

00219

PRELIMINARY REPORT

ON FINANCIAL FEASIBILITY OF

A GOODELL MONORAIL PASSENGER SYSTEM

BETWEEN

LOS ANGELES INTERNATIONAL AIRPORT

AND

THE WILSHIRE-DOWNTOWN AREAS

REPORT NO. 52-619

SEPTEMBER 1961

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MATURITY	AMOUNT MATURING	PROJECTED NET AVAIL- ABLE FOR DEBT SERV. AND RE- SERVE FUND	ESTIMATED INTEREST	DEPREC. & MANDATORY PROJECTED		
				OPERATING RESERVE PAYMENTS	SINKING FUND PAYMENTS	NET SUR- PLUS AVAILABLE
1963			1,224 (1/2)			(1,224)
1964 (1/2)		1,569	2,448	50		(929)
1965		3,568	2,448	300		820
1966		4,074	2,448	300		1,226
1967	100	4,673	2,448	300		1,825
1968	225	5,284	2,442	300		2,317
1969	325	5,874	2,430	300		2,819
1970	425	6,498	2,412	300		3,361
1971	500	7,131	2,388	300		3,943
1972	575	7,810	2,361	300		4,574
1973	650	8,464	2,329	300		5,185
1974	700	9,136	2,294	300		5,842
1975	750	9,792	2,255	300		6,487
1976	800	9,853	2,214	300		6,539
1977	850	9,853	2,170	300		6,533
1978	900	9,853	2,123	300		6,530
1979	900	9,853	2,074	300		6,579
1980	950	9,853	2,024	300		6,579
1981	950	9,853	1,972	300		6,639
1982	1,000	9,853	1,920	300		6,633
1983	1,000	9,853	1,865	300		6,688
1984		9,853	1,810	300	1,100	6,643
1985		9,853	1,749	300	1,200	6,604
1986		9,853	1,683	300	1,300	6,570
1987		9,853	1,612	300	1,400	6,541
1988		9,853	1,535	300	1,500	6,518
1989		9,853	1,452	300	1,650	6,451
1990		9,853	1,361	300	1,800	6,392
1991		9,853	1,262	300	2,000	6,291
1992		9,853	1,152	300	2,200	6,201
1993		9,853	1,031	300	2,400	6,122
1994		9,853	899	300	2,600	6,054
1995		9,853	756	300	2,900	5,897
1996		9,853	597	300	3,200	5,756
1997		9,853	421	300	3,600	5,532
1998	32,900	9,853	223	300	4,050	5,280
TOTAL	<u>44,500</u>					

(000's omitted)

MATURITY	AMOUNT MATURING	PROJECTED NET AVAIL- ABLE FOR DEBT SERV. AND RE- SERVE FUND	ESTIMATED INTEREST	DEPREC. & MANDATORY		PROJECTED NET SUR- PLUS AVAILABLE
				OPERATING RESERVE PAYMENTS	SINKING FUND PAYMENTS	
1963			1,224 (1/2)			(1,224)
1964 (1/2)		2,016	2,448	50		(482)
1965		4,459	2,448	300		1,711
1966		5,214	2,448	300		2,466
1967	100	5,959	2,448	300		3,111
1968	225	6,720	2,442	300		3,743
1969	325	7,452	2,430	300		4,427
1970	425	8,226	2,412	300		5,199
1971	500	9,018	2,388	300		5,830
1972	575	9,868	2,361	300		6,632
1973	650	10,685	2,329	300		7,406
1974	700	11,524	2,294	300		8,230
1975	750	12,342	2,255	300		8,937
1976	800	12,453	2,214	300		9,139
1977	850	12,453	2,170	300		9,133
1978	900	12,453	2,123	300		9,130
1979	900	12,453	2,074	300		9,179
1980	950	12,453	2,024	300		9,179
1981	950	12,453	1,972	300		9,231
1982	1,000	12,453	1,920	300		9,233
1983	1,000	12,453	1,865	300		9,288
1984		12,453	1,810	300	1,100	9,243
1985		12,453	1,749	300	1,200	9,204
1986		12,453	1,683	300	1,300	9,170
1987		12,453	1,612	300	1,400	9,141
1988		12,453	1,535	300	1,500	9,118
1989		12,453	1,452	300	1,650	9,051
1990		12,453	1,361	300	1,800	8,992
1991		12,453	1,262	300	2,000	8,891
1992		12,453	1,152	300	2,200	8,801
1993		12,453	1,031	300	2,400	8,722
1994		12,453	899	300	2,600	8,654
1995		12,453	756	300	2,900	8,497
1996		12,453	597	300	3,200	8,356
1997		12,453	421	300	3,600	8,132
1998	32,900	12,453	223	300	4,050	7,880
TOTAL	<u>44,500</u>					

(000's omitted)

ESTIMATED ANNUAL REVENUE
TO BE DERIVED FROM A PROPOSED HIGH SPEED
MONORAIL SYSTEM

Operating from Los Angeles International Airport to Downtown Los Angeles

Estimates Based Upon Requirements Stated in Report No. 32-619

<u>Year</u>	<u>At Basic Rate of \$1.25</u>	<u>At Basic Rate of \$1.35</u>	<u>At Basic Rate of \$1.50</u>
1962	\$2,341,000	\$2,504,000	\$2,740,000
1963	2,596,000	2,777,000	3,040,000
1964	2,829,000	3,037,000	3,323,000
1965	3,086,000	3,301,000	3,612,000
1966	3,563,000	3,811,000	4,171,000
1967	4,027,000	4,308,000	4,715,000
1968	4,498,000	4,812,000	5,267,000
1969	4,958,000	5,304,000	5,804,000
1970	5,430,000	5,809,000	6,357,000
1971	5,941,000	6,355,000	6,955,000

Estimates include revenue from passengers, mail, express
and from miscellaneous other sources.

Prepared by: Arthur C. Jenkins, Consulting Engineer
August 3, 1964

I. ESTIMATED TOTAL ANNUAL REVENUE ON PROPOSED AIRPORT MONORAIL LINE

Year	<u>Estimated Revenue at \$1.25 Base Fare</u>			<u>Estimated Revenue at \$1.50 Base Fare</u>		
	<u>Total Passenger Revenue</u>	<u>Mail and Other Revenue</u>	<u>Total Annual Revenue</u>	<u>Total Passenger Revenue</u>	<u>Mail and Other Revenue</u>	<u>Total Annual Revenue</u>
	(1)	(2)	(3)	(4)	(5)	(6)
1962	\$ 1,815,000	\$ 160,000	\$ 1,975,000	\$ 2,139,000	\$ 160,000	\$ 2,299,000
63	1,963,000	175,000	2,138,000	2,317,000	175,000	2,492,000
64	2,109,000	189,000	2,298,000	2,492,000	189,000	2,681,000
65	2,262,000	205,000	2,467,000	2,677,000	205,000	2,882,000
66	2,518,000	230,000	2,748,000	2,983,000	230,000	3,213,000
67	2,771,000	255,000	3,026,000	3,288,000	255,000	3,543,000
68	3,032,000	281,000	3,313,000	3,600,000	281,000	3,881,000
69	3,285,000	306,000	3,591,000	3,905,000	306,000	4,211,000
70	3,554,000	333,000	3,887,000	4,228,000	333,000	4,561,000
71	3,816,000	359,000	4,175,000	4,542,000	359,000	4,901,000
72	4,087,000	387,000	4,474,000	4,878,000	387,000	5,265,000
73	4,368,000	414,000	4,782,000	5,204,000	414,000	5,618,000
74	4,647,000	441,000	5,088,000	5,539,000	441,000	5,980,000
75	4,921,000	469,000	5,390,000	5,868,000	469,000	6,337,000
Total	45,158,000	4,204,000	49,362,000	53,660,000	4,204,000	57,864,000
10 years						
1966-75	37,009,000	3,475,000	40,484,000	44,035,000	3,475,000	47,510,000

Note: Col. (1) includes \$198,000 for each year representing new novelty riding

1/10/72

G. Annual Revenue at \$1.25 Base Fare

Year	Reduced Rate Passengers		Full-Fare Passengers \$1.25	Total Passenger Revenue
	Employees	Half-Fare		
	35¢ (1)	65¢ (2)		
1962	\$ 7,282	\$ 7,592	\$1,601,894	\$1,616,768
1963	7,793	8,304	1,748,806	1,764,903
1964	8,176	9,016	1,893,438	1,910,630
1965	8,615	9,965	2,045,369	2,063,949
1966	9,326	10,914	2,299,500	2,319,740
1967	9,837	12,100	2,551,350	2,573,287
1968	10,476	13,286	2,810,044	2,833,806
1969	11,114	14,472	3,061,894	3,087,480
1970	11,753	15,659	3,329,256	3,356,668
1971	12,264	16,845	3,588,863	3,617,972
1972	12,775	18,268	3,867,631	3,898,674
1973	13,286	19,455	4,137,275	4,170,016
1974	13,797	20,878	4,414,675	4,449,350
1975	14,308	22,064	4,687,056	4,723,428

