGHT (reversible).
3. Another feature is the design of the “Test Jack” which is NOT engaged in the circuitry until the test telephone is plugged in.

Grounding Requirements for all Services

In all new residential buildings (including mobile homes) TELUS recommends the installation of a # 6 green insulated A.W.G. ground wire from the location of the NIB/NID demarcation back to the electrical power panel. This ground wire should be as short as possible with as few bends as practical (sweep bends only). It must be permanent and where needed, guarded from mechanical injury. The ground wire shall be connected to a suitable ground electrode and installed in accordance with the Canadian Electrical Code (ref. CEC 60-706) using an approved connector.

If the TELUS service is being extended from the first building to any other out building such as a detached garage, workshop or coach house, that additional communication protection devices be installed in a NIB with a #6 ground wire being provided and attaching to the closest ground. Grounding would only be required if it's not in conduit all the way.

All individual service paths need their own individual ground from the NIB/NID demarcation to the ground servicing the electrical panel for that residence, suite, or coach house, except when all services enter at the same point on the premise and the inside wire from the demarcation to each dwelling unit is run to the "Star" location through its own conduit path.

Service Entrances Requirements

1. TELUS location and method of service entrance depend to some extent on the existing or proposed feeder route. The closest telephone facility may be aerial, underground, or buried. An underground service must be in conduit as determined by TELUS.
2. In areas where TELUS provisions with buried cable, TELUS is responsible for providing and installing the network wiring to the property, and the owner/developer is responsible for a suitable trench and/or conduit as stipulated by TELUS from the property line to the building demarcation location.
3. TELUS reserves the right to determine the point of connection on public R/W. The developer will pay for ALL excessive costs associated with providing service if he chooses to insist on a location other than the one determined by TELUS.
4. If the service is aerial, TELUS shall attach to the building and enter the Owner furnished conduit running to the building terminal location. The Owner is responsible for supplying and installing the building attachment.
5. If additional poles are required to support the telephone service on private property, they may be installed by either the Owner to TELUS standards or TELUS at the Owner's expense. Responsibility for the normal maintenance and replacement of the poles is outlined in [Tariff item 97](#).
6. TELUS shall specify duct sizes (aerial and underground) and design parameters such as bend radii, pull boxes, and building terminal requirements.
7. Easements and arrangements for distribution of services for subdivisions, condominium, and special projects shall be dealt with on an individual basis.
8. All work shall be performed to TELUS standards and shall conform to all building and electrical codes, acts, that may apply and are specified under the jurisdiction of the Provincial and Canadian Authorities.

9. Failure to comply with the rules, regulation, specifications, and requirements in Item 8 will delay the provision of service until such time that the deviation has been rectified, or may result in the assessment of additional service charges as defined in Item 3.
10. Where reasonable, TELUS will coordinate the service entrance route with the Power Authority.
11. CATV service entrance cable may be placed in the duct supplied for the telephone service entrance provided prior notice is received to establish duct size.
12. Network communication services for residential will require a suitable grounding electrode or ground wire as specified by TELUS. The grounding electrode will normally consist of the grounded conductor of the power consumer service. The grounding requirements will be specified by TELUS and will be dependent upon the type of service required and size of project under consideration.
13. The grounding electrode and all material used to provide the ground shall conform to the requirements outlined in The Canadian Electrical Code Part 1 (Rule 60-706) and TELUS grounding requirements.

Aerial Service

If the drop wire crosses a street or lane to reach the house, the minimum placing clearance is 5.3 m above the crown of the road and 9m maximum at the house attachment. This will provide the minimum required CSA clearance in all weather conditions. If the house is a low ranch style, to ensure adequate road clearance, it may be necessary to place a clearance pole on the property to maintain this height.

