Title
Meeting Land Transportation Needs of the Ports of Long Beach and Los Angeles

Author
Parker, John K.

Publication Date
1990-04-01

Meeting Land Transportation Needs of the Ports of Long Beach and Los Angeles

John K. Parker

Working Paper
UCTC No. 35

The University of California
Transportation Center

University of California
Berkeley, CA 94720

The University of California Transportation Center

The University of California Transportation Center (UCTC) is one of ten regional units mandated by Congress and established in Fall 1988 to support research, education, and training in surface transportation. The UC Center serves federal Region IX and is supported by matching grants from the U.S. Department of Transportation, the California State Department of Transportation (Caltrans), and the University.

Based on the Berkeley Campus, UCTC draws upon existing capabilities and resources of the Institutes of Transportation Studies at Berkeley, Davis, and Irvine; the Institute of Urban and Regional Development at Berkeley; the Graduate School of Architecture and Urban Planning at Los Angeles; and several academic departments at the Berkeley, Davis, Irvine, and Los Angeles campuses. Faculty and students on other University of California campuses may participate in Center activities. Researchers at other universities within the region also have opportunities to collaborate on selected studies. Currently faculty at California State University, Long Beach, and at Arizona State University, Tempe, are active participants.

UCTC's educational and research programs are focused on strategic planning for improving metropolitan accessibility, with emphasis on the special conditions in Region IX. Particular attention is directed to strategies for using transportation as an instrument of economic development, while also accommodating to the region's persistent expansion and while maintaining and enhancing the quality of life there.

The Center distributes reports on its research in working papers, monographs, and in reprints of published articles. For a list of publications in print, write to the address below.

University of California
Transportation Center

108 Naval Architecture Building
Berkeley, California 94720
Tel: 415/643-7378
FAX: 415/643-5456

Authors of papers reporting on UCTC-sponsored research are solely responsible for their content. This research was supported by the U.S. Department of Transportation and the California State Department of Transportation, neither of which assumes liability for its content or use.

Meeting Land Transportation Needs of the Ports of Long Beach and Los Angeles

John K. Parker
Distinguished Visiting Professor
Graduate Center for Public Policy and Administration
California State University, Long Beach

Presented at the Annual Conference of
The Western Governmental Research Association
Oakland, California, March 1990

UCTC No. 35

The University of California Transportation Center
University of California at Berkeley

TABLE OF CONTENTS

THE LOS ANGELES REGION

The Los Angeles metropolitan region has grown to be the second most populous in the United States, surpassed only by the New York City region. Forecasts are for growth to continue at a rate almost twice the national average. Estimates are the population will grow from 12.4 million people in 1984 to 18.3 million people in the year 2010. About 5.9 million additional people will be added to the six county region -- more people than lived in the entire State of Indiana at the time of the last census. While immigration to the region will account for about a third of the population increase, two-thirds will come from natural increase, making the population forecasts somewhat less likely to be impacted by unforeseen events. Whatever the actual population reached by 2010, it is clear that there will be a major increase in population barring a catastrophic earthquake. Jobs are expected to increase by 3 million to a total of approximately 9 million.[1]

The Security Pacific Bank and the County of Los Angeles have studied the booming regional economy of that part of the Los Angeles Region located within 60 miles surrounding downtown Los Angeles. With only 5% of California's land, the area makes up half the state's total economy and has an impressive history of growth in population, employment and personal income. The 60-mile circle dominates the Western United States. With a 1987 population of almost 13 million, the area ranks behind only three states--California, New York and Texas. In terms of gross product, the area would rank 11th among nations with a gross product of $228 billion placing it ahead of Brazil, India and Australia. In terms of per capita gross product the area would rank second among nations, with per capita gross product of $19,060.[2]

The continuing rapid growth of the region has outpaced the ability of government to

provide the necessary infrastructure and services for maintenance of the quality of life. Most noticeable to residents is the failure of freeway and street improvements to accommodate the growing demand, with ever longer rush hours and dramatically decreased traffic speeds. While the State and local governments are beginning to propose increased taxes and expenditures for freeways and streets, there is little reason to expect improvements in transportation -- at best there will be less degradation of travel times than are forecast in the absence of greatly increased investments. Similar deficiencies exist in the capacity for refuse disposal, water supply, schools and prisons. Despite the infrastructure inadequacies, the growth forecasts for the region assume a solution of the growth problems.

