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May 2003
Airport Transit Access and Intermodal Transportation Center Site Evaluation Study

FINAL REPORT

Prepared for:

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E.0 EXECUTIVE SUMMARY

This report is a compilation of the technical reports developed for the Airport Transit Access and Intermodal Transportation Center (ITC) in 2001. It includes the following elements:

Executive Summary - The study objectives and findings, along with future steps, are reported in this section.

Evaluation of Alternative Sites for the Intermodal Transportation Center (Appendix A) - This report describes the alternative sites considered, the criteria to evaluate them, and the results of the analysis.

Travel Demand Technical Report (Appendix B) - The travel patterns to/from the airport and cruise ship terminal, and transit’s potential to serve them, are included in this report.

Transit Service Technical Report (Appendix C) - The services and facilities needed to enhance transit’s ability to serve travel to/from the airport and cruise ship terminal are analyzed in this report. Included are both local and regional transit service, along with the potential for each of the ITC sites to expand the use of transit.

E.1 Study Goals and Objectives

In November 2000 MTDB partnered with the Port of San Diego (Port) to conduct the Airport Transit Access and ITC Site Evaluation Study. The study has evaluated potential locations for an ITC that would meet airport and cruise ship parking needs and possibly provide a hub for transit access to the airport, including access to both the existing terminals and the proposed North Terminal. In addition, the study considered the feasibility and desirability of providing direct transit access to the airport and cruise ship terminals (bypassing the ITC).

The resulting joint study was initiated to address these issues. The study focused on three primary objectives:

- Narrowing down promising ITC sites that address both airport parking and transit access goals.

- Determining the markets for transit and auto access to the airport.

- Identifying and developing transit access alternatives to the airport that take advantage of an ITC facility and/or serve the airport terminals directly.

E.2 Key Findings of ITC Site Location Results

Based on the evaluation, the following key findings and conclusions were developed:

- An ITC appears to have limited potential for attracting riders to airport transit and should be considered as complementary to other primary airport transit access options.
• ITC Sites 3, 5, 6, 7, 8, and 9 should not be retained for further consideration due to their lower potential to provide transit or auto access to the airport.

• ITC Site 1 is the Port’s preferred site (as identified in its DEIR) for remote airport and cruise ship terminal parking and should be retained for further consideration for transit access.

• ITC Sites 2 and 4 should be retained for further consideration as an alternative to Site 1 or a second ITC for transit access to the airport. The provision of pedestrian bridges with moving sidewalks could enhance the connection between the North Terminal and ITC Sites 2 or 4, or the Washington Street Trolley Station.

E.3 Key Findings of Airport Travel Demand

Based on the evaluation, the following key findings and conclusions were developed:

• The existing south airport terminal is currently well served by The Airport Flyer bus route (992), which provides frequent, high-quality service to the airport.

• The cruise ship terminal has convenient access to numerous private shuttles, local and express bus, trolley, Coaster, and Amtrak services. There would not be sufficient ridership to support additional or specialized public transit service to the cruise ship terminal since the need for connections is tied to specific cruise ship arrivals and departures.

• The provision of new express bus service from outlying areas to the airport does not appear to be warranted due to the relatively low ridership potential in the geographic areas served.

• Direct high-speed transit connections between major transit centers (such as the Old Town Transit Center [OTTC]) and the airport terminals would serve multiple geographic markets by taking advantage of the existing transit network. Conversely, diverting or providing transit to a new ITC would ignore the regional connection opportunities at nearby transit centers and could require passengers to transfer twice to reach the airport.

• The realignment of the Coaster tracks to serve the North Terminal would be expensive, is not warranted by the potential ridership gain through 2020, and is probably infeasible due to freight traffic sharing the same tracks.

E.4 Key Findings of Potential Airport Transit Service Options

Based on travel markets, travel demand, and remaining ITC sites, transit access options were developed for evaluation. The transit access evaluation considered two possible scenarios: transit focused on an ITC connection to the airport and cruise ship terminals, and transit directly serving the airport and cruise ship terminals. The options are broken down as follows:

• Near-term: Year 2002 to 2005 (Port adds an ITC).
- Mid-term: Year 2005 to 2015 (Port adds 14 gates to the North Terminal and eight gates to the South Terminal).

- Long-term: Year 2010 to 2020 (Port adds 40 gates to the North Terminal).

The near-, mid-, and long-term proposals have been broken down under several different categories: trolley interface, Coaster interface, local bus service, connecting services to/from transit centers, connections between the ITC and airport terminals, and connections between the ITC and cruise ship terminal.

Based on the evaluation, the following key findings and conclusions were developed:

Near-Term Airport Transit Access Improvement Program Options (2005)

- Although an ITC appears to have limited potential for attracting riders to airport transit, the Port should design remote parking at ITC Site 1 to include a dedicated pedestrian connection between the Middletown Trolley Station and connecting airport-ITC shuttles to accommodate trolley passengers going to the airport. The Port-provided shuttles should be open to ticketed transit passengers.

- The Port should upgrade the existing Port-provided Red Bus and employee transit service with transit-priority facilities to create a Bus Rapid Transit-type service. This type of service would provide a level of service consistent with Transit First.

- MTDB and the Port should pursue a new direct, high-speed connection (including transit priority treatments and service branding) between the OTTC and the terminals as the most promising option for enhancing airport transit access. This type of service would provide a level of service consistent with Transit First.

- Transit priority treatments between downtown and the airport terminals should be pursued to enhance the image, reliability, and speed of the existing Route 992 Airport Flyer service. This type of service would be consistent with the Transit First strategy.

Mid-Term Airport Transit Access Improvement Program Options (2015)

- Relocating the Washington Street Trolley station to incorporate it into either ITC Site 2 or 4 is a relatively low-cost project that could provide ridership gains and should be studied further.

- Pedestrian and/or moving sidewalk connections between the Washington Street Trolley Station, ITC Site 2, or ITC Site 4 and the North Terminal should be further evaluated.

- Providing a new ITC Coaster station at the Washington St. or Middletown Trolley stations or ITC Sites 2 or 4 is a seemingly low-cost project that could generate ridership and should be considered further.
• A regional automated people mover (APM) connection between the south and north airport terminals, ITC, OTTC, the Naval Training Center, North Embarcadero, Harbor Drive, and downtown redevelopment projects may be worth pursuing. An analysis of the further potential of a regionally connected APM should be conducted.

Long-Term Airport Transit Access Improvement Program Options (2020)

• The realignment of the trolley tracks to serve the North Terminal would be expensive and is not warranted by the potential ridership gain through 2015 (Airport Master Plan Steps 1, 2, and 3B). However, there may be sufficient ridership with the potential 40-gate expansion of the airport North Terminal (Step 3A) to warrant relocation of the trolley to directly serve the North Terminal. This transit access option should be considered further once the status of Step 3A is known.

E.5 Next Steps

A preliminary Phase II joint study could include the following tasks:

• Further evaluate ITC Sites 1, 2, and 4 for potential to provide transit access to the airport and narrow down to a preferred option.

• Further evaluate and develop airport transit access recommendations identified for the near-(2005) and mid-term (2015) to identify the opportunities and constraints related to engineering, environmental, and operational feasibility.

• Conduct conceptual engineering for potential transit priority treatments for transit service options consistent with the Transit First strategy.

• Evaluate potential APM system in the study corridor and compare to alternative transit services.

• Conduct more in-depth public outreach.
APPENDIX A - Evaluation of Alternative Sites for the Intermodal Transportation Center
Airport Transit Access and
Intermodal Transportation Center
Site Evaluation Study

Final

EVALUATION OF INTERMODAL TRANSPORTATION CENTER
ALTERNATIVE SITES

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March 2001
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1.0 INTRODUCTION

As directed at the November 9, 2000 kick-off meeting and discussed at the December 6, 2000, January 10, 2001 and February 7, 2001 Technical Committee Meetings, a set of alternative station sites for the proposed Intermodal Transportation Center (ITC) has been developed and evaluated. This memo provides a description of all sites considered; a detailed evaluation of three of the sites; and a summary of the results.

2.0 ALTERNATIVE SITES

Based on the previous planning efforts by the Port of San Diego, the currently preferred site is located at Pacific Highway and Palm Avenue. To verify that this location is the most desirable site, other sites in the vicinity were considered. To ensure reasonable proximity to the airport, it was generally assumed that the ITC site should be located within the area west of I-5 along Pacific Highway, generally between Washington Street and Grape Street. Any site north of Washington Street would have to be east of Pacific Highway because of MCRD’s location along the west side of Pacific Highway, resulting in complicated and time-consuming access to the North Terminal. Sites south of Grape Street would involve expensive right-of-way, more congested traffic access, and would be too far from the planned North Terminal. (Sites south of Grape Street would be closer to the Cruise ship Terminal, but the distance to the North Terminal was considered to be a more significant consideration.) Sites on the east side of I-5 would be too far from, and have congested access to, the North Terminal.

The following nine sites were considered in the initial screening of nine alternative locations (see Figure 2-1).

2.1 Site No. 1 – Pacific Highway & Palm Street

This 3.9-acre site is located on Port-owned land and offers close proximity to the southern end of the North Terminal. It is bounded by the railroad right-of-way to the east, Pacific Highway to the west, the Port District building to the north, and Palm Street to the south. It would be accessed from Pacific Highway, Palm Street, and Redwood Street via a bridge over the railroad tracks. It has convenient automobile access to Pacific Highway at the Palm Street intersection, and it is adjacent to the Middletown Station on the San Diego Trolley Blue Line. It is currently occupied by a car rental company. This site is the Port District’s preferred location for the ITC.

2.2 Site No. 2 – Washington Street

This 4.2-acre site is located at the southwest corner of Washington and Hancock Streets. It is bounded by Washington Street to the north, Bean Street to the south, the trolley right-of-way to the west, and Hancock Street to the east. It would be accessed from Washington Street and Hawthorn Street. It has convenient access to Washington Street and Hancock Street for southbound traffic and somewhat less convenient access to Pacific Highway for northbound
traffic. It is located across Washington Street from the Washington St. Station on the San Diego Trolley Blue Line. The site is currently occupied by an office building and a large retail store. It is privately owned.

2.3 Site No. 3 – North Terminal

This 25.0-acre site is located on the southern side of the planned North Terminal, on the west side of Pacific Highway. (The ITC facility would not use the entire site.) It would have access from Pacific Highway, although access could be shared with the North Terminal. Trolley access would be provided via the San Diego Trolley Middletown Station, but would require crossing of Pacific Highway. The site is owned by the Port and is currently occupied by a parking lot and a building with commercial uses.

2.4 Site No. 4 – Hancock Street

This 5.3-acre site is located between the railroad right-of-way and Hancock Street/Kettner Boulevard. It is bounded by Bean Street on the north and Vine Street on the south. Its primary access would be from Hancock Street or Kettner Boulevard, with additional access from Bean and/or Vine Street. The site currently has light industrial uses and three residential units on the site and is privately owned.

2.5 Site No. 5 – Kettner Boulevard

This 4.7-acre site is located between the railroad right-of-way and Kettner Boulevard and is bounded by Vine Street on the north and Sassafras Street on the south. Its primary access would be from Kettner Boulevard, with additional access from Vine and/or Sassafras Street. The site currently has rental car and airport parking uses on the site, and is privately owned.

2.6 Site No. 6 – East of Middletown Station

This 2.9-acre site is located to the east of the Middletown Station, and is bounded by Redwood Street on the north, Palm Street on the south, the trolley right-of-way on the west, and Kettner Boulevard on the east. Its primary access is from Kettner Boulevard, with additional access from Redwood Street and Palm Street. The site is currently occupied by a car rental business and is privately owned.

2.7 Site No. 7 – Grape Street/Hawthorn Street

This 2.5-acre is bounded by Hawthorn Street to the north, Grape Street to the south, Harbor Boulevard to the west, and Pacific Highway to the east. Its access would come primarily from Pacific Highway and Harbor Drive, with additional access from Grape and Hawthorn Streets. The site is currently occupied by a gas station and parking lot, and is owned by the Port District.
2.8 Site No. 8 – Laurel Street & Pacific Highway

This site is 3.4 acres in size and bounded by Laurel Street on the north, Juniper Street on the south, Pacific Highway on the west and the railroad right-of-way on the east. It would have primary access from Pacific Highway, with additional access from Laurel Street and Juniper Street. The site is currently occupied by a car rental business, motel and vacant building, and is privately owned.

2.9 Site No. 9 – Hawthorn Street & Pacific Highway

This location is 3.4 acres in size and is bounded by Juniper Street to the north, Hawthorn Street to the south, Pacific Highway to the west and the railroad right-of-way to the east. Its primary access would be from Hawthorn Street and Pacific Highway, with additional access from Juniper Street. The site is currently occupied by a car rental business, light industrial buildings, and a restaurant. It is privately owned.

3.0 INITIAL SITE SCREENING

The ITC project is intended to fulfill the following objectives:

1) Provide trolley, Coaster and airport shuttle transfer points for airport, downtown, ballpark, cruise ship, and North Embarcadero visitors.
2) Meet the increasing demand for additional parking due to the growth of passenger traffic at Lindbergh Field and subsequent terminal expansion.
3) Provide additional public parking for the North Embarcadero Visionary Plan implementation.
4) Provide revenue to the Port District for continuation of its capital development program.

All of the sites were initially screened qualitatively to determine which ones were most desirable and worthy of further, more detailed analysis. Seven criteria were used:

- Proximity to the future North Terminal
- Proximity to the existing terminals
- Congestion levels on surrounding streets
- Proximity to existing trolley lines
- Proximity to Coaster stations
- Proximity to the cruise ship terminal
- Land ownership

The sites have been aggregated into three groups based on their location to assist in the analysis. The North Group includes Sites 2 (Washington Street), 4 (Hancock Street), and 5 (Kettner Boulevard). The Central Group includes Sites 1 (Pacific Highway & Palm Street), 3 (North Terminal), and 6 (East of Middletown Station). The South Group includes Sites 7 (Grape Street/Hawthorn Street), 8 (Laurel Street & Pacific Highway), and 9 (Hawthorn Street & Pacific Highway). A comparison matrix of the alternative sites is shown as Table 3.1.
Congestion levels were rated as high, medium or low based on the number of intersections in the vicinity that are forecast to have Level of Service (LOS) E or worse in the future with the North Terminal Steps 1 and 2, and the Terminal 2 West improvements to the existing terminal. These intersections include:

- Sassafras Street & Pacific Highway
- Washington Street & Pacific Highway Southbound Ramp
- Washington Street & Pacific Highway Northbound Ramp
- Washington Street & San Diego Avenue
- North Harbor Drive & Grape Street
- North Harbor Drive & Laurel Street
- North Harbor Drive & Rental Car Road
- Grape Street & Pacific Highway
- Laurel Street & Pacific Highway
- North Harbor Drive Hawthorn Street
- Hawthorn Street & Pacific Highway
- Laurel Street & India Street

Sites located adjacent to, or having access that requires travel through, two or more of these intersections were considered to have high congestion. Sites adjacent to, or requiring travel through, one of these intersections were rated as medium. Sites that were not adjacent to, or requiring travel through, any of these intersections were rated low.

The sites within each group are similar in many ways and screening by group was performed for the six criteria. The Central Group generally performs best. The sites have average to very good proximity to the North Terminal and very good proximity to the existing trolley line. Two of the three sites are owned by the Port. Proximity to existing airport and cruise ship terminals is average. This group was carried forward for further analysis.

The North Group of sites performed average for most of the criteria. None of the sites are owned by the Port. All three sites have very good proximity to the LRT line and poor proximity to the existing airport and cruise ship terminals.

The South Group had the weakest overall performance of the three groups. All of the sites are far away from the North Terminal and have high traffic congestion levels. While one site is owned by the Port, developing it into the ITC is expected to have significant visual and community issues. Two of the sites are adjacent to the LRT line, but the grades in the adjacent tunnel and bridge sections would make it difficult to provide a station. Site 8 could not be used due to runway protection zone requirements. This Group does have the closest proximity to the cruise ship terminal, but this benefit does not outweigh the negative aspects.
<table>
<thead>
<tr>
<th>Site</th>
<th>Proximity to North Terminal</th>
<th>Proximity to Existing Terminals</th>
<th>Future Congestion Levels</th>
<th>Proximity to the Existing LRT Line</th>
<th>Potential for New Coaster Station</th>
<th>Proximity to Cruise Ship Terminal</th>
<th>Land Ownership</th>
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<tbody>
<tr>
<td><strong>North Group</strong></td>
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<tr>
<td>Site</td>
<td>Proximity to North Terminal</td>
<td>Proximity to Existing Terminals</td>
<td>Future Congestion Levels</td>
<td>Proximity to the Existing LRT Line</td>
<td>Potential for New Coaster Station</td>
<td>Proximity to Cruise Ship Terminal</td>
<td>Land Ownership</td>
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<tr>
<td><strong>Central Group</strong></td>
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</tr>
<tr>
<td>1 – Pacific Highway &amp; Palm Street</td>
<td>Average. Separated by Pacific Highway.</td>
<td>Average. Congested street connections.</td>
<td>Medium</td>
<td>Good. Separated from LRT line by Coaster tracks. Adjacent to Middletown Station.</td>
<td>Medium. Site is adjacent to railroad but right-of-way is constrained. Insufficient room for platform within the existing right-of-way.</td>
<td>Average</td>
<td>Port District</td>
</tr>
<tr>
<td>3 – North Terminal</td>
<td>Good. Adjacent to terminal on the same side as Pacific Highway.</td>
<td>Average. Congested street connections.</td>
<td>Medium</td>
<td>Poor. Separated from line by Pacific Highway and Port property. Some distance from Middletown Station.</td>
<td>Low. Site is approximately 300 feet from the right-of-way. Extensive realignment of Coaster tracks would be required.</td>
<td>Average</td>
<td>Port District</td>
</tr>
<tr>
<td>6 – East of Middletown Station</td>
<td>Average. Separated by tracks and Pacific Highway.</td>
<td>Average. Congested street connections.</td>
<td>Medium</td>
<td>Good. Adjacent to LRT line and the Middletown Station.</td>
<td>Medium. Site is adjacent to the LRT tracks but right-of-way is constrained. Insufficient room for platform within the existing right-of-way.</td>
<td>Average</td>
<td>Private</td>
</tr>
</tbody>
</table>
Table 3.1 Initial Screening of ITC Sites (Continued)

<table>
<thead>
<tr>
<th>Site</th>
<th>Proximity to North Terminal</th>
<th>Proximity to Existing Terminals</th>
<th>Future Congestion Levels</th>
<th>Proximity to the Existing LRT Line</th>
<th>Potential for New Coaster Station</th>
<th>Proximity to Cruise Ship Terminal</th>
<th>Land Ownership</th>
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<tr>
<td><strong>South Group</strong></td>
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<tr>
<td>7 – Grape Street/ Hawthorn Street</td>
<td>Poor. Long distance away.</td>
<td>Average. Congested street connections.</td>
<td>High</td>
<td>Poor. One block away from LRT line. Some distance from County Center/Little Italy Station.</td>
<td>Low. Site is approximately 350 feet from the right-of-way. Extensive realignment of Coaster tracks would be required.</td>
<td>Good</td>
<td>Port District</td>
</tr>
<tr>
<td>8 – Laurel Street and Pacific Highway</td>
<td>Poor. Long distance away.</td>
<td>Average. Congested street connections.</td>
<td>High</td>
<td>Average. Separated from LRT line by Coaster tracks. LRT line in transition to bridge over Laurel Street. Some distance from County Center/Little Italy Station.</td>
<td>Low. Site adjacent to railroad but right-of-way is constrained and includes LRT grade separation. Insufficient room for platform within the right-of-way.</td>
<td>Good</td>
<td>Private</td>
</tr>
<tr>
<td>9 – Hawthorn Street and Pacific Highway</td>
<td>Poor. Long distance away.</td>
<td>Average. Congested street connections.</td>
<td>High</td>
<td>Average. Separated from LRT line by Coaster tracks. LRT line below grade of Hawthorn Street and in transition to bridge over Laurel Street. Some distance from County Center/Little Italy Station.</td>
<td>Low. Site adjacent to railroad but right-of-way is constrained and includes LRT grade separation. Insufficient room for platform within the right-of-way.</td>
<td>Good</td>
<td>Private</td>
</tr>
</tbody>
</table>

Source: BRW, Inc., January 2001
While the North and Central Groups could provide an acceptable ITC site, the South Group would not. As a result, the sites in the North and Central Groups were advanced for further analysis (see Figures 3-1 and 3-2 for these two groups.).

