

SAN DIEGO INTERNATIONAL AIRPORT

**GROUND ACCESS STUDY
PHASE I**

July 1999

**For San Diego Association of Governments
By URS Greiner Woodward Clyde**

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1 Introduction

The purpose of the San Diego International Airport (SDIA) Ground Access Study – Phase I performed by URS Greiner Woodward Clyde (URSGWC) for the San Diego Association of Governments (SANDAG) was to:

- summarize prior studies and conceptual plans,
- identify elements in the prior work for consideration in the Phase II preliminary engineering study of ground access to Lindbergh Field,
- coordinate planning for the Phase II Scope of Work with SANDAG and the Technical Committee,
- prepare the Phase II Scope of Work,
- recommend the relevance of public involvement for Phase II, and
- prepare the study report.

Prior studies and conceptual plans that pertain to ground access to Lindbergh Field were reviewed and are summarized in Appendix A of this report. Prior work was performed by (1) the California State Department of Transportation (Caltrans) District 11, (2) the Metropolitan Transit Development Board (MTDB), and (3) the City of San Diego. Recommendations for considering prior studies and plans in Phase II are included in section two of this report.

The Scope of Work developed for Phase II is discussed in section three of this report and is wholly contained within Appendix B. At the conclusion of Phase I, it was decided by SANDAG and Caltrans not to continue with the Phase II study in favor of a more comprehensive Interstate-5 (I-5) Corridor Study. The proposed I-5 study is intended to bring together the development plans of a larger area including Centre City, Lindbergh Field, and North Bay for a more comprehensive analysis of impacts on the freeway and arterial street system.

Accessibility to Lindbergh Field, given the proposed airport master plan alternatives, would be conditioned upon input from the public sector and stakeholders. The recommended public involvement for the Phase II study is described in section four of this report.

2 Prior Studies and Conceptual Plans

The summary of prior studies and conceptual plans that is wholly contained in Appendix A was reviewed for their potential consideration in Phase II of the airport ground access study. Those studies and plans that merit consideration in Phase II are contained in the following reports:

- *Midway/Pacific Highway Corridor Community Plan Amendments*, City of San Diego, 1999;
- *San Diego Light Rail System Operating Plan, System Options Catalog, Version 6.5*, MTDB, June 1999;
- *SDIA Master Plan, Alternative Airport Development Concepts (Draft)*, San Diego Unified Port District (SDUPD), October 30, 1998;
- *Environmental Constraints Analysis*, SDUPD, March 1999;
- *Transportation Concept Report, Interstate 5*, Caltrans, May 1997; and
- *Airport/Point Loma Guideway Extensions*, MTDB, April 20, 1995.

A description of the importance of each study to the Phase II preliminary engineering of the ground access alternatives follows.

The *Midway/Pacific Highway Corridor Community Plan Amendments* is the land use planning document for the North Bay Redevelopment project area bounded by: I-5 on the east, Midway Drive/Rosecrans Street/Lytton Street/Barnett Avenue/Pacific Highway on the west, Laurel Street on the south, and I-8 on the north. Commercial revitalization programs, code enforcement, rehabilitation, acquisition of land for public facilities or the assembly of sites for redevelopment, and clearance of land for redevelopment are included for implementation in the Redevelopment Plan. Increased trip generation rates on the roadway system in the vicinity of Lindbergh Field would accompany the redevelopment plans. Street improvements are proposed to improve access to the community as the redevelopment occurs over the next 20 years. The Phase II preliminary engineering of ground access alternatives needs to consider the traffic impacts and street improvements, which are proposed in the North Bay Redevelopment Plan.

Plans by MTDB to expand the regional Light Rail Transit (LRT) system, studied in the *San Diego Light Rail System Operating Plan*, could directly affect ground access to SDIA. Future systems were evaluated independently for the Blue, Green, and Orange Lines, and for combined operations of the three lines. The Airport/Point Loma alignments were not included in the LRT operating plan alternatives studies. Findings of this study need to be considered in Phase II in order to include the regional LRT plans in the preliminary engineering of ground access alternatives for Lindbergh Field.

The *SDIA Master Plan, Alternative Airport Development Concepts (Draft)*, describes the *Master Plan 2020 (draft)* alternatives for airfield development, terminal area improvements, and roadway access. The SDUPD will recommend the Preferred Alternative for the on-airport improvements. The Master Plan, however, does not describe plans for the regional LRT system to the airport; although, a transit center is indicated for some of the alternative concepts. The Master Plan Preferred Alternative will uniquely affect ground access to Lindbergh Field, therefore, it needs to be considered in Phase II.

The *Environmental Constraints Analysis* characterizes the environment constraints associated with each of the SDIA Master Plan 2020 alternatives. Master Plan alternatives were grouped by South, North, and Split Terminal scenarios and then were screened for environmental constraints. The concept groupings were evaluated for rail and trolley access, traffic counts and traffic volume projections, street capacity, and direct access to I-5. The airfield and terminal improvements proposed for Lindbergh Field would increase trip generation rates and subsequently would increase traffic on the roadway network. Measures were suggested to mitigate traffic impacts on the roadway network that include physical improvements to the street system and transit alternatives. The findings of this study provide an important dimension of traffic conditions and future projections related to the Master Plan and, therefore, need to be considered in the Phase II study.

The *Transportation Concept Report (TCR), Interstate 5*, established a 20-year transportation-planning concept for I-5 and identified modal transportation options needed to achieve the concept. Future operating conditions for I-5 for the 20-year planning horizon were based on

Caltrans traffic projections and the SANDAG Series 8 regional Population and Employment forecasts. Conditions forecast for I-5 did not include the proposed SDIA Master Plan Alternatives. Therefore, it will be essential for the TCR assumptions to be included in the Phase II preliminary engineering of the airport ground access alternatives.

The *Airport/Point Loma Guideway Extensions* report summarized the LRT alignments adopted in 1985 as 1) the alignment along Harbor Drive, and 2) the northern access alignment from the Washington Street LRT station. Both alignments were proposed to continue past the airport and terminate at Rosecrans Street and Nimitz Boulevard. These alignments were proposed prior to the development of the SDIA Master Plan 2020. The manner in which the proposed Airport/Point Loma alignments would serve airport demand will be critical in the Phase II work.

3 Phase II Scope of Work

The Scope of Work prepared for Phase II (contained in Appendix B) describes the study plan to analyze ground access that will be associated with the Preferred Master Plan 2020 Alternative. The work program will,

- identify the purpose and need for the study,
- establish the study data set,
- analyze the ground access scenario(s),
- define the project, estimate cost, and identify funding,
- correlate the project with system planning,
- describe the environmental impacts,
- prepare a project milestone schedule, and
- issue the final report.

Four meetings are assumed with the Technical Committee in Phase II. Specific information from the prior studies and conceptual plans that pertain to ground access to Lindbergh Field will be considered in the preliminary engineering. The Phase II work is assumed to be six months in duration.

4 Phase II Public Involvement Process

The participation of the airport community in the preliminary engineering study of the ground access alternative(s) to Lindbergh Field will be a component in Phase II. The Technical Committee will define the role that the airport community will have in decision-making for the project.

To initiate the public involvement process in Phase II, both the Technical Committee and the Public Committee that were created for the Master Plan 2020 study would be convened. The Technical Committee will determine whether the stakeholder group needs to be expanded for Phase II.

The following public involvement schedule is recommended for Phase II to receive input and report findings of the study to the stakeholder group:

- 1 – This meeting would be convened at the outset of Phase II to present the fundamental ground access scenario(s) associated with the Preferred Alternative.
- 2 – The purpose of the second meeting would be to present the ground access concepts that are being evaluated by the Technical Committee.
- 3 – This meeting would present the draft ground access alternative(s) to the stakeholders.
- 4 – The purpose of this meeting would be to present the final report.

At each stage of the public involvement process, we will receive inputs from the community to the technical program. Inputs from the public involvement process will be summarized by the Consultant and presented to the Technical Committee. The Committee will determine the manner in which input from the public will be incorporated into the preliminary engineering scope.