H. Annual Revenue at \$1.50 Base Fare

Year	Reduced Rate Passengers		Full-Fare Passengers \$1.50	Total Passenger Revenue
	Employees	Half-Fare		
	50¢ (1)	75¢ (2)		
1962	\$10,403	\$ 8,760	\$1,922,273	\$1,941,436
1963	11,133	9,581	2,098,568	2,119,282
1964	11,680	10,403	2,272,125	2,294,208
1965	12,593	11,498	2,454,443	2,478,534
1966	13,323	12,593	2,759,400	2,785,316
1967	14,053	13,961	3,061,620	3,089,634
1968	14,965	15,330	3,372,053	3,402,348
1969	15,878	16,699	3,674,273	3,706,850
1970	16,790	18,068	3,995,108	4,029,966
1971	17,520	19,436	4,306,635	4,343,591
1972	18,250	21,079	4,641,158	4,680,487
1973	18,980	22,448	4,964,730	5,006,158
1974	19,710	24,090	5,297,610	5,341,410
1975	20,440	25,459	5,624,468	5,670,367

ESTIMATED POTENTIAL PASSENGER TRAFFIC AND REVENUE
ON PROPOSED AIRPORT MONORAIL LINE (Continued)

Year	Total Cabs Assuming No Rail Service (1)	Origin of Cabs		Estimated Diversion to Rail Service	
		From Zone 9 (2)	From Rail Service Area (3)	Autos (4)	Passengers (5)

C. Average Daily Passengers from Taxicabs

	Factor	100%	41.4%	47.9%	50%	x 1.12
1962	2,800		1,160	556	278	311
1963	3,100		1,280	613	306	343
1964	3,400		1,410	675	337	377
1965	3,700		1,530	733	367	411
1966	4,300		1,780	853	426	477
1967	4,800		1,990	953	476	533
1968	5,400		2,240	1,070	535	599
1969	5,900		2,440	1,170	585	655
1970	6,500		2,690	1,290	645	722
1971	7,100		2,940	1,410	705	790
1972	7,800		3,230	1,550	775	868
1973	8,400		3,480	1,670	835	935
1974	9,000		3,730	1,790	895	1,002
1975	9,700		4,020	1,930	965	1,081

D. Total Average Daily Passengers

Year	From Airport Buses* (1)	From Employee Autos (2)	From Airline Passenger Related Autos (3)	From Taxi- cabs (4)	Total Average Daily Passengers (5)
1962	1,305	52	1,932	311	3,600
1963	1,390	53	2,143	343	3,929
1964	1,480	54	2,341	377	4,252
1965	1,576	55	2,552	411	4,594
1966	1,678	57	2,947	477	5,159
1967	1,787	58	3,342	533	5,720
1968	1,903	59	3,736	599	6,297
1969	2,027	60	4,117	655	6,859
1970	2,159	62	4,512	722	7,455
1971	2,245	63	4,935	790	8,033
1972	2,335	65	5,386	868	8,654
1973	2,428	68	5,823	935	9,254
1974	2,525	70	6,275	1,002	9,872
1975	2,626	73	6,698	1,081	10,478

* Based on actual passenger traffic on bus line operating between airport and downtown Los Angeles.

ESTIMATED POTENTIAL PASSENGER TRAFFIC AND REVENUE
ON PROPOSED AIRPORT MONORAIL LINE

Year	Total Autos Assuming No Rail Service	Origin of Autos		Estimated Diversion to Rail Service	
		From Zone 9	From Rail Service Area	Autos	Passengers
	(1)	(2)	(3)	(4)	(5)
A. <u>Average Daily Passengers from Employee Autos</u>					
	Factor 100%	5.4%	33.3%	25%	x 1.23
1962	9,400	508	169	42	52
1963	9,600	518	172	43	53
1964	9,800	529	176	44	54
1965	10,000	540	180	45	55
1966	10,200	551	183	46	57
1967	10,400	562	187	47	58
1968	10,600	572	190	48	59
1969	10,800	583	194	49	60
1970	11,000	594	198	50	62
1971	11,400	616	205	51	63
1972	11,800	637	212	53	65
1973	12,200	659	219	55	68
1974	12,600	680	226	57	70
1975	13,000	702	234	59	73

<u>B. Average Daily Passengers from Airline Related Autos</u>					
	Factor 100%	17.7%	47.9%	65%	x 1.41
1962	24,900	4,410	2,110	1,370	1,932
1963	27,600	4,890	2,340	1,520	2,143
1964	30,200	5,350	2,560	1,660	2,341
1965	32,900	5,820	2,790	1,810	2,552
1966	37,900	6,710	3,210	2,090	2,947
1967	42,900	7,590	3,640	2,370	3,342
1968	48,000	8,500	4,070	2,650	3,736
1969	53,000	9,380	4,490	2,920	4,117
1970	58,000	10,270	4,920	3,200	4,512
1971	63,600	11,260	5,390	3,500	4,935
1972	69,300	12,270	5,880	3,820	5,386
1973	74,900	13,260	6,350	4,130	5,823
1974	80,600	14,270	6,840	4,450	6,275
1975	86,200	15,260	7,310	4,750	6,698

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TRANSIT - UTILITIES - VALUATION

September 27, 1961

Mr. William L. Hoyt, President
Goodell Monorail Systems, Inc.
634 South Spring Street
Los Angeles 14, California


Dear Mr. Hoyt:

Since our original discussions on the subject during last April, a study has been made of financial feasibility and preliminary analysis of passenger transportation characteristics as related to the prospective installation of a monorail system between the Los Angeles International Airport and the downtown area of Los Angeles, with branch line service to the easterly area of the Wilshire Boulevard section.

Sufficient data of a reliable nature has now been assembled and analyzed, and estimates have been made as to the probable revenue-producing potentiality of such an operation, projected from 1960 to 1975. Contained in the report submitted herewith are the results of this work, together with a preliminary layout of prospective routes that are considered to be adaptable to such a system.

It is my understanding that after your company has reviewed these findings, a final report will be prepared to show the complete financial prospect of earnings, cost of operation, and cost of facilities, including rail cars, stations, track structures and other appurtenances, together with estimates of bond service requirements.

Respectfully submitted,


Arthur C. Jenkins

A REPORT ON FINANCIAL FEASIBILITY OF A
GOODELL MONORAIL PASSENGER LINE
SERVING LOS ANGELES INTERNATIONAL AIRPORT

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A REPORT ON FINANCIAL FEASIBILITY OF A
GOODELL MONORAIL PASSENGER LINE
SERVING
LOS ANGELES INTERNATIONAL AIRPORT

PART A

CONCLUSIONS AND DISCUSSION

OBJECTIVE AND SCOPE

It is the objective of this general analysis to determine the feasibility of financing, constructing and operating a high speed, light-weight elevated monorail passenger system between the Los Angeles International Airport and the downtown business section of Los Angeles, with a branch line routed westerly to serve a portion of the Wilshire Boulevard district.

This analysis will consist of two phases. The first phase, the results of which are contained herein, relates to the magnitude of potential passenger traffic and revenue of such a system, and tentative routing of the rail line. The second phase will cover those aspects relating to general design characteristics of the rail cars and supporting structures, and of the investment and bond servicing estimates.

CONCLUSIONS

1. For a practical, high speed, light weight, attractive and convenient rail passenger line operating between the Los Angeles International Airport and a downtown terminal in Los Angeles, with a branch line into the Wilshire Boulevard Area, the sources of passenger traffic would be:

- a. Diversion of passengers who would otherwise use the airport bus line on the downtown route.
- b. Diversion of passengers who would otherwise use automobiles to and from the airport.
- c. Induced new traffic that would not otherwise use either of those modes of travel.

2. It is estimated that potential annual traffic from these three sources for the year 1965, would be:

a. Diversion of airline bus traffic	706,000
b. Diversion of auto traffic	2,373,000
c. Induced traffic	<u>308,000</u>
Total Passengers	3,387,000

- 3. At the rate schedule presently in effect on the airport bus system, of \$1.25 for adult passengers, it is estimated that passenger revenue for the year 1965 would be \$3,991,000, and revenue from other sources would be \$347,000, or a total of \$4,338,000.
- 4. It is estimated that during the ten-year period 1965-1975, the average annual revenue would be \$7,224,000.
- 5. The above estimates are premised upon a rail system of ultramodern design, with high speed, light weight, elevated monorail type, operated on short headways, with terminal facilities of modern, convenient and attractive design and fully coordinated with the architectural and physical character of the new airport, with emphasis upon convenience of handling luggage.
- 6. Economic feasibility of such a system will depend upon the cost of facilities, including the right of way, rail supporting structure, passenger cars and station facilities; the annual cost of operation; and the cost of financing.

7. With increasing airline passenger traffic, increasing automobile congestion and interference of vehicular traffic with airline bus service at grade, there appears to be a most favorable climate for an elevated railway system which, due to the concentrated points of source, different character of patronage and present fare structure, has high prospect of success as compared with a conventional local passenger transit system that would be required to serve a scattered population with short interval stops, high peak to base ratio and low fare.
8. Final routing layout will require extensive analysis as to availability of right of way, rights of occupancy and use of existing streets and freeways, crossings with existing traffic arteries, most favorable downtown routings, and selection of sites for terminal facilities in the business district. In general, however, there are three prospective routings that appear to have merit, as follows:
- a. Easterly from the airport along Century Boulevard to the Harbor Freeway, thence north on the freeway into the downtown area.
 - b. Northeasterly from the airport along existing railroad right of way to Slauson Avenue, thence easterly along Slauson Avenue to the Harbor Freeway, thence along the freeway into the downtown area, with bus connection to serve the Wilshire Boulevard Area.
 - c. Same as above, but with a branch rail line westerly from downtown into the Wilshire Boulevard Area, or along Hoover Street from a point in the vicinity of Exposition Boulevard.