One of the factors contributing to the region's growth is its role as the leading commercial and financial center linking continental U.S. markets to the booming economies of the Pacific Rim and elsewhere. Foreign trade is a significant contributor to the economy of the Los Angeles region today, a trend which is expected to increase. By 1990, approximately one million jobs in the Los Angeles region are expected to be supported by import-export trade if conditions continue to be favorable. Total employment at that time is expected to be about 6.3 million jobs.[3]

THE PORTS OF SAN PEDRO

At the southern tip of Los Angeles, at the boundary with Long Beach, is the San Pedro Bay, the site of the adjacent ports of Long Beach and Los Angeles. These two ports are the first and second largest on the West Coast, far outstripping their competitors in trade

volume. The combined complex, the Ports of San Pedro are by most measures the busiest port complex in the United States, surpassing even New York/New Jersey.

Historically, the Ports of San Pedro have been import ports, unlike ports of the Pacific Northwest. This situation has been changing significantly as exports begin to close the gap with imports. In 1988, exports grew by 25% while import volume grew by only about 4%. Import volume was 1.57 million TEUs while export volume reached 1.0 million TEUs. (A TEU is a standardized measure for import-export volume in terms of how many 20-foot-long shipping containers would be filled.) Export growth is not expected to be as great in the future, and imports will continue to exceed exports for the foreseeable future.[4]

Some 140 nations trade through the Ports of San Pedro, with Japan, Korea, Taiwan, Indonesia and the Netherlands as the major markets. For the Port of Los Angeles in 1986, these five countries accounted for 62% of all tonnage and nearly 70% of its total dollar value. Japan alone was responsible for nearly 30% of all port traffic.[5]

Imports include a high proportion of finished goods, including automobiles and electronics goods and also including textiles (70% of all U. S. textile imports), clothing from Asia, and alcoholic beverages from Europe. Petroleum is a major import as well, much of it coastwise shipping from Alaska. Exports, in contrast, are mainly agricultural products from California -- fruits, vegetables and cotton.

Containerization of cargoes continues to proceed rapidly, with continuing increases in container shipping through the Ports of San Pedro. At the same time, the increase in oil costs over the past 16 years has increased the fuel costs for ships more than for rail. In addition, the larger ships used on the Pacific Ocean in many cases are unable to use the

Panama Canal due to size limitations. Consequently, it has become more economical to transport goods from the Pacific Rim to U. S. West Coast ports, transfer the containers to rail cars for transport to East Coast and Gulf ports, and then transport by ship to European and African ports. This same advantage applies to European goods bound for the West Coast and Pacific Rim destinations. The rail portion of the intermodal system has become known as a "bridge." A "landbridge" applies to goods carried by ship at both ends of the bridge. A "minibridge" is the term used when the containers move by rail from a West Coast to an East Coast port and then by truck to an inland U. S. destination. When the containers are shipped directly from a West Coast port to an inland destination by rail, the term "microbridge" is used.[6]

In recent years, the railroads have implemented double stack trains (DSTs) which handle containers stacked two high on special, longer rail cars. This innovation has added to the attractiveness of intermodal (ship to train) transport. As a result, about 45% of the containers handled by the Ports of San Pedro are transported by rail to inland or East Coast destinations. Landbridge and minibridge transport from the Ports of San Pedro to New York City can save 10 to 15 days over the all-water route through the Panama Canal, thus reducing inventory costs as well as providing a direct savings in transportation costs.[7]

At present, containers are not directly loaded from ships to trains at the Ports of San Pedro. Instead, containers are unloaded onto the dock, then loaded on trucks that transport the containers to railyards for loading onto trains. Until 1987, all containers moving through the Ports of San Pedro destined for rail shipment were trucked some 20 miles to the major rail yards in Los Angeles. In early 1987, the Ports and the Southern Pacific

railroad opened a new Intermodal Container Transfer Facility (ICTF) on a 150-acre site about 4 miles from the Ports. While trucks still move the containers between ships and rail, the ICTF efficiently handles 350,000 containers annually, reducing costs and lessening traffic congestion on the main truck routes into Los Angeles.

The next development in the intermodal system is the shift to on-dock rail, where containers are transferred directly between ships and rail cars, further reducing costs and delays. The Ports of San Pedro are moving toward on-dock rail which was introduced by the Port of Tacoma in 1981.

THE 2020 PLAN

In the early 1980's the Ports of San Pedro foresaw a continuing increase in cargo handled by the Ports, and joined with the U.S. Army Corp of Engineers to plan for meeting requirements through the year 2020. The planning effort began with forecasts of cargo increases and then proceeded to identify and analyze alternatives for improving channels and developing new land area to serve the projected cargo increases.

