

# BART to S. F. International Airport

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City & County of San Francisco

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## INTRODUCTION

The Airports Commission has always encouraged the use of mass transit to the Airport. Since 1983, the Commission has supported the concept of extending BART from San Francisco to San Francisco International Airport.

Currently, the Metropolitan Transportation Commission (MTC) is evaluating several mass transit alternatives which are proposed to serve SFIA. The full range of these alternatives is described in Appendix A. Among these alternatives, four involve extending BART to the Airport. These alternatives are described below:

- "At-Grade" --- with an at-grade mass transit station west of Highway 101, serving BART, CalTrain, and SamTrans, connected to all areas of the Airport by a high frequency Airport Light Rail System. (See Figure 6, page 14.)
  
- "Underground" --- with an underground station 50 ft. below the current parking garage serving BART only. Access to the terminal from this station would be via elevators and escalators to the first floor of the airport garage and then through existing pedestrian tunnels to the terminal buildings.

The current MTC study is the first comprehensive analysis of ridership, convenience, cost effectiveness, and environmental impact of the proposed alternatives. MTC, BART, and SamTrans have established a Policy Committee to consider the results of the analysis and make recommendations to the respective agencies in April of 1992. The Airports Commission looks forward to receiving the Policy Committee's recommendations.

In the interim and as part of the Airport's Transportation Systems Management effort, the Commission has approved an on-Airport light rail passenger and employee transit system. This system will serve all areas of the Airport, and will be extended to an interface with the CalTrain right-of-way west of Highway 101 (Figure 6, page 14). The on-Airport light rail system is not a substitute for BART, but will be complementary and act as an effective on-Airport distribution system when BART is extended to SFO. The construction of the Airport light rail system will begin in 1993 and the Airports Commission will complete a link to CalTrain as part of this project by 1996. This light rail system will give the Airport an early link with mass transit while facilitating an eventual BART extension to the Airport. In addition, this link will be vital in the event BART does not proceed south past SFO, and CalTrain remains the only peninsula corridor rail option.

This document is provided by the Airports Commission as an objective and factual reference regarding the question of mass transit to SFO.

## "AT-GRADE" vs. "UNDERGROUND" CONCEPTS

The Airports Commission intends to provide a highly attractive alternative to the use of the private automobile for Airport access. To do so, the Commission will support the most convenient, efficient, cost-effective, and timely mass transit alternative to the Airport. At the conclusion of the MTC study, the Commission will examine the physical, technical, operational, financial, environmental, and safety aspects of the recommended alternatives. Based on that evaluation, it will support the alternative which the Commission feels will best serve all passengers, visitors, and employees at the Airport. The most widely discussed alternatives involve either an underground BART station below the Central Parking Garage or an at-grade station west of Highway 101, adjacent to the CalTrain right-of-way, and connected to the Airport terminals via an Airport light rail system.

	<u>AT-GRADE STATION WEST OF HWY.101</u>	<u>UNDERGROUND STATION BELOW CENTRAL PARKING GARAGE</u>
Total walking distance from BART to terminal lobby	350 ft.	950 ft.
Number of floor changes required (see Fig. 1, page 4)	1	4
Number of times the passenger is required to read directional signs	3	10
Travel time from downtown S.F. to Airport terminal	41 min.	40 min.
Total daily public transit ridership to SFO in the year 2010 (including BART, CalTrain, SamTrans)	33,100	33,000
Capital cost in 1991 dollars	\$720 million	\$1,129 million
Annual operating cost in 1991 dollars	\$53 million	\$56 million
Cost per new rider (National Avg. = \$8)	\$25	\$50