4.0 DETAILED EVALUATION CRITERIA

The following five general criteria were used in the more detailed evaluation of the North and Central Groups.

4.1 Traffic Operations

The circulation capability of each site was considered, using the following measures.

- Freeway Access - Consideration of the directness of the routings between the ITC and I-5.
- Site Access - Access points to the sites and an assessment of potential conflicts or street design considerations.
- Traffic Volumes/Level of Service - The LOS for key intersections in the vicinity of each site.

4.2 Airport Accessibility

Criteria address airport proximity and how the site would serve travel to and from the airport terminals, especially the North Terminal. Considerations include:

- Proximity and connections to North Terminal Steps 1 and 2 (primarily Kettner Boulevard and Pacific Highway).
- Proximity and connections to Existing Terminals 1 and 2 (primarily Harbor Drive).
- Proximity and connections to North Terminal Step 3 (primarily Pacific Highway).

4.3 Transit Access

The proximity and ease of access for transit, including LRT, Coaster and bus were measured with the following:

- Proximity and connections to existing LRT lines.
- Potential for realigning the LRT line to serve the ITC with consideration of both physical and financial requirements/issues.
- Potential for new or connecting Coaster service.
- Bus service access, including the amount of out of direction travel required for buses to serve the ITC.
4.4 Cruise Ship Terminal Accessibility

The proximity and ease of access for users of the Cruise Ship Terminal were measured with the following:

- Proximity to Cruise Ship Terminal.
- Congestion levels on streets connecting the Cruise Ship Terminal and the ITC.

4.5 Land Use and Environmental

The compatibility of the site with existing and future land uses was be assessed with consideration of the following:

- Site availability, including ownership.
- Compatibility with surrounding uses.
- Environmental issues.

5.0 EVALUATION OF NORTH AND CENTRAL GROUPS

A summary of the evaluation for each of the criteria is presented in this section.

5.1 Traffic Operations

Both the North and Central Groups are reasonably accessible. The North Group has more direct access to I-5, while both have adequate local street access. The North Group would have access from Washington Street, Hancock Street, and Kettner Boulevard. The Central Group would have access from Pacific Highway, Sassafras Street, Kettner Boulevard, and Palm Street.

Overall, the Central Group performs the best for traffic operations, while the North Group is rated somewhat lower.

5.2 Airport Accessibility

The proximity to the North Terminal is good for both groups. The Central Group has the most convenient access for Steps 1 and 2, while the North Group sites are better positioned for Step 3. Sites 1 and 3 have the benefit of being west of the trolley and railroad tracks, which reduces the amount of overall delay in reaching the terminal. Both groups are fairly distant from the existing terminals, and would use the same streets for most of the connection.

5.3 Transit Access

Several aspects of transit access were considered in the evaluation. Proximity to the LRT line is one important aspect. All of the North Group sites are adjacent to the line. Two of the Central Group sites (1 and 6) are also. The LRT platform could be relocated to connect more directly with the ITC for all sites, although there is more room in the trolley right-of-way for moving the
platform for the North Group sites. A substantial realignment of the tracks would be required to provide an LRT station adjacent to Site 3. Such a realignment would have a high cost, and would encounter engineering challenges at the connection points to the existing right-of-way. It would also have potential issues with encroachment into the runway clear zones.

Regarding Coaster service, both of the groups could be connected to the Old Town Transit Center (OTTC). The distance between the OTTC and the sites ranges from 1.5 to 2.0 miles. The potential for adding a Coaster platform would be best for the North Group, since the amount of space needed is available within the existing Coaster right-of-way. The Central Group sites would be more challenging. Sites 1 and 6 would need 20 feet of additional right-of-way that would likely come from the ITC parcel. Site 3 would require a significant realignment of the tracks, similar to that needed for a realigned LRT. Compared to an LRT alignment, the grades would have to be less and the curve radii would need to be larger.

All of the sites have bus service nearby. The North Group has the best access since it is served by two north-south routes (5 and 34) and one east-west route (8). Because it is the only group with direct access to points east of I-5, Site 2 has an advantage. Bus access to the other sites is convenient, with Central Group sites served by Routes 5 and 34.

Overall, the North Group has the best rating for transit access. The sites are adjacent to the LRT line, are closest to the Coaster Station at OTTC, have room for a new Coaster platform, and have the best bus access. The Central Group has fewer existing bus routes nearby, and the need for more right-of-way for a new Coaster platform.

5.4 Cruise Ship Terminal Accessibility

The Central Group sites are closest to the cruise ship terminal. They are approximately 1.0 mile away. The North Group is rated lower due because its sites are farther away at 1.5-1.8 miles, coupled with their somewhat more difficult site access.

5.5 Land Use and Environmental

The North Group has the best ratings for land use and environmental considerations. Two of the sites (1 & 3) are owned by the Port District and are compatible with surrounding uses. Site 1 is consistent with the Port's Master Plan; Sites 3 and 6 are not. All of the Central Group sites would have potential traffic, visual, and air quality impacts. The North Group has the potential for the same impacts, plus historic (Site 2), archeological, and hazardous materials impacts. Significant impacts are not expected at the North Group in the following areas: noise and vibration; ecosystems; water resources; cultural resources; parklands; and hazardous materials.

Central Group Sites 1 and 3 are in the coastal zone, while the North Group sites are not. (Location in the coastal zone should not be a great difference between sites, but will be an approval process that would have to be followed.)
6.0 CONCLUSIONS

Both groups achieve the Port's project objectives to varying degrees. All of the sites in the North and Central Groups would fulfill Objective 2 by increasing the supply of parking for air passengers and Objective 4 by generating revenue for the Port's capital development program. There are differences in the other two objectives. All of sites in the North and Central Groups would provide transfer points for transit and shuttle services. However, the North Group sites are more distant from Downtown, the new ballpark, the cruise ship terminal and the North Embarcadero area than the Central Group sites. As a result, the Central Group sites would provide somewhat more convenient access to these destinations. In a similar way, the Central Group would provide somewhat more convenient parking for the North Embarcadero area than the North Group. (The Central Group sites would also provide more convenient access to the terminals on Harbor Drive.) Overall, the Central Group sites would better achieve the objectives of the project.

The initial review of the groups with the more detailed criteria did provide insights. Both groups have reasonable freeway and surface street access, although the North Group has somewhat more convenient freeway access. Two of the Central Group sites (1 and 3) have the advantage of not having to cross the trolley and railroad tracks to connect with the terminal. Both groups have acceptable access to the future North Terminal, while the Central Group sites are closer to the existing terminals.

Transit access is good for both groups. All of the North Group sites are served by existing bus routes along Hancock Street and Kettner Boulevard. Because of their location along the LRT line, all of the North Group stations, and two of the Central Group stations, could have convenient LRT service with existing or relocated platforms.

Cruise ship terminal access would be more convenient with the Central Group sites. They are 0.5-0.8 miles further away, which would diminish their ability to serve the terminal.

There is little difference between the groups for environmental issues. The primary difference is the potential for visual and historic property impacts at Site 2.

More detailed analysis will be needed to determine which of the six sites in the two groups would be the most desirable. The general location of the two groups will be used for the transit demand and service analysis to be conducted in the Airport Access Study.
APPENDIX B - Travel Demand Technical Report
Airport Transit Access and
Intermodal Transportation Center
Site Evaluation Study

Final

TRAVEL DEMAND TECHNICAL REPORT

Prepared for:

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URS
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August 2001
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1.0 PURPOSE AND OBJECTIVES

The Port of San Diego is in the process of implementing Step 1 of the Airport Master Plan for Lindbergh Field. One of the key components of this step is construction of a new north passenger terminal, along with an adjacent intermodal transportation center (ITC). The Airport Master Plan timeline is as follows:

- Steps 1, 2, and 3B (2005–2015) – Construction and opening of the North Terminal with 14 gates, plus the addition of 8 gates at the South Terminal; and

While consideration in the Port’s Master Plan for the ITC to date has focused on parking requirements and providing automobile access, the ITC could also potentially serve as a primary hub for transit and non-automobile access to an expanded Lindbergh Field. With this recognition, the Airport Access and Intermodal Transportation Center Site Evaluation Study is being conducted jointly by the Metropolitan Transit Development Board (MTDB) and the Port of San Diego with a number of objectives:

- Narrow down the preferred site to no more than three options for the ITC;
- Assess potential transit demands to the ITC and the airport/cruise ship terminals;
- Recommend an effective form and functionality for the ITC based on the identified travel demands; and
- Define transit characteristics and operations that would best serve travel demands between the ITC, airport, and cruise ship terminal.

This Technical Report assesses travel demands associated with the ITC and specifically the airport and the downtown cruise ship terminal, as well as estimates the potential market for transit services to these areas.

1.1 Purpose and Objectives of Technical Report

The primary objectives of this Technical Report can be summarized as follows:

- Document existing and future travel demands associated with the airport and cruise ship terminal that could be served via the ITC.
- Identify various travel demand market segments and those that could be served via expanded transit services through the ITC.
- Establish a range of transit ridership potential or propensity for each market segment given various transit service characteristics.
- Assist in defining the role of the proposed ITC in meeting identified transit demands.
1.2 Report Organization

After this Introduction, this report is organized into the following sections:

2.0 Airport and Cruise Ship Travel Demands – Discusses existing and future travel demands associated with the airport and cruise ship terminal.

3.0 Travel Demand Market Segments – Identifies and discusses the travel market segments for trips to and from the airport and cruise ship terminal.

4.0 Transit Ridership Propensity – Discusses transit ridership propensity associated with each of the travel demand market segments, and presents an estimate of transit ridership by market segment for the forecast year 2020.

5.0 Conclusions and Key Findings – Summarizes study findings, and presents conclusions related to the role of the proposed ITC in serving transit demand to and from the airport and cruise ship terminal.

2.0 AIRPORT AND CRUISE SHIP TRAVEL DEMANDS

This section documents existing and future travel demands at the San Diego (Lindbergh Field) International Airport and the San Diego cruise ship terminal.

2.1 Existing Airport and Cruise Ship Travel Demands

Data from the SANDAG Regional Transportation Model were utilized extensively for the purpose of quantifying both existing and forecast travel demands related to the airport and the cruise ship terminal. The airport study area is comprised of four traffic analysis zones (TAZs) from the SANDAG Series 9 Transportation Model (3142, 3152, 3201, and 3210). The cruise ship terminal, located at the foot of B Street in Downtown San Diego, is comprised of a single TAZ (3137), which includes non-cruise ship land uses as well as the cruise ship terminal. Figure 2-1 displays study area TAZ’s for the airport and cruise ship terminal.

Airport study area land use, employment, and travel data from SANDAG’s 1995 base year transportation model are reported in Table 2.1.
Table 2.1
Existing (1995) Airport Travel Demands

<table>
<thead>
<tr>
<th>Airport TAZs</th>
<th>Predominate Land Use</th>
<th>Annual Passengers in Millions</th>
<th>Number of Employees</th>
<th>Daily Airport Person Non-Work Trips</th>
<th>Daily Airport Person Work Trips</th>
</tr>
</thead>
<tbody>
<tr>
<td>3142</td>
<td>Commercial Airport</td>
<td>N/A</td>
<td>1,400</td>
<td>25</td>
<td>2,720</td>
</tr>
<tr>
<td>3152</td>
<td>Commercial Airport (402 acres)</td>
<td>13.9</td>
<td>1,350</td>
<td>$7,470</td>
<td>1,020</td>
</tr>
<tr>
<td>3201</td>
<td>Commercial Airport (34 acres) Other Commercial (17 acres)</td>
<td>N/A</td>
<td>710</td>
<td>5</td>
<td>430</td>
</tr>
<tr>
<td>3210</td>
<td>Heavy Industry (44 acres) Military Use (19 acres)</td>
<td>N/A</td>
<td>900</td>
<td>10</td>
<td>1,700</td>
</tr>
<tr>
<td>TOTAL</td>
<td></td>
<td>13.9</td>
<td>4,360</td>
<td>67,510</td>
<td>5,870</td>
</tr>
</tbody>
</table>

Source: Hamilton, Rabinovitz & Alschuler, 2000; SANDAG Series 9 Forecast

The primary land uses in the airport TAZ’s apart from Commercial Airport, are Heavy Industry and Military. Appendix A provides a comprehensive list of land uses in the airport TAZ’s. As shown in Table 2.1, there were 13.9 million annual airport passengers in 1995, generating approximately 67,510 daily trips. Roughly 4,360 employees worked in the study area, generating about 5,870 daily work trips. There were about 5,400 daily shared-van airport trips and 1,600 daily bus trips to the airport (MTDB Short Range Transit Plan, 2000), representing 7.3% and 2.2% respectively of total airport person trips.

A recent Route 922 passenger survey conducted by SANDAG in 2001 provides additional information on travelers using transit to access the airport. The survey showed that airport employees made up approximately 33% of Route 922 bus riders, followed by riders traveling for non-business trip purposes (26.4%) and business travelers (20.3%).

Table 2.2 displays existing 1997 cruise ship activity and travel demands. Embarkations and disembarkation data, along with total annual passengers were obtained from the 1999 Cruise Ship Feasibility Study conducted by Bruno-Elias & Associates. Daily person trips were estimated from information on total annual passengers.
Table 2.2
Existing (1997) Cruise Ship Travel Demands

<table>
<thead>
<tr>
<th>Cruise Ship Demand</th>
<th>Annual Ports of Call</th>
<th>Annual Disembarkations/Embarkations</th>
<th>Annual Passengers1</th>
<th>Number of Employees1</th>
<th>Daily Person Non-Work Trips2</th>
<th>Daily Person Work Trips2</th>
</tr>
</thead>
<tbody>
<tr>
<td>67</td>
<td>9,065</td>
<td>95,400</td>
<td>45</td>
<td>260</td>
<td>90</td>
<td></td>
</tr>
</tbody>
</table>

Source: Port of San Diego, Cruise Ship Feasibility Study, 1999

Notes:
1. Ports of call are stops by cruise ships that did not originate in San Diego.
2. Embarkations are passenger boardings at cruise trip origin. Disembarkations are passenger alightings at cruise trip destination.
3. Total Annual Passengers is the sum of embarkations, disembarkations, and passengers passing through.
4. Data on employees at the cruise ship terminal was obtained from the Port of San Diego.
5. Daily person non-work trips were calculated by dividing Total Annual Passengers by 365 days per year.
6. Work trips were calculated using the assumption that each employee generates 2 work trips per day.

Two general types of stops occur at San Diego: ports of call and terminations. A port of call is a short-term stop at San Diego as part of a longer journey that both begins and ends elsewhere. A termination occurs when a cruise ship begins or ends a trip at San Diego’s cruise ship terminal. Most ports of call involve stopovers and passengers can choose to disembark and day-trip in San Diego. Ports of call in San Diego are made primarily by the weekly, local cruise ship traveling between Los Angeles, San Diego, and Ensenada. This ship is also currently the only one that continues to serve San Diego during the summer months. Itineraries for 2001 indicate that cruise ship activity in San Diego varies throughout the year. The busiest months for cruise ship stops are April, and October through December. The period from June to mid-September is the slowest of the year, as many cruise lines re-deploy ships away from San Diego to Alaskan and Caribbean runs.

As shown in Table 2.2, in 1997 there were approximately 67 San Diego ports of call, with 9,065 embarkations and disembarkations. A total of 95,400 annual cruise ship passengers passed-through or embarked/disembarked in San Diego. Cruise ship passengers generated an average of 260 total daily trips and 90 daily person work trips to and from the cruise ship terminal.

2.2 Future 2020 Airport and Cruise Ship Travel Demands

This section discusses 2020 travel demands under two airport scenarios, Step 3B and Step 3A of the Draft Final Airport Master Plan, as well as cruise ship travel demands. Step 3B refers to the scenario where the north terminal and ITC is constructed without new runways. Step 3A refers to the scenario where, in addition to improvements under Step 3B, land currently owned by the Military is acquired and utilized to construct an additional runway. The SANDAG model currently incorporates only Step 3B in its land use database and travel forecasts. The transit ridership forecasts are based on the SANDAG land use and travel forecasts which only include Step 3B.
Airport Master Plan Step 3B

Future year 2020 airport land use, employment, and travel data from the SANDAG Transportation Model are reported in Table 2.3, along with existing data and the percent change from 1995.