APPENDIX A

**SUMMARY OF PRIOR STUDIES AND
CONCEPTUAL PLANS**

San Diego International Airport

July 1999

For San Diego Association of Governments

- By URS Greiner Woodward Clyde

1 Introduction

This report summarizes the review of prior studies and conceptual plans associated with ground access to the SDIA performed by URS Greiner Woodward Clyde (URSGWC). Prior studies and plans for airport, highway, and transit improvements related to Lindbergh Field were reviewed for the relevance of these studies and plans to this SDIA Ground Access Study.

The following 11 documents were reviewed by URSGWC and are included in the summary:

1. *Midway/Pacific Highway Corridor Community Plan Amendments*, City of San Diego, 1999
2. *San Diego Light Rail System Operating Plan, System Options Catalog, Version 6.5: Options Selected for Further Evaluation*, Metropolitan Transit Development Board (MTDB), June 1999
3. *San Diego International Airport Master Plan -- Alternative Airport Development Concepts (Draft)*, San Diego Unified Port District (SDUPD), October 30, 1998
4. *Environmental Constraints Analysis: San Diego International Airport Master Plan 2020*, SDUPD, March 1999
5. *Transportation Concept Report, for Interstate 5 (11-SD-5; P.M. R0.0 – R2.4)*, State of California Department of Transportation (Caltrans), District 11 – System Planning Branch, May 1997
6. *Airport/Point Loma Guideway Extensions*, MTDB, April 20, 1995
7. *Airport Trolley Alignment Study*, MTDB, May 1985
8. *Airport/Point Loma Preliminary Engineering (Draft Final Report)*, MTDB, March 1984
9. *Point Loma/Airport Trolley Extension Study (Draft Final Report)*, MTDB, November 1982
10. *Rail Transit Service to Airports, Point Loma/Airport Trolley Extension Special Study*, MTDB, October 1982
11. *Guideway Planning Projects, Phase I, Evaluation of Candidate Corridor Alignments*, MTDB, March 1977

2 Prior Studies and Conceptual Plans

This section summarizes the findings of each of the 11 documents described above in Section I (Introduction).

Midway/Pacific Highway Corridor Community Plan Amendments (1999)

This City of San Diego document amended the Midway Drive/Pacific Highway Corridor Community Plan focusing on the Plan's North Bay Redevelopment project area, which is bounded by I-5 on the east, Midway Drive/Rosecrans Street/Lytton Street/Barnett Avenue/Pacific Highway on the west, Laurel Street on the south, and I-8 on the north.

The planning process incorporated a review of the updated *Peninsula Community Plan*, the Comprehensive Land Use Plan for Lindbergh Field, the draft reuse plan for the closed Naval Training Center, and the preliminary Lindbergh Field Airport Master Plan. Disposition of the Navy's Old Town Campus (the former Plant 19 site and adjacent storage yard) will depend in part on the US Navy's long-range plans.

The Amendments note that since the 1960s, the Midway Drive/Pacific Highway Corridor community has continuously suffered from haphazard development, which resulted in the lack of clear visual form – both in orientation and community legibility. Much of the existing commercial development was built in accordance with the now-rescinded Midway Planned District Ordinance. The 1991 Midway Drive/Pacific Highway Corridor Community Plan recommended the re-designation and rezoning of properties to revise the existing parcel sizes and configurations that act as impediments to redevelopment and revitalization.

Commercial revitalization programs, code enforcement, rehabilitation, acquisition of land for public facilities or the assembly of sites for redevelopment, and clearance of land for redevelopment are included in the implementation of the Plan. The Community Plan designates land for future residential development that would ultimately increase the residential population from 3,400 residents to approximately 8,000. Portions of the community are planned to transform land uses from their current industrial, retail, and storage-based emphasis to water-oriented retail, entertainment, office, and residential uses with construction of the proposed bay-to-bay canal that would link San Diego and Mission Bays.

Office/research and development uses are proposed as part of a mixed-use development that would take advantage of the future bay-to-bay canal. Multiple use would be encouraged along the canal alignment to promote redevelopment and revitalization of the area and to support redevelopment of the Navy's Old Town Campus. Generally, with the exception of the Sports Arena site, no single type of land use would represent more than 50 percent of the total available square footage of the area designated for multiple use.

Appropriate street design improvements would help to delineate and define circulation routes for vehicles, pedestrians, and bicyclists. Realignment and/or bridging of some streets, such as Camino Del Rio West and Rosecrans Street, are proposed. Grade separation of Camino Del Rio West at the intersection of Rosecrans Street and Sports Arena Boulevard is proposed to eliminate the five-point intersection.

Caltrans would reevaluate the provision of an interchange at Kurtz Street/Hancock Street/I-8 to improve access to the community. This may involve the reclassifying and widening of Kurtz Street to a four-lane major street.

The following new street construction was proposed: (1) a new four-lane collector street (Street A) from Midway Drive to Barnett Avenue north of Dewey Elementary School and the Gateway Village Housing development, which would serve as a straightened extension of Midway Drive; (2) a new four-lane collector street (Street B) between Street A and Kurtz Street, crossing Midway Drive and Sports Arena Boulevard, east of Rosecrans Street; and (3) new four lane street (Street C) from Sports Arena Boulevard to Hancock Street (west of Sherman Street) to improve circulation.

An extension of Cauby Street to Midway Drive is proposed to improve circulation. Rosecrans Street would be widened between Camino Del Rio West and Lytton Street to eight lanes.

Street widenings included in the planning document include the following areas: (1) Midway Drive at the intersection of Rosecrans Street; (2) the north leg of Rosecrans Street at Midway Drive; (3) the north leg of Sports Arena Boulevard at the intersection of West Point Loma Boulevard and Midway Drive; (4) Midway Drive at the intersection of Sports Arena Boulevard and West Point Loma Boulevard; and (5) Rosecrans Street at the intersection of Lytton Street.

There are two concepts proposed to construct tunnels at the intersections of Rosecrans Street with Midway Drive and Sports Arena Boulevard. Should the proposed bay-to-bay canal be implemented, the tunnel alternatives would be infeasible.

The Plan adoption is near-term. However, the Plan states that the timing for redevelopment should be considered long-term. The Community Plan Implementation Overlay Zone for properties abutting the canal influence area and residential, commercial zoning, and industrial zoning would be adopted with the plan. The roadway improvements and canal engineering studies are scheduled to be conducted in the next five years.

San Diego Light Rail System Operating Plan (June 1999)

This MTDB document screened and evaluated six light rail transit (LRT) operating plans for the San Diego Trolley system based on service objectives and operating parameters. Alternatives were ranked based on:

- Transfer requirements
- Compatibility with service area travel demands
- Operating efficiency and flexibility
- Operating costs
- Capital costs
- Compatibility with special events service
- User convenience and comprehension
- Traffic impacts
- Schedule adherence
- Compatibility with long term system plans
- Ridership estimates (for 2015)

Future systems for the regional LRT were evaluated independently and for the combined operations that would extend the Blue and Orange Lines and that would implement a new Green Line. The Blue Line currently runs from the International Border with Mexico to Rancho Mission Road. An extension from Rancho Mission Road easterly following an alignment along I-8 to a connection with the Orange Line is scheduled to open in late 2004. The Orange Line runs from Centre City to Santee in an alignment that parallels SR-94 and then runs in a northerly direction to Santee. Currently, the proposed Green Line alignments that could be connectors for the Blue and Orange Lines or that could provide for service overlaps are being evaluated.

The Airport/Point Loma alignments were not included in the LRT operating plan alternatives that are being studied.