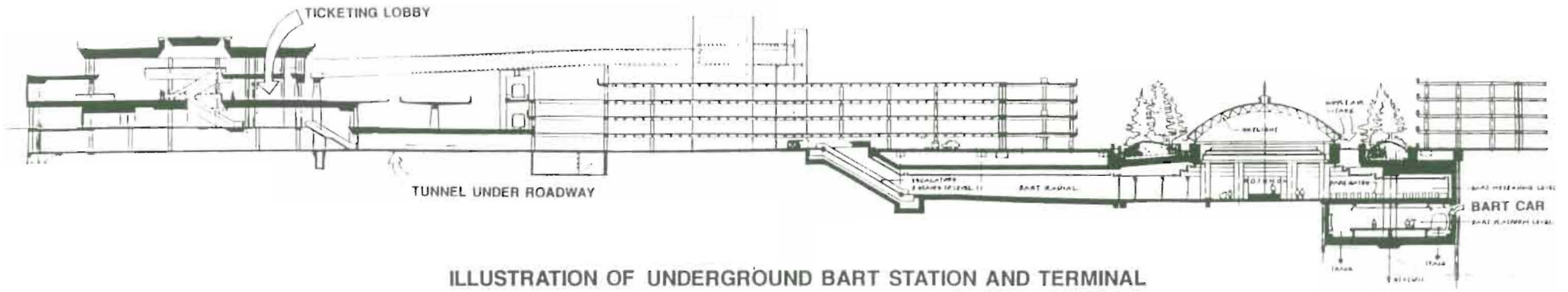


ILLUSTRATION OF UNDERGROUND BART STATION AND TERMINAL

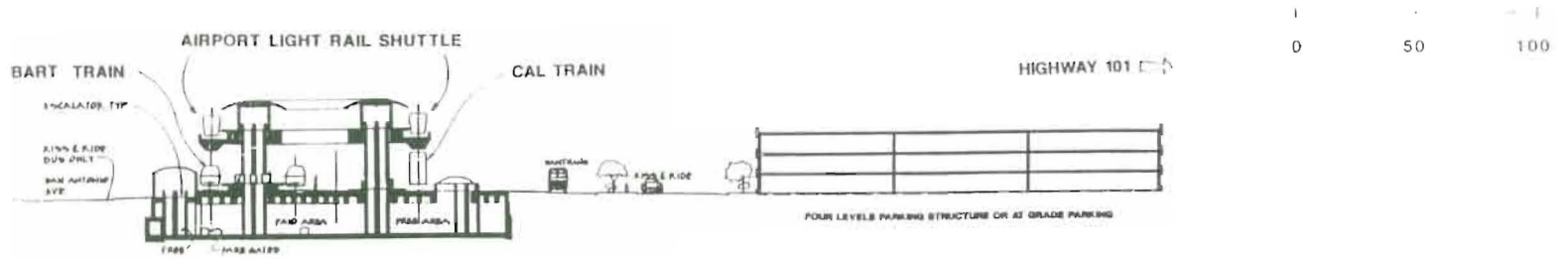


ILLUSTRATION OF PROPOSED AT-GRADE BART STATION

Fig. 1

## COMMON QUESTIONS

The discussion of "BART to the Airport" has raised several questions. Listed below are some of those most frequently asked.

1. **What is the Airports Commission's position regarding "BART to the Airport"?**

The Airports Commission has a long standing policy of encouraging the use of mass transit. In 1983, the Commission expressed support for MTC's concept of extending BART to the Airport. In recognition of MTC's current effort to evaluate various alternatives, the Commission has not endorsed any specific location for the Airport BART station.

2. **Isn't there already a BART "trace" under the North Terminal?**

During the construction of the North Terminal in 1972, the Airports Commission made a decision to preserve a right-a-way under the terminal to provide access for BART in the future. However, by the time the decision was communicated to the field, the contractor had already driven 36 piles in the space which had been intended for BART access. These reinforced concrete piles, 80 to 120 ft. long, were abandoned in place under the terminal rather than being removed. In addition, interlocking steel sheet piling was also left in place blocking the intended BART access. Since no excavation took place, the original bay mud and soil still exist under the North Terminal and garage.

3. **What about the "shell" for a BART station under the parking garage?**

There is no "shell" for BART under the parking garage. In fact, no construction took place in the 1970's to create space for BART on or under the Airport.

4. **Are there any other major obstructions for the station under the garage?**

Yes. BART would require a spur track which would extend beyond the garage and beneath the existing South Terminal. This spur track is an operational requirement for the storage and turn around of BART cars. More than 180 load bearing piles which support the South Terminal and the garage would have to be removed and a new subterranean supporting structure for the South Terminal and the main Airport garage would have to be erected in order to accommodate the BART station.