Table 2.3
2020 Airport Travel Demands – Step 3B

<table>
<thead>
<tr>
<th>Predominate Land Use</th>
<th>Annual Passengers in Millions</th>
<th>Number of Employees</th>
<th>Daily Airport Non-Work Person Trips</th>
<th>Daily Airport Work Person Trips</th>
</tr>
</thead>
<tbody>
<tr>
<td>Airport TAZ</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3142 Heavy Industry</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(100 acres)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Commercial (2 acres)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Military (4 acres)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Commercial Airport (acreage not available)</td>
<td>N/A</td>
<td>N/A</td>
<td>1,400</td>
<td>880</td>
</tr>
<tr>
<td>3152 Commercial Airport</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(402 acres)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Commercial Airport (402 acres)</td>
<td>13.9</td>
<td>25.6</td>
<td>1,350</td>
<td>1,680</td>
</tr>
<tr>
<td>3201 Commercial Airport</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(34 acres)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other Commercial (17 acres)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Commercial Airport (34 acres)</td>
<td>N/A</td>
<td>N/A</td>
<td>710</td>
<td>780</td>
</tr>
<tr>
<td>3210 Heavy Industry</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(44 acres) Military Use</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(19 acres)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Heavy Industrial (44 acres) Military Use (19 acres)</td>
<td>N/A</td>
<td>N/A</td>
<td>900</td>
<td>900</td>
</tr>
<tr>
<td>TOTAL</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>13.9</td>
<td>25.6*</td>
<td>4,360</td>
<td>4,240</td>
</tr>
<tr>
<td>Percent Change</td>
<td></td>
<td>84%</td>
<td>(3%)</td>
<td></td>
</tr>
</tbody>
</table>


* Year 2020 Annual Passengers and Daily Person Trips assume completion of Step 3B of the Airport Master Plan. This would incorporate the North Terminal expansion south of Washington Street, but no additional runways and no terminal expansions in the area north of Washington Street.

Apart from commercial airport, the primary land uses in the study area under the Step 3B 2020 conditions are projected to be heavy industry, military, commercial, and multi-family. Appendix B provides a comprehensive list of land uses in SANDAG's 2020 database for the airport study area TAZ’s.

As shown in Table 2.3, there will be a projected 25.6 million annual airport passengers in 2020, representing an 84% growth over the 25 year period from 1995 to 2020. Daily non-work person trips to the airport are projected to increase by approximately 120% from 67,510 to 148,212. The magnitude of increase in daily non-work airport person trips (120%) is higher than the increase in annual airport passengers (84%), indicating that daily travel to the airport is projected.
to increase faster than actual airplane passenger trips. This could be accounted for by a relative increase in the number of drop-off and pick-up trips made, i.e., a greater percentage of travel to the airport may be projected to occur as a drop-off or pick-up by a family member or friend.

The number of employees is projected to decrease from 1995 levels by 3%, due to the closing in the mid-1990's of the General Dynamic employment site located in TAZ 3142. Roughly 4,240 employees are projected to work in the study area in 2020, generating 3,970 daily work trips. While the number of 2020 employees decreases by 3% from 1995, work trips are projected to decrease by 32% from 1995. The difference in the magnitude of decrease between number of employees and work trips is accounted for by differences in trip rates associated with 1995 and 2020 land uses. Specifically, the increase in commercial airport land use in TAZ 3142 under 2020 conditions has a lower trip rate per employee than the heavy industry and commercial land uses in TAZ 3142 under 1995 conditions. Commercial airports have a person trip rate of one trip/employee, while heavy industry and commercial land uses have person trip rates of approximately six trips/employee.

Airport Master Plan Step 3A

Table 2.4 presents airport passenger, employee, non-work person trip, and work person trip forecasts for the Year 2020 under the assumption that a new runway and additional terminals would be constructed on property that is currently owned by the military to the north of the existing airport facilities. The difference in airport passenger forecasts between Step 3A and Step 3B is approximately 22%, or a total growth of 106% versus 84% from 1995.

Travel demand estimates for Step 3A were developed by factoring up the Step 3B estimates in Table 2.3 by an additional 22%.

Table 2.4
2020 Airport Travel Demands – Step 3A

<table>
<thead>
<tr>
<th>Annual Passengers in Millions</th>
<th>Number of Employees</th>
<th>Daily Airport Non-Work Person Trips</th>
<th>Daily Airport Work Person Trips</th>
</tr>
</thead>
<tbody>
<tr>
<td>TOTAL</td>
<td>13.9</td>
<td>28.6†</td>
<td>4,360</td>
</tr>
<tr>
<td>Percent Change</td>
<td>106%</td>
<td>19%</td>
<td>142%</td>
</tr>
</tbody>
</table>

Source: SANDAG Series 9 Forecast; Airport Master Plan Final Draft Report; HNTB, Inc. December, 2000

Note:
1. Forecast represents completion of Step 3A of the Airport Master Plan, including construction of a new runway and additional terminals in the area north of the existing airport facility.
2. Figures developed by factoring employees and person trips by the difference in forecast passengers between Step 3B and Step 3A, which is approximately 22%.

Cruise Ship Travel Demand

Table 2.5 displays projected 2020 cruise ship activity and travel demands. It is expected that cruise ship demand in San Diego will remain strong in the coming decades, especially given San
Diego’s location as the southwesternmost U.S. port. Of all U.S. cities, San Diego is physically closest to destinations in Hawaii and Mexico for example.

### Table 2.5
2020 Cruise Ship Travel Demands

<table>
<thead>
<tr>
<th></th>
<th>Annual Ports of Call</th>
<th>Annual Disembarkation s/Embarcations</th>
<th>Annual Passengers</th>
<th>Number of Employees</th>
<th>Total Daily Non-Work Person Trips</th>
<th>Total Daily Work Person Trips</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cruise Ship Demand</td>
<td>67</td>
<td>120</td>
<td>9,065</td>
<td>37,260</td>
<td>95,400</td>
<td>222,860</td>
</tr>
<tr>
<td>Percent Change</td>
<td>79%</td>
<td>311%</td>
<td>134%</td>
<td>15%</td>
<td>134%</td>
<td>15%</td>
</tr>
</tbody>
</table>

Notes:
1. 2020 forecast assumes Passenger Services Act is not amended.
2. Ports of call are stops by cruise ships that did not originate in San Diego.
3. Embarkations are passenger Boardings at cruise trip origin. Disembarkations are passenger alightings at cruise trip destination.
4. Total Annual Passengers is the sum of embarkations, disembarkations, and in-transit passengers.
5. Data on employees at the cruise ship terminal was obtained from the Port of San Diego. This figure represents only locally-based employees and not those passing through on ports of call.
6. Daily person non-work trips were calculated by dividing Total Annual Passengers by 365 days per year.
7. Work trips were calculated using the assumption that each employee generates 2 work trips per day.

As shown in Table 2.5, there are projected to be approximately 120 annual ports of call in 2020, with 37,260 annual embarkations and disembarkations. This represents an increase of approximately 79% in ports of call, and a 311% increase in embarkations and disembarkations between 1997 and 2020. There will be a projected 222,860 total annual cruise ship passengers in 2020, representing an increase of approximately 134% from 1997.

The cruise ship terminal is expected to generate approximately 610 daily non-work person trips and 105 daily work person trips in 2020, representing a 134% and 15% increase respectively.

### 3.0 TRAVEL DEMAND MARKET SEGMENTS

This section describes airport and cruise ship travel demand market segments. This study defines travel demand market segments primarily in terms of trip purpose and trip origin. Trip purpose and trip origin provide a basis for grouping airport/cruise ship travelers into unique segments with similar travel priorities and needs. Defining airport travel market segments aides in determining that segment with the highest potential for transit ridership, as well as determining the type of transit service that best fits this market segment.

The following subsections describe airport and cruise ship travel market segments, along with each segment’s share of total travel to the airport and cruise ship terminal.
3.1 Airport Market Segments

Eight different travel demand market segments were identified for the purposes of assessing potential transit demand to the airport:

1. **Resident Business:** This market consists of business travelers originating in San Diego and flying to other cities for business purposes. The typical trip for the Resident Business market segment would be to leave his/her household in the early morning and travel to the airport to catch a flight to another city for business. In some cases, this traveler would leave from the work place and travel to the airport. This market segment tends to travel with small amounts of luggage, and would most often travel alone or with one other person.

2. **Resident Non-Business:** This market consists of travelers originating in San Diego and flying to other cities for leisure or personal purposes. These travelers would more typically travel in larger groups than the business travelers, with family members, small children, relatives, and/or friends. This market segment tends to travel with more luggage.

3. **Visitor Business:** This segment is comprised of business travelers who originate outside of San Diego and arrive in San Diego for business purposes. They are similar to the Resident Business market segment, except for their origins and destinations. This market segment would tend to leave the airport and travel to a hotel or an employment site. This market segment would typically not have a home-based trip end in San Diego.

4. **Visitor Non-Business:** This market segment is comprised of travelers originating outside of San Diego and coming to San Diego for leisure or personal purposes. Similar to the Resident Non-Business, this segment would tend to travel in larger groups with family, small children, relatives and/or friends. They would tend to stay in San Diego longer than the Visitor Business traveler and would likely have larger amounts of luggage.

5. **Airport Employee:** This market segment consists of airline and service industry employees working at the airport. These workers tend to work part-time and/or flexible full time schedules.

6. **Meeter/Greeter:** Meeters and greeters are defined as individuals or groups who go to the airport to assist an arriving or departing passenger.

7. **Visitor Non-Passenger:** This market consists of individuals or groups who travel to the airport to visit or conduct business at the airport itself.

8. **Airport Services Provider:** This segment consists of employees of companies that service the airport. Travel for this market segment would mainly include delivery of products for the airport businesses and airlines.

Market share estimates of total travel to the airport were obtained through a review of previous studies that assessed trip purposes associated with travelers using the San Diego Airport as well as other similar airport locations in California, such as Oakland and San Jose. Similar to San Diego, Oakland and San Jose are locally oriented airports with a high level of destinations and lower proportions of through trips. The San Jose, Oakland, and San Diego airports differ from large internationally-oriented airports like San Francisco or Los Angeles, and are also...
distinguishable from the through-enplanement nature of hub airports like Phoenix, Dallas/Fort Worth or Denver.

Surveys conducted by the Convention and Visitor’s Bureau of overnight visitors to the San Diego region and of passengers passing through Lindbergh Field terminals provided a basis for estimating the percent of Visitor versus Resident travelers to the airport. Survey data from a 1995 study conducted by the Bay Area Metropolitan Transportation Commission provided the basis for estimating percent of Business versus Non-Business travelers to the airport.

In a 1992 study conducted by Airport Interviewing & Research for the Port of San Diego, meeters and greeters were found to travel to the airport at a rate of one meeter and greeter to every four passengers for all flights. Employee market shares were estimated from recent counts of security badges and parking tags. Airport Services workers and non-passenger Visitors were each estimated to account for one percent of airport travel.

Table 3.1 displays the estimated share of travel to the airport for each of the travel demand market segments.

<table>
<thead>
<tr>
<th>Airport Market Segment</th>
<th>Airport Market Share</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Airport Passenger Trips</strong></td>
<td></td>
</tr>
<tr>
<td>1 – Resident Business</td>
<td>16%</td>
</tr>
<tr>
<td>2 – Resident Non-Business</td>
<td>25%</td>
</tr>
<tr>
<td>3 – Visitor Business</td>
<td>16%</td>
</tr>
<tr>
<td>4 – Visitor Non-Business</td>
<td>23%</td>
</tr>
<tr>
<td><strong>Airport Non-Passenger Trips</strong></td>
<td></td>
</tr>
<tr>
<td>5 – Employees</td>
<td>3%</td>
</tr>
<tr>
<td>6 – Meeters/Greeters</td>
<td>15%</td>
</tr>
<tr>
<td>7 – Visitors (non-passenger)</td>
<td>1%</td>
</tr>
<tr>
<td>8 – Airport Services</td>
<td>1%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>100%</td>
</tr>
</tbody>
</table>

Source: URS/BRW; June 2001
Resident Non-Business represents the largest market segment at 25% followed by Visitor Non-Business at 23%. Both Resident Business and Visitor Business travel groups are estimated at 16% of total trips to the Airport.

Each of the airport travel segments were reviewed for likelihood or potential for utilizing transit to serve a portion of their trip making activities. Several of the airport travel market segments were found to have limited or minimal transit ridership potential, and subsequently were not carried forward into the transit ridership estimation process presented in the following section.

The airport market segments, judged to have little or no transit ridership potential, include the following:

**Meeters/Greeter:** This market segment typically uses personal automobiles to transport friends, relatives, and/or business associates to/from the airport. Although the Meeter/Greeter market share is relatively large at 15%, this segment would not have a strong likelihood to use transit because their trip purpose is to assist airport passengers by transporting them to their destination.

**Non-Passenger Visitors:** This market segment represents a very small portion of total travel to the airport and did not warrant analysis as a unique travel market.

**Airport Service Providers:** This market segment travels to the airport via commercial vehicles to transport heavy and/or bulky goods and would realistically not utilize transit.

### 3.2 Cruise Ship Travel Demand Market Segments

Four travel demand market segments were identified for travelers to San Diego cruise ship terminal:

1. **Resident Non-Business:** This market segment consists of cruise ship travelers originating in San Diego and accessing the cruise ship terminal for leisure. This market segment would typically embark and disembark in San Diego, with travel occurring between their local San Diego County residence and the cruise ship terminal. This market segment would tend to travel in groups of two or more and would tend to have large amounts of luggage.

2. **Visitor Non-Business:** This market segment consists of cruise ship travelers originating outside of San Diego and accessing the cruise ship terminal for leisure. This market segment would embark and disembark in San Diego, accessing locations outside San Diego via the airport or other transportation means. Like the Resident Non-Business market segment, the Visitor Non-Business segment would travel in groups and would tend to carry large amounts of luggage.

3. **Ports of Call:** This segment represents those cruise ship travelers arriving in San Diego on a cruise ship destined for another port. This market segment would be likely to make day trips to tourist destination in San Diego from the cruise ship terminal. This segment would not have any luggage, since it would be left aboard the ship.

4. **Cruise Ship Employee:** This market segment consists of locally-based employees of the San Diego cruise ship terminal.
Table 3.2 displays the market segment share of total travel to the cruise ship terminal. These percentages were estimated through a review of previous studies and from data presented in the 1999 Cruise Ship Feasibility Study conducted by Bruno-Elias & Associates.

Table 3.2
Cruise Ship Market Shares

<table>
<thead>
<tr>
<th>Cruise Ship Market Segment</th>
<th>Cruise Ship Market Share</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 – Resident Non-Business Passengers</td>
<td>6%</td>
</tr>
<tr>
<td>2 – Visitor Non-Business Passengers</td>
<td>4%</td>
</tr>
<tr>
<td>3 – Ports of Call</td>
<td>75%</td>
</tr>
<tr>
<td>4 – Cruise Ship Terminal Employee</td>
<td>15%</td>
</tr>
<tr>
<td>TOTAL</td>
<td>100%</td>
</tr>
</tbody>
</table>

Source: Cruise Ship Feasibility Study; 1999; URS/BRW; June 2001

As shown in Table 3.2, ports of call or trips associated with ships passing through San Diego, represent approximately 75% of local travel associated with the cruise ship terminal. In other words, there is significantly more activity associated with ports of call at the cruise ship terminal than with home-ported ships. If the number of cruise ships based in San Diego increased in the future, the cruise ship market shares would shift to reflect a relatively greater percentage of Resident Non-Business and Visitor Non-Business market shares. Trips associated with passengers embarking/disembarking in San Diego currently amount to approximately 10% of the total travel market, with 6% and 4% of the trips attributed to residents and visitors, respectively.

As with the airport market segments, each of the cruise ship market segments were reviewed for transit utilization potential. The largest of the cruise ship market segments, ports of call, was not carried forward into the ridership forecasting process. Although these trips may utilize transit, the potential for interaction with the ITC is limited due to existing access to the San Diego Trolley, Coaster, and other regional/local transit services. There are approximately 10 local buses and 7 express buses that serve the Cruise Terminal area. This market is also served by shopping shuttles and other transportation services provided by the cruise lines.

3.3 Transit Propensity Functions

A number of factors related to transportation service characteristics are considered as key determinants in the decision to utilize transit by airport and cruise ship travel market segments:

- Travel Time: End-to-end travel times.
- Reliability: On-time performance, dependability of service.
- Flexibility/Convenience: Ability to accommodate dispersed trip-making patterns, personal safety, ease of transfers with luggage, proximity to terminals.
• Cost: Out-of-pocket travel costs including parking costs and transit fares.

The various market segments can be distinguished in terms of the importance each group places on the above transportation service characteristics. Airport and cruise ship travel market segment responses to transit service characteristics are discussed below:

*Resident Business Passenger:* This market is generally very sensitive to travel times and flexibility, and requires a high level of service reliability. As a rule this market segment is not very sensitive to travel costs.

*Resident Non-Business Passenger:* This market is less sensitive to travel time and reliability, but requires flexibility and convenience. The Resident Non-Business market segment is moderately sensitive to travel costs.

*Visitor Business Passenger:* As with the Resident Business Passengers, this market is sensitive to travel times and flexibility, requires a high level of service reliability, and is generally not very sensitive to travel costs.

*Visitor Non-Business Passenger:* As with the Resident Non-Business Passenger, this market is not as sensitive to travel time and reliability as the Business market segments. The Visitor Non-Business market segment is sensitive to flexibility and convenience, and moderately sensitive to travel costs.

*Employees:* This market segment is moderately sensitive to travel times, flexibility, reliability, and costs.