The six potential regional LRT operating plans included the following configurations:

1. Two Blue Line alternatives (1A–Mission Valley and 1B–Balboa) that connect with Centre City (downtown San Diego) were eliminated from further study. The screening of Alternative 1A indicated that it would have unbalanced line lengths and operational inefficiencies. Alternative 1B was eliminated in favor of a stronger Green Line service to Santee (Alternative 3A) that was retained for further study.
2. Alternative 10, a four-line option with one-way loops in Centre City, was eliminated from further study in favor of Alternative 3E a possible longer-term alternative.
3. Alternative 3A is a proposed Green Line from Bayside to Santee. It would provide direct service to Qualcomm Stadium, San Diego State University, and El Cajon from Santee. It was retained for further study as a stronger service to Santee and for possible overlap with the Orange Line in El Cajon.
4. Alternative 3E (Blue Line/Green Line Loops to Centre City with Orange Line to Balboa) was retained as a possible path to the longer-term Alternative 10. It would allow for a Centre City circulator/shuttle and flexibility/resource conservation on Midcoast Line.

5. Alternative 6, one-way Centre City loops with the Green and Orange Lines, has operational efficiencies and was retained for further study. It would provide good service to the downtown ballpark and Green Line service to C Street before Bayside. The Blue Line extends to Balboa Avenue. It could be modified to include the Green Line to Santee with possible Orange Line overlap.

In October 1999 it is anticipated that two options (3A and 3E) will be presented to the Board of Directors of the MTDB.

San Diego International Airport Master Plan, Alternative Airport Development Concepts (Draft) (October 30, 1998)

This SDUPD report describes the SDIA Master Plan 2020 (draft) alternative concepts for airfield development, terminal area development, and roadway access. It does not, however, specify improvements that would be needed to extend the regional LRT (Trolley) system to the airport, although a transit center is indicated for some of the alternative concepts.

Alternative Concepts A1, A2, and A3 (south side terminal) maintain existing runways and taxiways in their current condition. Terminal facilities would be expanded on the south side of the airfield (north of Harbor Drive) by phasing development. A satellite terminal would be developed on the Camp Nimitz property with a people mover connecting the satellite terminal to Terminal 2. Terminal 1 would be demolished, rebuilt and then connected by the people mover to Terminal 2.

A1-Roadway Access would involve signalized intersections on Harbor Drive at the west end of the site with the Terminal Loop Road, at Harbor Island Drive, and at Rental Car Road. Direct connectors would be constructed to and from north and south I-5 via an elevated roadway running parallel to Laurel Street on the north side and into the site at the east end of the Airport.

A northbound (NB) I-5 off-ramp would be added at Washington Street. The NB I-5 off-ramp would be closed at Vine Street, and the NB Hawthorn Street on-ramp would be closed. The Pacific Highway on-ramp to southbound (SB) I-5 would be relocated to avoid the SB connector.

A2 and A3-Roadway Access differs in that direct connectors would be constructed to and from NB and SB I-5 at Washington Street to an at-grade roadway running parallel along the Marine Corp Recruiting Depot (MCRD) property line and then tunnel under the west end of the site below the runway protection zone (RPZ). The SB I-5 on ramp at Old Town Avenue would be relocated west to avoid the new direct connector.

Alternative Concepts B1-1, B1-1a, B1-2, B1-3, and B1-4 (south side terminal) maintain the existing runway in its current configuration and length. They increase Airport capacity by constructing additional taxiways and an expanded departure apron. Terminal area development is the same as in Alternatives A1, A2, and A3.

B1-1 Roadway Access is the same as Alternative A1.

B1-1a Roadway Access differs from A1 in that direct connectors would be constructed to and from NB and SB I-5 to a tunnel that would run under the east end of the runway and up into the site at the east end of the terminal buildings.

The Sassafras Street SB I-5 off-ramp would be closed. The SB I-5 on-ramp at Pacific Highway would be relocated to avoid the new SB direct connector. The Pacific Highway NB I-5 off-ramp would be widened to accommodate the NB direct connector.

B1-2 and B1-4 Roadway Access would be constructed to and from NB and SB I-5 at Washington Street to an at-grade roadway running parallel along the MCRD property line then would tunnel under the west end of the site below the RPZ.

The Old Town Avenue SB I-5 on-ramp would be relocated to the west to avoid the new connector. The SB I-5 off-ramp would be relocated and rebuilt as a loop ramp to avoid the new SB connector. The Sassafras Street SB off-ramp would be closed to avoid the new SB connector.

B1-3 Roadway Access would be constructed to and from NB and SB I-5 to an elevated roadway running parallel to Barnett Street on the south side and into the site at the west end. The roadway would tunnel under the RPZ. The Hancock Street on-ramp to SB I-5 would be relocated west to avoid the new direct connector.

Alternatives B2-1, B2-2, and B2-3 (south side terminal with north side passenger processing center) maintain the current runway configuration and length and construct additional taxiways and an expanded holding apron.

Passenger terminals would be expanded on the south side of the airport. A terminal processing complex with curbside, parking, and access to Pacific Highway and the existing LRT/San Diego Trolley line would be developed on the north side (on land previously occupied by General Dynamics). The people mover would be extended to the new north satellite processing. Belly cargo, airline support facilities, all cargo facilities, and general aviation facilities would be developed on the north side of the airfield on land previously occupied by General Dynamics with access from Pacific Highway.

A new satellite terminal would be developed for commuter activities on the existing cargo area, commuter terminal area, and Teledyne-Ryan property.

B2-1 and B2-2 Roadway Access would have direct connectors to and from I-5 NB and SB tying into an elevated roadway running parallel to Laurel Street on the north side and into the east end of the site. A NB I-5 off-ramp would be constructed at Washington Street. The Vine Street NB I-5 off-ramp and the Hawthorn Street on-ramp to NB I-5 would be closed. The Pacific Highway on-ramp on SB I-5 would be relocated to avoid the SB direct connector.

Access to the north side satellite terminal would be provided via Pacific Highway with two signalized intersections. A right turn only from SB Pacific Highway and a second signalized intersection would provide ingress from NB Pacific Highway and egress to both NB and SB Pacific Highway.

B2-3 Roadway Access would provide direct connectors to and from NB and SB I-5 at Washington Street, tying into an at-grade roadway running south parallel along the MCRD property line and then west through a tunnel under the west end of the site below the RPZ.

Access to the north side satellite terminal would be provided via Pacific Highway with two signalized intersections. A right turn only would be provided from SB Pacific Highway and a second signalized intersection would provide ingress from NB Pacific Highway and egress to both NB and SB Pacific Highway.

Alternative Concepts C1, C2, and C3 (north side terminal) maintain the current runways and taxiways and would construct a taxiway extension. A new parallel runway would be constructed that would significantly increase airport capacity.

A new passenger terminal complex (including gates) would be developed on the north side of the airfield (on former General Dynamics' property) with access from Pacific Highway. Land would be acquired between Pacific Highway and Kettner Avenue for parking. A satellite terminal for commuter activities would be relocated to the General Dynamics property. A people mover connecting to the existing rail/San Diego Trolley line would be provided.

Terminals 1 and 2 on the south side would be demolished. Belly cargo, airline support facilities, all cargo facilities, and general aviation facilities would be developed on the south side of the airfield with access from Harbor Drive using Camp Nimitz property.

C1 and C2 Roadway Access would be provided by direct connectors to and from NB and SB I-5. The existing Pacific Highway ramps would tie into I-5. The Hancock Street SB I-5 off-ramp would be closed to provide a new SB direct connector. Pacific Highway between Washington Street and Palm Street also would be closed. Access to and from the Terminal Loop Road to Pacific Highway south of the terminal would be provided.

C3 Roadway Access would develop a counterclockwise Terminal Loop Road. Direct connectors would be provided to and from NB and SB I-5. The existing I-5 NB connector to Pacific Highway would be used to access the terminal from the south. Hancock Street between Washington and Sassafras Streets would be closed.

Alternative Concept D2-1 (split south and north side terminals) would convert an existing taxiway to a runway and would construct a new parallel runway. The south side passenger terminal would be expanded and a new passenger terminal would be developed on the north side on a portion of land previously owned by General

Dynamics that would be accessed from Pacific Highway. Some form of people mover would be provided to tie the south and north terminal passenger activities together.