A conduit, weatherhead, and NIB are required for all aerial service. Conduit size of 32 mm (minimum) allows for placing of TELUS and CATV drops. If the conduit is to support the drop wires from the pole, then a minimum of 50mm HDG iron pipe must be used, which is securely attached to the building per required codes. Section 5 reference [P546](#) and [P630](#) Per CSA CEC Rule 60-510 Clause 5.10.6 and Table 23, the telecommunications cable must maintain a 300 mm separation from the hydro from the clevis attachment on the mast, down the full path of the drops to the providing service poles on the right of way.

Aerial Service to a mobile home will have to have a class 6 pole installed, with the mast attached to this pole. See section on mobile homes on private property in this document for further details.

All exposed PVC conduit must have U.V. inhibitors and is subject to local building inspector approval. The primary protector /demarcation are to be placed as close as practical to the bottom of the mast and as close as practical to the point at which the conductors enter or attach to that building (Sec CEC rules 60-200).

Aerial Service Entrance Clearances

Minimum Placing Clearances above ground in Urban and Rural areas for telephone facilities in all loading areas on normal spans (45 m - 148' for cable 30 m - 100' for drops)

Where cables, guys, line wires run parallel with and within the limits of:

1. Oil and Gas Pipe Lines clearance 5.1 m (16'-9")
2. Public highways, streets, roads, and alleys clearance 5.3 m (17'-5")
3. Driveways accessible to trucks, farm machinery clearance 5.3 m (17'-5")
4. Residence driveways, for vehicles not exceeding 2.4 m in height clearance 4.3 m (14'-2")
5. Walks accessible to pedestrians only clearance 3.1 m (10'-2")
6. Billboards, signs, roofs other than flat clearance 1.2 m (4'-0")
7. Flat roofs used by tenants or workmen. clearance 3.1 m (10'-2")
8. Railway, waterways (rivers, canals, etc.) provide clearance as shown on TELUS engineering drawings.

Note: The minimum placing clearances are TELUS standards that were engineered to meet the minimum CSA clearances in all weather conditions.

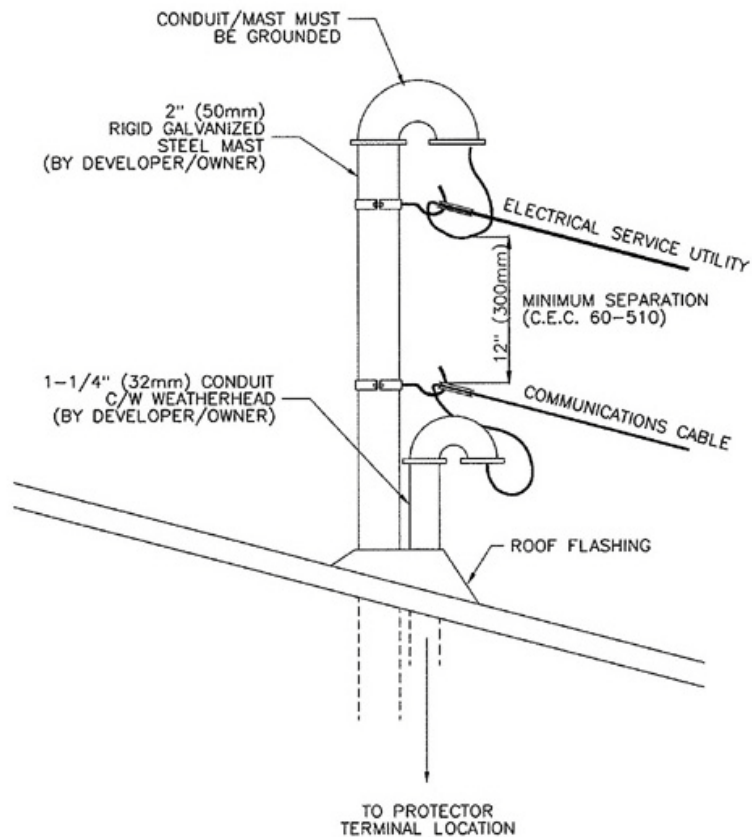
Recommended Building Attachments

See Section 4: [Commercial Business & Multi-Dwelling Residential](#)

