



CI-0704

### TAB 7: TECHNICAL DISCIPLINES

Communications

## TELEPHONE NETWORK

### DESIGN REQUIREMENTS

- > The main telephone switch shall consist of trunk lines supplied as either individual or T1 circuits to allow for local and/or long distance calling. The network is to be capable of interfacing with 4-digit dialling as well as integrating with the voice mail system.
- > Telephone switches at remote sites such as Middlefield or Wolfedale shall be linked to the main switch at Head Office to permit 4-digit dialling between all sites.
- > All systems are to be provided with backup power supplies from Uninterruptible Power Sources at each location and by generator power.
- > The network shall be capable of permitting paging to be performed through the local telephone system at all stations.
- > Provision shall be made for local caller I.D., call hold, call waiting, transfer and conferencing.
- > Individual telephones shall be speaker type, capable of accepting multiple lines and speed dialling.

### WIRING

- > Conduits and power for the telephone network shall be provided at each trunk switch location.

## SECURITY SYSTEMS

### BASIS OF CRITERIA

Security at GO Transit Rail and Bus Stations is managed by integrated access control and alarm systems. These systems are supplied and installed, as well as monitored by Chubb Security Systems on a 24-hour basis.

### CODES AND STANDARDS

The equipment, materials, installation methods and workmanship will be equal to or exceed the standards specified by the Canadian Standards Association, Electrical and Electronics Manufacturers Association of Canada, Ontario Electrical Safety Code, OBC, ULC, NFPA and all other current applicable codes.

### DESIGN REQUIREMENTS



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provides an estimate of the maximum wattage that each device requires. Table 1. shows power requirements for each device.

Device	Watts
SPOS (Station Point of Sale)	200
SFTP (Station Fare Transaction Processor)	35
CQD (Card Query Device)	35
HCR (Handheld Card Reader) Cradles	120

Table 1: Power Requirements

For Electrical wiring specifications, refer to Tab 7 Section CI-0703 Electrical

**Communications Rack**

In the Communications Room, the required receptacles, each fed from dedicated power circuits from a local non UPS (generator backed up), shall be provided at each CC Rack.

The types of receptacles required at the different locations are as follows:

Main CC Rack – Two (2) dedicated NEMA L5-20R (120V, 20A) mounted on cable tray fed from two (2) 15A breakers on different circuits, providing two (2) extension cords from the two (2) locked receptacles to reach bottom of the CC rack. The two extension cords shall include one (1) L5-20P plug each at top end of cords to plug into the twist lock receptacles and one (1) NEMA 5-20R receptacle each at bottom of cord (which accepts both NEMA 5-15P and NEMA 5-20P for plugging PRESTO UPS which is supplied by PRESTO supplier).

Main CC Rack if Transit Safety is included – In addition to Main CC Rack requirements, One (1) dedicated NEMA L6-20R (208V, 20A) mounted on the cable tray fed from One (1) 20A breaker, providing an extension cord from the locked receptacle to reach bottom of CC rack with one (1) NEMA L6-20P plug at top end to plug into twist lock receptacle and one (1) L6-20R receptacle at bottom of CC Rack (for plugging PRESTO UPS which is supplied by PRESTO supplier).

Secondary CC Rack - Two (2) dedicated NEMA L5-20R (120V, 20A) mounted on cable tray fed from two (2) 15A breakers on different circuits, providing two (2) extension cords from two (2) locked receptacles to reach bottom of the CC rack. The two extension cords shall include one (1) L5-20P plug each at top end of cords to plug into the twist lock receptacles and one (1) NEMA 5-20R receptacle each at bottom of cord (which accepts both NEMA 5-15P and NEMA 5-20P for plugging PRESTO UPS which is supplied by PRESTO supplier).

**PRESTO Devices**



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Each **SPOS** (at Service Counter) is locally backed-up by PRESTO UPS (provided by PRESTO equipment supplier) and the PRESTO UPS requires a separate NEMA 5-20R (120V, 20A) receptacle fed from a 15A breaker on a dedicated non UPS power circuit (generator backed up). The power outlet shall be located within a maximum 2 m of the service position and labeled with PRESTO.

**SFTP** and **CQD** devices require dedicated power circuits from UPS located in the CC Rack (UPS provided by PRESTO equipment supplier). Power for up to four (4) devices (SFTP and CQD) can be daisy-chain connected to the UPS in the CC Rack. If devices are daisy-chained, they shall be staggered such that devices in close proximity to each other will be fed on separate circuits. Each such circuit shall be protected by a circuit breaker which will also serve as an isolation point near the CC rack (see Standard Drawing PRES-002 Detail 3 for power wiring termination details at CC Rack location).



An individual ground wire for each SFTP and CQD shall be run and terminated in the copper ground bus at power junction box at CC Rack location.

