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Bus Rapid Transit Stations and Shelters

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BRT Shelters

• Should be provided at every station and stop
• Differentiated from regular bus stops
  – convey identity and image
• Enhanced shelters and/or transit center design
  – integrated with surroundings
• Sense of permanence
• Joint-development/multi-use – TOD supportive
• Designated passenger “platform”, possibly raised
  – facilitate boarding and make boarding rapid
BRT Shelters

- Precision docking
- Should extend the full length of the platform
- Provide protection from the elements (rain, sun, snow)
- Materials
  - Durable
  - Easy to maintain
  - Vandal resistant
  - Readily available
Station Location and Spacing

• Should be far apart as compared to conventional bus service

• Will vary dependent upon the type of running way, development density, and mode of arrival

• Should be key to major passenger concentrations
  – Business districts, employment areas, universities, recreational centers
## Running Way Types and Station Spacing

<table>
<thead>
<tr>
<th>Running Way Type</th>
<th>Distance (in feet)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Freeways and Busways</td>
<td>2,000 to 21,000 feet</td>
</tr>
<tr>
<td>Arterial Streets</td>
<td>1,000 to over 4,000 feet (Cleveland and Vancouver)</td>
</tr>
</tbody>
</table>

*TCRP Report 90, Volume II*
## Typical BRT Station Spacing by Arrival Mode

<table>
<thead>
<tr>
<th>Main Arrival Mode</th>
<th>Spacing (Miles)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pedestrians</td>
<td>0.25 – 0.33</td>
</tr>
<tr>
<td>Bus</td>
<td>0.5 – 1.0</td>
</tr>
<tr>
<td>Automobile</td>
<td>2.0</td>
</tr>
</tbody>
</table>

*TCRP Report 90, Volume II*
Passenger Amenities

- **Signage and Graphics**
  - Station identification signage
  - Transit route maps
  - Local neighborhood maps
  - Be distinguishable from conventional bus service
  - Tactile signage and audible information may also be used

- **ITS Displays and Passenger Information**
  - Real-time, variable message signs providing “next bus” and systemwide schedule delay information
Passenger Amenities

- **Street Furniture**
  - Seating and/or leaning rails
  - Trash receptacles
- **Other amenities**
  - Bicycle racks
  - Newspaper vending equipment
  - Public telephones
- **Other amenities (larger stations)**
  - Restrooms
  - Drinking fountains
  - ATMs
  - Convenience stores
  - Newsstands
Fare Collection

• Controlled Access
  – Free and Paid areas
  – Turnstiles, other control devices
  – Common in grade-separated BRT systems
• Proof of Payment
  – Passengers purchase fare beforehand and carry a pass or receipt
Safety and Security

• Visibility
  – Passengers should be able to see their surroundings
  – Passengers should be seen
  – Unobstructed views to the street or public way
  – Landscaping should not obstruct a passengers view
  – Ample lighting is essential
  – Security equipment
    • Closed-circuit television monitoring
    • Emergency call boxes
Illumination

- Adequate lighting is essential for attractiveness, safety, and security of BRT stations
- Planned in coordination with adjacent, exterior public places
- Lighting should be vandal resistant
- Open platforms
  - In the range of 5 footcandles
- Areas beneath canopies
  - 10 to 15 footcandles
Operational Planning Issues

- Platform requirements
  - Most BRT stations have low platforms
    - Low-floor vehicles
  - Some systems have high platforms
    - Quito, Curitiba
- Bypass Capabilities
  - Express buses must be able to bypass buses dwelling in stations
Platforms

- Side Platforms
  - Compatible with conventional bus door configurations
  - Tandem (opposite each other)
    - Dedicated busways with grade-separated pedestrian crossings
  - Staggered
    - At-grade busways, median arterial busways, and in most curbside operations

- Center Platforms
  - Most efficient, but rare with BRT
    - Require contra flow operations with conventional buses or nonstandard door configurations
Platforms

- Vehicle-based precision docking systems
  - Two kinds of precision docking
    - Optical guided steering (Las Vegas, Rouen)
    - Mechanically guided systems (Adelaide and Essen)
  - Accurately steer the vehicle into alignment with the platform
  - Assists in faster boarding and shorter dwell time

Las Vegas MAX
Curitiba, Brazil
Brisbane, Australia
Ottawa
Los Angeles, CA
MAX BRT, Vegas – Station Construction
Small scale stations are used in Vancouver & Leeds

Vancouver

Leeds
Boston, MA
LYNX Lymmo – Orlando, FL
Miami Busway
Rapid Bus - Oakland
Rouen, France