Telephone and Power Separation for Aerial Service Entrances

See Section 4 [Commercial Business & Multi-Dwelling Residential: Raceway](#)

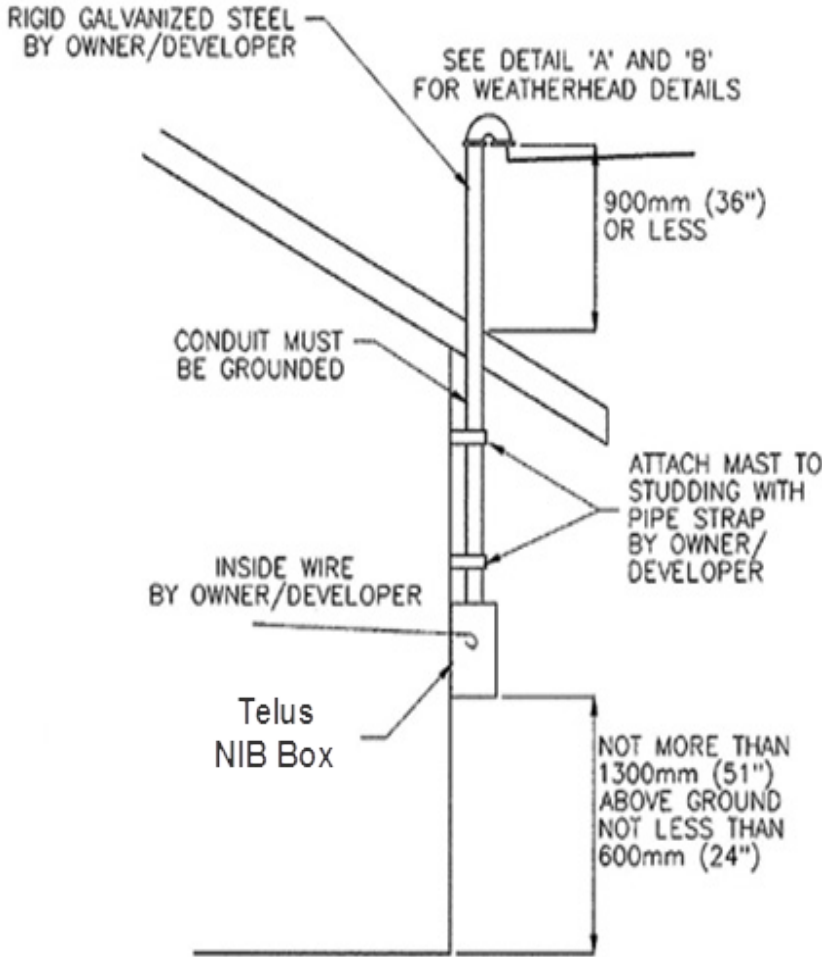
Figure 8 Hydro Clearance and drop attachment



1. All aerial entrance conduit for residential buildings covered in this section shall be rigid galvanized steel (mast), electrical metallic tubing (E.M.T.) or rigid P.V.C. UV. This conduit is for TELUS services only (Must meet The Canadian Electrical Code Requirements Part 1). All underground conduits shall be P.V.C. DB2 orange.
2. The entrance conduit size shall be determined by the number of dwelling units in the building as identified below.