The Corps of Engineers developed cargo forecasts in consultation with the Ports. They analyzed population, employment and income levels in the Western states and both domestic and world regional price levels. Forecasts from various sources were used in a multiple regression model to forecast imports, exports, coastwide receipts and shipments. These rough forecasts were reviewed with the Ports and major industry representatives and adjusted. The forecasts used are presented in Table 1.

Using the above commodity forecasts, the existing capacity of the Ports was determined

Table 1
Commodity Forecasts, Ports of San Pedro

Commodity Type	1980 Tonnage	2020 Tonnage (Projected)
Container	10,670,000	62,510,000
Break Bulk	8,380,000	11,030,000
Automobile	600,000	1,320,000
Petroleum	52,670,000	83,880,000
Other Liquid Bulk	650,000	1,080,000
Grain	2,950,000	6,100,000
Other Dry Bulk	7,600,000	57,290,000
TOTAL	85,520,000	223,210,000

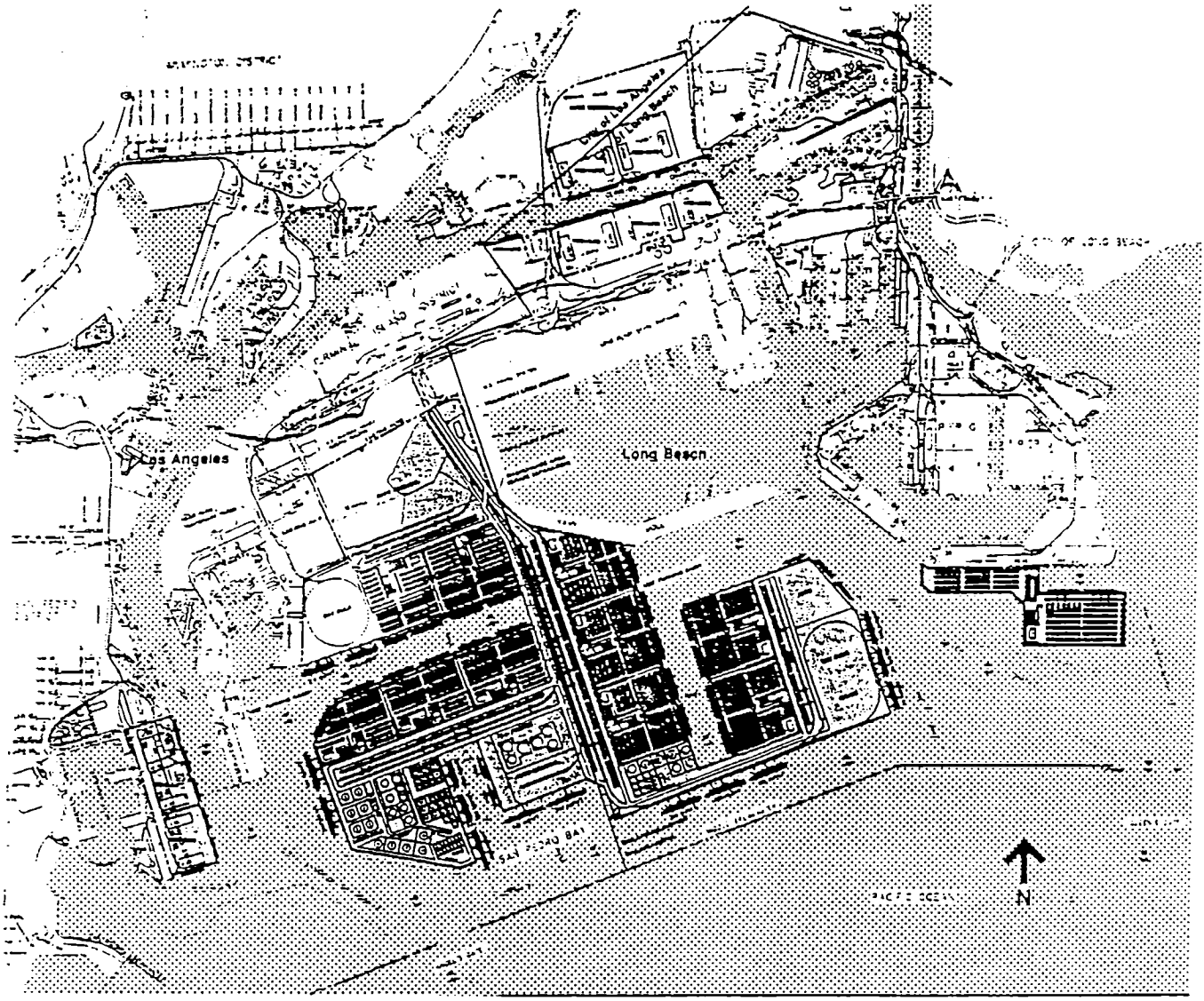
Source: 2020 Plan, July 1984

and the additional acreage needed to meet forecasts for the year 2020 was estimated. The analysis of existing port facilities determined that the throughput of the Ports, when developed to the maximum, was an estimated 150,127,000 short tons -- well above the 1980 tonnage but far below the forecasted year 2020 tonnage. The shortfall of 73,083,000 tons was estimated to require an additional 2,600 acres of land to accommodate additional terminals, transportation, facilities and ancillary uses. Since the Ports were surrounded by urban development inland, the requirement was expressed in terms of new landfill to be created in the harbor through dredging, which would also enable the Ports to handle larger ships.[8] (See Figure 1.)

The 2020 Plan also gave some attention to landside transportation requirements, noting that it was expected that by the year 2020 truck movements would increase from 7,200 movements a day to over 24,500 average daily movements. Due to existing traffic congestion, a need was seen for major improvements to the existing highway network. Additional major improvements to the railroads serving the Ports were envisioned, with an increase from 17 trains daily to a minimum of about 42 train movements daily in the year 2020.[9]