5. **Where do Airport employees and passengers come from?**

<u>County</u>	<u>Resident Passengers</u>	<u>Non-Resident Passengers</u>	<u>Employees</u>
San Francisco	28.6%	43.6%	23%
Marin	7.1	5.4	4
San Mateo	21.3	18.4	38
Santa Clara	13.6	11.3	10
Alameda	13.2	8.8	13
Other counties	16.2	12.5	12

6. **Can we impose a Passengers' Facilities Charge (PFC) to pay the extra costs of bringing BART underground to the garage?**

Under current Federal regulations, PFC funds must be used for facilities owned by the Airport. Since the Airport does not own BART facilities, money collected cannot be transferred to BART for its construction projects. Assuming a resolution of this issue with the Department of Transportation, of greater concern is the fact that imposing a PFC will require the Airports Commission to comply with lenient Federal Noise Regulations and abandon SFO's much more stringent noise regulations. Finally, a PFC is really a user tax. It is estimated that such a tax would cost San Francisco residents and businesses \$73 million over a ten year period to finance an underground BART station.

7. **Could passengers check their baggage at the At-Grade BART Station?**

Yes. The design of the Airport Light Rail System will provide the capability of adding a remote baggage check-in station.

8. **Is BART going to be extended south beyond SFO?**

Currently, the Airport BART station whether at-grade or underground would be a terminus station. Neither the Metropolitan Transportation Commission nor BART has any plan to extend BART beyond SFO at this time. This will make CalTrain an important transportation mode for employees and passengers coming to the Airport from the south.

9. **What are some of the construction concerns facing a BART extension if the underground alternative is selected?**

Airport engineers and independent consultants have identified several major construction concerns in connection with the Underground Station concept:

- A. Construction of underground tunnels and station will cause major disruption to the Airport, including closure of roadways, sections of terminal buildings, portions of the garage, aircraft parking positions, baggage conveyors, baggage carrousel, elevators.
- B. Tunneling through the Airport will cause differential ground settlement, which will affect existing roads, aircraft pavements, utility lines, and aviation fuel lines.
- C. The area beneath the Airport contains a number of underground streams which are continually shifting. These underground streams will impact BART both during construction and during operation.
- D. The existing 6,000 vehicle Airport Central Parking Garage is supported on piles and buoyed by ground water. The required excavation beneath the garage will affect the structural integrity of the garage.

## APPENDIX A -- STUDY ALTERNATIVES

The Metropolitan Transportation Commission (MTC) is currently studying six alternatives for mass transit between San Francisco and the Airport. Four of these include BART. MTC is expected to make a decision on the alternatives and the various options in April of 1992.

### ALTERNATIVE 1 -- DO NOTHING

Do nothing beyond currently committed highway and transit projects.

### ALTERNATIVE 2 -- TRANSPORTATION SYSTEMS MANAGEMENT

More CalTrain service and extend BART to Colma. Provide shuttle service from Colma BART station to Airport.

Option A -- Existing CalTrain station at 4th and Townsend to remain.

Option B -- Relocate CalTrain station to 2nd and Market Streets.

### ALTERNATIVE 3 -- BART TO SFO AT-GRADE STATION (Fig. 2, page 9)

BART runs along the Southern Pacific railroad right-of-way to a combined BART/CalTrain station located west of Hwy. 101. A high frequency light rail system shuttles air passengers and Airport employees from this station to various parts of the Airport.

Option A -- BART and CalTrain at ground level at San Bruno Ave. Angus Ave. passes under the tracks. San Mateo Ave. closed at CalTrain tracks.

Option B -- BART is underground to Angus Ave. CalTrain is at grade. Streets remain unchanged.

Option C -- BART and CalTrain 8 feet above ground and streets pass under. Street circulation remains unchanged.

Option D -- BART is elevated over San Bruno Ave., San Mateo Ave., and Angus Ave. CalTrain remains as is.