- d. Easterly along Slauson Avenue or Century Boulevard to existing rights of way and thence northerly into the downtown area from the southeast.

BASIC CONSIDERATIONS

In approaching the question of financial feasibility, the basic foundation data required is an estimate of the potential passenger traffic and the prospective annual revenue over a sufficient period of years upon which to establish a reasonable and realistic program of financing and net return.

For purpose of this preliminary report, certain of the basic considerations are as follows:

1. Airline passenger traffic has been growing at such a rapid rate during recent years, and the size and speed of planes have increased to such an extent, that major airports of metropolitan areas throughout the country have found it necessary to expand their runways and modernize their passenger handling facilities in order to keep pace with the trend.
2. Improvement in jet age airplane design and expanded terminal facilities has been prompted by public acceptance of this mode of travel and by the desire of airline companies and airport management to provide collateral service to airline passengers commensurate with the superior quality of air transportation.
3. Except for the attractive downtown ticket offices, the modernistic and futuristic appeal of the airline passenger industry is in effect isolated behind the entrance gates of the airports. Outside those gates, the airline passenger descends from the fantasy of his lofty luxury into the realities of the perpetual battle of street traffic congestion. He is at the mercy of the automobile.
4. Vehicular traffic congestion at the concentration points and on the streets and freeways in the vicinity of metropolitan area airports has grown to

such proportions as to clog the entrances, approaches and parking lots.

5. Growth of airline travel that evolves from the inherent appeal of this mode of transportation, is no doubt already retarded by the difficulty of airport access, and the anticipated future upward trend of air passenger volume may be stifled by intolerable vehicular congestion.
6. Despite past reluctance of the airline industry and airport management to consider ground transportation as an integral part of airline travel, the time has arrived when the interrelationship of the two must be recognized, and it is imperative that steps be taken to break the bottleneck through acceptance of some modern mode of transportation that will conveniently, comfortably and speedily bring passengers to the airports when beginning an airline trip, and take them away when the trip has been completed, completely free of the interference of street level traffic.
7. To accomplish this objective, it is obvious that the passenger conveyance must be operated either below or above the street surfaces, and in view of the magnitude of prospective volume, it is equally obvious that underground facilities cannot be justified due to the high cost of construction.
8. Therefore, it becomes evident that the only practical means of accomplishing the objective is to adopt an elevated transportation system with high speed cars of automatic or semi-automatic design, of small enough size to be flexibly adaptable to automatic operation and control, so as to provide a relatively short interval of time between cars.
9. Design of rail cars, supporting structures and station facilities should be in keeping with most recent and modern concepts of safety, light-weight construction, high-strength metals, uniform rates of acceleration and deceleration, noiseless and smooth operation, electronic controls and closed circuit television monitoring, and appealing decor consistent in

all respects with design, appointments, comfort and convenience of the service provided by the airlines themselves.

10. Station facilities, although necessarily of conservative design, should be generous in proportions, attractive in architecture, conveniently accessible and closely located to ample automobile parking areas.
11. Baggage handling facilities should be given high priority in design of cars and station equipment so as to reduce to a minimum the cost, damage and inconvenience of luggage transport.
12. The routing should be such as to take advantage of available airways over streets, freeways or existing rail rights of way, so that the cost of track structures can be kept at a minimum and displacement of dwellings and buildings can be avoided.
13. The vast expanse of available space above the paved surfaces of the street system offers almost unlimited possibilities as a means of relieving vehicular traffic congestion in metropolitan areas, where the capacity of converging arteries far exceeds the ability of the downtown traffic system to absorb the volume into the antiquated system of streets that was laid out in the era when automotive vehicles presented no serious problem.

PURPOSE

It is the purpose of this study to determine the probable financial feasibility of construction and operation of a high-speed elevated rail rapid transit system that will provide passenger service between the Los Angeles International Airport and a downtown terminal in Los Angeles, and also to explore the potentialities of extending a branch line to the west to serve the Wilshire Boulevard Area.

In order to accomplish this objective, it is necessary to determine the present volume of passenger traffic moving between the airport and other

concentration points to the north thereof, particularly the downtown business district in Los Angeles. After determining the characteristics of the present traffic pattern, it is necessary to project these estimates into the future so that a reasonable financing period can be developed against which to prepare estimates of potential revenue and the investment cost of providing the transportation facilities as well as the annual costs of operating the system.

Essentially, this study is for the purpose of determining the financial feasibility of establishing such a specialized type of high speed transportation without particular regard to the physical nature of the transportation device itself.

BASIC ASSUMPTIONS

It is obvious from casual observation of the transportation problem at the International Airport, that whatever system of mass transportation is considered, it will have to be separated from the grade of normal vehicular traffic. This must be the basic premise upon which the study is made.

Experience to date has indicated conclusively that no form of mass transportation can satisfactorily meet the problem if it is to use existing structures, highways and freeways mixed with vehicular traffic, or even on private right of way if the line must cross existing streets at grade.

This leaves two alternate methods of construction, either underground or overhead. The volume of traffic at present and that which may be developed in the future is far less than sufficient to justify an underground system. It becomes apparent, therefore, that if a rail passenger system is to be built, it must utilize the space above existing streets in the form of an elevated structure.

Therefore, this study must be confined to the premise that the line will be elevated for its entire length between the airport and its point or points of destination to the north.

ROUTING

The system contemplated is inherently a point-to-point operation with little, if any, intermediate local short haul traffic. The primary objective, therefore, becomes one of transporting passengers from a convenient point of loading at the airport to a convenient point of discharge at final destination over a route that will permit the fastest travel within reasonable limits of safety. By reason of this point-to-point characteristic, the selection of routing becomes somewhat flexible, which is highly important in considering the initial investment in right of way facilities.

Initial cost of the system is one of the controlling aspects and its financial success may depend greatly upon keeping the original cost at a minimum. It becomes important, therefore, that in selecting a route, maximum advantage be taken of existing facilities where available, that will eliminate the necessity for acquiring use of land that is presently occupied by residential and business development.

If it is possible to make use of existing railroad rights of way that are so laid out that the route will not be excessively circuitous, the cost of construction can be kept at a minimum. In doing this, it may be necessary to construct more mileage of line than would be required over a direct point to point alignment.

The circuitry of routing, however, does not offer too great a problem in view of the high average speed that can be attained by an elevated railroad system with few, if any, intermediate stops between terminals. It is not the purpose of this study to develop joint use agreements between the airport transit operation and owners of existing facilities that might be adaptable to the proposed operation. The elements of cost, however, will have a bearing upon the final feasibility determination.

The owner of an existing right of way would demand payment for use of the facilities during the initial construction period and a lease rental during future years of operation. In the area between the airport and downtown Los Angeles, there are many industries that are served by branch lines of the major railroads. Location of the railroad tracks are such that it might be possible to use a combination of railroad rights of way that would provide almost continuous routing from the airport to the downtown business section and create no interference with normal railroad operation.

There is another possibility of using the railroad right of way for part of the distance and the freeway right of way for the remaining distance. The latter, although affording a more direct routing, would involve special design characteristics at the overpasses along the freeway where the clearance for standard highway construction has been maintained. It is desirable, therefore, that the potential advantages and disadvantages of both forms of routing be thoroughly explored.

TERMINAL FACILITIES

Provision of adequate passenger terminal facilities at the airport and downtown presents a major part of the problem. Details of design are beyond the scope of this analysis, but some consideration must be given to the nature of the facilities when estimating the probable use.

At the airport, there will be ample ground area for construction of a suitable terminal which will no doubt fit in with the type of architecture used in the newly expanded facilities. In the downtown area, however, the problem is much greater due to the more limited access routes and suitable space for terminal structures.

The easiest and perhaps, in the over-all analysis, the most convenient point for a terminal would be at the Pacific Electric Railway Building

which is located on the southeast corner of 6th and Main Streets. This is the main bus terminal for the interurban lines of the Los Angeles Metropolitan Transit Authority, and also is available to several of the local transit lines. If a terminal were to be located in the vicinity of existing bus pick-up points, there would be major problems unless suitable arrangements could be worked out with the city for constructing an elevated line along the downtown streets.

PRESENT AIRPORT SERVICE

Public transportation is presently provided to the airport from two pick-up points in the downtown area; one at the Biltmore Hotel and the other at the Statler Hotel. A transfer shuttle is operated between the Statler Hotel and the Ambassador Hotel to the west on Wilshire Boulevard. Another airport bus route operates between the airport and Hollywood.

In considering the most suitable location for terminal facilities, an estimate must be made as to the most centrally located point that would be convenient to the greatest number of potential airline passengers. It would appear that such a route as contemplated should extend beyond the Biltmore Hotel which is now the most northerly terminus, into the Civic Center area. There is no doubt a substantial amount of airline traffic going directly to and from the City, County, State and Federal Buildings located in the Civic Center.

A trunk line, therefore, operating from the airport terminal into the downtown area either over a combination of railroad right of way and freeway or railroad right of way for the entire distance to Sixth and Main Streets, with suitable extension to the Civic Center, would provide a much needed service that would probably attract a maximum traffic volume. Location of the terminal in either case is highly important.

POTENTIAL SOURCES OF TRAFFIC

When considering the financial feasibility of an airport rapid transit line, all potential sources of traffic must be explored. In addition to the passengers who are actually using airlines coming in and out of the airport, there are many workers regularly employed at the airport, a substantial number of sightseers who travel by automobile, and a large number of persons who accompany airline passengers, all making use of automobiles.