THE CONSOLIDATED RAIL CORRIDOR APPROACH

As early as July of 1981, the Southern California Association of Governments (SCAG) began focusing on the land-side access requirements of the growing Ports of San Pedro. It formed a Ports Advisory Committee to initially address an extension of the Terminal Island Freeway. After resolving that issue, in May of 1982 the Ports Advisory Committee turned



LAYOUT OF 2020 PLAN IMPROVEMENTS BASED ON OFI STUDY
(Gray and black shaded areas are new landfill)

Figure 1.

to the issue of rail access to the Ports. Since the rail lines run through a number of cities in addition to Los Angeles and Long Beach, the Ports Advisory Committee had broad representation. Membership included local elected officials, city and port officials, Caltrans (the California Department of Transportation), the three railroads, the trucking industry, the Los Angles County Transportation Commission, the U.S. Navy, the Army Corps of Engineers, Assemblyman David Elder, state Senator Robert Beverly, and Congressman Glenn Anderson.[10]

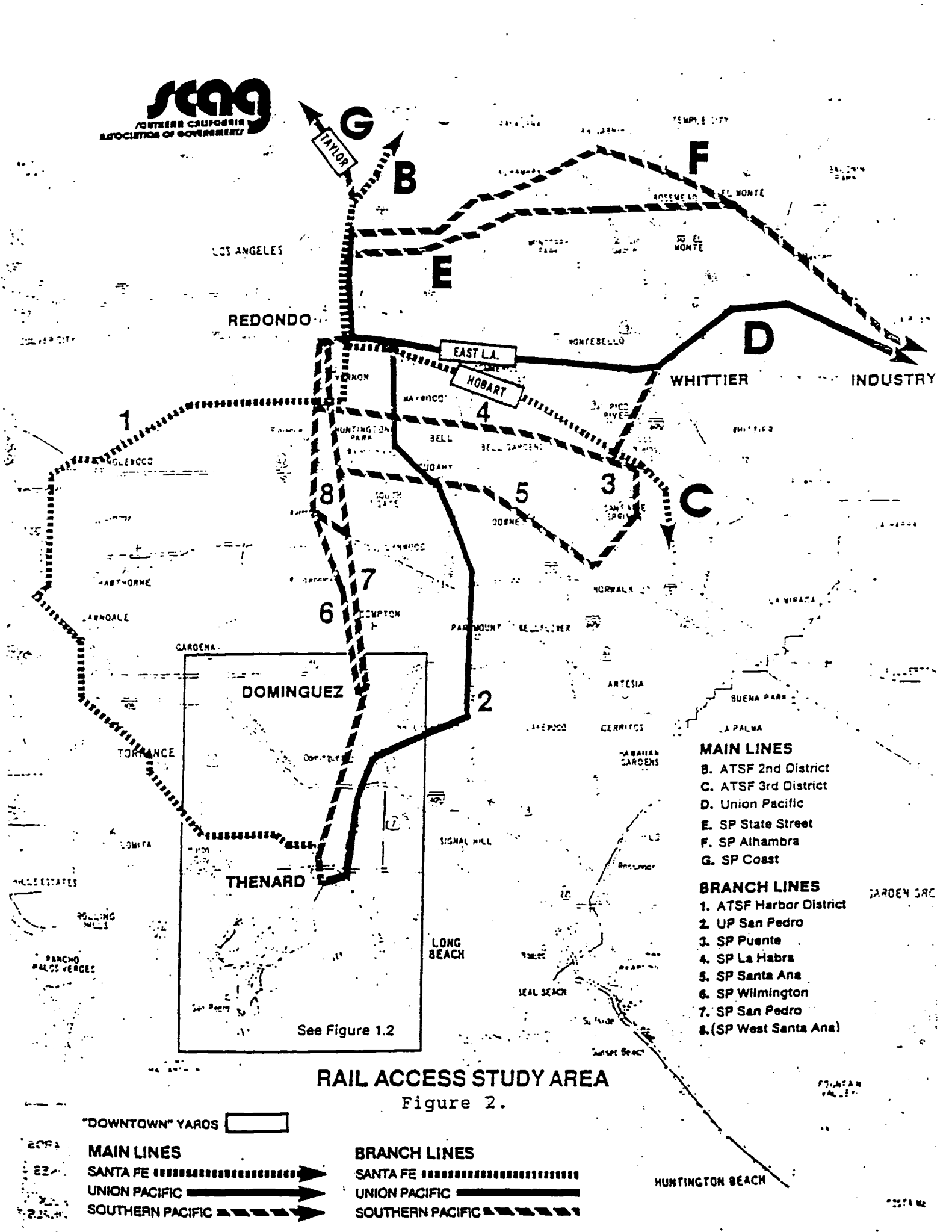
In June of 1982, the Draft Environmental Impact Report for the Intermodal Container Transfer Facility identified two branches of the Southern Pacific railroad as being highly involved in future port traffic and proposed that as many trains as possible be routed along the San Pedro branch of the railroad. In September of 1982, the California State Assembly Transportation Committee held a public hearing on the feasibility of consolidating all port-related rail traffic along the SP San Pedro branch. The three railroads serving the Ports -- the Southern Pacific, the Union Pacific and the Santa Fe -- all described their plans and expressed doubts as to the feasibility and costs of concentrating high traffic volume on a single corridor. At the same meeting SCAG staff presented several possible consolidated routes. The point was made that the SP San Pedro branch had not yet been demonstrated as the "best" route, even from an environmental point of view.[11]