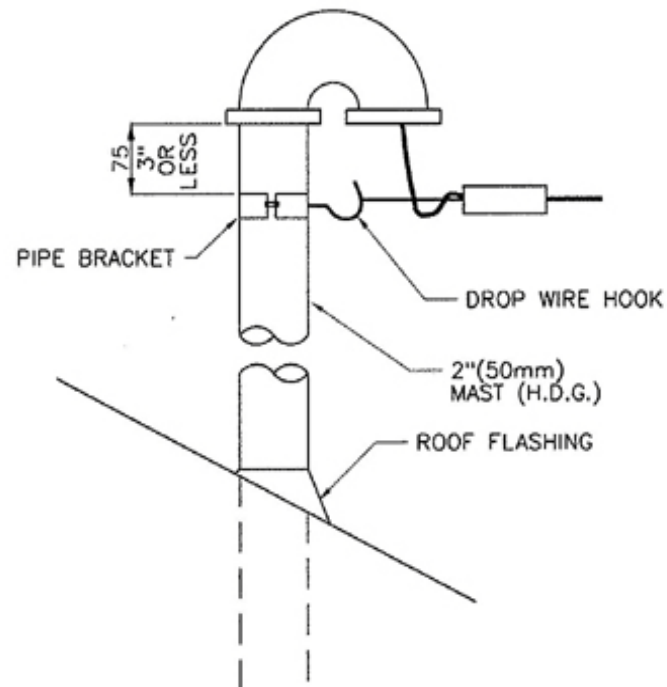
Aerial Detail and dimensions

Figure 9



Aerial Mast Attachment detail

Figure 10



TELUS ONLY MAST (DROP ATTACHED)

NOTES:

1. A MAST OVER 5' (1.5m) WILL REQUIRE GUYING IN 2 DIRECTIONS.
2. IF MAST IS NOT USED AS A SERVICE CONDUIT A 32mm CONDUIT C/W WEATHERHEAD SHALL BE PROVIDED.
3. MINIMUM SEPARATION FROM THE ELECTRICAL SERVICE IS 12" (300mm) FOR TELUS AERIAL SERVICE (CEC 60-510)
4. FOR MINIMUM CLEARANCES SEE SECTION 3.

Conduit Requirements for Service Entrances

1. The diameter of the service entrance cable depends on the gauge and number of pairs used which in turn depends on building type, size, and location. The number and size of service entrance ducts are to be determined by TELUS.
2. TELUS duct is orange PVC type DB2. The color of the duct is a safety factor and must be adhered to.
3. No installation can have more than 2 - 90 degree bends. A pull box should be inserted in the duct line to avoid exceeding two bends. (See example below). Ducts must enter and exit from ends only.
4. The maximum pulling lengths should not exceed the following:
 - 61 m (200') (through 2 - 90 degree bends), 91.5 m (300') (straight pull between pull boxes).
5. The conduit sizes normally specified allow for cablevision. If CATV is to be installed later a separate conduit will be required.
6. A 3 mm (1/8") waterproof pull cord shall be provided and installed in each duct by the Owner.

Note: Pull Box No. 2 is required when the distance between Pull Box No. 1 and the building is greater than 100 m (328') or there are two (2) 90 degree bends.

Service Boxes and Vaults

The top of a service box must be at finished grade and match the incline of the finished grade. The 75 mm (3") & 100 mm (4") ducts that enter a service box must have a flare. The box must be grouted all around the ducts and behind the flares. The face of the flares should be no more than 25 mm (1") inside the service box. All ducts entering the service box must extend into the box just enough to place a cap into it. It is important that all ducts enter into a service box in the ends.

Service vaults will be set to final grade; the windows must be as shown on the approved drawing. All ducts shall be grouted in place.

Drains

75 mm (3") drains must be placed from all service vaults and from the lowest service box in all areas. In order of preference the drains will be connected to:

- 1) storm pipes
- 2) catch basins or basin leads
- 3) rock pits (not under box or vault)

Note: The B.C. building code requires that a drain be placed on all ducts entering a building.