A good rapid transit rail line will attract some of the persons from each of these categories. It must be kept in mind, however, that the same problem which confronts rail rapid transit in general in our metropolitan areas, is present when considering this limited project and is perhaps more accentuated due to the extremely restricted area that will be served. Casual observation of movement of persons and vehicles to and from and about the airport, coupled with a general knowledge of the population distribution and decentralization characteristics of the Los Angeles metropolitan area, indicates conclusively the impossibility of providing adequate service to all persons using the airport.

In approaching the problem, therefore, it must be recognized that a selected portion of the airport population is to be served, and that the percentage of the total population may well be fairly small. There must be a starting place, however, and the logical approach is to lay out one trunk line by itself or possibly with one branch line feeder, that will within a reasonable mileage of track and roadway facilities provide service to a potential volume of traffic sufficient to meet the financial requirements of the facilities and service to be provided.

This would naturally mean selection of a route that will connect high density, commercial and residential areas that are most productive of airline travel. Here again, this process can be done with a reasonable degree

of accuracy through general knowledge of the growth and development characteristics of the area involved.

During recent years, there has been a rapid growth of commercial enterprises along Wilshire Boulevard to the west of the downtown business area. In these large business concentrations, many of which are home offices of state-wide, western states and national institutions, it is reasonable to expect that there would be a substantial amount of business travel to and from these offices that would make up a sizable segment of the potential airport traffic.

The other principal point of concentration is the downtown area. Although there has been a considerable expansion of hotel capacity to the west, there still is a high concentration of hotels in and immediately adjacent to the central business district. Also included in this area are the financial center of Southern California, extensive wholesale and retail activities, together with the City, County, State and Federal Office Buildings in the Civic Center area. All of these are closely associated with airline passenger travel as well as air mail and air express.

Therefore, in developing an initial approach to elevated high speed rail transportation to and from the airport, it is logical to select the downtown business area and the Wilshire Boulevard sections, due to their high density characteristics as the largest potential source of prospective airline passenger traffic. The remainder of the vast region of the Los Angeles metropolitan area must, at least for the present, be considered as producing inadequate concentration of potential traffic to justify any such elevated rail service.

If suitable terminal facilities are constructed in the Wilshire area and downtown, they will no doubt serve as major collecting centers to which motorists will bring their friends instead of traveling the greater

distance to the airport. This means that adequate provision must be made for automobile parking in the immediate vicinity of the airport rail line terminals, together with suitable lounging and recreational facilities at those points.

PASSENGER CONVENIENCE FACILITIES

To attain maximum potential traffic, the terminal facilities of the system must be designed so as to offer most, if not all of the points of interest and convenience afforded passengers who are brought directly to the airport.

Essentially, this rail line should be considered as a high-speed extension of the airlines themselves. It should be possible to work out some system of baggage checking in the rail line terminals that would obviate the necessity of rehandling of baggage at the airport. At the outset, this may be looked upon with disfavor, but eventually it should be considered as a part of the service.

INADEQUACY OF PRESENT SERVICE

In the early days of airline travel, transportation to and from the airports was to a large extent conducted by a deluxe type of transportation vehicle, with limousines being used in many cases. The airplane was looked upon as a deluxe type of long-haul transportation, and it was considered necessary to maintain a high standard of ground transportation with luxury-type vehicles commensurate with the quality of the airplanes themselves.

The limousine was actually a limousine in those days, and in most instances they were modern Cadillacs. During more recent years, however, as the volume of passenger traffic has increased and the cost of providing transportation has continued upward, use of small capacity

deluxe vehicles has largely disappeared.

In all large metropolitan areas today, the typical ground transportation service is provided by passenger buses. The bus is essentially no different from any other mass transit bus except for the rear end baggage compartment. Actually, it is less appealing in some respects than the modern interurban bus used in metropolitan areas. There is nothing about the vehicle or the service that presents any special appeal.

The terminal facilities of these bus lines are nothing more than a waiting place at a hotel, with an atmosphere somewhat the same as that of a conventional bus depot. The general character of these facilities falls far short of the standards of luxury of the jet age airplane, and the convenience and attractiveness of the modern airport.

It is interesting to note that airline personnel, when selling tickets in the well appointed airline ticket offices, inquire as to whether the prospective passenger wishes to use the "limousine." The word "bus" seems to be distasteful when referring to airline transportation. This is not intended as an indictment of the ground transportation operators. Problems confronting these companies are largely beyond their control.

At present, airport buses are operated from the downtown area at intervals of one-half hour, leaving on the hour and on the half-hour from the Biltmore and Statler Hotels. Half-hourly service is likewise operated from the airport to those hotels.

A typical airline trip from Los Angeles to San Francisco involves almost as much time getting to the airport and checking in as is required in the air between the two airports, and then another interval of approximately the same time on the ground getting from the San Francisco airport to a downtown destination. The travel time is considerably extended for those who must proceed for a greater distance.

Air travel is sometimes made more unpalatable when ground transportation employees are on strike and no terminal connecting service is available. Such an incident recently occurred at the San Francisco Airport, and in making a trip from the Biltmore Hotel to a place of residence in Berkeley, the starting time from the hotel was 4:30 in the afternoon and the arrival time at home was 9:30 in the evening, of which total time only one hour was spent in the air.

In summary, it might be said that the weakest link in airline transportation has been the ground transportation service to and from the airports. Airplanes have progressed in a relatively few years from the two-engine DC-3 to the modern jets with their luxurious appointments, high speed and ultracomfort for the passengers. On the other hand, ground transportation has gone in the reverse direction from the fairly luxurious limousine of 20 years ago to the 33-passenger bus, which finds it increasingly difficult to maintain a reasonable schedule due to street traffic congestion.

Any substantial effort to provide a modern means of ground transportation more nearly in keeping with the standards of airline transportation should be looked upon with great favor by not only the airline companies and the public, but also the airport administration and city traffic officials.

EXPLANATION OF COMPUTATIONS AND STATISTICS

1. General

In Part B of this report are shown the results of statistical analysis relating to the past, present and probable future trend of airline traffic moving through the Los Angeles International Airport.

Although the primary purpose of this report is to determine the financial feasibility of a rail line operation between the airport and the

downtown area of Los Angeles, such findings must be based upon a realistic analysis of past trends and reasonable prediction of future growth.

It is, therefore, necessary that careful analysis be made of actual traffic volume not only on the airlines, but also that which passes into and out of the airport confines by all modes of transportation.

The volume of passenger traffic that will be attracted to a rail system will consist of two segments. First there will be those persons who can be diverted from present means of conveyance, and, secondly, there is the potential patronage of the future that can be captured as the growth trend continues upward. This analysis has explored each of those potential sources of traffic in an orderly sequence and with an ample degree of conservatism.

2. Summary of Revenue Estimate

On page B-13 under Section VXIII are shown the final estimates of annual revenue that can be expected from the proposed passenger rail system at four different rates of adult fare.

The process of developing these revenue figures was to estimate the number of persons presently using automobiles that could be attracted to the rail line, and then to estimate the number of passengers that would be diverted from the present airport bus service to the rail line.

This total was then increased by 10% as an allowance for traffic expected to be induced by the novelty and attraction of the new type mono-rail transportation. The next step was to segregate the total passengers between reduced rate, half-fare and adult passengers.

Applicable rates of fare were then applied to the passengers in each of these classes to determine the amount of revenue for each, as shown on pages 10 - 12.

To that annual revenue was then added a further increment of induced revenue at rates varying as between the several fare classifications.

3. Example of Computation - For Year 1960

Estimated annual rail line passengers was computed as follows:

<u>Autos</u>	<u>Total Autos</u>	<u>To Zone 9</u>	<u>To Rail Line</u>	
			<u>%</u>	<u>Number</u>
Employee Autos	9,000	486	10%	49
Airline Passenger Autos	19,600	6,500	30	2,000
Taxicabs	2,200	900	50	<u>450</u>
Total Daily Autos				2,499

<u>Passengers</u>		<u>Daily</u>	<u>Annual</u>
Employee Autos	49 x 1.3	64	23,360
Airline Passenger Autos	2,000 x 1.6	3,200	1,168,000
Taxicabs	450 x 1.5	<u>675</u>	<u>246,375</u>
Total Passengers		3,939	1,437,735
Annual Passengers from Autos			1,438,000
Annual Passengers from Airline Buses			<u>420,000</u>
Total Passengers from Autos and Buses			1,858,000
Induced New Traffic - 10%			<u>186,000</u>
Total Annual Passengers 1960			2,044,000

After computing the total annual passengers, they were then broken down into the three passenger fare classifications for airline employees' reduced rate, children's half-fare and adult full fare, as follows:

Reduced Rate Employee Passengers

Employee Autos	10%	2,300
Airport Buses	4%	<u>16,800</u>
Total Employee Rate Passengers		19,100

Half-Fare Passengers

Airline Passenger Autos	1%	11,700
Airport Buses	1%	<u>4,200</u>
Total Half-Fare Passengers		15,900

Full Fare Passengers

Total Passengers		1,858,000
Less Reduced Rate	19,100	
Less Half-Fare	<u>15,900</u>	<u>35,000</u>
Total Full Fare Passengers		1,823,000

Passenger volume as computed above was then applied to the specific rates of fare for each classification, to determine the estimated annual revenue as follows for the \$1.25 basic adult rate:

Employee Rate	19,100 @ \$0.35	\$ 6,685
Half-Rate	15,900 @ \$0.57	9,063
Full Rate	1,823,000 @ \$1.14	<u>2,078,220</u>
Total Annual Passenger Revenue		2,093,968
Additional Induced Traffic	15%	314,095
Revenue from Other Sources	10%	<u>209,397</u>
Total Annual Revenue		\$2,617,560

4. Airline Passenger Trend

Under section I of Part B, page B-1, the actual volume of traffic moving through the airport has been shown by years as set forth in official documents prepared by the Airport administration.