Land would be acquired between Pacific Highway and Kettner Avenue for the new terminal building. Parking would be constructed on the eastern portion of the General Dynamics property. Terminals 1 and 2 would be demolished. A people mover would be constructed connecting the new terminal and a new on-airport concourse to the transit center. A satellite terminal would be constructed on the former Naval Training Center property.

D2-1 Roadway Access would provide direct connectors to and from NB and SB I-5 north of Washington Street and north of Laurel Street. The Pacific Highway ramps to and from I-5 would be closed. The SB Kettner on- and off-ramps would be closed.

Alternative Concepts E1 and E2 (north side terminal) encroach on the MCRD property and are only feasible if the property becomes available in the future. Existing runways will be maintained and a new parallel runway would be constructed, significantly increasing airport capacity.

South side passenger terminals would be expanded and a new satellite terminal developed on Camp Nimitz property. A people mover would be constructed to connect the satellite to Terminal 2. Terminal 1 would be demolished and replaced with a new terminal structure. All cargo and general aviation facilities would be developed on the north side of the airfield on land previously owned by General Dynamics with access from Pacific Highway.

E1 and E2 Roadway Access would construct direct connectors to and from NB and SB I-5 tying into an elevated roadway running parallel to Laurel Street on the north side and into the site at the east end. A NB I-5 off-ramp would be constructed at Washington Street. The Vine Street I-5 off-ramp and the NB I-5 on-ramp at Hawthorn Street would be closed. The Pacific Highway on-ramp to SB I-5 would be relocated.

Alternative Concepts F1 and F2 (north side terminal) encroach on the MCRD property and are only feasible if the property becomes available in the future. The current runway configuration would be maintained, and a new "V" runway would be constructed, significantly increasing airport capacity.

The new north side terminal development is similar to that in E1 and E2 with a new passenger terminal on the north side of the airfield. A people mover would be constructed to connect the terminal with the transit center. Terminals 1 and 2 on the south side would be demolished.

F1 and F2 Roadway Access would construct direct connectors to and from NB and SB I-5. Existing Pacific Highway ramps to I-5 would be used. The SB I-5 off-ramp at Hancock Street to Sassafras Street would be closed, and a new diamond interchange would be provided at Washington Street. Pacific

Highway would be closed between Barnett Street and Sassafras Street. Barnett Street would be extended between Pacific Highway and the I-5 ramps. Access would be provided to and from the Terminal Loop Road to Pacific Highway south of the terminal.

Environmental Constraints Analysis: San Diego International Airport Master Plan 2020 (March 1999)

The environmental analysis characterizes the environmental constraints associated with each of the SDIA Master Plan 2020 alternative concepts. Master Plan 2020 alternatives are grouped into South, North, and Split Terminal scenarios and are screened for environmental constraints. Within each of the three terminal groups, variations are proposed for runway and ground access improvements.

National Environmental Policy Act (NEPA) and California Environmental Quality Act (CEQA) guidelines were utilized in the constraints analysis to determine "significant effects." Criteria evaluated in the *Environmental Constraints Analysis* include:

- Noise
- Environmental issues (i.e., air quality, biology)
- Land use (i.e., community character, historic sites)
- Mass transit
- Parking
- Regional traffic (traffic volumes, turning movements, circulation impacts)

The alternative concept groupings were evaluated for rail and trolley access, traffic counts, and traffic volume projections for the Master Plan 2020, street capacity, and direct access to I-5. Physical constraints associated with ground access to the airport were studied, focusing on strategies to mitigate traffic impacts.

I-5 in the vicinity of the airport is anticipated to have a demand of more than 250,000 average daily trips (ADT) in 2020 regardless of the placement of the terminals. It is anticipated that I-5 would operate at Level of Service (LOS) F with the 28 million annual passengers (MAP) forecasted for 2020. Based on traffic projections, airport traffic volumes would approximately double from current levels.

Under existing conditions, I-5 currently operates at LOS F in the vicinity of the airport during peak periods. The morning peak periods are defined as from 6:00 to 9:00 a.m. The evening peak period is defined as from 3:00 to 6:00 p.m.

The location of the passenger terminal affects the capability of transit and intermodal transportation services under the various Master Plan alternatives. Several transportation enhancement programs are possible, regardless of the terminal location, including: (1) dedicated airport express buses, (2) remote passenger and/or baggage check-in, and (3) low or zero emission dedicated express shuttles.

Following is a brief description of the Master Plan 2020 South, North, and Split Terminal scenarios and their associated runway variations, which affect ground access to the airport. This summary focuses on the ground access transportation system and its connectivity with airport landside operations. The environmental constraints analysis reviews the regional multi-modal transportation system that feeds the airport and traffic impacts in the airport area.

1. **South Passenger Terminal Alternative Concepts (A, B1, E)** are grouped together in the existing terminal facilities located on the south side of the airfield, north of Harbor Drive. Phasing development in the following sequence would expand the South Terminal: (1) existing terminal facilities would be modified by expanding onto the Camp Nimitz and Teledyne-Ryan properties, as necessary; (2) Terminals 1 and 2 would be demolished and redeveloped; and (3) passenger terminal and integrated belly cargo facilities would be expanded on the south side of the airfield.

All cargo and general aviation facilities would be developed on the north side of the airfield on land previously owned by General Dynamics, with access from Pacific Highway. Alternative Concepts A, B1, and E build on recent investments that the Port made for developing improved terminal, access, and parking facilities on the south side of the airport.

Alternative Concepts A and B1 essentially maintain the "status quo," of the existing runway, designated as Runway 9/27, and the supporting taxiways in their current configuration. Neither alternative provides any significant enhancement to airport capacity or to longer runway length.

Alternative E involves the same modifications to the existing terminals as in A and B1. However, it differs in that it proposes a new parallel runway to the north of 9/27 that would significantly increase airfield capacity. The airport traffic control tower would need to be relocated. However, Alternative E does not include direct access to I-5 or rail access opportunities.

Traffic and Circulation

Alternative Concepts A, B1, and E lack direct I-5 ramp access and would have major traffic constraints. I-5 experiences regional demand and would break down under future demands around 2007. Portions of Grape Street, Harbor Drive, Hawthorn Street, and Kettner Boulevard would operate at LOS E and F around 2007. Direct connector ramps to I-5 would be difficult to achieve because of the long distance to the on-airport street system.

Mass Transit

Alternatives A, B1, and E would be nearest to the Middletown Station. This station serves the Trolley only, and not the Coaster or Amtrak. The Middletown Station is restricted for an intermodal facility due to limited area for expansion and grade differentials that would challenge development.

MTDB considered a "spur" rail line in the past. MTDB also adopted two basic alignments for planning purposes known as the Airport/Point Loma Line, one of which is along Harbor Drive, the other a northern access line from the Washington Street Station. The potential of ridership for an airport line has been questioned since these proposals were made in the 1970s and 1980s.

The spur line would provide direct transit access to the airport. Other station locations would require an on-airport people-mover connection to transport passengers to the terminal. A transit plaza that could accommodate buses and shuttles would be located at the South Terminal. Other studies considered the impacts that a rail line would have on the Coast Guard's ability to taxi planes across Harbor Drive to the runway.

2. **North Passenger Terminal Alternative Concepts (C and F)** propose a new north of the airfield passenger terminal on the former General Dynamics property with access to Pacific Highway. Both alternatives provide significant increases in airport capacity with the development of new parallel runways. Complete acquisition of the Teledyne-Ryan property would be required. Neither alternative takes advantage of recent investments in new terminal, access, and parking improvements.

Concepts C and F would involve development of new belly and cargo facilities, airline support facilities, and general aviation facilities on the south side of Harbor Drive utilizing Camp Nimitz property.

Concept F would require additional land acquisition at the intersection of Barnett Avenue and Lytton Street. The air traffic control tower and fuel farm would need to be relocated. This concept is only possible if MCRD property becomes available in the future.

Traffic and Circulation

Traffic conditions on surface streets in the vicinity of the airport under the North Terminal alternative would be expected to break down, without direct access to I-5, similar to the South Terminal alternative. Only direct I-5 access was studied in detail for the North Terminal proposal.