Underground Service example

Figure 11

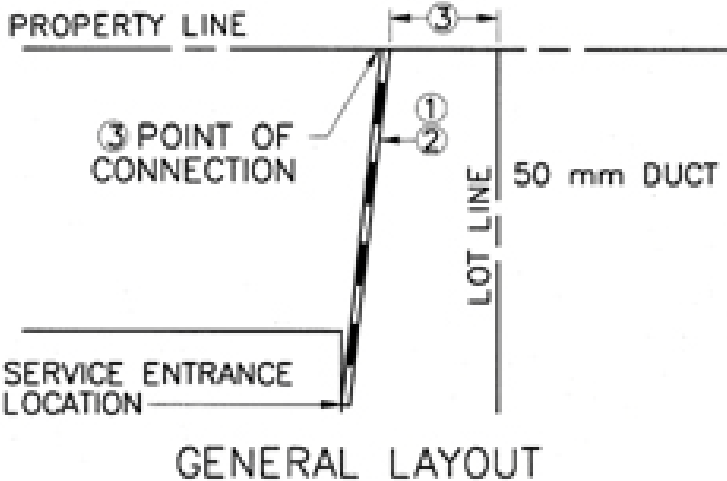


Figure 12

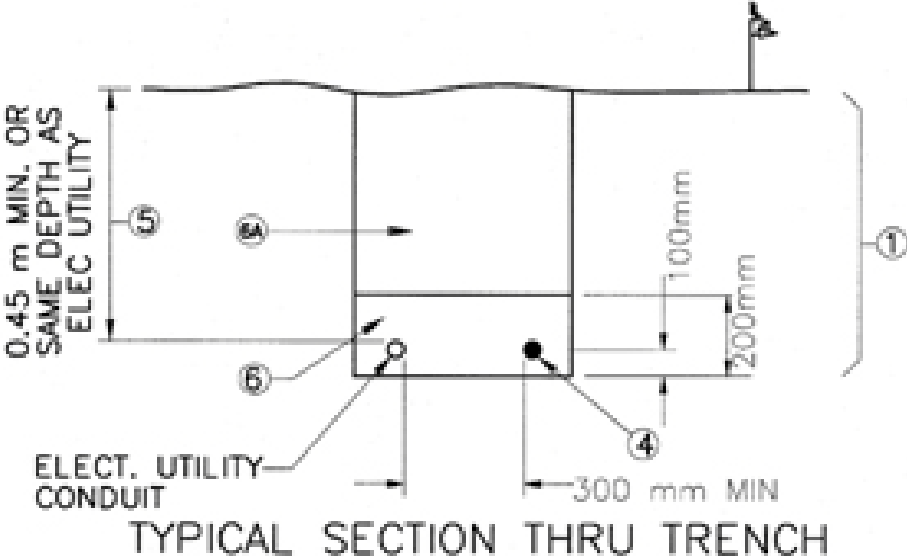
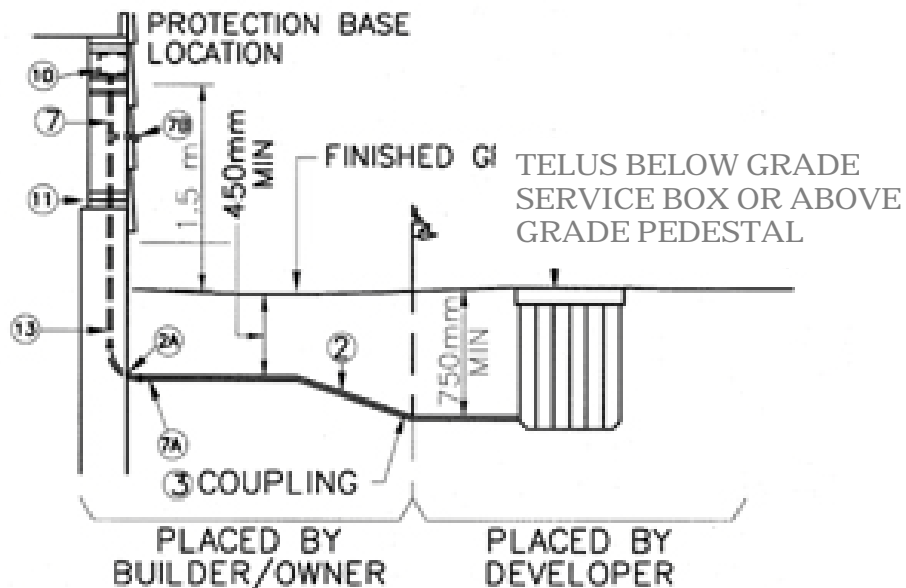