Airline passengers have increased over the past eight years by an average of 15.8% per year. There appears to be no reason to expect a decline in the rate of growth unless there is some unforeseen catastrophe of major scale involving national economic or military emergency, or unless the volume exceeds the airport capacity.

5. Air Mail, Express and Freight

Air Mail has shown a consistent upward trend except for 1957-58, during each of the past eight years, averaging 7.2% after allowance for the loss in 1957-58.

Air Express and Freight volume has increased regularly over the same period of time, averaging 13.4% per year.

It would appear reasonable to expect that these trends will likewise continue upward, barring unforeseen major emergencies.

6. Local Airport Statistics

Section III, page B-2, shows that there were 285 industries located within a one-mile radius of the airport, with 75 leaseholders at the airport with total employment of 32,000 persons. At the time of this survey, there were 17 airlines using the airport, with two additional lines expected in the near future. This magnitude of activity provides a substantial measure of potential airport rail line patronage.

7. Forecast of Airline Passengers

Under section IV on page B-2, there are shown the results of a long range prediction of airline passenger traffic extending from 1956 through 1970. These estimates were prepared by the Aviation Service Company and submitted to the Los Angeles Department of Airports in February 1956.

Three bases of estimating were submitted as shown in the three columns of the table. The first was termed a "conservative" estimate, the second a "supportable" estimate, and the third a "not improbable" estimate. It is interesting to note that column (4) of the table shows that actual traffic over the period of five years from 1956 through 1960 showed annual increases in excess of the "not improbable" estimate, with exception of the year 1958.

If this actual pattern continued, certainly the conservative estimate will be reached, and it is quite likely that the supportable estimate will be reached. Under favorable conditions, the past trend may continue with a rate of growth that will equal, if not exceed, the third estimate as shown on the table. It is reasonable to expect that the trend of airport rail passengers will continue upward if the volume of airline passenger traffic follows the predicted trend.

Actually, there is a probability that the trend of growth on the rail line might exceed the trend of growth on the airlines. This could well be brought about as a result of the rapidly increasing vehicular traffic congestion in the vicinity of the airport and on city streets which, as it worsens, will tend to discourage that mode of travel for airline passengers. They will virtually be forced to seek some other means of travel and a well-designed elevated rapid transit line will solve their problem, providing it offers destination points that are reasonably convenient to the airline passengers.

8. Automotive Traffic

To any person using the airlines and to those visiting the airport, it is obvious that a great volume of passenger traffic is carried by automobiles into and out of the airport confines. At the present time, a relatively small percentage of the total airline traffic gets to and from the airport by mass transit facilities. By far the greater portion relies upon the private automobile.

In addition to the airline passengers themselves, these automobiles carry persons employed at the airport, relatives and friends of the airline passengers and many visitors. Although no systematic count has been available to show the annual growth of automotive traffic, its effect has been seriously felt by the heavy congestion on the main arteries leading

to and from the airport. This vehicular congestion has been a matter of considerable concern not only to the airport administration but also to the city traffic department and the State Division of Highways.

9. Vehicular Traffic Count

In an effort to lay the groundwork for some means of relief, a traffic count was conducted in 1960 and the results were compiled in a document prepared by the California Division of Highways, dated October 1960. This report contains results of an origin and destination traffic survey, the findings of which indicated the points to which drivers of automobiles passing out of the airport, were destined. The survey was conducted and the report compiled in the usual manner to segregate the traffic first between predesignated zone areas and, secondly, as to the nature of the traffic and the type of vehicle.

Under section V on page B-2, and following sections, are shown the results of that survey. There were four classifications of vehicles as shown in section VII, consisting of private automobiles, taxicabs, U-drive autos and "for hire" vehicles, including buses, airport coaches and limousines. The total group was further segregated as to the nature of the trip being made, resulting in three major classifications as shown under section V. These classifications were: (1) airport employees; (2) airline passengers and traffic related thereto; and (3) miscellaneous traffic.

The general directions in which vehicles were proceeding as they left the airport were determined on the basis of five segments which were with relation to the airport; north, northeast, east, southeast and south. A further segregation of traffic was made to determine the volume of vehicles on an hourly basis. The results are shown under section VIII on page B-4. On that table the total vehicles counted are broken down by

hours of the day and by the type of vehicle.

This same segregation was made with respect to the vehicles under the different classes of use. The results of this segregation are shown under section IV on page B-4. This table breaks the vehicles down between those of airport employees and those of non-employees, which would include the airline passengers and related traffic.

10. Traffic Zone Layout

As indicated above, there were a number of predesignated zones laid out on the map of the Los Angeles metropolitan area for the purpose of determining the traffic using the airport that was destined to or originated from these various zones. One of these zones was number 9, which included the downtown business district of Los Angeles and the Wilshire area extending approximately as far west as La Brea Avenue.

Under section X on page B-5, is shown an analysis of the 24 hour traffic traveling between the airport and points in zone 9, segregated by employees' autos, airline passengers and related autos, and taxicabs. This analysis also shows the percent of the total destined to zone 9, and the percent in each classification that it is estimated could be diverted to the rail system.

11. Development of Annual Auto Traffic Projections

Under section XI is shown the number of passengers that it is estimated the rail line would obtain, based upon the average occupancy of the three classifications of vehicles as determined by the traffic count. These figures on page B-5 show an estimate of 1,291 daily automobiles and taxis that would be diverted to the rail line, and an equivalent passenger volume of 3,082.

On page B-6 under section XII there is shown the estimated daily autos in both directions, in projection from 1960 through 1975, as developed

from the Division of Highways traffic count. Based upon the estimate therein that for each 100 airline passengers there would be 70 automobiles using the airport, there would be a total of 25,000 autos for 1960, 42,000 for 1965, 74,000 for 1970, and 109,200 for 1975, assuming the ratio between airline passengers and automobiles to continue unchanged. This projection has been used herein for estimating future rail line passengers and checked against a computation based on the long range estimate of airline passengers.

Using these figures and breaking them down between the several classes of users, the projected rail line traffic that would be diverted from autos is shown under section XIII, pages B-6 and B-7. The first group refers to employees' autos. Of the total shown in column (3) of section XII, the employees' autos have been segregated and shown in column (1) under section XIII. In column (2), the number of total employees' autos destined to zone 9 has been shown based upon the results of the 1960 vehicular count, which showed that 5.4% of the total went to zone 9. In column (3) of section XIII there are shown the number of employee automobiles destined to zone 9 that probably would be attracted by the rail service. For this purpose, it was estimated that 10% would make use of the rail line.

Under subsection B of section XIII on page B-7, is shown the same process of development for airline and related autos. The total autos of this classification are shown in column (1), and in column (2) has been included that portion which would be destined to points in zone 9 based upon the traffic count of 1960, which indicated that 33% of the total went to this zone. It is estimated that of this zone 9 traffic, 30% would be attracted to the rail service and the results are shown in column (3).

At the bottom of that page under subsection C, taxicab traffic has been similarly analyzed. The traffic count showed that 40% of taxicab traffic was destined to zone 9, and for purpose of this report it is estimated that due to the nature of this traffic, 50% would make use of the rail service.

12. Estimate of Passengers Diverted from Autos

Under subsection D on page B-8, the estimated automobile traffic in each of these classifications has been converted into passenger traffic by applying the average occupancy figures determined by the 1960 traffic count. In column (4) of this table on page B-8, there are shown the estimated average daily passenger traffic from these three sources; namely, employee autos, airline autos and taxicabs.

In column (5), these daily averages have been multiplied by 365 to produce the estimated annual passenger traffic. This process develops the estimated traffic from one of the major sources, namely, automobile traffic.

13. Estimate of Passengers to be Diverted from Airport Bus Line

The other major source is the traffic presently using the airport bus system between the airport and downtown Los Angeles. To determine the probable volume of traffic from this source, an analysis was made of the annual traffic using existing routes of the airport bus operation.

Of these several routes, the one serving downtown Los Angeles was isolated and the volume of traffic handled on an annual basis was determined to be 420,000 passengers for the year 1960, as shown on the table under section XIV. It was estimated that this traffic would increase during coming years in a reasonable relationship to the increase in airline traffic and to the estimated increase in auto traffic, as estimated in the

O & D study. This segment of traffic was correspondingly projected by years from 1960 to 1975.

14. Estimated Passengers from Other Sources

In column (3) of section XIV, the two major sources of traffic were combined to show the total estimated potential rail line passengers that would be diverted from the two major sources of traffic. In addition to the traffic expected to be captured from these two major sources, it is estimated that there will be a certain measure of traffic that would be generated by reason of the novelty and interest of the new monorail service. To provide for this, a factor of 1.1 was applied to the passengers in column (3).

15. Annual Revenue Computation

Having established the total number of anticipated passengers annually, as shown in column (4), it then became necessary to segregate these totals into the several classifications of traffic that would take different rates of fare. This was done under section XV commencing on page B-9.

Under subsection A, the estimate of employees at a reduced rate was developed. For this purpose it was estimated that 10% of the passengers from employee autos would be involved, and that 4% of the present airport bus traffic would be included, giving a combined result as shown under column (3).