Following this meeting, the SCAG Ports Advisory Committee undertook a study of rail access to the Ports. Communities along the rail lines serving the Ports had intense concerns about potentially adverse impacts of increased rail traffic, such as noise, vibration, air pollution, and delays to highway traffic at grade crossings. The purpose of the study was

to analyze these issues, evaluate alternatives and recommend a cost-effective program of rail improvements to meet projected demands and mitigate adverse environmental impacts. The study addressed operational feasibility, capital costs, traffic impacts and population impacts. It did not address institutional arrangements, financial feasibility or funding sources.

The rail access study area depicted in Figure 2 included the branch lines serving the ports and the main lines to which they connect. The SCAG staff, which undertook the study with the assistance of consultants, analyzed six alternatives: the status quo, or each of the three railroads continuing to use their own lines; the consolidation of all through traffic of the three railroads on the Southern Pacific San Pedro line; and four other alternatives using different combinations of the existing rail lines. Each alternative was assessed under two scenarios, a low scenario with 37 trains a day and a high scenario with 71 trains a day.

For each of the alternatives, a simulation of operations was performed to analyze train movements. The alternatives were evaluated using the major criteria of railroad capital improvement costs, grade separation costs, vehicle hours of delay at streets not separated, and population impacts. Under the status quo, Santa Fe trains passed within 500 feet of about 26,000 residents, Union Pacific trains passed within 500 feet of about 16,000 people, while trains on the Southern Pacific San Pedro line (the consolidation route) passed within 500 feet of only about 8,000 people. Thus population impacts were less along the consolidated route, and the majority of the other criteria favored the consolidated route, especially at the higher level of train traffic (71 trains per day) and at the lower levels of



RAIL ACCESS STUDY AREA

Figure 2.

highway traffic delay at intersections.

The SCAG study strongly suggested the consolidated route. The proposed consolidated route featured double-tracking for through train movements, 30 mile an hour speeds along most of the route (compared to about 15 miles an hour in the status quo), necessary additional connections, trackage and control systems, and grade separations at major streets and highways.