Figure 13



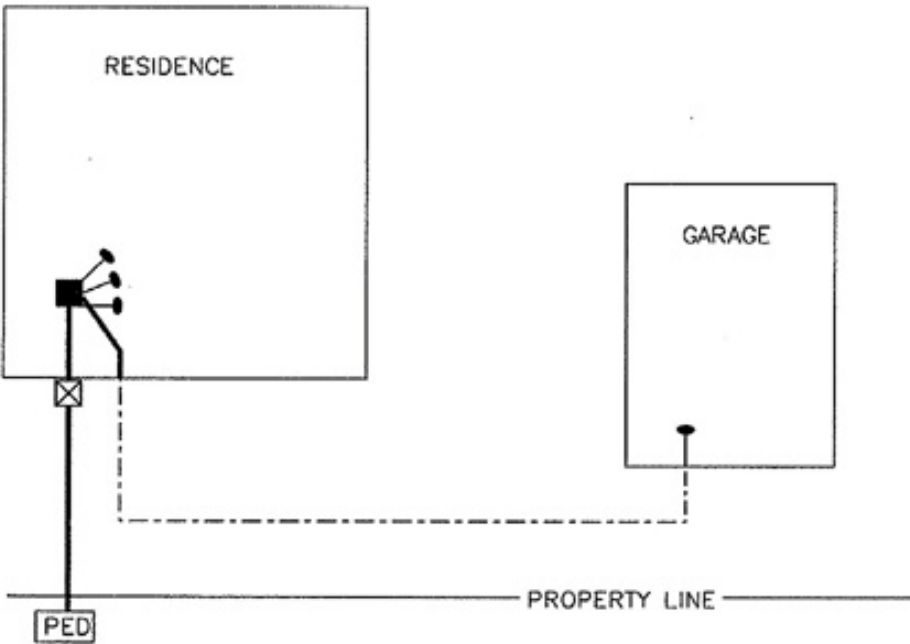
Note: These notes are for Figures 11, 12 and 13

1. The Owner/Builder is responsible for supplying all material and civil work (to TELUS specifications) on private property.
2. All duct material will be ORANGE, 50 mm PVC-DB2 Conduit.
 - a) 50 mm PVC-DB2 300 mm Radius bend or 90 degree 50 mm Schedule 40 rigid PVC J-Bend
3. The Owner/Builder is to make the physical connection at the TELUS specified point-of-connection.
4. TELUS conduit must be on the property line side of the trench with 300 mm separation from Electrical utility conduit, no crossover of TELUS and Electrical conduit is permitted.
5. The minimum cover above conduit to be 0.45 m (1.5 ft) or the same depth as Electrical utility is permitted.
6. All material used for back-filling must be select fill, clear of all rocks and sharp stones unless otherwise specified.
 - a) Native fill free of rock larger than 150 mm
7. Extend conduit 1.5 m (5ft) above the final grade into the Distribution Box. Fish line to be 3 mm braided nylon cord.
 - a) Owner/Builder to provide drain in 90 degree sweep bend into drain rock, by perforating the bend on the bottom side
 - b) Optional - Owner/Builder to provide and install 50 mm Tee and nipple to provide drainage

8. No installation can have more than 2-90 degree or equivalent bends (2 x 45 degree = 1 x 90 degree) without the use of a pull box. Pull Boxes or L.B.'s must not be used in place of a bend.
9. Maximum pulling length 60 m (200ft) through 2-90 degree (300 mm Rad) bends or 91.5 m (300ft) on a straight pull.
10. Owner/Builder to provide and install NIB on an outside wall facing outside.
11. Owner/Builder to insure that TELUS and Electrical utility conduit exit the concrete at a minimum of 300 mm separation.
12. Depending upon Foundation type and local bylaws, conduit can be attached to exterior. (All exposed PVC Conduit must have U.V. Inhibitors).
13. All above requirements are subject to local building Inspector's approval and other provincial bodies that have jurisdiction and authority.

