

## SCHEDULE S – INSTALLATION STANDARDS

### 1. Introduction

- 1.1 In accordance with this Agreement, TELUS will ensure that the Services are installed at Sites in compliance with the general installation standards and procedures detailed in this Schedule S, and in the case of Voice Services, the additional Service specific installation standards set out in Attachment S3 – Installation Specific Standards for Voice Services.

### 2. General Installation Standards

- 2.1 Industry Installation Standards. TELUS will ensure Network infrastructure construction meets, where applicable, local building and electrical codes, generally accepted industry and manufacturers installation standards, and any standards which may be provided in writing to TELUS from time to time by the GPS Entity to which such infrastructure relates. TELUS will ensure that a Circuit and its associated Service is initially installed, upgraded and rearranged according to such standards.
- 2.2 Cable Standards. TELUS will conform to the following cabling standards when performing Service installation work at a Site for a GPS Entity:
- 2.2.1 TELUS will work with existing premise distribution systems, or on request of the GPS Entity, place cable in order to provide Services at station locations.
- 2.2.2 Premise cabling will follow the most current specifications stated in the Accommodation and Real Estate Services “Structured Cabling” specification in "Technical Standards" posted at: [http://www.bcbc.bc.ca/Doing\\_Business\\_With\\_Us/Technical\\_Manuals/](http://www.bcbc.bc.ca/Doing_Business_With_Us/Technical_Manuals/) and updated from time to time and will comply with applicable building codes.
- 2.2.3 If requested by the GPS Entity, TELUS will adhere to GPS Entity specific premise cabling specifications provided in writing by the GPS Entity.
- 2.2.4 TELUS will ensure manufacturers’ cable installation limits are not exceeded and standard cable installation procedures are followed.
- 2.2.5 Cabling between communication racks (i.e. modem shelves) and backboards will be fastened securely to cabinet rails, cable trays and walls, and neatly routed along perimeters.
- 2.2.6 No cables will be left unsecured.
- 2.2.7 Cable fasteners, such as tie-wraps or Velcro will be used.

- 2.2.8 TELUS will take appropriate safety precautions (e.g. cables not run across open floor space, excess cable coiled to avoid tripping and tie-wraps trimmed to avoid protrusions).
- 2.2.9 Cables with connectors will be secured to the mating connector using the fastening screws or hardware supplied with that connector.
- 2.2.10 When removing equipment, all associated cables will be removed.
- 2.3 Communications Racks. TELUS will conform to the following communication rack standards when performing Service installation work at a Site for a GPS Entity:
  - 2.3.1 If a communication rack has both wheels and levelling feet, the levelling feet will always be lowered and adjusted to prevent communications racks from rolling or tipping once moved into place.
  - 2.3.2 When two or more communications racks are installed side-by-side, the adjoining side panels will be removed to allow placement of cables between racks.
  - 2.3.3 Where exhaust fans are provided, they will be powered on at all times.
  - 2.3.4 Air vents for both convection and forced air-cooled cabinets will remain unrestricted.
- 2.4 Equipment Mounting. TELUS will conform to the following equipment mounting standards when performing Service installation work at a Site for a GPS Entity:
  - 2.4.1 equipment and equipment shelves will be installed with consideration given so as not to impede any functionality of the equipment or the visibility and accessibility of LED/LCD indicators, front panel switches, controls, ventilation and fanning;
  - 2.4.2 equipment will be readily accessible without the aid of a step or ladder; and
  - 2.4.3 rack mounted equipment will be properly fastened using mounting hardware (e.g. screws, nuts, bolts, etc) and sufficient size and quantity of fasteners will be used giving consideration to the weight of a fully configured/loaded shelf.
- 2.5 Power. TELUS will conform to the following power standards when performing Service installation work at a Site for a GPS Entity:
  - 2.5.1 where a Site has an uninterruptible power supplies (UPS) system located within communications racks or has outlets protected by larger UPS systems, equipment will be attached to power circuits using guidelines provided in writing by such GPS Entity's technical staff;