Under subsection B, the half-fare passengers were estimated, based upon the actual percentage of half-fares presently carried by the airline buses. Deducting these two classifications from total passengers produced the volume of full fare passengers under subsection C, page B-10, in column (3).

Having determined the volume of passengers in each of these classifications, the next step was to convert these passengers into estimated annual revenue. This was done under section XVI commencing on page B-10, using a full fare adult rate of \$1.00.

In the following subsections B, C, and D, the same process was applied, using full adult fares of \$1.25, \$1.35 and \$1.50. Under subsection E are shown the estimated percents of induced traffic that might be expected under these four basic rate classifications.

16. Revenue from Other Sources

In a rail operation such as that anticipated, there no doubt would be a substantial volume of air mail, air express, and air freight traffic which would produce revenue in addition to the passenger revenue. It is difficult at this point to make a reasonably accurate estimate of the revenue that might be derived from these sources. Therefore, an arbitrary figure of 10% of passenger revenue at the \$1.25 rate level has been adopted, which is considered to be on the conservative side. This estimate is shown under section XVII, page B-12.

17. Final Summary of Estimated Annual Revenue

Under section XVIII, page B-13, is shown the final summary of estimated annual revenue from all of these previously discussed sources, including newly generated traffic, induced revenue, and revenue from other sources. This table shows the estimates under the four different basic adult fares considered. At the foot of this table is shown a sample of the calculations involved in producing the revenue shown in these columns, using the 1965 revenue under the \$1.35 basic fare for the purpose.

For purpose of this estimate, no allowance was applied for passenger diminution at higher basic fares.

18. System Characteristics

Section XIX shows preliminary characteristics of the rail system, including route mileages, stations, running time and prospective equipment requirements under various car capacities. All of these features must be worked out with greater refinement for final estimating of cost and investment.

19. Summary

After following the step by step development outlined above, the final annual revenue figures as shown under section XVIII, page B-13, were developed. It is felt that the revenues shown thereon can reasonably be expected to materialize if the fundamental premise as touched upon elsewhere herein is followed, of setting up the rail system so that its destination terminal facilities will be at such locations and of such design as to provide convenience of access, comfort and attraction, at least equivalent to those presently afforded by the airport bus system.

It is important to keep in mind that the degree to which this rail line can capture passenger traffic will depend upon the balance between the desirable features it affords as compared with the desirable and undesirable features of the existing airport bus operation and the private automobile.



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PART B

STATISTICS & COMPUTATIONS

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Part B

STATISTICS AND COMPUTATIONS

I. Aircraft and Airline Passenger Traffic - LAX^(a)

<u>Year</u>	<u>Annual Aircraft Movements In and Out</u>	<u>Annual Airline Passengers</u>	
		<u>Number</u>	<u>Percent Increase</u>
	(1)	(2)	(3)
1952-53	245,113	2,358,009	18.9
1953-54	277,085	2,606,051	10.5
1954-55	278,536	3,067,548	17.7
1955-56	266,455	3,627,886	18.3
1956-57	305,843	4,284,530	18.1
1957-58	322,192	4,851,123	13.2
1958-59	323,293	5,159,103	6.3
1959-60	304,361	6,366,804	23.4

II. Mail, Express & Freight By Air - LAX^(a)

<u>Year</u>	<u>Annual Tons of Air Mail</u>	<u>Annual Tons of Air Express and Freight</u>
	(1)	(2)
1952-53	14,812	29,400
1953-54	15,313	32,608
1954-55	16,781	37,909
1955-56	17,681	42,543
1956-57	20,268	50,292
1957-58	19,664	49,322
1958-59	21,411	61,726
1959-60	23,875	69,901

(a) Source: L. A. Dept. of Airports Annual Report, 1960.

III. General Airport Statistics^(a)

Within 1 mile radius of airport

- 285 Industries with \$300,000,000 annual payroll.
- 75 Leaseholders at airport with 32,000 employees and weekly payroll exceeding \$4,000,000.
- 17 Airlines serve airport.
- 2 Additional airlines expected in near future.

IV. Forecast of Future Airline Passengers^(b)

Year	Conservative Estimate (1)	Supportable Estimate (2)	Not Improbable Estimate (3)	Actual Traffic (4)
1956	3,800,668	3,800,668	3,858,820	3,944,967
1957	4,247,626	4,262,448	4,393,884	4,669,063
1958	4,730,582	4,780,336	5,003,138	4,826,350
1959	5,208,370	5,361,146	5,696,874	5,893,387
1960	5,759,936	6,012,526	6,486,800	6,605,036
1961	6,347,450	6,743,048	7,386,260	
1962	6,970,134	7,562,328	8,410,438	
1963	7,626,720	8,481,150	9,576,630	
1964	8,315,412	9,511,610	10,904,526	
1965	9,034,696	10,667,270	12,416,548	
1966	9,780,058	11,963,344	14,138,226	
1967	10,548,770	13,416,890	16,098,632	
1968	11,336,764	15,047,042	18,330,868	
1969	12,140,540	16,875,258	20,872,626	
1970	12,952,742	18,925,602	23,766,824	

V. Automotive Traffic Departing LAX^(c)

Type of Traffic	Departing Autos		Average Occupancy (3)
	Number (1)	Percent (2)	
Airport Employees	4,500	26.5%	1.3
Airline Passengers and Related Traffic	10,900	64.0	1.6
Miscellaneous Traffic*	1,600	9.5	1.3
Total	17,000	100.0%	

* Banking, Post Office, Tourists, etc.

(a)Source: L. A. Department of Airports Annual Report, 1960.

(b)Aviation Service Co. Report No. 2, to L. A. Department of Airports, 2/16/56.

(c)Source: O&D Survey, California Division of Highways, October 1960.

VI. Destination of Departing Vehicles^(a)

<u>Direction</u>	<u>Destination Area</u>	<u>Percent</u>
North	San Fernando Valley, Santa Monica, and Beverly Hills	28%
No. Ea.	Hollywood, Glendale, Wilshire, Downtown L. A., San Gabriel Valley	35
East	Directly east of airport and northern portion of Orange County	13
So. Ea.	L. A. Harbor, Long Beach, and southern portion of Orange County	8
South	South Bay Area	9
	Airport Area	<u>7</u>
	Total	100%

VII. Type of Vehicle Departing^(a)

<u>Type</u>	<u>Percent</u>
Private Automobile	83.0%
Taxi	10.0
Bus, Airport Coach and Limousine*	4.5
U-Drive Autos	<u>2.5</u>
Total	100.0%

* Includes service to hotels and motels.

(a) Source: O&D Survey, California Division of Highways, October 1960.

VIII. Departing Traffic by Hours and Type - OW 24 Hours^(a)

Hour	Autos (1)	Taxis (2)	Bus & Limo. (3)	Trucks (4)	Total (5)
6- 7a	253	39	15	10	317
7- 8	545	88	24	8	665
8- 9	662	58	29	11	760
9-10	525	57	22	21	625
10-11	486	25	20	24	555
11-12	698	48	24	26	796
12- 1p	800	78	25	22	925
1- 2	783	53	22	15	873
2- 3	889	49	27	27	992
3- 4	956	73	27	21	1,077
4- 5	1,331	72	39	10	1,452
5- 6	819	46	20	9	894
6- 7	988	75	39	12	1,114
7- 8	857	67	32	11	967
8- 9	987	64	25	14	1,090
9-10	853	87	25	13	978
10-11	776	70	23	11	880
11-12	691	23	20	5	739
12- 1a	512	17	12	7	548
1- 6a	600	40	-	-	640
Total	15,011	1,129	470	277	16,887
Percent	88.9%	6.7%	2.8%	1.6%	100.0%

IX. Departing Auto Traffic by Hours and Class - OW 24 Hours^(a)

Hour	Employees		Non-Employees	
	Vehicles (1)	Percent (2)	Vehicles (3)	Percent (4)
6- 7a	44	1.0%	261	2.1%
7- 8	217	4.8	460	3.7
8- 9	218	4.8	542	4.4
9-10	76	1.7	549	4.4
10-11	94	2.1	461	3.7
11-12	177	3.9	619	5.0
12- 1p	193	4.3	732	5.9
1- 2	135	3.0	738	6.0
2- 3	267	5.9	725	5.9
3- 4	436	9.7	641	5.2
4- 5	817	18.1	635	5.1
5- 6	317	7.0	577	4.6
6- 7	166	3.7	948	7.7
7- 8	78	1.7	889	7.2
8- 9	135	3.0	955	7.7
9-10	114	2.5	864	7.0
10-11	130	2.9	750	6.1
11-12	339	7.5	400	3.2
12- 1a	377	8.4	171	1.4
1- 6a	180	4.0	460	3.7
Total	4,510	100.0%	10,501	100.0%

^(a) Source: O&D Survey, California Division of Highways, October 1960.