For these concepts with direct I-5 ramp access, all roadways analyzed operate at acceptable levels for future conditions. It is anticipated that only minor traffic constraints would occur.

Mass Transit

The North Terminal would offer the best opportunity for an intermodal transit center to link with the terminal or to integrate the facility within the terminal to provide passengers direct access without a secondary transfer. Trolleys (electric) could serve the facility, but the Coaster and Amtrak diesel powered trains may not be able to travel through or stop at the enclosed area. The

current location of the rail lines to serve the North Terminal may capture higher ridership than the projected four percent used in the traffic study.

3. **Split Passenger Terminal Alternative Concepts (B2 and D2)** propose expanding the existing passenger terminal facilities on the south side of the airfield and developing a new passenger terminal on the former General Dynamics property with access from Pacific Highway. The split passenger terminal concept would require a connector between the terminals, such as a people mover.

Concept B2 would maintain the existing Runway 9/27 in its current configuration. D2 would convert a taxiway to a new runway, close Runway 9/27, and propose new runway development that would significantly increase airport capacity. Concept D2 would require acquisition of MCRD property.

Traffic and Circulation

Alternative Concepts B2 and D2 were studied with direct I-5 connector ramps. All analyzed roadways were found to have acceptable traffic operations under future conditions. Only minor traffic constraints would occur.

Mass Transit

The intermodal transit center could be directly connected to the North Side Terminal, similar to the North Terminal alternative, with a greater opportunity to attract passengers. If the North Terminal could accommodate passenger and baggage check-in, a people mover to the South Terminal would become more viable.

If the Alternative Concept B2 located the North Terminal transit center further south, the distance between terminal and transit center could be shortened.

The South Terminal would have a transit plaza to accommodate buses and shuttles only and would not serve as the primary airport transit center, which would be located instead at the North Terminal.

Transportation Concept Report (TCR) Interstate 5 (11-SD-5 P.M. R0.0 – R2.4) (May 1997)

This report established a 20-year transportation-planning concept for I-5 and identified modal transportation options needed to achieve the concept. It considered reasonable financial constraints and projected travel demand to 2020. At a preliminary sketch planning level, the concept analyzed LOS, modal improvements, and new technologies. The TCR also considered potential long-term transportation needs for the corridor beyond the 20-year planning period (the Post-2020 Ultimate Transportation Corridor (UTC)).

Included in the TCR is the entire I-5 facility in San Diego County from the international border with Mexico to the Orange County line. It was examined in 23 segments and considered the regional transportation system. This report summarizes

two segments, including one from State Route (SR) 163 to the Pacific Highway ramp (Segment 10) and another from the Pacific Highway ramp to I-8 (Segment 11).

Existing 1995 facility data and operating conditions indicate that I-5 is an eight-lane freeway for the two segments studied. ADT range from 184,300 trips on the SR 163 to Pacific Highway ramp segment to 187,100 trips on the Pacific Highway ramp to I-8 segment. Peak hour LOS is F-0 for both freeway segments, representing considerable delay, forced flow, heavy congestion, long queues, and stop-and-go conditions.

In the report, future operating conditions for I-5 were based on Caltrans traffic projections and the SANDAG Series 8 Regional Population and Employment forecasts for the year 2020. Future no-build conditions assume completion of only those projects in the local transportation sales tax program (TransNet) and the 1996 State Transportation Improvement Program (STIP). ADTs forecasted for the year 2020 are 263,700 for Segment 10 (LOS F-1), and 221,400 for Segment 11 (LOS F-0).

Potential trip inducing major development projects were identified in the I-5 corridor. The Convention Center expansion is the only development listed in the Centre City (downtown San Diego)/SDIA area. No highway facility improvements are assumed for Segments 10 and 11 in the airport area. The TCR includes an aviation component, but it did not specify the Airport Master Plan 2020.

A year 2020 analysis was performed to determine how conceptual improvements to the freeway might affect traffic operations. In this analysis, increasing I-5 from eight to 14 lanes for Segment 10 (SR 163 to Pacific Highway ramp) would result in peak hour LOS F conditions. For Segment 11 (Pacific Highway ramp to I-8), an increase to from eight to 10 lanes on I-5 would result in LOS E during peak hours. However, no actual freeway improvements are proposed for Segments 10 and 11 in the 2020 Transportation Concept Facility Improvements.

The post-2020 UTC describes beyond the 20 year planning period. For I-5, the UTC remains the same as the 2020 Transportation Concept Facility (i.e., eight lanes only for Segments 10 and 11).

Airport/Point Loma Guideway Extensions (April 20, 1995)

This report summarized analysis completed to date on a proposed Airport/Point Loma LRT extension that is classified as a future rail extension under study. There has been little activity on this project, since the May 23, 1985 MTDB meeting in which the Board of Directors adopted two basic alignments for planning purposes.

The basic preferred Airport/Point Loma LRT alignments adopted in 1985 were (1) an alignment along Harbor Drive and (2) a northern access alignment from the Washington Street LRT station (LRT and airport people-mover systems were considered). Both alignments continue past the airport and terminate at Rosecrans Street and Nimitz Boulevard.

It was assumed in earlier 1982 and 1984 MTDB studies that direct service to the airport terminals would require an elevated alignment through the parking lot areas, with elevated stations serving the east (Terminal 1) and west (Terminal 2) terminals. The 1985 study examined potential at-grade alignments by which LRT could directly serve the airport – several of which were found to be physically feasible. However, each option would cause greater direct adverse impacts to the airport than the aerial alignments.

Conceptual level engineering was performed. In addition, it was assumed that an airport extension along Harbor Drive would tie into an Old Town segment assumed along Pacific Highway. It was determined that new studies would be required to determine if it would be physically feasible to tie in directly with the Old Town segment as presently configured.

Costs for the Harbor Drive alignment ranged from \$40 to \$50 million (in 1985 dollars) for the segment from Pacific Highway to Rosecrans Street. Inflation would increase this range to \$62 to \$77 million in 1995. Detailed engineering would be needed to determine the added cost of a direct connection to the Old Town segment.

Costs for the northern access option ranged from \$45 to \$55 million in 1985 and would escalate to \$69 to \$85 million in 1995. This alignment proposed a tunnel between the Washington Street LRT station and the East Terminal (Terminal 1). An alignment around the west end of the main runway to the West Terminal (Terminal 2) ranged from \$65 to \$70 million in 1985 and would escalate to \$100 to \$108 million in 1995. This alignment is the more expensive of the two due to its greater length and the need to depress trackbed below grade at the end of the runway to maintain adequate clearance.

Three ridership estimates have been made for the Airport/Point Loma LRT alignments, as follows:

- The 1982 MTDB study estimated patronage at 3,100 to 4,300 riders per day on the line by the year 2000, depending on the proximity of the airport station to the terminals. For a station on Harbor Drive, patronage was estimated at 1,300 per day. For a station adjacent to the terminals, patronage was estimated at 1,700 riders per day.
- The 1984 Regional Transportation Plan (RTP) estimated daily patronage for the Airport/Point Loma Line at 12,000 by 2005, with 5,000 daily riders at the airport. This estimate was higher than the 1982 MTDB ridership projections in that the RTP assumed double the number of air passengers arriving and departing Lindbergh Field. In addition, the 1982 study assumed the East and South LRT lines only, while the RTP estimate assumed a complete regional LRT network.
- A MTDB regional LRT study, performed in 1985, analyzed routing combinations through Centre City system-wide. This study estimated that ridership for the

Airport/Point Loma line would range from 9,000 to 13,000 per day in year 2005. Patronage at the airport was estimated to be 5,000 to 7,000 per day.

Studies indicate that a high percentage of demand to and from Lindbergh Field is from areas north of I-8. A review of other airport rail service shows that most travel originates in a city's central business district.

It was determined that additional study would be needed to guide decisions on connecting an airport extension to the regional rail system. A direct connection with the existing Old Town segment presents a significant new issue, since the prior LRT studies were conducted in the 1980s.