Schematic overview

Figure 14 Single Family dwelling without building

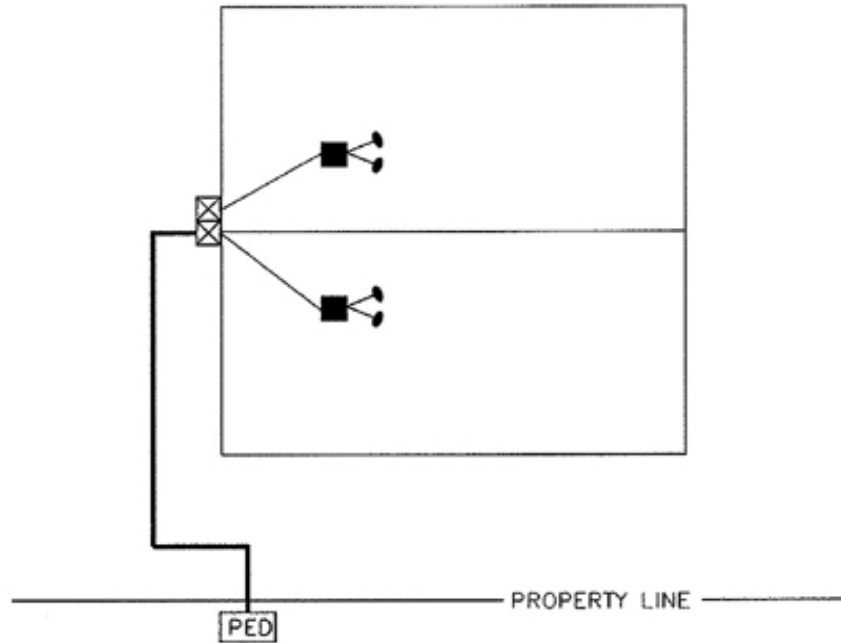


KEY:

- ☒ TELUS Communications Inc. provided and maintained Protected Terminal at the customer's premises.
- TELUS Communications Inc. provided and maintained (CCP) customer connection block = Demarcation Point
- Customer provided and maintained premise wiring.
- TELUS Communications Inc. provided and maintained network facilities up to Demarcation Point.
- Customer provided and maintained distribution wiring for extension purposes.

Note: Customer, owner/developer shall provide conduit/raceway open trench from property line to Protected Terminal as required by TELUS Communications Inc. (Ref.: Tariff Item 4.1, 4.2, 5.1, 6.1 and 25.1)

