

SECTION 10 – COMMUNICATIONS AND FARE COLLECTION

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SECTION 10 – COMMUNICATIONS AND FARE COLLECTION

10.1.0 GENERAL

This Design Criteria establishes the minimum standards to be used in the design of RTD bus transit facilities. This section is intended to direct the Design Engineer in the design of communication elements, fare collection devices and associated appurtenances at all RTD bus transit facilities.

Communications elements are defined as those devices that provide and enable remote contact, announcements and message information sharing.

Fare collection devices are defined as all equipment and supporting infrastructure needed to accomplish collection or documentation of fares, which are not located on the designated transit vehicle.

Power requirements shall consist of all electrical alternating current (AC) power, equipment and conduits needed to energize a specific site.

10.2.0 PARK-N-RIDES AND TRANSFER FACILITIES

10.2.1 Communication and Fare Collection Device Locations

Park-n-Ride (pnR) communication elements and fare collection devices shall be located in areas that are convenient for the transit patron. They shall be near boarding areas, shelter areas and other public congregation and circulation areas. The size of the element or device shall be industry standard, but may vary depending upon specific needs and local ordinances.

Electronic communication information devices shall be located near bus boarding areas. At least one public telephone shall be installed at all major facilities (i.e., pnR, BRT superstops and transfer facilities). Additional phones may be installed as determined by patron volumes and frequency.

10.2.2 Plaza Signage

See Section 8.2.2 of this Manual.

10.2.3 Communication Elements

Public telephones shall be industry standard pay and credit card type.

Emergency telephones (blue phones) shall be installed adjacent to pay phones at bus boarding plaza areas. Emergency phones shall be installed on each level of parking structures and at the far end of pnRs that exceed 1000 spaces.

Public and emergency phones will typically be installed by the respective area telephone provider. Conduits for the phone lines shall be installed by the respective site contractor. Conduits shall be shown on the engineering drawings.

Communication elements shall also include a variety of Intelligent Transportation System (ITS) devices, which shall be integrated into each facility on a unique site-by-site basis in order to improve the overall system performance in terms of travel time, reliability, convenience, operational efficiency, safety and security. ITS items that shall be considered include: devices that enhance vehicle priority, operations and maintenance management, operator communications, real-time passenger information, and safety and security systems. SCADA systems shall be considered for all facilities. The final determination shall be coordinated with RTD during the concept design phase.

10.2.4 Fare Collection Devices

Bus fare collection currently occurs by submitting on-board cash directly into the bus fare box or by showing pre-purchased tickets, passes or transfers that are acknowledged by the bus operator.

Ticket vending machines (TVM) are not currently a bus transit fare collection option. However, with the introduction of bus rapid transit (BRT), and in an effort to improve and enhance fare collection efficiencies, "smart cards," RFID readers and cards, and TVM are being evaluated by RTD for future bus service applications.

It is unlikely that street-side standard bus stops will utilize TVM. TVM are probable for BRT stops, major pNRs and major transfer facilities.

Design Engineers, in coordination with RTD, shall incorporate flexible options to include future TVM installations, which shall include consideration of device, location and conduit placement.

The Design Engineer shall coordinate with RTD on the need and design for TVM enclosures and canopies.

10.3.0 BRT AND STANDARD STREET SIDE BUS STOPS

10.3.1 Sign Requirements

Communication signage at BRT stops shall be similar to plaza areas for pNR and LRT station stops.

Street side standard bus stop signage is discussed in Section 8. In general electronic information signage will not be used at these locations unless technology and special circumstances dictate otherwise.

Sign panels, maps, schedule, route and fare information shall be provided and installed by RTD. Route number stickers shall be placed by RTD after the sign installation is complete.

Map and route information (schedules, maps and fare listing) shall be placed within cases that are part of bus stop passenger shelters or other required locations.

10.3.2 Sign Location

Bus information signage and communication devices shall be placed in areas that experience high passenger movement and shall comply with ADA requirements. If a passenger shelter is to be provided at the site, then a case for signs should be attached to the shelter.

See Section 8 for more information on signs at street side bus stops.

When a bus stop requires a new sign to be installed (on a new post), the sign should be located according to RTD Standard Drawings.

10.3.3 Communication Elements

A public telephone shall be placed at all major bus transit facilities and BRT stop stops, but not at standard street side bus stops.

Emergency telephones shall also be installed at major BRT stops, but not at standard street side stops.

10.3.4 Fare Collection Devices

The infrastructure for fare collection devices shall be included in the design of BRT stops, but not for standard street side stops.

10.4.0 INFORMATION KIOSKS

See Section 8.4.0 of this Manual.

10.5.0 POWER AND CONDUIT REQUIREMENTS

10.5.1 Power and Conduits

The placement of electrical devices and fixtures will be unique for each site and shall be coordinated through RTD's Engineering Division. The power needs for each site shall be individually evaluated. A minimum 50% power reserve shall be designed for each site. All of the necessary transformers, electric panels and appurtenances shall be designed according to the unique needs of each site, and coordinated with the respective power utility company.

10.5.2 Lighting and Electrical Conduits

Conduit shall be provided to/from the mechanical or utility room of the DRS, where the site electrical panel shall be located.

Parking lot, plaza and station lighting, electrical fixtures, communication devices and TVM or other fare collection devices shall each be linked with a minimum of three 1-inch conduit that shall continue through appropriate pull-boxes, handholds and control panels.

ITS, SCADA, bus information variable message boards or public announcement devices shall include the installation of additional 1-inch conduits. All conduits shall include pull-ropes and shall be clearly marked for the intended use and so identified through the run from the source point of connection to the termination at the specified device.

As determined during the concept phase, security devices shall be placed on light or other specified poles. They shall include two (2) additional 1-inch conduits, marked "security conduit," installed with pull ropes. Security conduits shall run from light pole hand holes, through the pole base, to an adjacent pull-box. Two (2) 2-inch conduits, labeled "security conduit," shall run between pull boxes, hand holes or other similar access boxes and connect to the security room of the DRS building, or other approved location, if the site will have a separate security building. Pull boxes, hand holes or other similar access boxes, placed in plaza or other paved areas, shall be rated for vehicular loading

See Section 9 of this Manual for additional criteria.

10.5.3 Easements

See Section 9 of this Manual.