Airport Trolley Alignment Study (May 1985)

This study identified and evaluated potential at-grade alignments for the San Diego Trolley to serve SDIA. It is a continuation of the *Point Loma/Airport Trolley Extension (1982)* that investigated Trolley extensions from the terminus at Kettner Boulevard and C Street to the Point Loma area.

The study identified and evaluated six alternative alignments as follows:

Continued for Further Consideration

- An at-grade trolley alignment to serve the East Terminal (Terminal 1) and the West Terminal (Terminal 2). The East Terminal alignment would be adjacent to the parking lot. It is dependent on MTDB selecting a northside Harbor Drive alignment east of the airport.
- A partially aerial alignment would serve the East and West Terminals. It would be aerial from Harbor Drive to the East Terminal Station on the parking lot side. It is dependent on MTDB selecting an alignment in the median of Harbor Drive east of the airport.

Eliminated from Further Consideration

- A partially aerial alignment to serve both terminals would have a combined station between the terminals. It is not feasible in that the station would interfere with air traffic ground operations.
- A partially aerial alignment to serve only the West Terminal. It would serve just one-third of the passenger market. The horizontal geometry alignment would be very restricted where it turns to the west in front of the West Terminal.
- An at-grade alignment to serve the East and West Terminals. The East Terminal alignment would be adjacent to the terminal building. Significant negative impacts were found in Trolley operations, pedestrian access, taxi access, and general traffic circulation. Trolley operations would be slowed sufficiently in the airport area and may impact Trolley schedules in the region.

- An alignment that would partially tunnel under the runway to serve the East and West Terminals. The East Terminal alignment would be adjacent to the parking lot. In order to gain sufficient vertical clearance to go under the runway, the Trolley must operate at-grade sections across the northeastern loop ramp of the interchange. Traffic impacts would be unacceptable and would cause hazardous operating conditions.

Airport/Point Loma Preliminary Engineering (Draft Final Report) (March 1984)

This study was limited to preliminary engineering of the alternatives from the C Street and Kettner Station to the intersection of Harbor Drive and Laurel Street. It was eliminated from consideration due to the structure costs of crossings and operational problems for those alternatives that ran north on Kettner and required either a separated crossing of the Santa Fe tracks or running in the Santa Fe right-of-way (ROW). Another alternative that was eliminated due to access and ROW impacts on the Grape/Hawthorn/Pacific Highway/Harbor Island parcel, coupled with severe traffic impacts on Harbor and Pacific Highway, was one that utilized the Grape/Hawthorn couplet to cross from Pacific Highway to Harbor Drive.

The alternative alignments evaluated were:

- The Pacific Highway route from C Street to the west side of Kettner to the north side of Broadway, to the centerline of Pacific Highway, to the north side of Laurel Street, continuing on Laurel Street (adjacent to the airport) to Harbor Drive. Stations were proposed at the existing C Street Station, along Pacific Highway at B Street and Cedar Street, and in the parking lot on Laurel Street adjacent to Pacific Highway.
- The Harbor Drive route from C Street to the west side of Kettner to the north side of Broadway, to the centerline of Harbor drive, to Laurel. Stations were proposed on the north side of Broadway between Kettner and Pacific Highway, at B Street and Harbor Drive, Cedar and Harbor Drive, and at Laurel Street.

Based on this study alone, the Harbor Drive alternative was favored. It was recommended that the North Line Study (from downtown to Mission Valley) be considered in a final recommendation.

Point Loma/Airport Trolley Extension Study (Draft Final Report) (November 1982)

Alternative alignments within the study area were grouped into three sections for evaluation:

1. Section 1 – C Street Station to Laurel Street and Harbor Drive, including six options grouped by major travel corridor.
 - Harbor Drive – Broadway to Laurel Street (1A)
 - Pacific Highway/Harbor Drive

Broadway – Pacific Highway – Grape Street – Harbor Drive – Laurel Street (1B).

Beech Street – Pacific Highway – Grape Street – Harbor Drive – Laurel Street (1D).

- Pacific Highway
Broadway – Pacific Highway – Laurel Street – Harbor Drive (1C).
Beech Street – Pacific Highway – Laurel Street – Harbor Drive (1E).
 - Santa Fe – Beech Street – Santa Fe – Laurel Street – Harbor Drive (1F).
2. Section 2 – Three alignments were considered along Harbor Drive between Laurel Street and the airport.
- Median operations (2A) – a station located in the median of Harbor Drive serving both the Airport and Harbor Island.
 - Landside operations in the north side utility easement of Harbor Drive (2B) – two stations located immediately adjacent to the East and West Terminals for 2B and 2C.
 - Waterside operations in the south side of Harbor Drive in the utility easement (2C).
3. Section 3 – West end of Lindbergh Field to Rosecrans Street or Barnett Avenue.
- Alternative 3 – north from the west end of Lindbergh Field through the military bases to Barnett Avenue.
 - Alternative 4 – West from Lindbergh Field to Rosecrans Street.
4A – Harbor Drive to Scott Street
4B – Harbor Drive to Nimitz Boulevard to Scott Street.

Rankings in Order of Preference

Section 1

- Harbor Drive – 1A coupled with the 2B/2C terminal station is the preferred alignment. Generally, the Airport extension carries substantially more riders if the alignment directly serves the Airport with convenient access to both terminals. Based on data from other airports, direct service to the airport should generate about 35 percent more ridership than indirect service. Projected daily ridership for year 2000 for the Trolley extension is between 3,100 and 4,300, based on 15-minute headways. A ridership difference of 500-600 trips is dependent upon the direct connection to the airport terminal, versus a long walk or shuttle access.

The preferred alignment would run in the median of Harbor Drive, crossing over the westbound traffic lanes near Winship Lane, entering the airport in an elevated section, and conveniently connecting to the terminals, similar to Alternatives 2B and 2C. Capital costs of direct airport service were estimated at \$7 million (in 1984) with an elevated section in front of the terminals. At-grade alternatives

would create severe traffic congestion and likely Trolley operation delays. There is a potential for cost sharing of the elevated rail with FAA funds.

For all Section 1 alternatives south of the Hawthorn/Grape couplet, Trolley operations produced no major traffic impacts. High traffic impacts were identified at the intersections of Harbor Drive and Hawthorn Street and Pacific Highway if the Trolley operates on the landside of Harbor Drive. At Laurel Street and Harbor Drive high traffic levels were identified with landside operations for 1A, 1B, and 1D and for waterside operations for 1C, 1E, and 1F.

The Harbor Drive (2A) median alignment station location would be less convenient for airport travelers and would reduce potential ridership.

- Pacific Highway – 1B, C, D, and E. A major issue relative to 1B and 1C is ROW acquisition. Currently, Pacific Highway has excess capacity and could potentially be narrowed to four lanes, allowing Trolley operations without new ROW. Significant traffic growth is forecasted as the waterfront along Harbor Drive is developed. The City's traffic engineer recommended retaining six traffic lanes to accommodate future volumes that would have significant ROW acquisition impacts and costs for the Trolley extension.

These alternatives and 1F must be grade separated under the railroad. Grade limitations dictate that the Trolley enter a tunnel at Beech Street and Kettner Boulevard and exit in the median of Pacific Highway near Cedar Street for 1D and 1E.

Alternatives 1D and 1E would enter Pacific Highway near Beech Street instead of at Broadway. These alternatives would provide access to the proposed Santa Fe development, with a station on Kettner Boulevard rather than on Pacific Highway. The Trolley is proposed to operate on the west side of Kettner, which would inhibit access to driveways on the short dead-end sections of A and B Streets. If Kettner were converted to a two-way street, the Trolley could operate in the median of a widened Kettner, thus simplifying traffic control at A, B, and Ash Streets.

- Santa Fe – 1F. This alignment should not be pursued due to its high acquisition cost, its relatively poor accessibility from the new developments west and south of the alignment, and Santa Fe's opposition to the Trolley operating in its ROW.