At the high level of train traffic, quantifiable benefits of the consolidated route included:

"a) A 32% reduction in train-weighted population impacts with a 36% reduction in train-weighted noise.
b) A net reduction in highway traffic delays of 2500-4100 vehicle hours per day (60-76%).
c) A 74% reduction in the number of train stoppages, which cause major disruptions to street traffic (i.e., time when trains must stop for several minutes at a time to allow other trains to pass).
d) A 29% reduction in train-hours of operation, and a comparable percentage reduction in locomotive emissions.
e) In addition, there are savings in grade separation costs at the lOO vehicle hours delay per day (VHDD) and lower threshold levels."[12]

Total costs for the 71-train-a-day scenario were estimated in the range of $156-214 million including improvements to railroad tracks, signals, and grade separations, but not including noise walls.[13]

In October of 1984, the Ports Advisory Committee of SCAG gave its policy endorsement to development of a consolidated rail corridor along the Southern Pacific San Pedro Branch, with vigorous pursuit of mitigation of adverse economic and environmental impacts, including grade separations, sound walls, etc. (The railroad members of the

Committee abstained from voting on these public policies.) The Committee further called for implementation in increments, and recommended formation of a Task Force to guide further work on consolidation, replacing the Ports Advisory Committee in that role.

The Task Force was charged with developing more detailed technical analyses to support an Environmental Impact Report, with developing specific engineering designs for trackage and grade separations to be used in negotiation with individual jurisdictions and with development of precise cost estimates based on engineering designs for use in funding requests. The Task Force was further charged with gaining a consensus on a specific program of phased improvements to enable negotiation of action agreements for implementation, and finally, the Task Force was charged with developing a financial plan for construction, including a strategy for funding.[14]

To bring together the technical and policy capabilities needed to carry out the charges to the Task Force, the Committee recommended membership of each of the cities along the proposed consolidated corridor route, along with the other major organizations involved. Regular membership of the Task Force was to include:

- California Department of Transportation (Caltrans)
- California Public Utilities Commission (PUC)
- Southern California Association of Governments (SCAG)
- Los Angeles County Transportation Commission (LACTC)
- County of Los Angeles
- City of Carson
- City of Compton
- City of Huntington Beach
- City of Long Beach
- City of Los Angeles
- City of Lynwood
- City of South Gate
- City of Vernon
- Port of Long Beach

- Port of Los Angeles
- Long Beach Naval Ship Yard
- U.S. Army Corp of Engineers
- Atchison, Topeka, and Santa Fe Railway
- Union Pacific Railroad
- Southern Pacific Railroad
- California Trucking Association[15]

Thus the SCAG study established the San Pedro line of the Southern Pacific as the preferred solution to the rail transport needs of the Ports through the year 2020, and established the Task Force -- subsequently named the Alameda Corridor Task Force because the San Pedro line parallels Alameda Street -- to carry forward with implementation. The Task Force met frequently on into 1989 but was unable to accomplish the extremely ambitious work program prescribed for it in the beginning. The "Alameda Corridor" rail consolidation proposal, however, became thoroughly embedded in planning for the Ports and the metropolitan region.

Noise Mitigation

The SCAG study did not take into account the cost of noise mitigation when it calculated costs for the different alternatives. In 1986, however, the Ports of Long Beach completed a draft Environmental Impact Report that addressed noise mitigation in relation to a proposed on-dock intermodal container transfer railyard for stack train service. Stack trains (or double stacked trains) use cars 266 feet in length with five platforms capable of carrying ten containers. These trains are somewhat quieter than normal since the longer cars result in fewer wheels and couplings in a train.

Measurements showed that the stack trains generated significant noise. At a distance

of 30 feet, under ambient noise conditions of 61 decibels, the stack train produced readings of 91 decibels as the locomotive passed and up to 84 decibels as the stack cars passed. At a speed of 20 mph it would take about five seconds for two locomotives to pass and just over 3 minutes for the rolling stock to pass a given point. At a distance of 50 feet, the different rail lines produced noise levels ranging up to 81 decibels. These noise levels would have a significant impact on residential areas through which the trains pass. Noise barriers (typically concrete block walls) reduce noise impacts up to 20 decibels. To install noise walls along the Southern Pacific San Pedro rail corridor would cost at least $40 million, assuming protection of all impacted residential areas -- a cost of $1,943,000 per mile.[16]

Reaction to the Consolidated Corridor

Even before the final SCAG Rail Access study was published, the Long Beach City Council, in April of 1984, endorsed the consolidated rail corridor, adding support for including improvements to Alameda Street to accommodate port truck traffic. In testimony on the Environmental Impact Report for the 2020 land fills, the Long Beach Planning Director stated that:

"... City Council recommends that a phasing plan be developed which would link segments of the proposed landfill to implementation of specific recommended transportation improvements. Landfill should not be permitted to proceed until the transportation improvements needed to support that development are under way. Based on earlier studies by the Corps of Engineers and SCAG this means that a major portion of the landfill recommended in the 2020 plan could not commence until the Alameda corridor is improved as a consolidated rail line and a partially-limited access truck route. City Council reaffirms its support of the consolidated rail line and recommends that it be specifically included in the environmental document as a necessary mitigation measure."[17]