**ALTERNATIVE 4 -- BART TO SFO UNDERGROUND STATION** (Fig. 3, page 10)

BART runs along the Southern Pacific railroad right-of-way to combined BART/CalTrain station in San Bruno, then goes underground below Hwy. 101 and continues underground to a station under the existing main parking garage at the Airport. Although the tracks continue to Millbrae on the west side of Highway 101 for turnaround and storage of cars, this Airport station is the end of the line.

Options -- same as Alternative 3 for the portion through the City of San Bruno.

**ALTERNATIVE 5 -- BART TO SFO AT-GRADE STATION VIA I-380** (Fig. 4, page 11)

(Purpose of this Alternative: to bypass downtown San Bruno - At-Grade Station Alternative)

BART runs along the Southern Pacific railroad right-of-way to Tanforan Shopping Center area, then turns east to bypass downtown San Bruno. This alignment goes underground from the Tanforan station, paralleling the north side of I-380 freeway, passes under I-380, continues underground along the easterly limit of the City of San Bruno, then ascends to ground level to the At-Grade BART/CalTrain station west of Hwy. 101.

**ALTERNATIVE 6 -- BART TO SFO UNDERGROUND STATION VIA I-380** (Fig. 5, page 12)

(Purpose of this Alternative: to bypass downtown San Bruno - Underground Station Alternative)

BART runs along the Southern Pacific railroad right-of-way to Tanforan Shopping Center area, then turns east to bypass downtown San Bruno. This alignment goes underground from the Tanforan station to an underground station at the Airport's Long Term Parking Lot, then continues underground to a second Airport station under the garage. The transfer between BART and CalTrain is made at Tanforan and would involve a 1,000-foot walk or ride on a shuttle bus.