**Table 3.3** summarizes the various airport and cruise ship market segment responses to transit service characteristics. Each market segment’s sensitivity to travel times, reliability, flexibility, and cost is ranked as *High,* *Medium,* and *Low,* depending on their expected reactions to transit service characteristics for travel to the airport and cruise ship terminal. *High* indicates that the market segment would have a strong positive or negative response to a particular transit service characteristic. Likewise, *Low* indicates that the market segment would have a weak positive or negative response to a particular transit service characteristic. For example, the Resident Business market segment is expected to be highly sensitive to transit travel times for the trip to the airport: the higher the travel time, the lower the transit ridership from this market segment. This same market segment is expected to have a low sensitivity to travel cost, i.e., transit ridership would not decline very much give a sharp increase in travel costs.
Table 3.3  
Market Segment Sensitivity to Changes in Transportation Service Characteristics

<table>
<thead>
<tr>
<th>Airport Trip Marked Segment</th>
<th>Transit Market Sensitivity to Service Characteristic</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Travel Time</td>
</tr>
<tr>
<td>Resident Business Passenger</td>
<td>High</td>
</tr>
<tr>
<td>Resident Non-Business Passenger</td>
<td>Medium</td>
</tr>
<tr>
<td>Visitor Business Passenger</td>
<td>High</td>
</tr>
<tr>
<td>Visitor Non-Business Passenger</td>
<td>Medium</td>
</tr>
<tr>
<td>Airport/Cruise Ship Employee</td>
<td>Medium</td>
</tr>
</tbody>
</table>

Source: URS/BRW; June 2001

The recent SANDAG survey of Route 922 bus riders provides additional supporting information about the current propensity to use bus transit by each of the airport market segments. As mentioned in Chapter 2.0, the most common trip purpose for Route 922 riders was found to be employment at the airport (33%), followed by people traveling for non-business purposes (26%), followed by business purpose trips (20%). These existing ridership percentages support the responses to transportation service characteristics summarized in Table 3.3. The market segment with the least sensitivity to travel time, reliability, and flexibility—Airport/Cruise Ship Employees—currently shows the highest level of bus transit travel. The business traveler, who is characterized as having the highest sensitivity to travel time, reliability, and flexibility in Table 3.3, currently shows the lowest level of bus transit travel for the trip to the airport.

4.0 TRANSIT RIDERSHIP PROPENSITY

This section presents the methodology utilized to estimate transit ridership potential associated with each of the airport and cruise ship market segments, along with the resulting 2020 transit ridership forecasts.

4.1 Overview of Methodology

Figure 4-1 outlines the methodology utilized for forecasting airport/cruise ship terminal transit demands. The forecasting process begins with total 2020 airport person trips from the SANDAG Regional Transportation Model and 2020 estimates of cruise ship passengers developed from the 1999 Cruise Ship Feasibility Study. Various factors are then applied to disaggregate the person trip forecasts by travel market segment. The resulting total person trips by market segment are then distributed to the regional TAZ structure based on land uses and trip generation characteristics. A market segment transit propensity and a transit accessibility factor is then applied to each regional TAZ. High, medium, and low range estimates of transit ridership are
Airport/ITC
Transit Forecasting Approach

Airport and Cruise Terminal Travel Demands

Market Segmentation
- Resident Business and Non-Business Passengers
- Visitor Business and Non-Business Passengers
- Airport and Cruise Ship Employees
- Meeters/Greeters
- Non-Passenger Visitors
- Airport Service Providers
- Cruise Ship Ports of Call

Transit Propensity Functions by Market Segment
- Travel Time
- Service Levels
- Accessibility
- Cost

Geographical Distribution

Access to Transit

ITC and Airport Transit Demands

MTDB
Airport Transit Access and Intermodel Transportation Center Site Evaluation Study

Figure 4-1
Transit Forecasting Methodology
developed based upon market segment transit propensity and airport/cruise ship terminal accessibility. The following subsections discuss each step of the forecasting process.

**Future Year Airport and Cruise Ship Trips**

Year 2020 airport and cruise ship non-work and work person trips from the SANDAG model were disaggregated into market segments and combined utilizing the market shares discussed in Chapter 2.0. **Table 4.1** displays future 2020 total person trips associated with both the airport/cruise ship terminal, disaggregated by the appropriate market segment. Total person trips for those market segments included in the analysis represent approximately 83% of all person trips to the airport and cruise ship terminal. As mentioned in Chapter 3, several market segments were dropped from the analysis because their potential market shares were characterized as very small. Airport person trips were generated by the SANDAG Series 9 Transportation Model and represent person trips to/from the airport and cruise ship terminal area.

**Table 4.1**

<table>
<thead>
<tr>
<th>Market Segment</th>
<th>Total Person Trips</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resident Business Passenger</td>
<td>24,460</td>
</tr>
<tr>
<td>Resident Non-Business Passenger</td>
<td>38,255</td>
</tr>
<tr>
<td>Visitor Business Passenger</td>
<td>24,460</td>
</tr>
<tr>
<td>Visitor Non-Business Passenger</td>
<td>35,180</td>
</tr>
<tr>
<td>Employee</td>
<td>4,050</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>126,405</strong></td>
</tr>
</tbody>
</table>

* This table excludes market segments with little or no propensity to use transit.

**Distribution of Market Segment Airport/Cruise Ship Trips**

The airport/cruise ship person trips shown in Table 4.1 were distributed to the regional TAZ’s based on the type and amount of year 2020 airport/cruise ship trip-generating land uses, located in each TAZ, as shown in the SANDAG Series 9 forecast.

**Table 4.2** displays airport and cruise ship market segments and the related land use type which was assumed to generate trips for each of the market segments. The origin and destination land use was identified for each applicable market segment. Person trips by market segment were distributed to TAZ’s in San Diego according to the distribution of the airport trip-generating land use for each particular market segment. For example in Table 4.1, there are a total of 24,460 resident business person trips to/from the airport. These trips were distributed to TAZ’s in the region according to the proportion of residential land uses and employment land uses in each TAZ.
### Table 4.2
**Market Segment Land Use Origin/Destination**

<table>
<thead>
<tr>
<th>Market Segment</th>
<th>Origin</th>
<th>Destination</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Land Use</td>
<td>Percent</td>
</tr>
<tr>
<td>1 – Resident Business Passengers</td>
<td>Household</td>
<td>60%</td>
</tr>
<tr>
<td></td>
<td>Employment</td>
<td>40%</td>
</tr>
<tr>
<td>2 – Resident Non-Business Passengers</td>
<td>Households</td>
<td>100%</td>
</tr>
<tr>
<td>3 – Visitor Business Passengers</td>
<td>Airport</td>
<td>85%</td>
</tr>
<tr>
<td></td>
<td>Employment</td>
<td>15%</td>
</tr>
<tr>
<td>4 – Visitor Non-Business Passengers</td>
<td>Airport/Cruise Ship Terminals</td>
<td>60%</td>
</tr>
<tr>
<td></td>
<td>Airport/Cruise Ship Terminals</td>
<td>40%</td>
</tr>
<tr>
<td>5 – Employees</td>
<td>Household</td>
<td>100%</td>
</tr>
</tbody>
</table>

Source: URS/BRW; June 2001

**Figures 4-2 through 4-6** display the regional distribution of 2020 airport/cruise ship terminal person trips by Subregional Area (SRA) for each of the applicable market segments. SRA's represent an aggregation of TAZ’s into a larger set of districts.

**Regional Transit Accessibility**

The next step was to develop a measure of transit accessibility for each TAZ based on minimum 2020 transit travel times to the airport/cruise ship study area, as estimated by the SANDAG Series 9 Transportation Model. The 2020 Regional Transportation Plan (RTP) transit network was assumed in the calculation of minimum transit travel times. The minimum transit travel times, therefore, do not include any of the assumptions of MTDB’s Transit First plan.

**Figure 4-7** displays minimum 2020 transit travel times to the airport/cruise ship terminal by TAZ assuming buildout of the 2020 Regional Transportation Plan.
Figure 4-5
2020 Airport and Cruise Ship Terminal Person Trips by SRA Visitor Non-Business Market Segment
These transit travel times were categorized as *Excellent*, *Good*, and *Poor* levels of transit accessibility using the criteria shown in Table 4.3.

### Table 4.3
Level of Transit Access to the Airport / Cruise Ship Terminal

<table>
<thead>
<tr>
<th>Transit Accessibility to the Airport</th>
<th>Transit Travel Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Excellent</td>
<td>&lt; 30 minutes</td>
</tr>
<tr>
<td>Good</td>
<td>31 – 60 minutes</td>
</tr>
<tr>
<td>Poor</td>
<td>61 – 90 minutes</td>
</tr>
<tr>
<td>No Service</td>
<td>&gt; 90 minutes</td>
</tr>
</tbody>
</table>

Source: URS/BRW, June 2001

Propensity to Use Transit by Market Segment

The next step was to assess transit propensity by market segment. In this step, transit propensities were generalized into *Low*, *Medium*, and *High* categories, based upon previous research on mode splits for travel to airport (1999, Mandel et al.).

The 1999 Mandel study’s findings on nationwide airport trip mode share are presented in Figure 4-8. As shown, the existing transit share of airport trips varies from a high of 22% in San Francisco to approximately 1% in Salt Lake City. The Washington D.C. airport has the highest share of rail trips, with approximately 13% of all airport trips using rail, followed by Atlanta at 8%, and Chicago’s Midway Airport at 7%. New Orleans has the highest share of bus usage for the airport trip, with approximately 16%, followed by Denver and Boston at approximately 12% and San Francisco at 9%.

The transit propensity factors presented in Table 4.4 were developed by categorizing the range of nationwide transit mode shares, from 1% to 22%, into three categories corresponding to *Low*, *Medium*, and *High*. The average of each category was then used to represent *Low*, *Medium*, and *High* transit propensities.

Table 4.4 presents the average transit propensity factors as developed from the 1999 Mandel et al study.
Table 4.4
Market Segment Transit Propensities

<table>
<thead>
<tr>
<th>Level of Transit Propensity</th>
<th>Propensity Factor (Transit Mode Share)</th>
</tr>
</thead>
<tbody>
<tr>
<td>High</td>
<td>9%</td>
</tr>
<tr>
<td>Medium</td>
<td>5%</td>
</tr>
<tr>
<td>Low</td>
<td>2%</td>
</tr>
</tbody>
</table>

Source: Mandel et al. 1999; URS/BRW; June 2001

Transit Propensity by Market Segment and Accessibility

The ridership propensity levels by market segment were then stratified by transit accessibility to the airport, resulting in the transit shares shown in Table 4.5. The resulting factors incorporate both an assessment of market segment characteristics (demand-related) and transit service characteristics (supply-related) in the estimation of potential transit ridership.

Table 4.5
Transit Propensity
Percent of Person Trips Utilizing Transit

<table>
<thead>
<tr>
<th>Market Segment Propensity</th>
<th>Transit Accessibility</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Poor</td>
</tr>
<tr>
<td>Low</td>
<td>1%</td>
</tr>
<tr>
<td>Medium</td>
<td>2%</td>
</tr>
<tr>
<td>High</td>
<td>5%</td>
</tr>
</tbody>
</table>

Source: Mandel, Mansel, and Coogan 1999

As suggested by Table 4.5, this study did not attempt to explicitly define each market segment’s response to the 2020 RTP transit network, rather it provided ridership estimates for a range of market segment responses—from all segments having a low propensity to all segments having a high propensity.

The factors presented in Table 4.5 are interpreted in the following manner. A market segment with low propensity due to service needs not compatible with available services and poor transit access would have a transit mode share of 1%. Conversely, a market segment with high transit propensity, travel needs compatible with available services and high accessibility, would have a transit mode share as high as 20%.
4.2 Transit Ridership Potential

The methodology described above was utilized to develop a range of potential transit ridership for each of the airport/cruise ship market segments. Table 4.6 displays total transit ridership by market segment. For each market segment, the number of potential transit trips was calculated given the TAZ source of trip, accessibility to the regional transit system, and propensity to use transit.

Table 4.6
2020 Transit Trips
By Airport/Cruise Ship Market Segments

<table>
<thead>
<tr>
<th>Market Segment</th>
<th>Low</th>
<th>Medium</th>
<th>High</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resident Business</td>
<td>340</td>
<td>750</td>
<td>1,580</td>
</tr>
<tr>
<td>Resident Non-Business</td>
<td>570</td>
<td>1,260</td>
<td>2,630</td>
</tr>
<tr>
<td>Visitor Business</td>
<td>460</td>
<td>1,000</td>
<td>2,080</td>
</tr>
<tr>
<td>Visitor Non-Business</td>
<td>630</td>
<td>1,380</td>
<td>2,860</td>
</tr>
<tr>
<td>Employees</td>
<td>60</td>
<td>140</td>
<td>280</td>
</tr>
<tr>
<td>Total Transit Trips</td>
<td>2,060</td>
<td>4,530</td>
<td>9,430</td>
</tr>
</tbody>
</table>

Source: URS/BRW; June 2001

As shown in Table 4.6, the resulting airport/cruise ship daily transit ridership estimates for the year 2020 range from a low of 2,060 to a high of 9,430 based on existing 2020 transit and land use plans. This equates to a range of 1.4% to 6.2% of total daily person trips to the airport/cruise ship terminal. While the actual transit ridership within this range will be a function of the service provided, this range provides a realistic low to high estimate and accounts for variation in the response of each market segment to variations in travel times, reliability, convenience, flexibility, and cost of service alternatives.

Based on the estimates in Table 4.6—which were developed through a process considering current SANDAG forecasts for land uses and person trips, accessibility to the airport, and national mode share information for travel to airports—the Resident Non-Business and Visitor Non-Business market segments have the highest potential transit ridership. These market segments should be considered the target market segments for transit system development associated with the airport and cruise ship terminal.

As previously mentioned, these estimates do not include potential transit ridership from four identified airport market segments (Meeters/Greeters, Visitor (non-passenger), and Airport Services), as well as the port of call cruise ship market segment.
Relative to other airports in the U.S., whose mode shares range from 1% to 22%, the estimated transit mode share for San Diego is low. Projected transit shares could increase significantly with the implementation of transit supportive land uses and the Transit First plan for transit system service developments.

5.0 CONCLUSIONS AND KEY FINDINGS

The key objectives and findings of this report are summarized below, followed by a discussion of the role of the ITC in meeting airport/cruise ship travel demand.

5.1 Key Study Findings

Existing and Future Travel Demands

A primary objective of this report was to document existing and future travel demands associated with the Airport and cruise ship terminal. These demands represent potential travel needs that could be serviced by the ITC. Table 5.1 summarizes existing and future person trips for the Airport and cruise ship terminal.

<table>
<thead>
<tr>
<th></th>
<th>Total Person Trips</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Existing</td>
</tr>
<tr>
<td>Airport</td>
<td>73,380¹</td>
</tr>
<tr>
<td>Cruise Ship</td>
<td>351²</td>
</tr>
<tr>
<td>Total</td>
<td>73,731</td>
</tr>
</tbody>
</table>

Source: URS/BRW; June 2001

Notes:
1. Existing year is 1995, from SANDAG base year model.
2. Existing year is 1997, from estimates by Port of San Diego.

As indicated in Table 5.1, total travel to the airport/cruise ship terminal study area is expected to grow by approximately 107%, from 73,731 to 152,897 person trips. Given current and projected levels of roadway congestion around the airport, the magnitude of this increase suggests that some potential would exist for accommodating a portion of this future travel with transit services and an intermodal transportation center.

Airport/Cruise Ship Market Segmentation

An important objective of this study was to determine what portion of future travel would likely utilize transit for travel to the airport/cruise ship terminal area. To accomplish this, travelers to the airport/cruise ship terminal area were disaggregated into market segments representing groups with unique travel demand and mode choice characteristics.
The following airport market segments were identified:

1. **Resident Business Passengers:** This market consists of business travelers originating in San Diego and flying to other cities for business purposes. The typical trip for the Resident Business market segment would be to leave his/her household in the early morning and travel to the airport to catch a flight to another city for business. In some cases, this traveler would leave from the work place and travel to the airport. This market segment tends to travel with small amounts of luggage, and would most often travel alone or with one other person.

2. **Resident Non-Business Passengers:** This market consists of travelers originating in San Diego and flying to other cities for leisure or personal purposes. These travelers would more typically travel in larger groups than the business travelers, with family members, small children, relatives, and/or friends. This market segment tends to travel with more luggage.

3. **Visitor Business Passengers:** This segment is comprised of business travelers who originate outside of San Diego and arrive in San Diego for business purposes. They are similar to the Resident Business market segment, except for their origins and destinations. This market segment would tend to leave the airport and travel to a hotel or an employment site. This market segment would typically not have a home-based trip end in San Diego.

4. **Visitor Non-Business Passengers:** This market segment is comprised of travelers originating outside of San Diego and coming to San Diego for leisure or personal purposes. Similar to the Resident Non-Business, this segment would tend to travel in larger groups with family, small children, relatives and/or friends. They would tend to stay in San Diego longer than the Visitor Business traveler and would likely have larger amounts of luggage.

5. **Airport Employees:** This market segment consists of airline and service industry employees working at the airport. These workers tend to work part-time and/or flexible full time schedules.

6. **Meeter/Greeters:** Meeters and greeters are defined as individuals or groups who go to the airport to assist an arriving or departing passenger.

7. **Visitor Non-Passengers:** This market consists of individuals or groups who travel to the airport to visit or conduct business at the airport itself.

8. **Airport Services Providers:** This segment consists of employees of companies that service the airport. Travel for this market segment would mainly include delivery of products for the airport businesses and airlines.

The following cruise ship market segments were identified:

1. **Resident Non-Business Passengers:** This market segment consists of cruise ship travelers originating in San Diego and accessing the cruise ship terminal for leisure. This market segment would typically embark and disembark in San Diego, with travel occurring between their local San Diego County residence and the cruise ship terminal. This market segment would tend to travel in groups of two or more and would tend to have large amounts of luggage.
2. **Visitor Non-Business Passengers:** This market segment consists of cruise ship travelers originating outside of San Diego and accessing the cruise ship terminal for leisure. This market segment would embark and disembark in San Diego, accessing locations outside San Diego via the airport or other transportation means. Like the Resident Non-Business market segment, the Visitor Non-Business segment would travel in groups and would tend to carry large amounts of luggage.