The consolidated corridor would divert the majority-of rail traffic out of residential areas of Long Beach and away from the downtown area. The City of Compton, however, was greatly concerned about the Alameda Street consolidated corridor. In most other cities along the route the rails go through industrial areas, but in Compton they cut through commercial and residential areas. Carson opposed both the truck route on Alameda Street and the consolidated rail corridor, and remained concerned on into 1989. Specifically, the City was concerned about getting sufficient grade separations to mitigate the impact on surface street traffic.[18]

In general, the affected jurisdictions accepted the Alameda consolidation while the railroads remained uncommitted.

2020 PLAN UPDATE

In 1988 the Ports commissioned a study of 2020 cargo handling operations, facilities and infrastructure requirements to provide more detailed information on action needed to implement the 2020 plan.

As a basis for the study, the Ports updated the cargo forecasts originally performed by the Corps of Engineers in 1982. These new forecasts predicted greater growth, especially in the number of containers, expected to reach 8.8 million twenty-foot equivalent units -- up from somewhat over 3 million units in 1987. These new forecasts resulted in the Ports increasing their estimate of daily trains from the high of 71 used in the SCAG study to a new total of 106 trains a day from the Ports area.

THE JOINT POWERS AUTHORITY

The SCAG Alameda Corridor Task Force gained governmental consensus on the need for the Consolidated Transportation Corridor (CTC), and in July of 1989 the Task Force was replaced by the Consolidated Transportation Corridor Joint Powers Authority (JPA). The JPA includes membership of the six cities along the CTC as well as the cities of Long Beach and Los Angeles, the Ports, and the Los Angeles Transportation Commission. Also included in the structure of the JPA is a Railroad Advisory Board with a representative of each of the three railroads as members.

The JPA has the authority to acquire right of way, to construct improvements and grade separations, to improve Alameda Street for truck traffic, and to provide for operation of the CTC.[19]

RAILROAD ISSUES

Both the Santa Fe and the Union Pacific railroads were generally favorable to the CTC but raised several concerns. Both railroads suggested an impartial operating authority -- neither wanted to be a tenant of the Southern Pacific. They also considered it essential that equal access to future Port terminals be assured.

The Southern Pacific, owner of the San Pedro branch that is the main component of the CTC, was skeptical about the CTC. The railroad was concerned that the CTC might take business away from its highly successful Intermodal Container Transfer Facility. Moreover, the Southern Pacific questioned the validity of the traffic forecasts made by the Ports, doubting that there would be as great a volume as assumed.[20]

Despite the railroads' concerns, their ability to share in the growth of Port business provides a strong reason to cooperate. Without the CTC, the Ports of San Pedro would lose the ability to compete with other west coast ports for business. In December of 1989, the President of the Southern Pacific publicly stated his support for the CTC. He did stipulate that his railroad expected to receive full and fair compensation for its property and competitive position.

ISSUES TO BE RESOLVED

The CTC Joint Powers Authority is faced with a number of important issues to be resolved before the CTC can become a reality.

Capacity The railroads have questioned the traffic forecasts used by the Ports in their planning. These forecasts obviously provide the foundation for any CTC improvements to be made. In addition, there is the question of whether the CTC could handle the predicted 106 trains a day. The 1984 SCAG analysis performed a simulation for a peak of 71 trains a day, but even that simulation was made without detailed engineering studies for the CTC. If the CTC cannot be designed to handle 106 trains a day, the additional trains would have to run on tracks that incur a much higher adverse impact on traffic ana population, and could require mitigation investments substantially increasing the cost of handling the traffic.

The JPA is commissioning a study to perform the conceptual engineering for the CTC, either at grade or depressed, to update traffic forecasts and to perform an analysis of the capacity of the designed CTC to handle forecasted traffic. The study is not expected to be completed until early 1992.

Ownership While two of the railroads prefer that the JPA or another impartial entity own and operate the Corridor, the potential costs of JPA purchase of the right of way from the Southern Pacific could be beyond the financing capacity of the JPA. The Ports and the JPA thus will seek a less costly alternative, but do not have a solution at hand.

Financing Cost estimates used by the JPA for CTC construction are for $500 million dollars, excluding the possible cost of right of way acquisition. Sixteen grade separations are estimated to cost $208 million, and the widening of Alameda Street is estimated to cost $50 million. There is the possibility that most of these costs may be born by the federal and state governments if additional highway funds become available and the Ports are successful in lobbying efforts.