- 2.5.2 equipment not directly associated with such GPS Entity's equipment, power tools or test equipment will not be plugged into any outlets servicing the communications cabinets;
  - 2.5.3 in cases where power must be extended, TELUS will discuss the manner of extension with the GPS Entity prior to implementation of the extension and where at all possible, power bars will be used in lieu of extension cords, and
  - 2.5.4 bulky external power supplies or transformers will be secured to prevent accidental disconnection.
- 2.6 Cross-Connects. TELUS will conform to the following cross-connect standards when performing Service installation work at a Site for a GPS Entity:
- 2.6.1 all cross-connects will be done in a neat and tidy manner;
  - 2.6.2 only the tool specifically designed for the style of cross-connect block will be used;
  - 2.6.3 all jumper ends will be trimmed;
  - 2.6.4 jumpers will be formed and routed using wire management rings as provided;
  - 2.6.5 jumpers will not contain excessive slack;
  - 2.6.6 for circuit removals, the jumper wire will be completely removed and discarded; and
  - 2.6.7 interfaces with non-standard connector types that are approved by the GPS Entity will be provided.

### **3. Site Survey**

- 3.1 TELUS will, if requested to do so in a Service Order, and subject to the Fees identified in the Price Book, complete and provide to the GPS Entity a Site survey prior to commencing any installation, upgrade or rearrangement activities with respect to the Network. Any such Site survey will identify all Site requirements and Site modifications required prior to installation of a Circuit and its associated Service. Site requirements to be addressed in the Site survey will include, but not be limited to:
  - 3.1.1 physical space including access for performing installation, upgrade, rearrangement and maintenance work;
  - 3.1.2 selection of location for terminating the Circuit;
  - 3.1.3 any necessary conduit, ducts, pathways; and

- 3.1.4 any unusual or unforeseen installation, upgrade, rearrangement or maintenance issues.

#### **4. Installation Co-ordination**

- 4.1 TELUS will maintain a single point of contact, via the Service Order Management Centre, for Services Orders and installation work, which will be accessible by the GPS Entities through:
  - 4.1.1 a toll free telephone number,
  - 4.1.2 electronic mail address; and
  - 4.1.3 or fax number,which will be provided by TELUS to each GPS Entity in writing.
- 4.2 The Service Order Management Centre will:
  - 4.2.1 co-ordinate field Personnel and field External Personnel with other technical personnel as may be designated by the GPS Entity and will contact the Site contact prior to anyone arriving at a Site;
  - 4.2.2 manage the interface with all Subcontractors in a manner that does not disrupt the Network services the TELUS provides under this Agreement; and
  - 4.2.3 place a follow-up call after completion of the installation to ensure the Site contact was satisfied with the installation and the Service is functional.

#### **5. Installation of Telecommunications Equipment**

- 5.1 TELUS will install telecommunications equipment owned by the GPS Entity at the time of initial installation, upgrade or rearrangement of a Circuit or its associated Service and in the manner specified in the Service Order for such equipment or as otherwise mutually agreed by the Parties.
- 5.2 TELUS will:
  - 5.2.1 arrange transport of any equipment owned by the GPS Entity to a Site if requested to do so by the GPS Entity at the Fee set out in the Price Book;
  - 5.2.2 receive stock shipped by GPS Entity at the installation Site or at another location designated by the GPS Entity;
  - 5.2.3 upon request from the GPS Entity, inspect and certify additional equipment from the GPS Entity stock for the Fee set out in the Price Book. Any such inspection will be done at TELUS's premises or the installation Site. The place of certification will be the installation Site or such other location as mutually agreed; and

- 5.2.4 with respect to equipment removed from a Site by TELUS, ensure it:
  - 5.2.4.1 is properly packaged to prevent damage;
  - 5.2.4.2 includes the Service Order number;
  - 5.2.4.3 is accompanied by a packing list showing the quantity and type of equipment; and
  - 5.2.4.4 will be sent courier collect or be delivered by TELUS to the GPS Entity loading dock. Such equipment will remain the responsibility of TELUS until formally received by an employee or agent of the GPS Entity loading dock.