X. Destination of Departing Autos

24 Hour Traffic Between LAX and O&D Zone 9

Employee Autos	
Total Autos	4,510
Percent to Zone 9	5.4%
Number to Zone 9	245
Percent to Rail Line	10%
Number to Rail Line	25
Airline Passenger & Related Autos	
Total Autos	10,501
Percent to Zone 9	32.9%
Number to Zone 9	3,460
Percent to Rail Line	30.0%
Number to Rail Line	1,038
Taxicabs	
Total Taxicabs	1,100
Percent to Zone 9	41.4%
Number to Zone 9	455
Percent to Rail Line	50.0%
Number to Rail Line	228
Total Autos and Taxis to Rail Line	
One Way per 24 Hour Day	1,291

XI. Passengers Diverted from Autos and Taxis to Rail Line

<u>Class of Vehicle</u>	<u>Number of Vehicles</u> (1)	<u>Average Vehicle Occupancy</u> (2)	<u>Passengers to Rail Line</u>	
			<u>One Way</u> (3)	<u>Both Ways</u> (4)
Employees' Autos	25	1.3	33	66
Airline Passenger and Related Autos	1,038	1.6	1,661	2,332
Taxicabs	228	1.5	342	684
Total Daily Passengers				3,082

XII. Projected Average Daily Auto Traffic (ADT)

Estimated on ratio of 0.7 autos per airline passenger

<u>Year</u>	<u>Airline Passengers</u> (1)	<u>Daily Autos One Way</u> (2)	<u>Daily Autos Both Ways (ADT)</u> (3)
1960	18,000	12,000	25,000
1961	20,300	14,200	28,400
1962	22,500	15,800	31,600
1963	24,800	17,400	34,800
1964	27,000	18,900	37,800
1965	29,300	21,000	42,000
1966	33,800	23,700	47,400
1967	38,400	26,900	53,800
1968	42,900	30,000	60,000
1969	47,500	33,300	66,600
1970	52,000	37,000	74,000
1971	57,200	40,000	80,000
1972	62,400	43,700	87,400
1973	67,600	47,300	94,600
1974	72,800	51,000	102,000
1975	78,000	54,600	109,200

XIII. Projected Rail Line Traffic from Autos

A. Employees' Autos - Both Directions

<u>Year</u>	<u>Total Autos</u> (1)	<u>Destined to Zone 9, 5.4%</u> (2)	<u>Estimated Rail Diversion 10%</u> (3)
1960	9,000(a)	486	49
1961	9,200	497	50
1962	9,400	508	51
1963	9,600	518	52
1964	9,800	529	53
1965	10,000(a)	540	54
1966	10,200	551	55
1967	10,400	562	56
1968	10,600	572	57
1969	10,800	583	58
1970	11,000(a)	594	59
1971	11,400	616	62
1972	11,800	637	64
1973	12,200	659	66
1974	12,600	680	68
1975	13,000	702	70

(a) O&D Survey, California Division of Highways, October 1960, Table 6.

B. Airline and Related Autos (ADT)

<u>Year</u>	<u>Total Autos</u> (1)	<u>Destined to Zone 9 33%</u> (2)	<u>Estimated Rail Diversion 30%</u> (3)
1960	19,600 ^(a)	6,500	2,000
1961	22,300	7,400	2,200
1962	24,900	8,200	2,500
1963	27,600	9,100	2,700
1964	30,200	10,000	3,000
1965	32,900 ^(a)	10,900	3,300
1966	37,900	12,500	3,800
1967	42,900	14,200	4,300
1968	48,000	15,800	4,700
1969	53,000	17,500	5,300
1970	58,000 ^(a)	19,100	5,700
1971	63,600	21,000	6,300
1972	69,300	22,900	6,900
1973	74,900	24,700	7,400
1974	80,600	26,600	8,000
1975	86,200	28,400	8,500

C. Taxicab Traffic (ADT)

<u>Year</u>	<u>Total Taxis</u> (1)	<u>Destined to Zone 9 40%</u> (2)	<u>Estimated Rail Diversion 50%</u> (3)
1960	2,200 ^(b)	900	450
1961	2,500	1,000	500
1962	2,800	1,100	550
1963	3,100	1,200	600
1964	3,400	1,400	700
1965	3,700	1,500	750
1966	4,300	1,700	850
1967	4,800	1,900	950
1968	5,400	2,200	1,100
1969	5,900	2,400	1,200
1970	6,500	2,600	1,300
1971	7,100	2,800	1,400
1972	7,800	3,100	1,550
1973	8,400	3,400	1,700
1974	9,000	3,600	1,800
1975	9,700	3,900	1,950

(a) 78.4% of ADT. O&D Report, California Division of Highways, page 11 and Table 7.

(b) 8.8% of ADT. O&D Report, California Division of Highways, October 1960, page 11 and Table 7.

D. Equivalent Auto to Rail Passengers

Year	Daily Passengers			Average Daily Passenger Traffic	Annual Passenger Traffic
	Employees' Autos	Airline Passenger Autos	Taxis		
	1.3 x A. (3)	1.6 x B. (3)	1.5 x C. (3)		
	(1)	(2)	(3)	(4)	(5)
1960	64	3,200	675	3,939	1,438,000
1961	65	3,500	750	4,315	1,575,000
1962	66	4,000	830	4,896	1,787,000
1963	68	4,300	900	5,268	1,923,000
1964	69	4,800	1,050	5,919	2,160,000
1965	70	5,300	1,130	6,500	2,373,000
1966	72	6,100	1,280	7,452	2,720,000
1967	73	6,900	1,430	8,403	3,067,000
1968	74	7,500	1,650	9,224	3,367,000
1969	75	8,500	1,800	10,375	3,787,000
1970	77	9,100	1,950	11,127	4,061,000
1971	81	10,100	2,100	12,281	4,483,000
1972	83	11,000	2,330	13,413	4,896,000
1973	86	11,800	2,550	14,436	5,269,000
1974	88	12,800	2,700	15,588	5,690,000
1975	91	13,600	2,930	16,621	6,067,000

XIV. Estimated Potential Rail Line Passengers

Year	Diverted from Present Facilities			Total Including New Traffic at Factor of 1.1
	Airport Bus Passengers to Rails	Auto and Taxi Passengers to Rails	Combined Total Passengers	
	(1)	(2)	(3)	(4)
1960	420,000	1,438,000	1,858,000	2,044,000
1961	477,000	1,575,000	2,052,000	2,257,000
1962	534,000	1,787,000	2,321,000	2,553,000
1963	591,000	1,923,000	2,514,000	2,765,000
1964	649,000	2,160,000	2,809,000	3,090,000
1965	706,000	2,373,000	3,079,000	3,387,000
1966	813,000	2,720,000	3,533,000	3,886,000
1967	920,000	3,067,000	3,987,000	4,386,000
1968	1,027,000	3,367,000	4,394,000	4,833,000
1969	1,135,000	3,787,000	4,922,000	5,414,000
1970	1,242,000	4,061,000	5,303,000	5,833,000
1971	1,358,000	4,483,000	5,841,000	6,425,000
1972	1,474,000	4,896,000	6,370,000	7,007,000
1973	1,589,000	5,269,000	6,858,000	7,544,000
1974	1,705,000	5,690,000	7,395,000	8,134,000
1975	1,821,000	6,067,000	7,888,000	8,677,000

XV. Estimated Passengers by Fare Classification

A. Employee Reduced Rate Passengers

<u>Year</u>	<u>From Employees' Autos 10.0%</u> (1)	<u>From Present Airport Buses 4.0%</u> (2)	<u>Total Reduced Rate Employee Passengers</u> (3)
1960	2,300	16,800	19,100
1961	2,400	19,100	21,500
1962	2,400	21,400	23,800
1963	2,500	23,600	26,100
1964	2,500	26,000	28,500
1965	2,600	28,200	30,800
1966	2,600	32,500	35,100
1967	2,700	36,800	39,500
1968	2,700	41,100	43,800
1969	2,700	45,400	48,100
1970	2,800	49,700	52,500
1971	2,900	54,300	57,200
1972	3,000	59,000	62,000
1973	3,100	63,500	66,600
1974	3,200	68,200	71,400
1975	3,300	72,800	76,100

B. Half Fare Passengers

<u>Year</u>	<u>From Airline Passenger Autos 1.0%</u> (1)	<u>From Present Airport Buses 1.0%</u> (2)	<u>Total Half Fare Passengers</u> (3)
1960	11,700	4,200	15,900
1961	12,800	4,800	17,600
1962	14,600	5,300	19,900
1963	15,700	5,900	21,600
1964	17,500	6,500	24,000
1965	19,300	7,100	26,400
1966	22,300	8,100	30,400
1967	25,200	9,200	34,400
1968	27,400	10,300	37,700
1969	31,000	11,400	42,400
1970	33,200	12,400	45,600
1971	36,800	13,600	50,400
1972	40,100	14,700	54,800
1973	43,100	15,900	59,000
1974	46,700	17,100	63,800
1975	49,600	18,200	67,800

C. Full Fare Passengers

Year	Total Passengers (1)	Less Reduced Rate Passengers (2)	Full Fare Passengers (3)
1960	1,858,000	35,000	1,823,000
1961	2,052,000	39,100	2,012,900
1962	2,321,000	43,700	2,277,300
1963	2,514,000	47,700	2,466,300
1964	2,809,000	52,500	2,756,500
1965	3,079,000	57,200	3,021,800
1966	3,533,000	65,500	3,467,500
1967	3,987,000	72,900	3,914,100
1968	4,394,000	81,500	4,312,500
1969	4,922,000	90,500	4,831,500
1970	5,303,000	98,100	5,204,900
1971	5,841,000	107,600	5,733,400
1972	6,370,000	116,800	6,253,200
1973	6,858,000	125,600	6,732,400
1974	7,395,000	135,200	7,259,800
1975	7,888,000	143,900	7,744,100