Section 2

Three alignments were considered along Harbor Drive between Laurel Street and the airport.

- Using the utility easement either north or south of Harbor Drive, and then closely connecting to the airport terminals, Alternatives 2B and 2C have merit. However, property frontage, traffic, and utility issues placed them in the second ranking. At

Laurel Street and Harbor Drive, high traffic impacts were identified for landside and waterside operations.

The Harbor Drive (1A) waterside alternative requires limited private ROW acquisition, provides good accessibility to planned developments in the corridor, and potentially could be paid for in part by contributions from the planned developments. It would be the least costly alignment, has low traffic impacts since there is excess street capacity, and has sufficient ROW for design flexibility. Relative to travel time, the preferred locations for Trolley operation would be on the waterside of Harbor Drive. However, the Port considered this alignment incompatible with waterfront activities.

The Harbor Drive (2A) median alignment has a minimal impact on traffic flow and would modestly affect Trolley speed and travel time (mostly at Grape and Hawthorn Streets).

Between Laurel Street and the airport, median and waterside Trolley alignments would produce high traffic impacts at Winship Lane and Harbor Drive unless there is an elevated crossing of Harbor Drive.

The Harbor Drive (3A) landside alignment has significantly more traffic impacts and landside parking would have to be removed.

Section 3

This section includes the west end of Lindbergh Field to Rosecrans Street or Barnett Avenue.

- Alternative 3 extending north from the west end of the airport to Barnett Avenue is the preferred alignment in Section 3. A final alignment would need to be negotiated with the military landowners. This alignment would have significant value to the Naval Training Center, both for barracks personnel and resident students.
- Alternatives 4A and 4B, extending westerly along Harbor Drive, appear feasible. They would serve the Point Loma area west of the Airport. Alternative 4A terminates at Scott Street and 4B terminates just south of Rosecrans Street on Nimitz Boulevard. The alignment west of the fishing harbor has the least ROW impacts, but the poorest accessibility to the Naval Training Center.

Rail Transit Service to Airports Point Loma/Airport Trolley Extension Special Study (October 1982)

This special staff study was to establish a factual background for forecasting potential airport rail transit patronage. Five airports that have direct rail transit service were analyzed for the study under 1980 conditions: Boston-Logan (14.7 million passengers), Chicago-O'Hare (43.7 million passengers), Cleveland-Hopkins (6.1 million passengers), Washington-National (14.5 million passengers), and London-Heathrow (27.4 million passengers). SDIA is significantly less busy than the airports

surveyed. (It served 5.1 million passengers in 1980.) Airport mode splits and the conditions that influence them would be analyzed for use in forecasting potential Trolley patronage and in planning the alignment.

Based on a survey of 13 United States airports, the general breakdown among passenger, visitor, and employee trips to-and-from an airport was: passengers-25 percent, visitors-50 percent, and employees-25 percent.

The study concluded:

- A rail extension to an airport also should serve other destinations. Service in Boston, Chicago, Cleveland, and Washington all serve other significant trip generators. An example of underutilized exclusive service is the monorail between Tokyo and Tokyo International Airport, where there is only one stop between downtown and the airport.
- Rail service to the airport should connect with the CBD, the primary generator of airport trips.
- Station proximity to terminal buildings is a significant consideration. Stations close to terminal buildings allow for short walks and convenient baggage handling. Stations further from terminal buildings that require shuttle service tend to discourage ridership.
- Timesavings over other modes encourages transit ridership and is usually dependent on the degree of congestion experienced on other modes. Travel time is of prime importance to air travelers. Infrequent service and a large number of stations between the rider's origin and the airport discourage ridership.
- Service reliability is important to airport-bound transit users and allows riders to reduce the time cushion normally included for delays in ground transportation.
- CBD stations should be located near major activity centers to assure convenient access.
- Air passengers (especially those oriented toward the CBD) and airport employees are the two groups most likely to use rail transit service.
- Locational convenience of airport transit stations, service reliability, baggage handling facilities, and general comfort and amenities are of special concern to air travelers.

Guideway Planning Projects, Phase I -- Evaluation of Candidate Corridor Alignments March 1977)

Building on the long-range regional transit plan adopted by the Comprehensive Planning Organization (now SANDAG), this study focused on the selection of guideway corridor alignments for the more detailed Phase II engineering and planning effort. The I-5/AT&SF Alternative was the most notable alignment segment based on current and 1975 ridership demand. This study mentioned an airport alignment as an optional transit service, but it was not recommended for the Phase II study.

APPENDIX B

PHASE II SCOPE OF WORK

San Diego International Airport Ground Access Study

July 1999

**For San Diego Association of Governments
By URS Greiner Woodward Clyde**

Task I Initiate Study

This task will launch the Phase II Study with the presentation of the recommended Master Plan 2020 Preferred Airport Alternative by the Port District. The Consultant will refine the Scope of Work, if needed, to reflect the ground access analysis that is associated with the Preferred Airport Alternative. The Preferred Alternative presented to the Port District Board included a phased implementation plan involving three steps. It was suggested that Phase II study the proposed roadway systems for Step 1 (year 2005) and Step 3 (full build-out in year 2020).

- **Technical Committee Meeting** – This task will initiate the Phase II Study with a meeting with the Technical Committee to confirm the objectives and scope for the study. A schedule will be established for Technical Committee meetings, data collection, deliverables, and other study benchmarks.
- **Preferred Airport Alternative** – The Port District will present the recommended Airport Master Plan 2020 Preferred Alternative, which will include the ground transportation access scenario to be analyzed in this study. It is anticipated that the Port District Board of Directors will recommend a Preferred Master Plan 2020 Alternative by the end of fall 1999.

Based upon the Preferred Alternative ground access elements and the Airport phased development schedule, the scope of work, and schedule for this study will be reviewed. The level of analysis for the ground access study to be performed in Phase II will be discussed with the SANDAG Project Manager and the Technical Committee. The scope will be refined, if needed, to reflect the analytical level for the study in accordance with the budget allocation.

- **Data Sources** – The Consultant will review the data sources required and available, e.g., traffic counts, travel model, Airport layout, Geographic Information System (GIS) mapping, etc., to perform the Scope. The Technical Committee will identify information resources and agency staff responsible at the Port District, Caltrans, MTDB, and others. Data gathering will be performed in Task III.
- **Deliverable** – Refined Scope of Services and Study Schedule.

Task II Develop Study Need and Purpose

In this task, a concise discussion of the need and purpose for the ground access study will be prepared that considers existing conditions and future proposals that affect access to the Airport. This overview will initiate our review of the transportation system that currently serves the airport and how the Master Plan 2020 may impact operations and services.

- **Need and Purpose** – The existing ground access system for the Airport and the recommended Master Plan 2020 Preferred Alternative will be reviewed to develop the study need and purpose. This will encompass regional multi-modal systems, operations, and forecasts that will affect future ground access to the Airport. An

initial perspective on the potential limitations of the current ground transportation system to serve future demand will be included in our review of the:

- Recommended Master Plan 2020 Preferred Alternative
- Environmental Constraints
- Million Annual Passenger (MAP) Projections
- Regional Transportation Improvement Program (RTIP)
- North Bay/Airport Area/Downtown Development Plans
- Traffic Data
- Level of Service
- Highway/Arterial Capacity
- Regional Light Rail Transit and Other Transit Systems
- Multi-Modal Systems
- Funding Responsibilities/Sources
- Public/Private Right of Way
- Off-Airport/On-Airport Transportation Network Interface
- **Controversial Aspects** – Any controversial aspects that could effect the Airport ground access study will be identified and briefly discussed. Issues may involve community concerns, right of way requirements, environmental constraints, and other issues that will be revealed in developing the need and purpose for the study.
- **Deliverable** – Study Need and Purpose.

Task III Establish Study Data Set

For this study, a large amount of data will be reviewed and assembled by the Consultant. The development of the study need and purpose in the previous task will lend insight into the types of information required to complete the analysis. These data will make-up the baseline upon which proposed ground access improvements will be analyzed, measured, and compared to existing conditions and forecasts.