At the CC rack end the plugs for the SFTP and CQD must be SOW Service Cord complete with Commercial specification grade (straight blade valise type as shown below) plugs to be connected to the PRESTO System UPS in CC Rack.

Example of PRESTO Device plugs (for illustration purposes only):





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#### Communications

For Electrical wiring specifications, refer to Tab 7 Section CI-0703 Electrical

#### Communications Rack

In the Communications Room, the required receptacles each fed from dedicated power circuits from a local non UPS (generator backed up), shall be provided at each CC Rack.

The types of receptacles required at the different locations are as follows:

Main CC Rack if Station EUT is included – One (1) dedicated NEMA L5-20R (120V, 20A) mounted on cable tray fed from one (1) 15A breaker on different circuits, providing an extension cord from locked receptacle to reach bottom of the CC rack. The extension cord shall include one (1) L5-20P plug at top end of cord to plug into the twist lock receptacle and one (1) NEMA 5-20R receptacle at bottom of cord (which accepts both NEMA 5-15P and NEMA 5-20P for plugging PRESTO UPS supplied by PRESTO supplier).

Main CC Rack if Transit Safety is included - One (1) dedicated NEMA L6-20R (208V, 20A) mounted on the cable tray fed from One (1) 20A breaker, providing an extension cord from the locked receptacle to reach bottom of CC rack with One (1) NEMA L6-20P at top end to plug into twist lock receptacle and One (1) L6-20R at bottom of CC rack (for plugging PRESTO UPS supplied by PRESTO supplier).

Main CC Rack if Station Staging Area is included – Two (2) dedicated NEMA L5-20R (120V, 20A) mounted on cable tray fed from two (2) 15A breakers on different circuits, providing two (2) extension cords from Two (2) locked receptacles to reach bottom of the CC rack. The two extension cords shall include one (1) L5-20P plug each at top end of cords to plug into the twist lock receptacles and one (1) NEMA 5-20R each at bottom of cord (which accepts both NEMA 5-15P and NEMA 5-20P for plugging PRESTO UPS supplied by PRESTO supplier).

#### PRESTO Devices

In EUT (End User Training) environment:

**SFTP** and **CQD** devices in a EUT environment will be equipped with a plug and will require NEMA 5-20R receptacles in the EUT office.

Each **SPOS** (in EUT office) requires a NEMA 5-20R (120V, 20A) receptacle fed from a 15A breaker on a different circuit. The power outlet shall be located within a maximum 2 m of the device.

In Transit Safety office:

An **HCR** cradle has an input voltage of 120V AC and will require a NEMA 5-20R receptacle in the Transit Safety office.



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**BUS MAINTENANCE FACILITIES**

**ELECTRICAL CONNECTIVITY AND WIRING**

**General**

Wiring and circuit protection will be sized to suit the total wattage on circuit, to address potential voltage drops, and de-rating requirements for multiple circuits run in the same conduit. The following table provides an estimate of the maximum wattage that each device requires.

Table 1 shows power requirements for each device.

Device	Watts
SPOS (Station Point of Sale)	200
SFTP (Station Fare Transaction Processor)	35
CQD (Card Query Device)	35
HCR (Handheld Card Reader) Cradles	120

Table 1: Power Requirements

**Communications Room**

In the Communications Room, the required receptacles each fed from dedicated power circuits from a local non UPS (generator backed up), shall be provided at each CC Rack.

The types of receptacles required at the different locations are as follows:

Main CC rack for Bus WLAN Solution – One (1) dedicated NEMA L6-20R (208, 20A) mounted on cable tray fed from One (1) 20 A breaker, providing an extension cord from locked receptacle to reach bottom of CC rack. The extension cord shall include one (1) NEMA L6-20P at top end to plug into twist lock receptacle and one (1) L6-20R at bottom of CC rack (for plugging PRESTO UPS supplied by PRESTO supplier) and One (1) dedicated NEMA L5-30R (120, 30A) mounted on cable tray fed from one (1) 30A breaker, providing an extension cord from locked receptacle to reach bottom of CC rack. The extension cord shall include one (1) NEMA L5-30P at top end to plug into twist lock receptacle and one (1) L5-30R at bottom of CC rack (for plugging PRESTO UPS supplied by PRESTO supplier).

Main CC rack when Transit Safety is included – In addition to Bus WLAN solution above, One (1) dedicated NEMA L6-20R (208V, 20A) mounted on cable tray fed from One (1) 20A breaker on different circuit, providing an extension cord from the locked receptacle to reach bottom of CC Rack. The extension cord shall include one (1) NEMA L6-20P at top end of cord to plug into twist lock receptacle and an L6-20R at bottom of CC rack for plugging PRESTO UPS supplied by PRESTO supplier).