3. **Ports of Call:** This segment represents those cruise ship travelers arriving in San Diego on a cruise ship destined for another port. This market segment would be likely to make day trips to tourist destination in San Diego from the cruise ship terminal. This segment would not have any luggage, since it would be left aboard their ship.

4. **Cruise Ship Employees:** This market segment consists of locally-based employees of the San Diego cruise ship terminal.

Table 5.2 displays the transit potential market segments and their respective share of total travel to the airport and cruise ship terminal.

### Table 5.2
**Airport and Cruise Ship**
**Market Segments and Share of Total Travel**

<table>
<thead>
<tr>
<th>Market Segments</th>
<th>Market Share</th>
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<tr>
<td></td>
<td>Airport</td>
</tr>
<tr>
<td>Resident Business Passenger</td>
<td>16%</td>
</tr>
<tr>
<td>Resident Non-Business Passenger</td>
<td>25%</td>
</tr>
<tr>
<td>Visitor Business Passenger</td>
<td>16%</td>
</tr>
<tr>
<td>Visitor Non-Business Passenger</td>
<td>23%</td>
</tr>
<tr>
<td>Employee</td>
<td>3%</td>
</tr>
<tr>
<td>Meeters/Greeters</td>
<td>15%</td>
</tr>
<tr>
<td>Visitors (non-passenger)</td>
<td>1%</td>
</tr>
<tr>
<td>Airport Services</td>
<td>1%</td>
</tr>
<tr>
<td>Ports of Call</td>
<td>N/A</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>100%</strong></td>
</tr>
</tbody>
</table>

Source: URS/BRW, Inc.; June 2001
Once markets were defined and segmented, those segments with minimal transit propensity and not likely to utilize transit were eliminated from further analysis. The following market segments were eliminated from assessment of potential transit ridership:

- **Meeters/Greeters:** This segment was not analyzed because of their low potential for transit ridership given their trip purpose of assisting and/or transporting airport travelers.
- **Visitors (non-passenger):** This market segment was not analyzed because it constitutes a very small percentage of overall airport travel (1%).
- **Airport Services:** This segment was not analyzed because of their low potential for transit ridership given their trip purpose of transporting potentially heavy and/or bulky items.
- **Ports of Call:** The port of call market segment was not included in the assessment of transit potential because this market would not present a high demand for the ITC and is already very well served by transit at the foot of B Street. Port of call travelers have good access to light rail and bus service, and are also provided transportation services by the cruise lines.

**Transit Accessibility**

Transit accessibility was defined in this study as a function of travel time. SANDAG’s 2020 RTP transit network was utilized to calculate minimum transit travel times to the airport/cruise ship terminal area from all TAZ’s in the region. In the future, as SANDAG develops modeling capacities in support of the Transit First transit network, the ridership estimates could be calculated based upon minimum transit travel times representing the assumed enhanced levels of transit services throughout the region.

Four categories of transit accessibility were developed based on the 2020 RTP minimum transit travel times, as displayed in Table 5.3.

**Table 5.3**

**Level of Transit Access To The Airport / Cruise Ship Terminals**

<table>
<thead>
<tr>
<th>Transit Accessibility to the Airport</th>
<th>Transit Travel Time</th>
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<tr>
<td>Excellent</td>
<td>&lt; 30 minutes</td>
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<tr>
<td>Good</td>
<td>31 – 60 minutes</td>
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<tr>
<td>Poor</td>
<td>61 – 90 minutes</td>
</tr>
<tr>
<td>No Service</td>
<td>&gt; 90 minutes</td>
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</table>

Source: URS/BRW; June 2001

**Defining Ridership Potential**

This step of the forecasting process involved synthesizing a set of factors that would account for both demand-based and supply-based variations in travel to the airport/cruise ship terminal area. A previous nationwide study of transit mode splits for travel to airports along with an assessment of market segment accessibility to the San Diego airport provided the basis for developing ranges.
of potential ridership (Mandel et al, 1999). Table 5.4 summarizes transit ridership potentials given Excellent, Good, or Poor transit accessibility, and High, Medium, or Low market segment transit propensity.

**Table 5.4**
**Percent of Person Trips Utilizing Transit**

<table>
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<tr>
<th>Market Segment Propensity</th>
<th>Transit Accessibility</th>
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<tr>
<td></td>
<td>Poor</td>
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<tr>
<td>Low</td>
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<tr>
<td>Medium</td>
<td>2%</td>
</tr>
<tr>
<td>High</td>
<td>5%</td>
</tr>
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Source: SANDAG's 2020 RTP; Mandel, Mansel, and Coogan 1999

Low transit propensity would translate into a 1% to 5% transit mode split, depending on transit accessibility; Medium transit propensity translates into a 2% to 10% transit mode split; and High propensity translates into a 5% to 20% transit mode split, again depending on transit accessibility. These factors were utilized to calculate an airport/cruise ship terminal transit ridership estimate ranging from a low of 2,060 to a high of 9,430 for the year 2020 daily trips.

5.2 **Role of ITC in Meeting Airport/Cruise Ship Travel Demand**

This section reviews the potential role of the ITC in meeting transit demands of airport and cruise ship travelers, along with related factors to be considered when assessing the merits of the ITC. In conclusion, general recommendations are made about design and service concepts that would allow the ITC to best serve forecast travel demands. Recommendations regarding which market segment constitutes the best target market for transit ridership to the airport and cruise ship terminal are also suggested.

**The Airport**

Based on analyses conducted in this report, transit ridership associated with the airport would range between 2,100 and 9,400 daily trips. This represents a 1.4% to 6.2% transit mode split, given the level of airport transit access provided by the current 2020 RTP. In comparison, The Flyer currently carries 1,100 to 1,800 passengers per day, which equates to a 2.2% transit mode share.

The ridership estimates could constitute sizeable transit station activity for the Metropolitan Transit System bus and/or trolley systems. For example, the Blue Line has current boardings ranging between a high of approximately 13,610 at the San Ysidro Station to a low of 140 at the Fenton Parkway Station. Average daily boardings for Blue Line stations is approximately 2,260. Average boardings for Orange Line stations is approximately 1,210 with a high of 3,860.
boardings at the 12th & Imperial Station and a low of 230 boardings at the Gaslamp Station. Stations with boardings currently near 2,000 include America Plaza Transfer Station, Beyer Boulevard, E Street, Euclid Avenue, and Fashion Valley Transit Center. This comparison confirms that significant potential transit demand exists for travel to the airport, and would generally be strong relative to current LRT system-wide station boardings.

While acknowledging this potential demand, it is important to note that in order to achieve a level of transit ridership beyond the estimated low end of the range (roughly 2,000 daily trips) will require an aggressive approach to improving transit services to the airport, either with or without the ITC. A major focus would need to be placed on convenient access to the airport terminals, with the transit system either directly stopping at the terminals or provision of an effective shuttle system between the ITC and the airport terminals. Other service requirements for consideration include service design oriented to the airport peak demand and luggage handling capabilities.

The Cruise Ship Terminal

Potential transit ridership associated with the cruise ship terminal is relatively low. Forecast year 2020 daily person trips to the cruise ship terminal, which could reasonably be served by the ITC, is estimated at less than 200.

Travel associated with the cruise ship terminal is characterized by other factors that limit the potential for these markets to be well served by the ITC. For example, the cruise ship terminal is already well served by light rail transit, regional bus services, and privately operated services such as sightseeing bus tours, shopping shuttles, and charter buses. These transportation services are especially important to the largest market share of cruise ship travelers, the port of call market segment (75% of total cruise ship market), which travel primarily between the cruise ship terminal and tourist destinations in the San Diego region. The port of call cruise ship market segment would not logically be served by the ITC.

The ITC could potentially serve embarking and disembarking cruise ship passengers, but luggage considerations and special transportation services provided by the cruise lines may dampen this potential. Currently, cruise lines arrange for charter buses for large groups of cruise ship travelers. In addition, most cruises currently leaving from San Diego are 10-15 day trips, with passengers carrying large amounts of luggage. The more luggage passengers have to transport, the less likely they would be to utilize public transit connections from the ITC. A luggage check-in at the ITC in combination with parking facilities and/or shuttle services for cruise ship passengers could facilitate travel for embarking and disembarking cruise ship passengers between the terminal and the ITC. In addition, the elimination of parking across the street from the cruise ship terminal at Lane Field, could also make the ITC a more viable option for the cruise ship passengers. The Intermodal Transit Center (ITC) Development Study prepared by Parsons Binkerhoff in June 2001 reports that the ITC’s greatest potential for serving cruise ship passengers is as a parking facility with luggage services and shuttle services providing connection to the cruise ship terminal.
Target Transit Market Segments

Based on the analyses presented in this report, the Resident Non-Business and Visitor Non-Business market segments present the greatest potential transit market shares. Transit ridership estimates for the Resident Non-Business are between 579 and 2,630 daily transit trips, while transit ridership estimates for the Visitor Non-Business market segment are between 630 and 2,860. In addition, these market segments would not have access to a personal automobile, and would therefore tend to utilize transit and other alternative sources of transportation. Finally, these market segments would have a higher potential to use transit because their travel is linked to the downtown area, which is a regional transit hub.

5.3 Additional Analysis Needs

Transit First Service

A possible direction for future work includes incorporation of MTDB’s Transit First service plan in the airport ridership assessment. This study utilized SANDAG’s 2020 RTP transit network to assess minimum travel times to the airport. The 2030 RTP with a Transit First network would result in increased transit ridership estimates and could significantly change estimated transit ridership to the airport and cruise ship terminal.

Testing Airport Service Alternatives

The transit ridership model was developed to easily assess a range of transit alternatives. Once SANDAG has the Transit First network running in the regional model, the minimum travel times could be recalculated and used to update the airport transit ridership forecasts. MTDB and the Port may also want to develop specific airport/cruise ship transit alternatives, which could also easily be tested and used to assess transit ridership.
Bibliography


Appendix A
1995 Land Uses
SANDAG Series 9 Forecasts
SAN DIEGO REGIONAL TRAFFIC FORECAST

VEHICLE TRIP GENERATION AND LAND USE BY ZONE - YEAR: 2000

TRAFFIC ANALYSIS ZONE : 3210

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Source: San Diego Association of Governments Traffic Forecast, November 2000
SAN DIEGO REGIONAL TRAFFIC FORECAST
VEHICLE TRIP GENERATION AND LAND USE BY ZONE - YEAR: 2000
TRAFFIC ANALYSIS ZONE : 3237

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VEHICLE TRIP GENERATION AND LAND USE BY ZONE - YEAR: 2000

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Source: San Diego Association of Governments Traffic Forecast, November 2000
SAN DIEGO REGIONAL TRAFFIC FORECAST
VEHICLE TRIP GENERATION AND LAND USE BY ZONE - YEAR: 2000

TRAFFIC ANALYSIS ZONE : 3152

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Source: San Diego Association of Governments Traffic Forecast, November 2000
### SAN DIEGO REGIONAL TRAFFIC FORECAST

**VEHICLE TRIP GENERATION AND LAND USE BY ZONE - YEAR: 2000**

**TRAFFIC ANALYSIS ZONE : 3201**

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Appendix B
2020 Land Uses
SANDAG Series 9 Forecasts
## SAN DIEGO REGIONAL TRAFFIC FORECAST

**VEHICLE TRIP GENERATION AND LAND USE BY ZONE - YEAR: 2020**

**TRAFFIC ANALYSIS ZONE : 3237**

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Source: San Diego Association of Governments Traffic Forecast, November 2000
SAN DIEGO REGIONAL TRAFFIC FORECAST
VEHICLE TRIP GENERATION AND LAND USE BY ZONE - YEAR: 2020
TRAFFIC ANALYSIS ZONE : 3210

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Source: San Diego Association of Governments Traffic Forecast, November 2000
SAN DIEGO REGIONAL TRAFFIC FORECAST
VEHICLE TRIP GENERATION AND LAND USE BY ZONE - YEAR: 2020

TRAFFIC ANALYSIS ZONE : 3142

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Source: San Diego Association of Governments Traffic Forecast, November 2000
### SAN DIEGO REGIONAL TRAFFIC FORECAST

**VEHICLE TRIP GENERATION AND LAND USE BY ZONE - YEAR: 2020**

**TRAFFIC ANALYSIS ZONE : 3152**

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Source: San Diego Association of Governments Traffic Forecast, November 2000
Airport Transit Access and
Intermodal Transportation Center
Site Evaluation Study

Final

TRANSIT SERVICE TECHNICAL REPORT

Prepared for:

Metropolitan Transit Development Board
1255 Imperial Avenue, Suite 1000
San Diego, California 92101

Port of San Diego
3165 Pacific Highway
San Diego, California 92112

Prepared by:

URS
701 B Street, Suite 530
San Diego, California 92101

August 2001
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1.0 PURPOSE AND ORGANIZATION

The Port of San Diego is in the process of implementing Step 1 of the Airport Master Plan for Lindbergh Field. One of the key components of this step is construction of a new north passenger terminal, along with an adjacent intermodal transportation center (ITC). The Airport Master Plan timeline is currently as follows:

- Steps 1, 2, and 3B (2005–2015) – Construction and opening of the North Terminal with 14 gates, plus the addition of 8 gates at the South Terminal; and

While consideration in the Port's Master Plan for the ITC to date has focused on parking requirements and providing automobile access, the ITC could also potentially serve as a primary hub for transit and non-automobile access to an expanded Lindbergh Field. With this recognition, the Airport Access and Intermodal Transportation Center Site Evaluation Study is being conducted jointly by the Metropolitan Transit Development Board (MTDB) and the Port of San Diego with a number of objectives:

- Narrow down the preferred site to no more than three options for the ITC;
- Assess potential transit demands to the ITC and the airport/cruise ship terminals;
- Recommend an effective form and functionality for the ITC based on the identified travel demands; and
- Define transit characteristics and operations that would best serve travel demands between the ITC, airport, and cruise ship terminal.

The results of the ITC site evaluation and the travel demand analysis have been documented in separate technical reports. Drawing on the results of those efforts, this report analyzes the transit services needed to serve regional trips to/from the airport, as well as the on-site service at the airport itself. Of equal importance, this report also analyzes the opportunities for transit to serve the travel demands of the cruise ship terminal on Harbor Drive.

The report begins with a discussion of the existing transit services to and at the airport. It follows with a description of the analysis approach, including the conceptual framework to cover the various options that are being planned for. The report concludes with a program of recommended service improvements and operational approaches, as well as supporting capital facilities to maximize the use of transit for travel to the airport.

Following this introduction, the report is organized into the following sections:

2.0 Existing Conditions;
3.0 Planned Service and Capital Improvements;
4.0 Key Assumptions and Conceptual Framework for the Analysis;
5.0 Analysis and Results; and
6.0 Key Findings and Conclusions.

2.0 EXISTING CONDITIONS

There are a variety of transit and shared ride modes in operation today that serve the airport. This section documents those services as a background for planning improvements.

2.1 Transit Access to the Airport

These services currently provide access to the airport.

Route 992 The Flyer

The Flyer is a specialized, high frequency shuttle bus service that connects Downtown San Diego and the airport. It runs every day between 5:00 a.m. and 1:15 a.m., with 10–minute service most of the weekday, and with 15–minute service after 8:00 p.m. and on weekends and holidays. Operational and performance information is reported in Tables 2.1 and 2.2. This route replaced Route 2 in the November 1997, and currently carries over 1,400 passengers each day (May 2001 counts). It uses specially designed, medium–sized vehicles with luggage racks.

Ridership has grown steadily on this route. However, it is the lowest performing route in the Line Haul category of services. MTDB’s annual Policy No. 43 evaluation of service for FY 2000 showed lower than average productivity, with 15.8 passengers per revenue hour (average was 36.0), and 1.62 passengers per revenue (average was 3.50). The sporadic nature of the tourist market to the airport is considered to be a factor in the Flyer’s performance. The route has been recommended route segment analysis to identify opportunities

Based on the May 2001 counts, approximately 80-85 percent of the riders use the Flyer for trips to and from the airport. The other 15-20 percent use it for short trips along the route, along Harbor Drive and Broadway in Downtown.

A passenger survey was conducted by SANDAG in spring 2001 for this study. It provided information on the types of riders, use of transit connections, and alternative ways for making the trip. Several of the key findings of the survey are listed below:

- The San Diego regional home zip codes with the highest number of riders included Downtown San Diego, Golden Hill, Hillcrest, and Logan Heights. Other well represented zip codes include Oceanside, North Park, East San Diego, Encanto, and San Ysidro.
- Approximately 77 percent of the riders were residents of San Diego.
- Almost 60 percent of the surveyed were going to or coming from home.
- One–third of the riders were airport employees.
- One–half of the air passengers were flying on Southwest Airlines.
Nearly all of those surveyed were traveling alone (78 percent), or in groups of two (20 percent).

Nearly all (98 percent) had two pieces of luggage or less.

One-third of the riders transferred from a bus to/from The Flyer, and one-third transferred to/from the Trolley. Transfers to/from the Coaster were made by nine percent of the riders. Nearly 20 percent walked, and the rest drove or were dropped off.

The bus routes with the most transfers included Routes 2, 7, 11, and 901.

Two-thirds of the Trolley transfers were with the Blue Line, one-third with the Orange Line.

Nearly two-thirds (64 percent) of the riders use transit in San Diego several times a week.

The survey results revealed several trends useful for airport transit service planning.

Most of the riders started their trips in locations relatively close to the airport. Thus the Flyer is generally used as part of short to medium length trips (less than 10 miles).

Half of the air passengers use Southwest Airlines, which probably reflects the high volume of Southwest Airlines travel at the airport. It may also indicate high use of the Flyer by cost conscious travelers.

Wherever Southwest Airline gates are located, e.g., the planned North Terminal, there will likely be a demand for transit service to that terminal. This could represent a transit market niche with opportunities for marketing efforts, perhaps in cooperation with Southwest Airlines.

More detailed surveys could provide valuable information on the travel patterns and preferences of transit riders to the airport.

San Diego Trolley

The San Diego Trolley does not serve the airport directly, but connections to The Flyer are available at the America Plaza Station for both the Blue and Orange Lines. The Flyer airport bound stop is located at the corner of Kettner Boulevard and Broadway adjacent to the Trolley station. The trip to Terminal 1 at the airport is scheduled to take 10 minutes.