## **6. Installation Times**

- 6.1 TELUS will perform initial installation, upgrade and rearrangement work with respect to the Services during Business Hours unless otherwise requested by the GPS Entity. If TELUS believes that it is necessary to perform any installation work at a time other than during Business Hours, TELUS will make a written request to the GPS Entity and will not proceed until the request is approved by the GPS Entity. TELUS will perform installation, upgrade and rearrangement work outside of Business Hours if requested to do so in a Service Order issued by a GPS Entity provided that overtime hourly rates may apply to such work outside of Business Hours.

## **7. Equipment Rooms and Distribution Closets**

- 7.1 Where TELUS is required to work in the GPS Entity's equipment rooms, TELUS will:
  - 7.1.1 track and report Site deficiencies beyond TELUS' control to the GPS Entity's network operations centre (i.e. the unit within the GPS Entity that is responsible for managing incident tickets from inception of the trouble ticket through rectification of the problem to closing the trouble ticket);
  - 7.1.2 ensure jumpers are properly routed, terminated and removed;
  - 7.1.3 ensure that Personnel, External Personnel and its agents responsible for performing such work are available to access Sites on a 7 day per week, 24 hour basis, subject to Section 7.10 of the main body of this Agreement.; and
  - 7.1.4 ensure regular formal work site inspections are conducted by the management Personnel of TELUS to validate that the level of workmanship is up to the required standards under this Agreement.

## **8. Installation Completion Tasks**

- 8.1 TELUS will perform the following tasks as part of every installation, upgrade or rearrangement of a Circuit or its associated Service:
  - 8.1.1 install labels for all cables, cross-connect blocks and equipment including functionality labels;
  - 8.1.2 ensure that labels are legible (preferably machine printed) and securely affixed to the appropriate item;
  - 8.1.3 ensure that labels are in clearly visible location and do not obstruct equipment operation, displays or indicators; and
  - 8.1.4 communicate with the installation coordinator designated by the GPS Entity before leaving any Site.

## **9. Disposal of Refuse**

- 9.1 TELUS will conform to the following disposal of refuse standards when performing installation work at a Site for a GPS Entity:
  - 9.1.1 all Sites will be kept clean and tidy;
  - 9.1.2 all packing material, boxes, cable scraps and tie-wrap cuttings from performing installation work will be removed from the Site during each visit; and
  - 9.1.3 while arrangements can generally be made with the local GPS Entity Site contact for the disposal of waste materials, if such arrangements cannot be made, TELUS will take all refuse from the Site and dispose of it as appropriate and in accordance with Applicable Laws.

## Attachment S3

### Installation Specific Standards for Voice Services

#### 1. Introduction

In accordance with this Agreement, TELUS will ensure that installation Work for a GPS Entity at a Site with respect to Voice Services is conducted in compliance with the general installation standards and procedures detailed in this Schedule S and the following specific installation standards for Voice Services.

#### 2. Installation Specific Standards for Voice Services

##### 2.1 Installation and Demarcation.

##### 2.1.1 Service Demarcation. With respect to the Voice Services:

- 2.1.1.1 “**Exchange Service Demarcation**” means the point of interconnection between TELUS’ local exchange facilities and the Distribution System;
- 2.1.1.2 “**CallCentreAnywhere Service Demarcation**” means the point of termination located in a TELUS IDC which provides a point of presence on both the public Internet and the PSTN;  
and
- 2.1.1.3 “**Centrex Service Demarcation**” means the point of termination of a Centrex service and associated GPS Provided Equipment at the GPS Entity Site.

##### 2.1.2 Installation. TELUS will:

- 2.1.2.1 provision / extend existing access facilities to the in-place premise Demarcation Point;
- 2.1.2.2 ensure new access facilities will terminate at a common building Demarcation Point;
- 2.1.2.3 where installation occurs in multi-tenant and multi-floor buildings, manage the provision of Voice Services to the premise Demarcation Point or common equipment location;  
and
- 2.1.2.4 ensure the activation of all features specified in the Service Order for such Service.

- 2.2 Integration/Interoperability. TELUS will to the extent possible, reuse hardware. If hardware cannot be reused, TELUS may propose to replace the hardware subject to the approval of the GPS Entity.
- 2.3 Facilities Rearrangements. TELUS will maintain records for OPXs including a cross-reference of OPX number, Circuit number and Site addresses.