SAN FRANCISCO BAY



CITY OF SOUTH  
SAN FRANCISCO

TANFORAN STATION

SAN FRANCISCO INTERNATIONAL AIRPORT

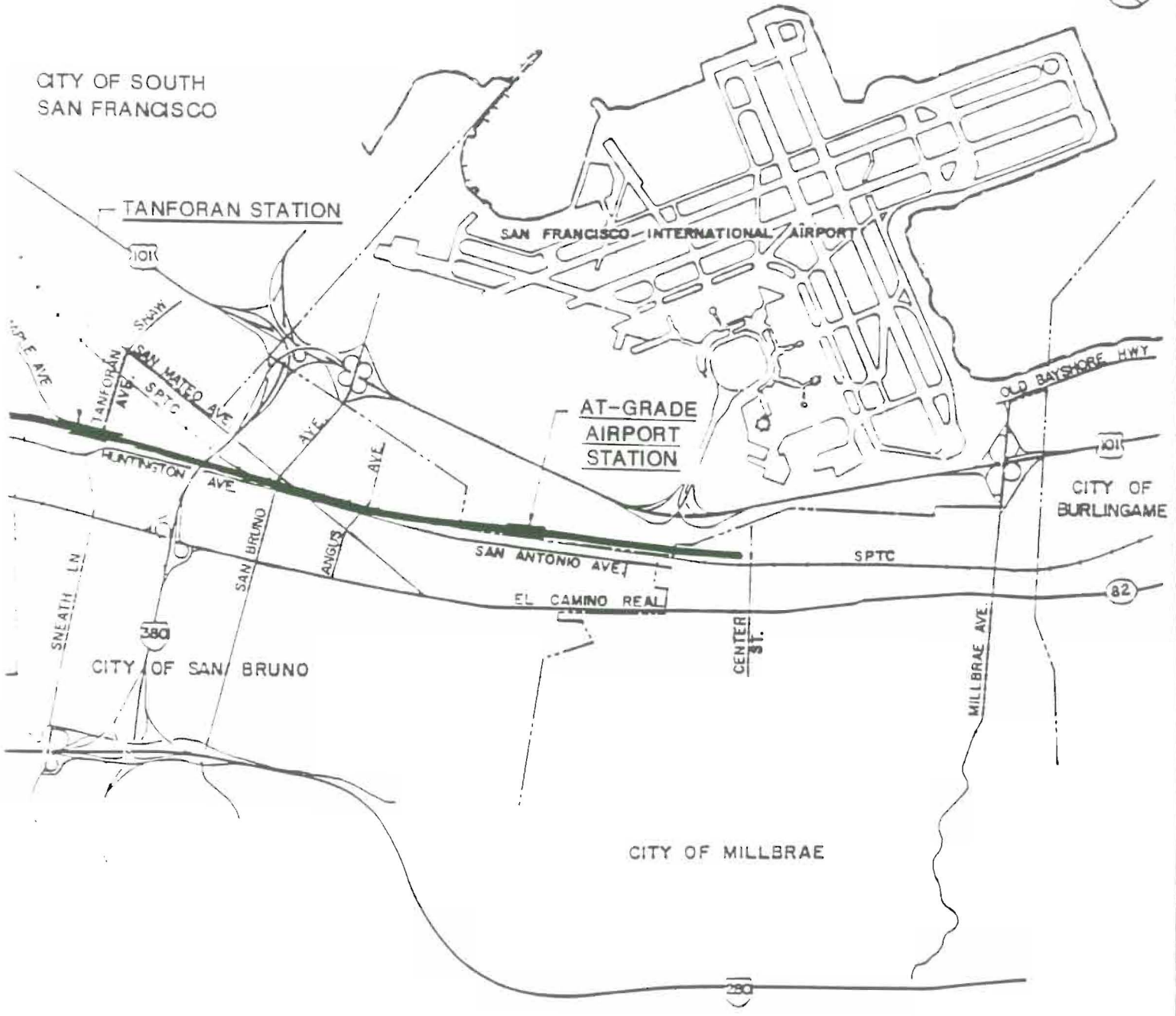
AT-GRADE  
AIRPORT  
STATION

OLD BAYSHORE HWY

CITY OF  
BURLINGAME

CITY OF SAN BRUNO

CITY OF MILLBRAE



BART EXTENSION ALTERNATIVE 3

NOT TO SCALE

Fig. 2



CITY OF SOUTH SAN FRANCISCO

TANFORAN STATION

SAN FRANCISCO INTERNATIONAL AIRPORT

UNDERGROUND AIRPORT STATION

W 4TH MAPLE AVE

TANFORAN AVE

SAN MATEO AVE

AVENUE

AVENUE

OLD BAYSHORE HWY

HUNTINGTON AVE

CITY OF BURLINGAME

SNEATH LN

CITY OF SAN BRUNO

SAN BRUNO

AVENUE

SAN BRUNO STATION

SAN ANTONIO AVE

SPTC

EL CAMINO REAL

CENTER ST

82

MILLBRAE AVE

CITY OF MILLBRAE

BART EXTENSION ALTERNATIVE 4

NOT TO SCALE

Fig. 3



CITY OF SOUTH SAN FRANCISCO

TANFORAN STATION

SAN FRANCISCO INTERNATIONAL AIRPORT

AT-GRADE AIRPORT STATION

OLD BAYSHORE HWY

CITY OF BURLINGAME

SPTC

SAN ANTONIO AVE

EL CAMINO REAL

82

CITY OF SAN BRUNO

CENTER ST.