Coaster

The Coaster provides commuter rail service Monday through Saturday between Oceanside and Downtown San Diego. No service is provided on Sundays and holidays. Coaster passengers can make connections to The Flyer by walking from the Santa Fe Depot to the stop at Kettner Boulevard and Broadway.
**Table 2.1**  
FY 2000 Route 992 Operations Data

<table>
<thead>
<tr>
<th>Route</th>
<th>Type of Route</th>
<th>Days of Operation</th>
<th>Operating Hours (Weekday)</th>
<th>Frequency (Minutes)</th>
<th>Vehicles</th>
<th>One-Way Length (Miles)</th>
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Source: MTDB Short Range Transit Plan, October 2000

**Table 2.2**  
FY 2000 Route 992 Base Statistics & Performance Indicators

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<th>Route No.</th>
<th>Total Operating Cost</th>
<th>Fare Revenue</th>
<th>Subsidy Amount</th>
<th>Total Pass.</th>
<th>Revenue Pass.</th>
<th>Total Miles</th>
<th>Revenue Miles</th>
<th>Revenue Hours</th>
<th>Farebox Recovery Rate</th>
<th>Operating Cost/Revenue Mile</th>
<th>Operating Cost/Total Pass</th>
<th>Operating Cost/Revenue Hour</th>
<th>Revenue Miles/Revenue Hour</th>
<th>Total Pass./Revenue Hours</th>
<th>Subsidy Per Boarding</th>
<th>Pass Mi. Per Seat Mi.</th>
<th>Average Trip Length (Miles)</th>
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<td>$2.17</td>
<td>0.21</td>
<td>2.74</td>
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</table>

Source: MTDB Short Range Transit Plan, October 2000
Bus Service

All of the bus routes serving Downtown San Diego can make connections to The Flyer, including a wide range of local trunk services and peak hour express services. The Downtown routes include local routes 1, 2, 3, 4, 5, 7, 11, 15, 16, 22, 23, 25, 29, 34, 115, 901, 902, 932, and express routes 20, 20C, 30, 40, 50, 70, 150, 210, 850, 860, 980, 990.

Private Shared Ride Services

Numerous private companies provide shared rides using vans, taxis, and limousines to and from the airport. These services provide convenient, direct service at premium fares. They are regulated by MTDB and the Port. These services use the designated stop areas in front of Terminals 1 and 2, located south of the access road in front of the terminals. Riders cross the road on a bridge (Terminal 1) or at-grade (Terminal 2). The Port estimates that 15 percent of air passengers use these service to get to/from the airport.

Courtesy Shuttles

These vehicles provide point-to-point service between hotels, privately operated parking lots, and the airport. The Port licenses these numerous services in operation, which use the same designated stops as the private shared ride. It is estimated that these shuttles provide access to up to 35% of air travelers.

2.2 Transit Access To The Cruise Ship Terminal

The cruise ship terminal on Harbor Drive is served by The Flyer, which offers a high level of service seven days a week. Other routes stopping or terminating within one-quarter mile walking distance include local routes 4, 15, 22, 23, 29, 115, 901, 902, 903, and 932, and express routes 20, 20C, 40, 70, 210, 850, and 860. Trolley service is also available nearby at the Santa Fe Depot and America Plaza Station, and Coaster service is available at the Santa Fe Depot. Both are approximately one-quarter mile from the cruise ship terminal. Parking for the terminal (approximately 850 spaces) is available in a lot across Harbor Drive, north of Broadway.

2.3 Circulation at the Airport

The Port provides two types of circulation services at the existing airport terminal buildings. One serves air passengers, providing connections between the three terminal buildings. The other one serves airport employees. Both are described in this section.

Red Bus

The Red Bus provides frequent service between the Commuter Terminal, Terminal 1, and Terminal 2 (approximately every six minutes during most of the day). With stops located at the curbside directly in front of the buildings, this service allows quick and convenient connections for air passengers. The Flyer also uses some of these stops. The Red Bus and the employee shuttles are interconnected to provide extra capacity on each service when needed.
Employee Shuttle

This service connects the remote employee parking lots south of Harbor Drive with the terminal buildings. It is timed to provide service throughout the day, with extra trips during the heaviest start and end shift times.

Rental Car Buses

Several rental car companies provide shuttles between the terminals and the rental car lots. Some of the companies have facilities along Harbor Drive, while others are located on Pacific Highway and other nearby streets. The vehicles circulate through the terminal areas frequently, providing frequent and free service to rental car customers.

3.0 PLANNED SERVICE AND CAPITAL IMPROVEMENTS

No improvements to the airport’s public transit service are included in the MTDB Short Range Transit Plan for FY 2001–2005. Several capital improvements are planned at the airport in the next 5–10 years that relate to the provision of transit service, as described below.

3.1 Intermodal Transportation Center

The Port is currently pursuing implementation of the Intermodal Transportation Center (ITC Site 1). The proposed site is located on the east side of Pacific Highway, between Palm Street and the Port’s office building. (Alternative sites are being considered as part of this study and subsequent analysis. See Figure 3–1). This project would add 1,800–2,000 parking spaces and provisions for courtesy shuttles and transit bus connections. The Draft Environmental Impact Report (DEIR) for the project at the Port’s preferred site at the corner of Palm Street and Pacific Highway (one of the central group of sites) was released in April 2001 for comment. The Final Environmental Impact Report (FEIR) is expected to be released in the fall of 2001.

3.2 Step 1 and 2 Terminal Improvements

The Port recently completed the Master Plan to guide development of the airport through 2020. A key element of the plan is construction of the 14-gate North Terminal, located west of Pacific Highway near Sassafras Street. This new passenger facility would be built in phases with Steps 1 and 2 likely to go forward at the same time. (See Figure 3–2 for the current conceptual plan for the terminal). These improvements are expected to take place in the 2005–2015 time frame.
3.3 Step 3 Terminal Improvements

Additional improvements to the airport terminals are planned for the 2010–2020 timeframe. In Step 3B, various improvements would be made to the South Terminal. As outlined in the Airport Master Plan, eight new gates would be added to Terminal 2, the Terminal 1 and 2 concourses would be reconstructed, the commuter gates would be incorporated in the new Terminal 1 building, and new second level access roads and expanded parking would be added. (The use of the existing commuter terminal is unclear at this time.) These improvements are planned for the 2010–2015 timeframe.

Step 3A, would provide 40 additional gates along Pacific Highway. Step 3A would depend on a regional decision to not develop a new airport at a different location, and the availability of the Marine Corp Recruit Depot site. Since there is no consensus on the potential for either of these two items, the Step 3A improvements were not included in the horizon year assumptions for this study. However, the effect of Step 3A and 3B on potential transit service options is considered in this report. It is expected that either Step 3B or 3A will be implemented, but not both.

3.4 Central I–5 Corridor Study

The purpose of the Central I–5 Corridor Study is to identify short-range and long-range actions to reduce traffic congestion on freeways, interchanges, and arterials that provide regional access to Downtown San Diego and other activity centers. These activity centers include existing and planned projects in Downtown (such as the central business district, Gaslamp District, Seaport Village, North Embarcadero, Convention, and the Padres Ballpark), San Diego International Airport, redevelopment at the naval Training Center, and the Port District marine terminals at 10th Avenue and 24th Street. The study will identify highway and transit improvements, transportation management measures, and travel demand management strategies to mitigate existing and future congestion in the corridor. The study is scheduled for completion by spring 2002.

A key focus of the ground access improvements to the San Diego International Airport is evaluation of potential direct connections from the airport on-site circulation system to the I–5 freeway. Due to increasing levels of roadway congestion, improved freeway access has been identified as a necessary component of the airport access system under both Steps 3A and 3B of the Airport Master Plan. A number of alternative freeway connection ramps have been identified for further evaluations as the corridor study proceeds.

4.0 KEY ASSUMPTIONS AND FRAMEWORK FOR THE ANALYSIS

4.1 Physical Facilities

There are two key physical facility assumptions for the analysis of transit service to the airport: the North Terminal and the ITC site. The location of the North Terminal Steps 1 and 2 is fixed at this time, although the actual design of the facility could be refined. The current assumptions were used for the transit service analysis.
The intent of the Airport Transit Access and Intermodal Transportation Center Site Evaluation Study is to identify and evaluate transit access improvements to the airport (South and North Terminals) and to analyze ITC site options that may facilitate improved transit access. The initial intent of this study was to narrow the number of alternatives to no more than three, including the Port’s preferred location. The site location options were narrowed down to two groups of three sites each (see Figure 3–1). The general location of these sites was used in the transit service analysis. Detailed operations plans for the recommended services, that would require a specific location for the ITC, will be developed in future studies.

4.2 Regional Transit Access

The primary goal of the study is to improve transit access to the airport. One feature of the ITC is the potential to bring together many modes of transportation in one facility, allowing for efficient connections between modes and convenient connections to the airport terminals. However, research conducted during the study indicated that direct service to terminals can be an important incentive for people to use transit for airport trips. As a result, the transit service analysis looked at two different focuses for regional transit access. One would focus regional service at the ITC. The other would provide service directly to the terminal buildings. As described below, the two approaches are combined with terminal development options to establish the scenarios used in the analysis.

4.3 Local Circulation

Local circulation includes the connections between the ITC and the terminal buildings, the ITC and the cruise ship terminal, and the connections between the terminal buildings themselves. When this study began, it was expected that a small group of individual ITC sites would be identified, and a detailed operating plan for shuttle services would be developed for each. Since groups of sites were identified for the ITC instead, the analysis of on-site circulation has been generalized somewhat to focus more on transit access service and facility packages. The services would include both routes and supporting capital facilities. More detailed analysis will be needed to refine the definition of the service and facility packages through further planning, design, environmental, cost, and ridership development.

4.4 Transit Improvement Scenarios

Combinations of terminal improvements and transit service emphasis have been developed into the six scenarios summarized below.

The improved South Terminal with eight additional gates is assumed to operate in all of the scenarios. Each scenario is described in more detail below.

Scenario North ITC – 2015 (Sites 2, 4, and 5)

Scenario North ITC – 2015 includes the following elements:

- Airport Master Plan Steps 1 and 2 with 14 additional gates at the new North Terminal.

URS

Page C-10

Transit Service
Technical Report
• Transit service focused on one of the north ITC sites located east of the current Trolley tracks between Washington and Sassafras Streets. (Sites 2, 4, and 5 would require Trolley station relocation and/or Coaster station addition.)
• Transit transfers to the South Terminal and the cruise ship terminal at the ITC site.
• Moving sidewalks between the ITC and the North Terminal.

Scenario North ITC – 2020 (Sites 2, 4, and 5)

Scenario North ITC – 2020 includes:

• Airport Master Plan Step 3A with 40 additional gates in a new North Terminal building.
• Transit service focused on one of the North ITC sites located on the current Trolley tracks between Washington and Sassafras Streets. (Sites 4 and 5 would require Trolley station relocation and/or Coaster station addition.) Step 3A increases travel demand in the area, and could lead to a need for a sizable amount of transit improvements.
• Transit transfers to the cruise/south airport terminals.
• Moving sidewalks between the ITC and the North Terminals.

Scenario Central ITC – 2015 (Sites 1, 6, and 3)

Scenario Central ITC – 2015 includes:

• Airport Master Plan Steps 1 and 2 with 14 additional gates at the new North Terminal.
• Transit service focused on one of the Central ITC sites, located between Palm Street and the Port office building.
• Regional transit service focused on the ITC, with transfer connections required to all airport/cruise terminals.
• Moving sidewalks between the ITC and the North Terminal.

Scenario Central ITC – 2020 (Sites 1, 3, and 6)

Scenario Central ITC – 2020 includes:

• Airport Master Plan Step 3A with 40 additional gates at the North Terminal.
• Transit service focused on one of the central ITC sites, located between Palm Street and the Port Pacific Highway office building. Step 3A increases the travel demand in this area, and could lead to a need for a sizable amount of transit improvements.
• Regional transit service focused on the ITC, with transfer connections required to all airport/cruise terminals.
• Moving sidewalks between the ITC and the North Terminal would be attractive to ITC users.
Scenario Airport – 2015

Scenario Airport – 2015 includes:

- Airport Master Plan Steps 1 and 2 with 14 gates at the North Terminal.
- Regional transit service focused on direct service to the airport/cruise terminals.
- Port provided transit service focused on ITC users, with transfers between the ITC and airport/cruise terminals.

This scenario can include bus rapid transit amenities such as exclusive lanes, high frequency service, signal priority, station upgrades, etc. to improve existing and new transit service. This approach provides transit users with direct service to the terminal buildings bypassing the ITC.

Scenario Airport – 2020

Scenario Airport – 2020 includes:

- Airport Master Plan Step 3A with 40 additional gates in a new North Terminal building.
- Regional transit service focused on direct service to the airport/cruise terminals.
- Port provided transit service focused on ITC users, with transfers between the ITC and airport/cruise terminals.

This scenario can include bus rapid transit amenities such as exclusive lanes, high frequency service, signal priority, station upgrades, etc. to improve existing and new transit service. This approach provides transit users with direct service to the terminal buildings bypassing an ITC. Step 3A increases the travel demand in this area, and could lead to a need for a sizable amount of transit improvements.

5.0 ANALYSIS AND RESULTS

The following aspects of transit service were analyzed for each scenario:

- Trolley Interface – existing station, new station on existing alignment, potential for realignment (see Figures 5–1 and 5–2)
- Coaster Interface – existing station, new station on existing alignment, potential for realignment (see Figures 5–1 and 5–2)
- Local Bus Service – potential routings, operating parameters, planning level costs
- Express Bus Services – potential routings (see Figure 5–3), operating parameters, planning level costs
- Connecting Transit Services to/from Transit Centers – dedicated transit from Old Town Transit Center and Santa Fe Depot, with system improvements
- Connections between ITC and Airport Terminals – pedestrian, bus, automated people mover (APM) (see Figure 5–4)
• Connections between ITC and Cruise Ship Terminals – dedicated shuttles
• Opportunities and Constraints

Information for each of these elements was developed through field work, discussions with MTDB and Port staff, and consultant research and analysis. Order-of-magnitude costs were estimated using comparable capital and operating costs from recent projects and services. The cost estimates are in 2001 dollars and do not include right-of-way costs. Also, the demand estimates developed in this study, and used in the evaluation, reflect the projects in the current Regional Transportation Plan. Updated 2020 land uses, and Transit First projects were not included. The service and capital elements for each of the scenarios are displayed in Figures 5–5 through 5–10.
• Realigned Route 992/The Flyer
• Five New Express Routes
• Connections to South Terminal - Enhanced Bus or Automated People Mover
• Charter Connections to Cruise Ship Terminal
• Pedestrian Bridge with Moving Sidewalk
• New Coaster Station (Sites 2, 4, or 5)
• Relocated Trolley Station (Sites 2, 4, or 5)
TRANSIT SERVICE TO ITC
- Realigned Route 992/The Flyer
- Five New Express Routes
- Connections to South Terminal - Enhanced Bus or Automated People Mover
- Charter Connections to Cruise Ship Terminal
- Pedestrian Bridge with Moving Sidewalk
- New Coaster Station (Sites 1, 3 or 6)
- Relocated Trolley Station (Sites 1, 3 or 6)
- New Trolley Station
- Trolley and Concourse Realignment

Central ITC 2015 Transit Improvements
TRANSLATION SERVICE TO ITC
- Realigned Route 992/The Flyer
- Five New Express Routes
- Connections to South Terminal -
  Enhanced Bus or Automated People Mover
- Charter Connections to Cruise Ship Terminal

LEGEND

ITC Sites
Washington St. LRT Station
Middletown LRT Station
County Center/Little Italy LRT Station

New Coaster Station
Relocated Trolley Station
Trolley and Coaster Realignment
5.1 Analysis Results

The results of the analyses have been summarized in Tables 5.1–5.6. A listing of issues and challenges is provided for each scenario in the tables. Regional routes were developed by identifying the five areas with the highest level of travel to the airport, and developing routings to serve them. A discussion of the implications of the analysis for each of the transit service aspects is provided at the end of this section.