The estimated cost of $100 million for track and signal improvements would not be eligible for federal and state funding. Either the railroads must contribute to the costs, or the Ports must bear the costs alone. The Port of Long Beach plans to levy a "mitigation fee" on every ton of cargo moving through the Port, which would provide a source of revenue to be used to repay revenue bonds which would be used by the JPA or CTC construction costs.[21]

The remainder of the $500 million cost of the CTC, some $114 million, includes contingencies, study and engineering costs, and construction management costs. These costs would have to be financed through the same means as the direct costs for grade separations and track and signal improvements.

CONCLUSIONS

The Ports of San Pedro are undertaking a massive expansion as envisioned in their 2020 plan. That expansion will have significant adverse impacts on the already severe highway traffic congestion between the Ports and the major railroad yards located near downtown Los Angeles unless major improvements to streets and railroads are made. The Ports intend to mitigate adverse impacts by construction of a Consolidated Transportation Corridor at a cost of $500 million.

If the Ports were to abandon handling cargo bound for destinations east of the Rockies, requirements would decrease by about 50% and would not necessitate most of the expansion called for in the 2020 plans. Some increase in traffic would occur, but could be handled by less expensive mitigation measures. Foregone traffic would almost surely be handled by competitive west coast ports. The Ports, private interests and governmental bodies in the Los Angeles area all support expansion in Port commerce and employment and no serious consideration has been given to foregoing cargo.

While serious issues remain to be resolved regarding the railroads, the major obstacle to implementation of the CTC is the need for financing, which may well exceed $500 million if costs of noise walls and acquisition of the Southern Pacific right of way are necessary. Obtaining financing will depend on the success of lobbying to gain federal and state funding for a substantial proportion of the costs.

ENDNOTES

1. Southern California Association of Governments. Impact Assessment: Draft Baseline Projection. October, 1986, p. 1.

2. Security Pacific Bank. Entering the 21st Century, Portrait for Progress. July 1988, pp. 2-14.

3. Southern California Association of Governments. Southern California's International Trade: Its Importance to the Regional Economy, with Forecasts to the Year 2000. April 1985, pp. I-8 to I-11.

4. Michael Strewfel. "Exports through L.A., Long Beach Ports Soar 25%; Imports Swell Moderately." Los Angeles Business Journal, February 20, 1989, p. 3.

5. Port of Los Angeles. 1986 Worldport L.A. Annual Report. September 1986, p. 6.

6. Port of Long Beach. Port Master Plan Update. May 1983, p. 137.

7. James R. Haucey. "Intermodal Trends at West Coast Ports and the Role of the U.S. Army Corp of Engineers," Transportation Research Circular Number 350. National Research Council, Washington, D.C., May 1989, pp. 10-11.

8. Port of Long Beach. Executive Summary, 2020 Plan: Landfill and Channel Improvements for San Pedro Bay Through the Year 2020. July 1984, pp. 1-5.

9. Ibid. pp. 27-28.

10. Southern California Association of Governments. Executive Summary, San Pedro Bay Ports Access Study: Phase 2 - Railroad Access. October 1984, p. 1.

11. Southern California Association of Governments. San Pedro Bay Ports Access Study: Phase 2 - Railroad Access, Volume 1. October 1984, pp. 2-5.

12. Southern California Association of Governments. Executive Summary, San Pedro Bay Ports Access Study: Phase 2 - Railroad Access. October 1984, p. xiv.

13. Ibid. p. xii.

14. Southern California Association of Governments. San Pedro Bay Ports Access Study: Phase 2 - Railroad Access, Volume 1. October 1984, pp. 121-22.

15. Ibid. p. 125.

16. Port of Long Beach. Environmental Impact Report Draft, International Transportation Service, On-dock Intermodal Container Transfer Railyard. June 1986, pp. V-8 to V-14.

17. United States Corps of Engineers. Public Meeting on the EIR/EIS's for Channel Improvements and Landfill Development in Los Angeles and Long Beach Harbors. September 5, 1984, pp. 30-31.

18. Michele Fuetsch. "Compton Fears It May Be Strangled by Rail Traffic." Los Angeles Times. February 3, 1989.

19. Joint Exercise of Powers Agreement Between the City of Long Beach and the City of Los Angeles to be known as Consolidated Transportation Corridor Joint Powers Authority. July 1989.

20. Transportation Marketing Services, Inc. Consolidated Rail Corridor Strategic Plan. November 1988, p. 57.

21. Gil V. Hicks, Manager of Transportation Planning, Port of Long Beach. Interview, February 2, 1990.