Figure 15 Duplex, single owner

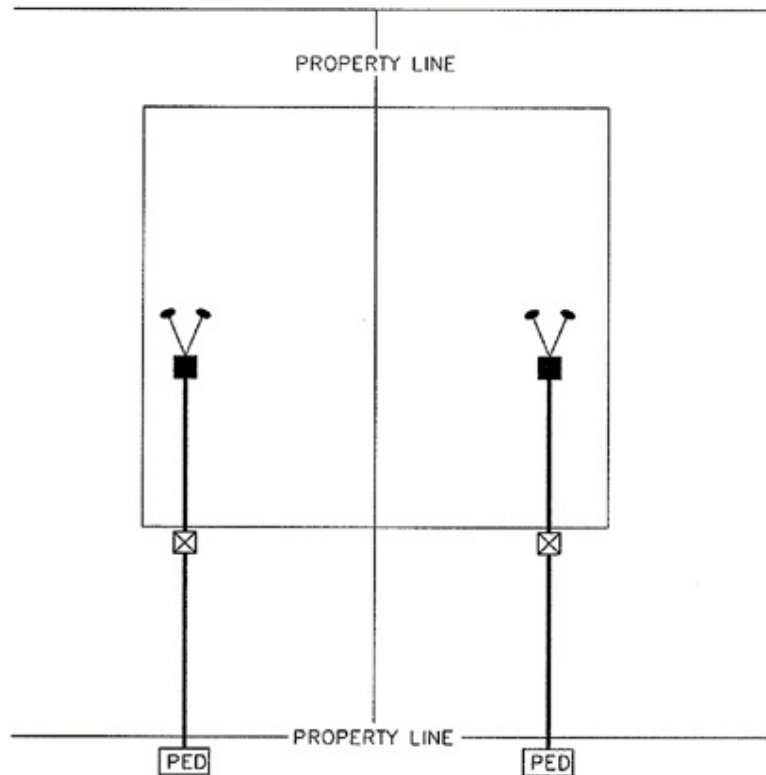


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Figure 16 Duplex, two owners

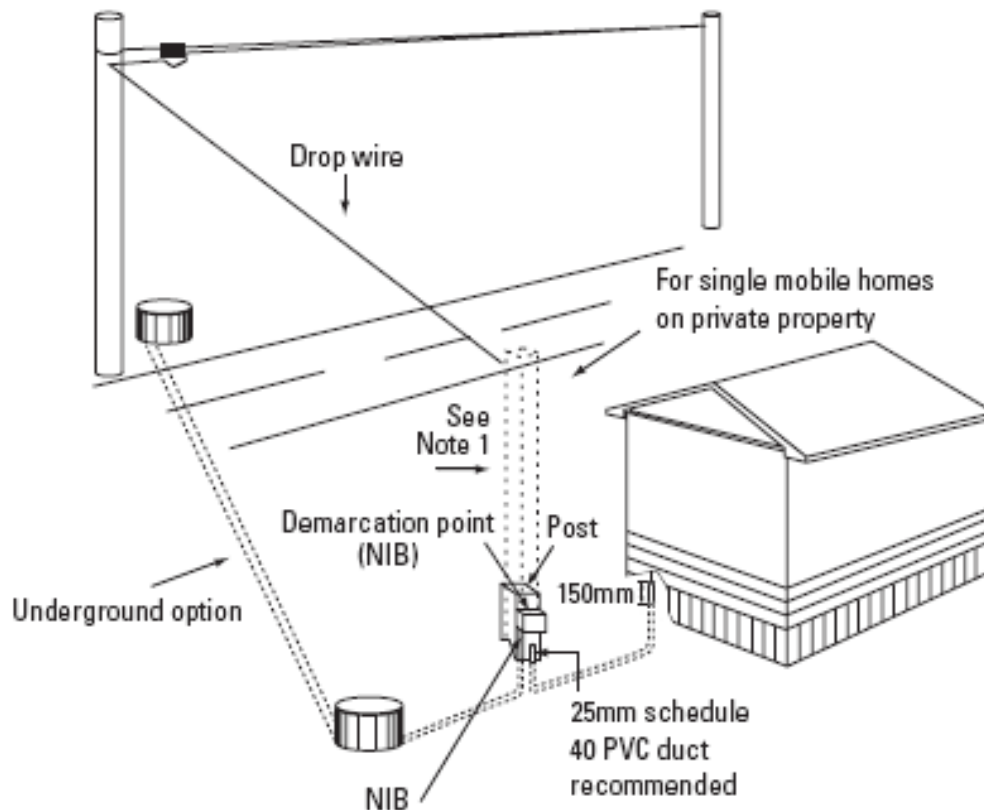


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Note: Customer, owner/developer shall provide conduit/raceway open trench from property line to Protected Terminal as required by TELUS Communications Inc. (Ref.: Tariff Item 4.1, 4.2, 5.1, 6.1 and 25.1)

Figure 17 - Mobile Home on Private Property, Aerial or Underground



Mobile home owners are required to provide:

1. For aerial service, a Class 6 treated pole shall be provided adjacent to the mobile home at the point of service entry. The treated pole shall set 1.22 m (4') into the ground no more than 610 mm (2') from the mobile unit.

Note: For minimum clearance over public and private property, see Section 4.1.a

2. For underground service, a post measuring 100 mm x 100 mm (4" x 4") x 1300 + 200 mm above final grade is required.