MILLBRAE AVE

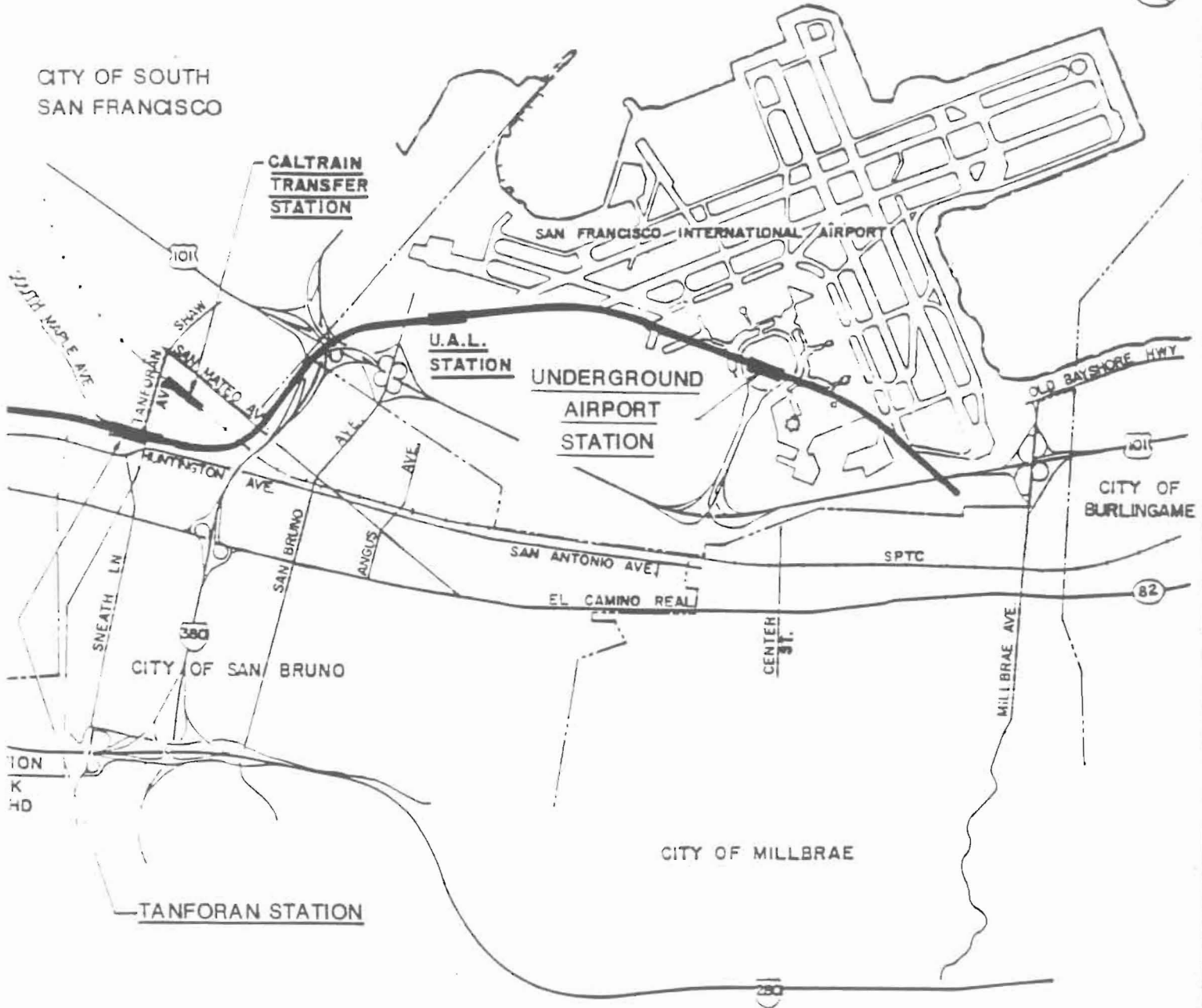
CITY OF MILLBRAE

BART EXTENSION ALTERNATIVE 5

NOT TO SCALE

Fig. 4

SAN FRANCISCO BAY



BART EXTENSION ALTERNATIVE 6

NOT TO SCALE

Fig. 5

## APPENDIX B -- AIRPORT LIGHT RAIL SYSTEM

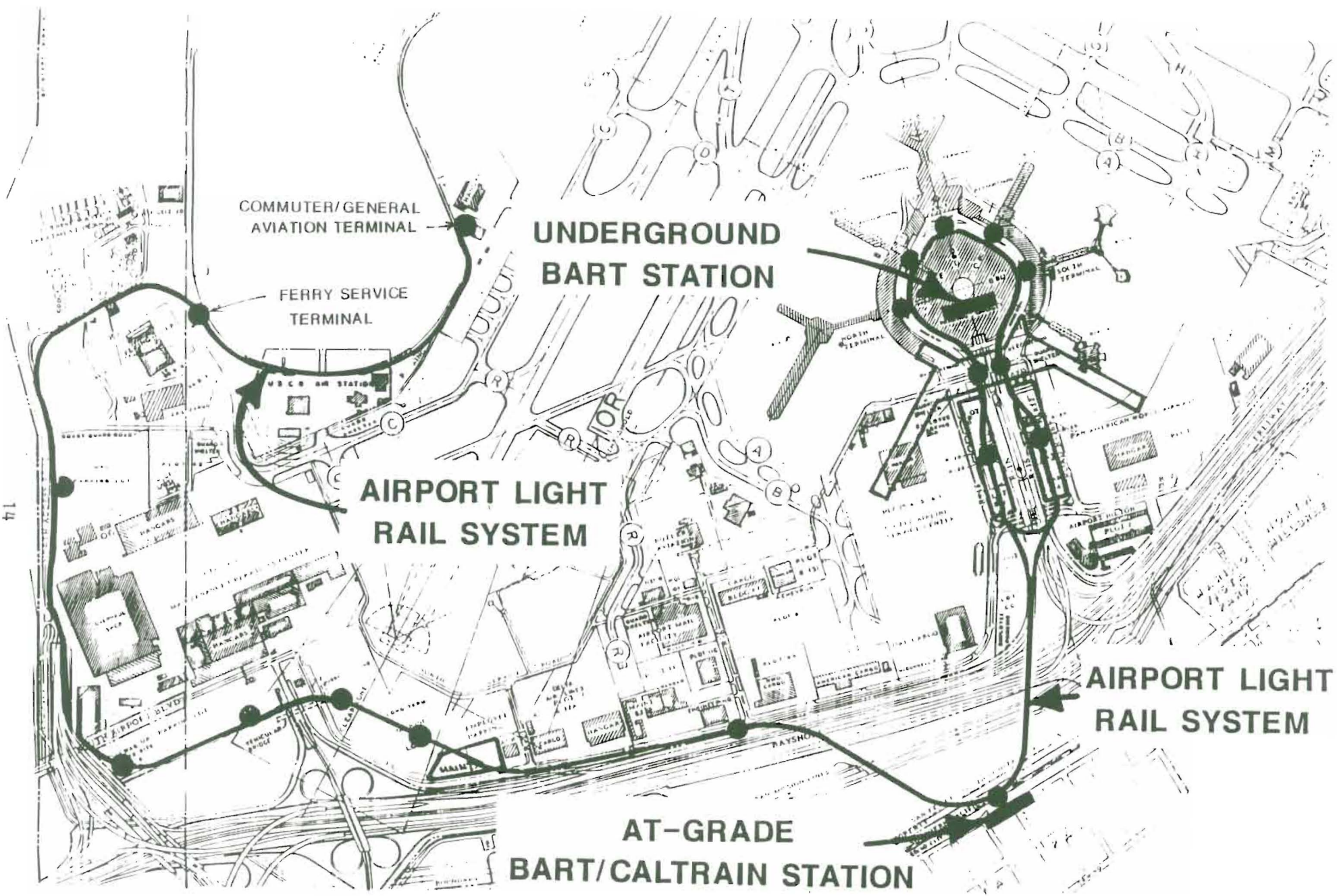
The Airport Light Rail System will provide free shuttle service connecting all passenger terminals, the Ground Transportation Center, hotel, remote parking lots, aircraft maintenance facilities, cargo areas, ferry service terminal, and an at-grade mass transit station located west of Highway 101. A map of its route and stations is shown on Figure 6, page 14.

The trains will be electric powered and run on a guide rail (Fig. 7, page 15). They will travel at a top speed of 25 m.p.h. and are quiet, non-polluting, and energy efficient. They can be fully automated or driver operated. The number of cars per train will be commensurate with the load demand. Typically, each train will have three cars with a total capacity of 75 passengers.

The trains will operate in two directions to minimize travel time between any destinations. They will run on both the departure and arrival levels in front of the domestic terminals to eliminate floor changes. Typical waiting time for a train will be 90 seconds. Maximum time between trains will be three minutes during 16 hours of the day. The system will operate 24 hours every day.

The Airport plans to construct, maintain, and operate the system at its sole expense. No financial support is expected from BART, SamTrans, CalTrain, or any other mass transit agencies.