- **Available Data** – In Task I, data required to perform the Scope of Services will be identified. In this task, the Consultant will meet with agency staff to discuss data requirements and to obtain available data. These data will be assembled and reviewed for completeness and accuracy to determine if any additional data may be needed to perform the study.

Available data will be used, and it will only be supplemented if necessary to complete the analyses. Types of data that will be required for this study include (but are not limited to) the following:

- Current Airport layouts
- Draft Airport Master Plan 2020 Layouts
- GIS files and area mapping
- Traffic counts/volumes
- Travel model information
- Environmental resources
- MAP projections

- Area/regional development plans
- RTIP
- **Additional Data** – Additional data needed to complete the study will be identified and discussed with the SANDAG Project Manager. Where data are incomplete, a decision will need to be made on whether to make an assumption based on historic trends or other similar projects, or to collect new data.

Should it be determined that additional data are required to complete the analysis, a data collection work program will be developed and approved by the SANDAG Project Manager. The Consultant will suggest methodologies to supplement available data that will minimize the collection of new primary data and lessen the influence on the study schedule and budget.

Any adverse impacts to study schedule and budget resulting from the additional data collection effort will be remedied at this time. The Consultant will perform the additional data collection only as extra work.

- **Study Data Set** – The Study Data Set will include a brief narrative and graphics and/or tabulations that describe the data. Associated raw data will be contained in appendices.
- **Deliverable** – Study Data Set.

Task IV Analyze Ground Access Scenario

Utilizing the Study Data Set prepared in Task III, the ground access scenario associated with the recommended Preferred Airport Alternative will be analyzed for its effectiveness to achieve study objectives. The Preferred Airport Alternative will include a phased on-airport build out to 2020.

The ground access study of the Preferred Airport Alternative will be performed at a sketch planning level that will limit the analysis to the conceptualization of options. Ground access options will be modeled using the North Bay focused version of the SANDAG Regional Travel Model. Results of the modeling effort will be reported for peak periods to help assess impacts.

- **Evaluative Criteria** – The Consultant will develop and present to the SANDAG Project Manager for approval a list of criteria upon which to evaluate the Airport ground access scenario's ability to achieve project objectives. Criteria will include:
 - Multi-modal solution
 - Effectiveness/efficiency
 - Deficiencies
 - Operations and systems
 - Off-On Airport interface
 - Right of way requirements
 - Environmental constraints/issues
 - Mode splits

- Connections to/use of existing transportation infrastructure
 - Design features
 - Infrastructure impacts
 - Cost
 - RTIP
 - Community impacts
- **Analysis** – The analysis will be performed at a sketch planning level that will conceptualize Airport ground access options. We will review the proposed development included in the SANDAG Regional Model and identify major developments in the North Bay area and downtown that will affect trip generation in the vicinity of the Airport. These proposed developments, and their scheduled development, will be included in the analysis. The system-wide, multi-modal transportation network and the RTIP will be reviewed as it relates to Airport access.

In the vicinity of the Airport, highway/street improvements will be conceptualized and traffic operations (e.g., ramp metering, distribution by ramps, volumes, Level of Service [LOS], peak characteristics) will be modeled for I-5 and the major arterials during peak periods using the focused version of the SANDAG Regional Travel Model. The transit mode split will be assumed based on other airports with rail transit access. Peak period traffic volumes will be sketched for I-5 segments and ramps and for arterial segments and turning movement volumes. The LOS analysis will be reported from the Highway Capacity Manual (HCM) software.

We will display the analytical results in a matrix format for comparison with existing conditions and for the forecast year. Sketches, tabulations, and a brief description of the ground access options will accompany the matrix. It will be presented to the Technical Committee for review, comment, and decision making on the ground access project that will be defined in Task V.

- **Alternative Solutions** – Results of the evaluation will reveal the ability of each ground access option to achieve study objectives. The proposed solutions would include arterials serving the Airport and connections to I-5. Potential solutions involving the regional transportation system that serve the Airport, e.g., improvements to I-5 and/or regional roadways, will be discussed but will not be sketched. We will review deficiencies in the proposed ground access options and suggest alternative solutions to improve effectiveness and to better achieve study objectives.
- **Alleviate Adverse Impacts** – The Consultant will identify any additional analysis that may be required beyond the sketch level planning performed in this study to alleviate adverse impacts on access to the Airport. Additional analysis may require more in-depth traffic/transit modeling, further ROW investigation, or related items suggested for analysis outside of this study.
- **Deliverable** – Evaluation of Ground Access Scenarios.

Task V Define Project/Estimate Cost/Identify Funding

The Airport Ground Access Project will be defined in this task based upon the analysis and evaluation performed in Task IV.

- **Project Elements** – The elements of the defined project will be prepared at a sketch planning level, as described in the previous task, in which ROW effects/estimated cost, construction cost estimates, environmental constraints, hazardous material/waste, system/operational effects, infrastructure impacts, funding sources, and related project elements will be discussed.
- **Variations** – Any variations from the defined project, e.g., alternative solutions, will be discussed and their effects on the defined project will be described.

Task VI Correlate with System Planning

The Airport Ground Access Transportation Project will be coordinated with state, regional, and local planning documents. Consistency with other planning efforts will be essential for acceptance of this project for planning, design, and funding. The Technical Committee will identify coordination requirements for the Airport Ground Access Study. This coordination will be conducted by the Consultant working in concert with the Technical Committee and with other agencies responsible for regional transportation planning.

- **Planning Coordination** – Meetings will be conducted, as needed, to coordinate with Local, General, and Specific Plans; the District System Management Plan (DSMP) and Transportation Concept Reports; Regional Transportation Plans (RTP); Congestion Management Plan (CMP); State Implementation Plan (SIP); Metropolitan Transit Development Board (MTDB); Federal Lands; and other relevant agencies.

Task VII Describe Environmental Impacts

An inventory of environmental resources and issues will be prepared in this task. Potential benefits and adverse impacts that would affect the viability of the defined project will be discussed qualitatively.

- **Environmental Clearance** – The type of environmental clearance for CEQA and NEPA will be identified and briefly described. Federal Highway Administration (FHWA), Federal Transit Administration (FTA), and 1990 Federal Clean Air Act Compliance requirements will be reviewed. Types of permits required for the project will be identified.
- **Mitigation** – Any mitigation of environmental effects that may require extensive cost or time to develop will be described. Based upon the types of permits required, the Consultant will detail all extensive studies or time consuming processes that may affect the project schedule.

Task VIII Prepare Milestone Schedule

The Consultant will prepare a tentative (simplified) milestone schedule for the defined project that assumes the earliest programming start date. Included in the schedule will be milestones for the PSR, Environmental Clearance, Public Involvement, Site Data, Maps to ROW, PS&E, ROW Certification, and other approvals that may be needed from transportation agencies. The estimated cost for the project, developed in Task V, will be escalated to the proposed program year. The tentative schedule will be included in the draft report prepared in Task IX.

Task IX Prepare Draft Report

The draft report will be prepared including the following attachments: Technical Memoranda, Maps, Cost Estimate, Back-up Data, Milestone Schedule, and Related Materials. The draft will be submitted to the SANDAG Project Manager and then to the Technical Committee for review and comment. Comments from the Technical Committee will be incorporated into the Final Report. One round of review comments is assumed.

- **Deliverable** – Draft Report.

Task X Issue Final Report

The Final Report will be submitted to the SANDAG Project Manager and then to the Technical Committee.

- **Deliverable** – Final Report.

Task XI Meetings with Technical Committee

Four meetings are assumed with the Technical Committee in Phase II. They will be scheduled in Tasks I, IV, and IX and to present the Final Report in Task X.

Schedule

The schedule is assumed to be six months in duration from July 1, 1999 through December 31, 1999. It is assumed that we will initiate data collection in July and that the analysis will proceed following a decision on the recommended Preferred Airport Alternative from the Port of San Diego Board of Directors at its July meeting.