Table 5.1
North ITC – 2015
Transit Focused on the ITC North Sites (2, 4, and 5)

<table>
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<tr>
<th>Consideration</th>
<th>Assumptions</th>
<th>Cost Estimates*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trolley Interface</td>
<td>• Site 2 – No realignment; possible relocation of station</td>
<td>• Site 2 – At-grade pedestrian connection at signalized intersection</td>
</tr>
<tr>
<td></td>
<td>• Sites 4 and 5 – Move station along existing line.</td>
<td>• Sites 4 and 5 – New Trolley station, $540,000</td>
</tr>
<tr>
<td>Coaster Interface</td>
<td>• Site 2 – Add station along existing line.</td>
<td>• Site 2 – At-grade pedestrian connection at signalized intersection</td>
</tr>
<tr>
<td></td>
<td>• Sites 4 and 5 – Add station along existing line.</td>
<td>• Sites 4 and 5 – New Coaster station, $675,000</td>
</tr>
<tr>
<td>Local Bus Service</td>
<td>• Bus routes terminate at ITC.</td>
<td>• Annual operating cost savings of $90,000</td>
</tr>
<tr>
<td></td>
<td>• Transfer to connect to airport/cruise terminals.</td>
<td></td>
</tr>
<tr>
<td>Express Bus Service</td>
<td>• Bus routes terminate at ITC.</td>
<td>• Annual operating cost $6.8 million</td>
</tr>
<tr>
<td></td>
<td>• Transfer to connect to terminals.</td>
<td></td>
</tr>
<tr>
<td>Connecting Bus Services to/from Transit Centers</td>
<td>• Existing Flyer service only.</td>
<td>• No additional cost.</td>
</tr>
<tr>
<td>Connections between ITC and Airport Terminals</td>
<td>• Pedestrian connections over Pacific Highway to North Terminal.</td>
<td>• Pedestrian bridge/moving sidewalk – Sites 2, 4, and 5: $8.2 million (570 feet long, structure $6.7 million, moving sidewalk $1.5 million).</td>
</tr>
<tr>
<td></td>
<td>• Connections to South Terminals via shuttle bus or APM.</td>
<td>• Connecting bus – annual operating cost $940,000,</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• APM segment – annual operating cost $1.1 million</td>
</tr>
<tr>
<td></td>
<td></td>
<td>– capital cost $165 million</td>
</tr>
<tr>
<td>Consideration</td>
<td>Assumptions</td>
<td>Cost Estimates*</td>
</tr>
<tr>
<td>---------------------------------------------------</td>
<td>--------------------------------------------------------------------------------------------------</td>
<td>--------------------------------------</td>
</tr>
<tr>
<td>Connections between ITC and Cruise Ship Terminal</td>
<td>• Connections would be provided by charter buses as needed to serve specific ship arrivals and departures. They would not be publicly operated services.</td>
<td>• Annual operating cost – $40,000</td>
</tr>
<tr>
<td>Opportunities and Constraints</td>
<td>• Bus routings near ITC would be somewhat circuitous.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• I-5/Pacific Highway ramps I-5 may impede North Terminal pedestrian connection.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• All North ITC sites are located east of Trolley and Coaster tracks, and require transit vehicle crossings of the tracks.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Provision of transit priority requirements for connecting services.</td>
<td></td>
</tr>
</tbody>
</table>

*Includes construction, design, and construction management cost, and contingency. Does not include right-of-way costs. Costs in 2001 dollars.
### Table 5.2
North ITC – 2020
Transit Focused on the ITC North Sites (2, 4, and 5)

<table>
<thead>
<tr>
<th>Consideration</th>
<th>Assumptions</th>
<th>Cost Estimates</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trolley Interface</td>
<td>• Site 2 – No realignment; possible relocation of station</td>
<td>• Site 2 – Pedestrian connection</td>
</tr>
<tr>
<td></td>
<td>• Sites 4 and 5 – Move station along existing line.</td>
<td>• Sites 4 and 5 – New Trolley station, $540,000</td>
</tr>
<tr>
<td>Coaster Interface</td>
<td>• Site 2 – No realignment; Add station along existing line.</td>
<td>• Site 2 – Pedestrian connection</td>
</tr>
<tr>
<td></td>
<td>• Sites 4 and 5 – Add station along existing line.</td>
<td>• Sites 4 and 5 – New Coaster station, $675,000</td>
</tr>
<tr>
<td>Local Bus Service</td>
<td>• The Flyer terminates at ITC. Route 34 stops on Pacific Highway.</td>
<td>• Annual operating cost savings of $90,000</td>
</tr>
<tr>
<td></td>
<td>• Transfer to connect to terminals.</td>
<td></td>
</tr>
<tr>
<td>Express Bus Service</td>
<td>• Bus routes terminate at ITC.</td>
<td>• Annual operating cost $6.8 million</td>
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<tr>
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<td></td>
</tr>
<tr>
<td>Connecting Bus Services to/from Transit Centers</td>
<td>• Existing Flyer service only.</td>
<td>• No additional cost.</td>
</tr>
<tr>
<td>Connections between ITC and Airport Terminals</td>
<td>• Pedestrian connections over Pacific Highway to North Terminal.</td>
<td>• Pedestrian bridge/moving sidewalk – Sites 2, 4, and 5:</td>
</tr>
<tr>
<td></td>
<td>• Connections to South Terminals via shuttle bus or APM.</td>
<td>$8.2 million (570 feet long, structure $6.7 million, moving sidewalk $1.5 million).</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Connecting bus – annual operating cost $880,000</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• APM segment</td>
</tr>
<tr>
<td></td>
<td></td>
<td>– annual operating cost $1.6 million</td>
</tr>
<tr>
<td></td>
<td></td>
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</tr>
<tr>
<td>Connections between ITC and Cruise Ship Terminal</td>
<td>• Connections would be provided by charter buses as needed to serve specific ship arrivals and departures. They would not be publicly operated services.</td>
<td>• Annual operating cost – $40,000</td>
</tr>
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<td>Cost Estimates</td>
</tr>
<tr>
<td>-----------------------</td>
<td>-----------------------------------------------------------------------------</td>
<td>----------------</td>
</tr>
<tr>
<td>Opportunities and</td>
<td>• Bus routings near ITC are somewhat circuitous.</td>
<td></td>
</tr>
<tr>
<td>Constraints</td>
<td>• Ramps between Pacific Highway and I-5 may affect pedestrian connection to North Terminal.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• All North Sites are east of LRT and Coaster tracks and require transit vehicle crossings of the tracks.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Provision of transit priority requirements for connecting services.</td>
<td></td>
</tr>
</tbody>
</table>

*Includes construction, design, and construction management cost, and contingency. Does not include right-of-way costs. Costs in 2001 dollars.
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<tr>
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<th>Assumptions</th>
<th>Cost Estimates*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trolley Interface</td>
<td>• Sites 1 and 6 – No relocation, Middletown Station would remain where it is.</td>
<td>• Site 3 Trolley realignment with station – $36.3 million</td>
</tr>
<tr>
<td></td>
<td>• Site 3 – Potential realignment of tracks.</td>
<td>• Sites 1 and 6 – Pedestrian connections provided.</td>
</tr>
<tr>
<td>Coaster Interface</td>
<td>• Sites 1 and 6 – No relocation. Add station along existing line.</td>
<td>• Sites 1 and 6 – New Coaster station $675,000</td>
</tr>
<tr>
<td></td>
<td>• Site 3 – Potential realignment of tracks.</td>
<td>• Site 3 – Realignment with station $56.4 million</td>
</tr>
<tr>
<td>Local Bus Service</td>
<td>• The Flyer terminates at ITC. Route 34 stops on Pacific Highway.</td>
<td>• Annual operating cost savings of $335,000</td>
</tr>
<tr>
<td></td>
<td>• Transfer to connect to terminals.</td>
<td></td>
</tr>
<tr>
<td>Express Bus Service</td>
<td>• Bus routes terminate at ITC.</td>
<td>• Annual operating cost $6.9 million</td>
</tr>
<tr>
<td></td>
<td>• Transfer to connect to terminals.</td>
<td></td>
</tr>
<tr>
<td>Connecting Bus Services from Transit Centers</td>
<td>• Existing Flyer service only.</td>
<td>• No additional cost.</td>
</tr>
<tr>
<td>Connections between ITC and Airport Terminals</td>
<td>• Sites 1 and 6 – Pedestrian connections over Pacific Highway to North Terminal.</td>
<td>• Pedestrian bridge/moving sidewalk</td>
</tr>
<tr>
<td></td>
<td>• Site 3 – Connected by at-grade walkway.</td>
<td>– Site 1 $19.4 million (1,330 feet long, structure $15.8 million, moving sidewalk $3.6 million)</td>
</tr>
<tr>
<td></td>
<td>• Connections to South Terminals via shuttle bus or APM.</td>
<td>– Site 6 $22.1 million (1,520 feet long, structure $18.1 million, moving sidewalk $4.0 million)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>– Site 3 No pedestrian bridge.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Shuttle bus</td>
</tr>
<tr>
<td></td>
<td></td>
<td>– annual operating cost $820,000</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• APM segment</td>
</tr>
<tr>
<td></td>
<td></td>
<td>– annual operating cost $1.1 million</td>
</tr>
<tr>
<td></td>
<td></td>
<td>– capital cost $165 million</td>
</tr>
<tr>
<td>Consideration</td>
<td>Assumptions</td>
<td>Cost Estimates*</td>
</tr>
<tr>
<td>-------------------------------------</td>
<td>-------------</td>
<td>-----------------</td>
</tr>
<tr>
<td>Connections between ITC and Cruise Ship Terminal</td>
<td>• Connections would be provided by charter buses as needed to serve specific ship arrivals and departures. They would not be publicly operated services.</td>
<td>• Annual operating cost – $25,000</td>
</tr>
</tbody>
</table>
| Opportunities and Constraints       | • Site 6 is east of Trolley and Coaster tracks, which will require transit vehicle crossings of the tracks.  
• Potential traffic congestion on Pacific Highway may impact local and shuttle bus circulation to Site 3.  
• Port owns Site 1.  
• Provision of transit priority requirements for connecting services. | |

*Includes construction, design, and construction management cost, and contingency. Does not include right-of-way costs. Costs in 2001 dollars.
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<td>• Site 3 – Potential realignment.</td>
<td>• Sites 1 and 6 – Pedestrian connections provided.</td>
</tr>
<tr>
<td>Coaster Interface</td>
<td>• Sites 1 and 6 – No realignment. Add station along the existing line.</td>
<td>• Sites 1 and 6 – New Coaster station – $675,000</td>
</tr>
<tr>
<td></td>
<td>• Site 3 – Potential realignment.</td>
<td>• Site 3 – Coaster realignment $87.2 million</td>
</tr>
<tr>
<td>Local Bus Service</td>
<td>• The Flyer terminates at ITC. Route 34 stops on Pacific Highway.</td>
<td>• Annual operating cost savings of $335,000</td>
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<tr>
<td></td>
<td>• Transfer to connect to terminals.</td>
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<tr>
<td>Express Bus Service</td>
<td>• Bus routes terminate at ITC.</td>
<td>• Annual operating cost $6.9 million</td>
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<td>Connecting Bus Services to/from Transit Centers</td>
<td>• Existing Flyer service only.</td>
<td>• No additional cost.</td>
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<tr>
<td>Connections between ITC and Airport Terminals</td>
<td>• Sites 1 and 6 – Pedestrian connections over Pacific Highway to North Terminal.</td>
<td>• Pedestrian bridge/moving sidewalk</td>
</tr>
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<td></td>
<td>• Site 3 – Connected by grade separated walkway.</td>
<td>– Site 1 $19.4 million (1,330 feet long, structure $15.8 million, moving sidewalk $3.6 million)</td>
</tr>
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<td></td>
<td>• Connections to South Terminals via shuttle bus or APM.</td>
<td>– Site 6 $22.1 million (1,520 feet long, structure $18.1 million, moving sidewalk $4.0 million)</td>
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<td></td>
<td>• Shuttle bus – annual operating cost $1.2 million</td>
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<td></td>
<td></td>
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<td></td>
<td>– annual operating cost $1.6 million</td>
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<tr>
<td>Connections between ITC and Cruise Ship Terminal</td>
<td>• Connections would be provided by charter buses as needed to serve specific ship arrivals and departures. They would not be publicly operated services.</td>
<td>• Annual operating cost – $40,000</td>
</tr>
<tr>
<td>Consideration</td>
<td>Assumptions</td>
<td>Cost Estimates*</td>
</tr>
<tr>
<td>---------------------------</td>
<td>--------------------------------------------------</td>
<td>-----------------</td>
</tr>
<tr>
<td>Opportunities and</td>
<td>• Site 6 is east of LRT and Coaster tracks, which will</td>
<td></td>
</tr>
<tr>
<td>Constraints</td>
<td>require transit vehicle crossings of the tracks.</td>
<td></td>
</tr>
</tbody>
</table>

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## Table 5.5
### Airport – 2015
#### Transit Focused on the Terminals

<table>
<thead>
<tr>
<th>Consideration</th>
<th>Assumptions</th>
<th>Cost Estimates*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trolley Interface</td>
<td>• Two options: realign to provide a station at the North Terminal, or connect the existing Washington Street Station to the Terminal with walkways.</td>
<td>• Trolley realignment – $36.3 million&lt;br&gt;• Pedestrian bridge/moving sidewalk – $11.1 million (760 feet long, structure $9.0 million, moving sidewalk $2.1 million)</td>
</tr>
<tr>
<td>Coaster Interface</td>
<td>• Could realign tracks to provide a station at the North Terminal.&lt;br&gt;• Station could be provided along existing tracks near the Washington Street Station with acquisition of right-of-way.&lt;br&gt;• Walkway would provide connection to Terminal.</td>
<td>• Coaster realignment – $56.4 million&lt;br&gt;• New Coaster station – $675,000&lt;br&gt;• Pedestrian bridge/moving sidewalk – $11.1 million (760 feet long, structure $9.0 million, moving sidewalk $2.1 million)</td>
</tr>
<tr>
<td>Local Bus Service</td>
<td>• Route 34 serves North Terminal. The Flyer serves both the North and South Terminals.&lt;br&gt;• Stop facilities would be needed, likely included in facilities for courtesy shuttles, rental car buses, etc.</td>
<td>• Annual operating cost $340,000</td>
</tr>
<tr>
<td>Express Bus Service</td>
<td>• Airport bus service could be provided to North and South Terminals, likely by routes serving both.&lt;br&gt;• Stop facilities would be needed, likely included in facilities for courtesy shuttles, rental car buses, etc.</td>
<td>• Annual operating cost $8.0 million</td>
</tr>
<tr>
<td>Connecting Bus Services to/from Transit Centers</td>
<td>• New airport connecting routes provided from Old Town Transit Center. The Flyer service from Downtown continued in lieu of additional regional services.</td>
<td>• Old Town Connection – annual operating cost $1.3 million&lt;br&gt;• The Flyer no added cost.</td>
</tr>
<tr>
<td>Consideration</td>
<td>Assumptions</td>
<td>Cost Estimates*</td>
</tr>
<tr>
<td>---------------------------------------------------</td>
<td>-------------------------------------------------------------------------------</td>
<td>-----------------------------------------------------</td>
</tr>
<tr>
<td>Connections between ITC and Airport Terminals</td>
<td>• Connections between terminal via shuttle bus or APM.</td>
<td>• Shuttle bus – annual operating $940,000</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• APM segment cost – annual operating cost $1.1 million</td>
</tr>
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<td>– capital $165 million</td>
</tr>
<tr>
<td>Connections between ITC and Cruise Ship Terminal</td>
<td>• Connections would be provided by charter buses as needed to serve specific ship arrivals and departures. They would not be publicly operated services.</td>
<td>• Annual operating cost – $25,000 (North sites) to $40,000 (Central sites)</td>
</tr>
<tr>
<td>Opportunities and Constraints</td>
<td>• Cost and feasibility of Trolley and/or Coaster track realignments.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Right-of-way availability for providing Trolley and/or Coaster stations within the existing right-of-way.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Space requirements at North and South Terminal for regional airport service stops.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Provision of transit priority requirements for connecting services.</td>
<td></td>
</tr>
</tbody>
</table>

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### Table 5.6
**Airport – 2020**
**Transit Focused on the Terminals**

<table>
<thead>
<tr>
<th>Consideration</th>
<th>Assumptions</th>
<th>Cost Estimates*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trolley Interface</td>
<td>- Two options: realign to provide one or two stations at the North Terminal, or connect the existing Washington Street Station to the terminal with walkways.</td>
<td>- Trolley realignment – $56.3 million&lt;br&gt;- Pedestrian bridge/moving sidewalk – $11.1 million (760 feet long, structure $9.0 million, moving sidewalk $2.1 million)</td>
</tr>
<tr>
<td>Coaster Interface</td>
<td>- Could realign tracks to provide a station at the North Terminal.</td>
<td>- Coaster realignment – $87.2 million&lt;br&gt;- New Coaster station – $675,000&lt;br&gt;- Pedestrian bridge/moving sidewalk – $11.1 million (760 feet long, structure $9.0 million, moving sidewalk $2.1 million)</td>
</tr>
</tbody>
</table>
| Local Bus Service                      | - Route 34 serves North Terminal. The Flyer serves both the North and South Terminals.  
- Stop facilities would be needed, likely included in facilities for courtesy shuttles, rental car buses, etc. | - Annual operating cost increase of $1.4 million |
| Express Bus Service                    | - Airport bus service could be provided to North and South Terminals, by routes serving both.  
- Stop facilities would be needed, likely included in facilities for courtesy shuttles, rental car buses, etc. | - Annual operating cost $8.3 million |
<p>| Connecting Bus Services to/from Transit Centers | - New airport connecting routes provided from Old Town Transit Center. The Flyer service from Downtown continued in lieu of additional regional services. | - Old Town – annual operating cost $1.4 million&lt;br&gt;- The Flyer –$1.4 million (no added cost). |</p>
<table>
<thead>
<tr>
<th>Consideration</th>
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<tbody>
<tr>
<td>Connections between ITC and Airport Terminals</td>
<td>• Connections between terminals via shuttle bus or APM.</td>
<td>• Shuttle bus – annual operating cost $820,000</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• APM segment cost – annual operating cost $1.6 million</td>
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</tr>
<tr>
<td>Connections between ITC and Cruise Ship Terminal</td>
<td>• Connections would be provided by charter buses as needed to serve specific ship arrivals and departures. They would not be publicly operated services.</td>
<td>• Annual operating cost – $25,000 (north sites) to $40,000 (central sites)</td>
</tr>
<tr>
<td>Opportunities and Constraints</td>
<td>• Cost and feasibility of Trolley and/or Coaster track realignments.</td>
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<td>• Right-of-way availability for providing Trolley and/or Coaster stations within the existing right-of-way.</td>
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<td>• Space requirements at North and South Terminal for regional airport service stops.</td>
<td></td>
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<td></td>
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<td></td>
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</tbody>
</table>

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5.2 Discussion

Trolley Interface

Trolley connections to the terminals can be made through connections at the ITC or by realigning the existing track to provide a station at the North Terminal (see Figures 5-1 and 5-2). Transfers to the North Terminal from a North ITC Site can possibly be accommodated through efficient pedestrian connections including moving sidewalks and a pedestrian bridge over tracks and roadways. Detailed studies will be necessary to determine engineering, operational, and financial feasibility.

The level of Trolley access provided to the terminals depends primarily on the intensity and timing of the North Terminal development proposed in the Airport Master Plan. Steps 1 and 2 provide up to 14 new gates, and transit access can be provided in an effective manner through direct pedestrian connections and connecting services to the South Terminal. Realigning the Trolley to serve the North Terminal directly, estimated at $26.9 million for Airport Steps 1 and 2, may be too costly during this stage of development. Step 3A, with 40 gates along Pacific Highway may provide more demand to justify a realignment of Trolley tracks to provide direct service to the North Terminal (see Figure 5-2). The cost of this longer realignment is estimated to be $41.7 million. Detailed studies will be necessary to determine engineering, operational, and financial feasibility.

Coaster Interface

The demand for Coaster service is relatively small compared to the Trolley. (According to the recent Flyer survey, nine percent of existing Flyer riders, approximately 140, transfer from the Coaster.) Considering the high cost and questionable feasibility of realigning the line (see Figures 5-1 and 5-2) and adding a new station ($41.8 to $64.6 million), it may be too costly for the Coaster to serve the North Terminal. Adding a Coaster station would be a more modest expense ($500,000). However, the added travel time may be detrimental to the Coaster’s service. An out of direction analysis and other detailed studies will be necessary to determine the effect on ridership, operating costs, possible vehicle equipment costs, engineering, and operational feasibility.