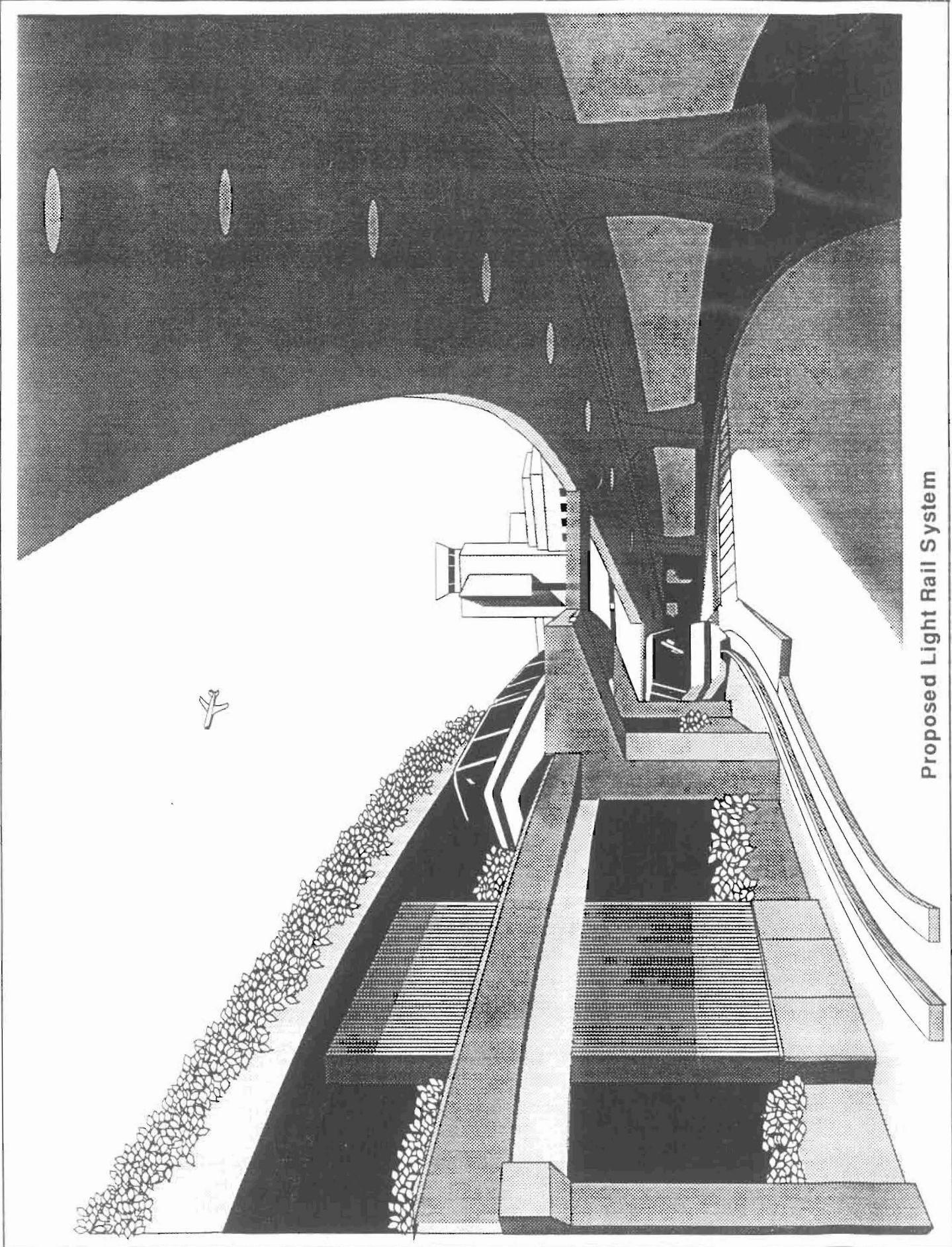
When fully operational, the Airport Light Rail System will reduce vehicular traffic by 23%. It will eliminate 50% of the commercial vehicle trips from the terminal roadways, or 1.9 million trips annually. For other Airport roads, the reduction will be 19%, or 727,000 annual commercial vehicle trips. It will also eliminate 5 million rental car trips from the terminal loop roads annually, as well as 2 million employee vehicle trips.



- BART STATION
- AIRPORT LIGHT RAIL STATION

AIRPORT MAP

Fig. 6



Proposed Light Rail System