XVI. Estimated Annual Passenger Revenue

A. At Fare of \$1.00 (\$.91 plus \$.09 Tax)

Full Fare - Net	\$0.91
Half Fare - Net	0.45
Employee Fare	0.35

Year	Employees \$0.35 (1)	Half Fares \$0.45 (2)	Full Fares \$0.91 (3)	Total Passenger Revenue (4)
1960	\$ 6,685	\$ 7,155	\$1,658,930	\$1,672,770
1961	7,525	7,920	1,831,739	1,847,184
1962	8,330	8,955	2,072,343	2,089,628
1963	9,135	9,720	2,244,333	2,263,188
1964	9,975	10,800	2,508,415	2,529,190
1965	10,780	11,880	2,749,838	2,772,498
1966	12,285	13,680	3,155,425	3,181,390
1967	13,825	15,480	3,561,831	3,591,136
1968	15,330	16,965	3,924,375	3,956,670
1969	16,835	19,080	4,396,665	4,432,580
1970	18,375	20,520	4,736,459	4,775,354
1971	20,020	22,680	5,217,394	5,260,094
1972	21,700	24,660	5,690,412	5,736,772
1973	23,310	26,550	6,126,484	6,176,344
1974	24,990	28,710	6,606,418	6,660,118
1975	26,635	30,510	7,047,131	7,104,276

B. At Fare of \$1.25 (\$1.14 plus \$0.11 Tax)

Full Fare - Net \$1.14
 Half Fare - Net .57
 Employee Fare .35

Year	Employees \$0.35 (1)	Half Fares \$0.57 (2)	Full Fares \$1.14 (3)	Total Passenger Revenue (4)
1960	\$ 6,685	\$ 9,063	\$2,078,220	\$2,093,968
1961	7,525	10,032	2,294,706	2,312,263
1962	8,330	11,343	2,596,122	2,615,795
1963	9,135	12,312	2,811,582	2,833,029
1964	9,975	13,680	3,142,410	3,166,065
1965	10,780	15,048	3,444,852	3,470,680
1966	12,285	17,328	3,952,950	3,982,563
1967	13,825	19,608	4,462,074	4,495,507
1968	15,330	21,489	4,916,250	4,953,069
1969	16,835	24,168	5,507,910	5,548,913
1970	18,375	25,992	5,933,586	5,977,953
1971	20,020	28,728	6,536,076	6,584,824
1972	21,700	31,236	7,128,648	7,181,584
1973	23,310	33,630	7,674,936	7,731,876
1974	24,990	36,366	8,276,172	8,337,528
1975	26,635	38,646	8,828,274	8,893,555

C. At Fare of \$1.35 (\$1.23 plus \$0.12 Tax)

Full Fare - Net \$1.23
 Half Fare - Net 0.62
 Employee Fare 0.35

Year	Employees \$0.35 (1)	Half Fares \$0.62 (2)	Full Fares \$1.23 (3)	Total Passenger Revenue (4)
1960	\$ 6,685	\$ 9,858	\$2,242,290	\$2,258,833
1961	7,525	10,912	2,475,869	2,494,306
1962	8,330	12,338	2,801,079	2,821,747
1963	9,135	13,392	3,033,549	3,056,076
1964	9,975	14,880	3,390,495	3,415,350
1965	10,780	16,368	3,716,814	3,743,962
1966	12,285	18,848	4,265,025	4,296,158
1967	13,825	21,328	4,814,343	4,849,496
1968	15,330	23,374	5,304,375	5,343,079
1969	16,835	26,288	5,942,745	5,985,868
1970	18,375	28,272	6,402,027	6,448,674
1971	20,020	31,248	7,052,082	7,103,350
1972	21,700	33,976	7,691,436	7,747,112
1973	23,310	36,580	8,280,857	8,340,742
1974	24,990	39,556	8,929,554	8,994,100
1975	26,635	42,036	9,525,243	9,593,914

D. At Fare of \$1.50 (\$1.36 plus \$0.14 Tax)

Full Fare - Net	\$1.36
Half Fare - Net	0.68
Employee Fare	0.40

Year	Annual Rail Line Passenger Revenue			
	Employees	Half Fares	Full Fares	Total
	\$0.40	\$0.68	\$1.36	Passenger Revenue
	(1)	(2)	(3)	(4)
1960	\$ 7,640	\$10,812	\$ 2,479,280	\$ 2,497,732
1961	8,600	11,968	2,737,544	2,758,112
1962	9,520	13,532	3,097,128	3,120,180
1963	10,440	14,688	3,354,168	3,379,296
1964	11,400	16,320	3,748,840	3,776,560
1965	12,320	17,952	4,109,648	4,139,920
1966	14,040	20,672	4,715,800	4,750,512
1967	15,800	23,392	5,323,176	5,362,368
1968	17,520	25,636	5,865,000	5,908,156
1969	19,240	28,832	6,570,840	6,618,912
1970	21,000	31,008	7,078,664	7,130,672
1971	22,880	34,272	7,797,424	7,854,576
1972	24,800	37,264	8,504,352	8,566,416
1973	26,640	40,120	9,156,064	9,222,824
1974	28,560	43,384	9,873,328	9,945,272
1975	30,440	46,104	10,531,976	10,608,520

E. Induced Passenger Revenue

<u>Basic Rate of Fare</u>	<u>Percent of Induced Traffic</u>
\$1.00	20%
1.25	15
1.35	13
1.50	10

XVII. Estimated Revenue from Other Sources

	<u>% of Passenger Revenue</u>
Mail, Express and Freight	5%
Concessions and Advertising	3
Joint Facility Use	1
Other Sources	1
Total	10%

(Apply to annual passenger revenue at present base fare of \$1.25, XVI. B.)

XVIII. Summary of Estimated Annual Revenue

Year	Total Annual Revenue From Passengers and Other Sources			
	Base Fare \$1.00	Base Fare \$1.25	Base Fare \$1.35	Base Fare \$1.50
	(1)	(2)	(3)	(4)
1960	\$2,216,700	\$ 2,617,000	\$ 2,762,000	\$ 2,957,000
1961	2,447,800	2,890,000	3,050,000	3,265,000
1962	2,769,100	3,270,000	3,450,000	3,694,000
1963	2,999,100	3,541,000	3,737,000	4,001,000
1964	3,351,600	3,958,000	4,176,000	4,471,000
1965	3,674,000	4,338,000	4,578,000	4,901,000
1966	4,216,000	4,978,000	5,253,000	5,624,000
1967	4,759,000	5,619,000	5,929,000	6,348,000
1968	5,243,000	6,191,000	6,533,000	6,994,000
1969	5,874,000	6,936,000	7,319,000	7,836,000
1970	6,328,000	7,472,000	7,885,000	8,442,000
1971	6,912,000	8,173,000	8,627,000	9,240,000
1972	7,484,000	8,859,000	9,354,000	10,023,000
1973	8,012,000	9,492,000	10,025,000	10,745,000
1974	8,592,000	10,188,000	10,763,000	11,540,000
1975	9,125,000	10,827,000	11,441,000	12,269,000

Sample Calculation: 1965 Col. (3)	\$4,578,000
a. Passenger Rev. XVI. C., 1965 Col. (4)	\$3,743,962
b. Inducement Factor XVI., E. for \$1.35 fare - 13% or 1.13	
c. From (a) above: 3,743,962 x 1.13	= 4,230,677
d. From XVII., other revenue factor 10% of \$1.25 fare base revenue	
e. From XVI., 1965 Col. (4): 10% of 3,470,680 = \$ 347,068	
f. From (c) above: 4,230,677 plus 347,068	= 4,577,745 (\$4,578,000)

XIX. System Characteristics

A. Route Mileage

1. Downtown Line - Approximately 15 miles OW
From LAX to downtown Los Angeles Terminal and beyond to Civic Center Terminal.
2. Wilshire Line - Approximately 18 miles OW
From LAX to downtown Los Angeles Terminal or vicinity thereof, then westerly, paralleling Wilshire Boulevard to a terminal in the vicinity of the Ambassador Hotel.

B. Stations

- | | |
|---|---|
| 1. At Los Angeles International Airport | 2 |
| 2. Downtown Los Angeles | 2 |
| 3. Civic Center | 1 |
| 4. Wilshire Boulevard | 3 |
| 5. Possible future stops: | 8 |
| Coliseum | |
| Hollywood Park | |
| Intermediate as required. | |

C. Running Time

1. Downtown Los Angeles	RT, 1 hr. 20 min.
2. Wilshire	RT, 1 hr. 40 min.
3. Average schedule speed	60 m. p. h.
4. Average terminal stop	10 min.
5. Average intermediate stop	5 min.
6. LAX to Wilshire - 18 miles	18 min.
7. LAX to Civic Center - 15 miles	15 min.


D. Equipment Requirement

Annual passengers	3,387,000
Average per month	282,000
Average per day	9,300
Average per hour	380
Ratio max. hr. to aver. hr.	2.0
Average max. hr. - Both directions	760
Average max. hr. - One way	380

<u>Passenger Car Capacity</u>	<u>Max. Cars Per Hour</u>		<u>Headway (Min.)</u>	
	<u>100% LF</u>	<u>75% LF</u>	<u>100% LF</u>	<u>75% LF</u>
10	38	51	2.1	1.6
15	26	35	3.1	2.3
20	19	25	4.2	3.2
25	16	22	5.0	3.6
30	13	18	6.2	4.4
35	11	15	7.3	5.3
40	10	14	8.0	5.7
45	9	12	8.9	6.7
50	8	11	10.0	7.3

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