Local Bus Service

Reaching the airport using local bus services can be accomplished through connections in Downtown San Diego, or the Old Town Transit Center, or selected realignments of existing routes and new service to the terminals themselves. Existing Routes 34 and 992 could be rerouted to serve the ITC and the North Terminal at a relatively modest expense. One approach to improving local bus service would be to have existing local bus service connect to frequent airport shuttles at either the ITC, Downtown San Diego, or at the Old Town Transit Center.
Express Bus Service

Reaching the airport using express bus services can be accomplished through connections from key regional areas, such as UTC, Mission/Pacific Beach, Mission Valley Transit Centers, North County Fair, and the Otay Ranch/Eastlake area (see Figure 5-3). While it would be desirable to provide express bus service to the terminals, and avoid transfers, the expense of adding service (approximately $6.8 – $8.3 million annual operating cost) relative to ridership benefits is a drawback. In addition, many of the proposed routes would have limited connecting bus service, which would diminish their accessibility and require a dependence on park-and-ride lots.

Connecting Bus Service to/from Downtown and the Old Town Transit Center

The region’s bus system currently connects with The Flyer in Downtown for a 10–minute trip to South Terminal 1 from the Santa Fe Depot. The high frequency of service and long hours of operation (5:00 a.m. to 1:15 a.m.) make the service convenient for a wide variety of trip makers to the airport. A similar service, possibly with transit priority treatments along the alignment, could connect the Old Town Transit Center with the airport terminals to provide convenient and efficient service from the north and east. It could be feasible to connect existing regional bus service to frequent shuttles at either the ITC or at the Old Town Transit Center. Existing Routes 34 and The Flyer could be rerouted to serve the ITC and the North Terminal at a relatively modest expense. Transit could provide service to a broad range of trip makers, including residents, visitors, business travelers, etc. By connecting with the Trolley, Coaster, and bus routes, regional transit already has an established base of riders that could be increased with specific focus on terminal connections. The annual operating cost for a new connection at the Old Town Transit Center would range from $1.3 to $1.4 million.

Connections between the South and North Terminals

There will be a need for quick and frequent connections between the two terminal complexes to serve connecting passengers, visitors, and employees. They could be provided by a bus shuttle system, or an APM system. They would represent an expansion of the existing Red Bus service. An important aspect of a bus shuttle connection would be the provision of priority treatments on Pacific Highway, Laurel Street, and Harbor Drive to increase operating speed and reduce travel time. A lane dedicated for the connecting shuttle, transit vehicles, and other airport shuttle would be highly desirable.

Connections between ITC and Airport Terminals

The ITC will need frequent and comfortable connections to both the North and South Terminal buildings. A wide range of facilities is possible. For both of the location groups, grade separated pedestrian walkways with moving sidewalks would be desirable for passengers and others connecting to the North Terminal. For connections to the South Terminal and the farther reaches of the North Terminal Step 3A improvement, transit connections will be required. This could take the form of a bus shuttle system, or an APM system. The annual operating cost of the bus shuttle system would range from $840,000 to $1.2 million.
The APM system could likely be part of the larger North Bay and Beach Area APM system, or it could be a dedicated system. Its capital cost is fairly high, $165 to $225 million. Its annual operating cost would be $1.1 to $1.6 million.

Connections between ITC and the Cruise Ship Terminal

Cruise ship passengers generally have a large amount of luggage, and are not expected to use transit for access. They may use the parking at the ITC, depending on the availability of parking closer to the cruise ship terminal. The parking would be used for specific cruise ship arrivals and departures, and shuttle connections could be provided by the cruise ship operators. Due to the time specific nature of the connections, it is not expected that a transit connection would be provided, and it can be assumed that any connecting service would be provided by others. Connections would be provided by charter service, funded by the cruise lines, the Port District, or others.

6.0 KEY FINDINGS AND CONCLUSIONS

6.1 Findings

Several findings can be made based on the analysis of the various scenarios to guide the development of transit service. The key findings are listed below.

- The existing airport and cruise ship terminal are well served by transit. The Flyer provides frequent, high quality service to both, and the cruise ship terminal has convenient access to numerous other private, local, express, Trolley, and rail services.

- The ITC appears to have limited potential for enhancing transit service to the airport. A large amount of service would have to be provided to connect with a frequent shuttle service to the airport terminal to make it viable for transit. Providing a level of service high enough to produce substantial ridership would be difficult in competition with other high volume demands. The ITC appears to be primarily for airport and cruise ship parking, and does not appear to be suitable as the primary transit access to the airport.

- Several ITC sites do not appear to be desirable for further consideration. With the Port favoring Site 1, Central Group Site 6, located on the other side of the Coaster and Trolley tracks, does not offer an advantage. Central Group Site 3, located on the west side of Pacific Highway, has potential conflicts with North Terminal expansion, and provides no additional transit access benefits due to its distance from the Trolley line. North Group Site 5 is located near the I-5/Pacific Highway viaducts, which complicates and/or eliminates the provision of direct pedestrian connections to the North Terminal. Sites 6, 3, and 5 should not be retained for further consideration.

- ITC Sites 2 and 4, located south of Washington Street, do offer the potential for direct pedestrian connections to the North Terminal, as well as a relocated Trolley station and a new Coaster station. They should be retained for further consideration.
• The realignment of the Trolley to serve the North Terminal would be expensive, and may not be warranted by the potential ridership gain through Steps 1 and 2 (2010). The 2020 air passenger forecast with the Steps 1, 2, and 3B improvements is 25.6 million. Adding the Step 3A improvements, the total increases to 28.6 million. Until Step 3A is completed, the majority of gates will be at the South Terminal. With Steps 1 and 2, there will be 14 gates (25 percent) at the North Terminal and 41 gates (75 percent) at the South Terminal. Step 3B would add 8 more gates to the South Terminal, raising its total to 49 (78 percent) while the number of gates at North Terminal would remain unchanged at 14 (22 percent). Step 3A would provide 40 additional gates in the terminal on Pacific Highway.

A Trolley realignment may be more cost-effective with the implementation of the Step 3A improvements (2020), when there would be a sizable increase in the access needs to the North Terminal of the airport. The early construction of the ITC near the Step 1 and 2 North Terminal would not preclude the future realignment of the Trolley for Step 3. With implementation of Steps 1 and 2, approximately 75 percent of the gates will be at the South Terminal. With Step 3B, an even higher percentage of gates, 78 percent, will be at the South Terminal. However, Step 3A would result in 52 percent of the gates (52 of 103) at the North Terminal. This level of passenger activity would be more conducive to realigning the Trolley to serve the terminal.

• The realignment of the Coaster would also be expensive, and would probably not be warranted by the potential ridership gain through Steps 1 and 2. The Step 3A improvements may provide sufficient ridership, but other cost factors and the effect on through travel time of adding the additional stop between Old Town Transit Center and the Santa Fe Depot would have to be carefully considered.

• The provision of new express bus service to the airport does not appear to be warranted due to the relatively low level of ridership expected in the areas served. In addition, airport express systems in other cities tend to primarily serve employees. The relatively low number of employees at San Diego’s airport can be served by the existing regional transit system. The region’s resources may be better used by focusing transit improvements in the vicinity of the airport, on connections with Downtown, the Old Town Transit Center, and the ITC.

• An automated people mover (APM) connection between the terminals and the ITC would have a high capital cost, and may not be suitable in the near term. Ultimately, APM service to the terminals could be part of a larger project that connects Old Town, the Naval Training Center redevelopment, the North Embarcadero area, and other major activity centers in the area.

• Moving a Trolley station to incorporate it into either North ITC Site 2 or 4 is a relatively low cost project that could provide ridership gains worth the expense. The effect on the existing bus connections would need to be considered.
• Providing a new Coaster station to be incorporated into the ITC is a seemingly low cost project that could generate ridership. However, the effect on the Coaster’s run time and rolling stock requirements must be assessed carefully to determine the effect on through passenger travel times and to ensure the project is cost-effective.

• Establishing a new direct connection between the Old Town Transit Center and the terminals may be an effective service addition. Operating on frequencies and hours similar to The Flyer, it would connect the terminals with the 10 bus routes, Trolley, and Coaster that already serve the transit center. It could be an effective near term alternative to realigning the Trolley. The service could be developed as a bus shuttle, or a bus rapid transit (BRT) line with transit priority measures such as exclusive right-of-way and signal priority. The two-lane Witherby Street underpass on Pacific Highway could be a constraint to the provision of a dedicated lane or similar treatments. The Flyer would be maintained and realigned as needed to provide effective connections between Downtown and the North and South terminals. The Flyer could also be enhanced through transit priority measures on its alignment.

• A high level of shuttle or BRT service would be needed to provide connection between the terminals and the ITC, and between the terminals themselves. A well-timed employee shuttle system will continue to be needed.

• The need for connections between the ITC and the cruise ship terminal will be infrequent enough that charter service tied to specific arrivals and departures should continue to be used. This service would not be publicly operated.

• The provision of pedestrian bridges with moving sidewalks would enhance the connection between the ITC, or the Washington Street Station, and the North Terminal. However, the Pacific Highway viaducts over Washington Street, and the connections to I-5, would constrain the ability to provide such connections for some of the ITC sites. More detailed analysis would be needed to determine their feasibility and cost for each proposed ITC site.

6.2 Transit Supportive Actions

For the near to medium term, there appear to be two primary improvements that would be effective in increasing the use of transit for airport related travel: moving the Trolley platform to be incorporated in the ITC and enhancing the operation of shuttles in the vicinity of the airport. Each is discussed below.

Incorporating a Trolley Station in the ITC

Either of the two existing Trolley platforms in the vicinity could be relocated to tie directly into the ITC. The Washington Street Station could be incorporated into any of the North Group sites between Washington Street and Sassafras Street. The effect on bus connections at that station would have to be considered, to avoid excessive out-of-direction travel, and expense. The
Middletown Station could be moved efficiently for two of the three Central Group sites, with little effect on existing bus connections. With an estimated cost of $400,000, relocating a platform would be a relatively small capital expense that could generate ridership increases.

Enhancing Operations of Connecting Services

The rapid operation of shuttles or BRT between the terminals and the ITC, as well as a new shuttle connecting the Old Town Transit Center to the terminals, is a key aspect of making these services attractive to airport trip makers. Fortunately, a wide variety of opportunities are available in the area to reduce travel times. Listed below are a few of the key ones that would support these services.

- Dedicated lanes for shuttles, taxis, courtesy vehicles, etc. on Pacific Highway, Harbor Drive, and Laurel Street. The Port has plans for the addition of one lane in each direction along Harbor Drive, west of Laurel Street. These new lanes could be dedicated for such vehicles. The existing parking along the north side of Laurel Street, between Pacific Highway and Harbor Drive would constrain the ability to add lanes in this segment. Likewise, the end of the runway near the Pacific Highway and Laurel Street intersection, and the buildings on the west side of Pacific Highway near Palm Street would also be constraints to the addition of new dedicated lanes.

- Traffic signal coordination to provide or extend green times for transit vehicles.

- Real time traveler information at stops and terminals to provide information, and let passengers know when the next vehicle will arrive.

- GIS aided dispatching to effectively match capacity to demand, and respond to traffic conditions.

- Provision of queue jumping technology in situations where a dedicated lane may not be available.

- Construction of new and retention of existing curb side stops at the terminals to reduce passenger walk times and increase the convenience of the service.

Improvements provided for public transit would also benefit private shared ride operators. For example, dedicated lanes could be used by both transit vehicles and courtesy vehicles operating to and from the airport. By sharing these facilities, both public and private operators will benefit and the reduction in single occupant vehicles can be maximized.

6.3 Transit Access Improvement Program

Several airport improvements are planned over the next 20 years. The ITC is expected to be implemented in the next one to two years, with the Step 1 and 2 North Terminal implemented
within the next five years. Beyond that, the timing of the Step 3A and 3B improvements is not clear. The situation is further complicated by current discussion on the creation of an airport authority to consider a new airport at a different location in the county.

Despite these uncertainties, it is still possible to implement improvements in a phased fashion that will improve transit access to the airport and contribute to meeting the airport’s travel demand. The proposed improvements have been arrayed for three airport improvement projects and time periods:

- ITC (2002-2005) – Construction and opening of the ITC;
- Steps 1, 2, and 3B (2005-2015) – Construction and opening of the North Terminal with 14 gates, plus the addition of 8 gates at the South Terminal; and
- Steps 1, 2, 3A, and 3B (2010-2020) – Construction and opening of 40 gates along Pacific Highway north to Barnett Avenue.

The proposed improvements are summarized in Table 6.1

**Table 6.1**

**Airport Transit Access Improvement Program**

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<tr>
<td>Trolley Interface</td>
<td>ITC Site 1 - Dedicated pedestrian connections (possibly grade separated) with Middletown Station. ITC Site 4 - Possible relocation of Washington Street Station.</td>
<td>ITC Sites 1 and 4 – Grade separated pedestrian connections to/from North Terminal. Option - Grade separated pedestrian connection with to/from Washington St. Station.</td>
<td>Realign to serve the North Terminal, with one or two stations.</td>
</tr>
<tr>
<td>Coaster Interface</td>
<td>--</td>
<td>Add station to existing line.</td>
<td>Realign to serve the North Terminal.</td>
</tr>
<tr>
<td>Local Bus Service</td>
<td>Route 34 stops on Pacific Highway with enhanced amenities.</td>
<td>Route 34 stops on Pacific Highway with enhanced amenities.</td>
<td>Route 34 stops on Pacific Highway with enhanced amenities.</td>
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<tr>
<td>Express Bus Service</td>
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<tr>
<td>Connecting Bus Services to/from Transit Centers</td>
<td>Enhance OTTC as a hub for airport transit access, including new connecting BRT service to/from Old Town Transit Center on dedicated right-of-way. Upgrade The Flyer to BRT service.</td>
<td>Realign the Old Town and The Flyer to serve the North Terminal with BRT upgrades.</td>
<td>Realign the Old Town and The Flyer to serve the North Terminal with BRT upgrades. An option would be to provide automated people mover (APM) connections as part of a larger system.</td>
</tr>
<tr>
<td>Connections between ITC and Airport Terminals</td>
<td>Port provides Red Bus and employee service. Upgrade to BRT service.</td>
<td>Port provides Red Bus and employee service with BRT upgrades.</td>
<td>Port provides Red Bus and employee service with BRT upgrades. Option - APM connections as part of a larger system.</td>
</tr>
<tr>
<td>Connections between ITC and Cruise Ship Terminal</td>
<td>Charter bus service as needed. (Not publicly operated.)</td>
<td>Charter bus service as needed. (Not publicly operated.)</td>
<td>Charter bus service as needed. (Not publicly operated.) An option would be to provide automated people mover (APM) connections as part of a larger system.</td>
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The possible program of improvements is tailored to match the scale of the airport improvement as described below. All proposed improvements are subject to additional analysis as part of the implementation process.

**ITC Opening (2002-2005)**

The opening of the ITC would lead to the provision of a pedestrian walkway between the Middletown Station and the ITC, if Site 1 is developed. If Site 4 is developed, relocation of the Washington St. Station would be considered. Route 34 would stop on Pacific Highway, at improved stops. A new connecting service running between the Old Town Transit Center and the airport would be implemented, with BRT features to speed its operation. The Flyer would be upgraded to BRT service. Assumed in all three time frames, charter bus service would connect the ITC to the cruise ship terminal.
Steps 1, 2, and 3B (2005-2015)

With the opening of the first phases of the North Terminal, grade-separated pedestrian walkways would connect the ITC to the North Terminal. An option would be to connect the Washington St. Station to the North Terminal with a grade-separated walkway. A Coaster station would be added to the existing line (subject to additional analysis). Route 34 would stop on Pacific Highway, at improved stops. (Direct service to the terminal buildings could be considered.) The Old Town and Flyer connections would be realigned to serve the North Terminal, with BRT upgrades. The Port would connect the North and South Terminals, and the ITC together with the Red Bus, which would be upgraded to use BRT facilities on the roadway.

Step 3A (2010 - 2020)

This stage of development would add 40 new gates and have significant access needs. The Trolley would be realigned to serve the North Terminal, with potentially more than one station. The Coaster would be realigned to stop there (subject to additional analysis). Route 34 would continue to stop on Pacific Highway, with two or more additional stops. (Direct service to the terminal buildings could be considered.) The Old Town and Flyer connecting services would be realigned to serve the terminal. The Port’s Red Bus would connect the terminals and the ITC, but at this point an APM system can be considered, especially if it is part of a larger system.

These transit improvements would be refined through the MTDB and Port planning and programming process.

6.4 Relationship of Service Improvement Concepts to Transit First

The recently adopted TransitFirst plan outlines an aggressive vision for improving the region’s transit system. It includes four service concepts, and the consistency of the airport improvement suggestions with them is discussed in this section.

Green Car

The connecting services proposed in this report would be Green Car services. They provide specialized services in a local area, and would include services like The Flyer, the Old Town Transit Center Shuttle, and the terminal/ITC shuttles. The provision of these shuttles would be in conformance with the concept for Green Car service. They could be enhanced with priority treatments that could bring them up to a BRT level in terms of travel time and amenities.

Blue Car

These are the street-based, trunk line services that carry a large number of riders throughout the region. Route 34 on Pacific Highway would be the primary example of this kind of service. However, there are numerous Blue Car services in Downtown and the Old Town Transit Center that would connect to the Flyer and Old Town Transit Center Shuttles. Making effective use of these Blue Car routes would be consistent with the TransitFirst vision.
Transit Service Operating Plans

The operations plans for the shuttles and any other transit services to the terminals and ITC will need to be developed. A review of the daily airport arrival and departure schedule indicates peaking in the morning, midday, and the evening that would need to be addressed to assure sufficient capacity. Also, an agreement would be needed between MTDB and the Port for public access to shuttle services from the ITC to the airport terminals if the focus of transit service is on ITC Site 1.

Cost Estimate Refinements

More detailed engineering, including consideration of right-of-way costs, is needed for the capital projects that may be pursued.