



Analysis of alternatives A and B of Phase 1-A of Tren Urbano

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Alternative A: Elevated

- ◆ Elevated alignment, parallel to PR-1 and PR-22 from Sagrado Corazón to Minillas.
- ◆ Elevated intermediate station at Los Angeles St. and marginal roadway of PR-1.
- ◆ Minillas station located adjacent to PR-22 between Fernández Juncos & Ponce De León avenues in a cut section and turns into a tunnel.
- ◆ Total length - 1595 meters plus 400 meters for tail tracks and turn back operations.



Alternative B: Subway

- ◆ Elevated from Sagrado Corazón to east of Mayol St. where it enters into a tunnel.
- ◆ Follows the alignment of Ponce De León Av. after intersecting it near San Jorge St.
- ◆ Underground intermediate station at Fidalgo Díaz St. in the san Mateo area.
- ◆ Minillas station located west of PR-22 (Minillas Tunnel).
- ◆ Total length - 1550 meters plus 220 meters for tail tracks and pocket track for turn back provisions.



Future extensions:

- ◆ Miramar
- ◆ Viejo San Juan
- ◆ Luis Muñoz Marín International Airport



Miramar: Alternative A

- ◆ After Minillas the alignment transitions from tunnel to elevated structure parallel to PR-26 on the south side.
- ◆ Elevated intermediate station at Condado sector on east side of R. H. Todd St.
- ◆ Descends into a tunnel to Ponce De León Av. and follows the roadway.
- ◆ Reaches underground Miramar station at Cuevillas St.



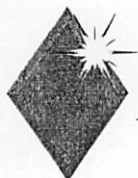
Miramar: Alternative B

- ◆ After Minillas the alignment continues underground following the Ponce De León roadway.
- ◆ Station at R. H. Todd St. adjacent to Stop 18.
- ◆ Alignment continues west until it reaches Miramar station in the same location as in alternative A.



Viejo San Juan

- ◆ Both alternatives follow the same alignment to reach Viejo San Juan.
- ◆ After Miramar Station extend the alignment in a tunnel under the San Antonio Canal.



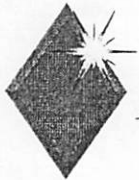
Airport: Alternative A

- ◆ A grade separated wye located past Minillas station to make turns to Miramar and the airport.
- ◆ Alignment parallel to PR-26 on the south side, east direction.
- ◆ This alignment can only provide service to the airport.



Airport: Alternative B

- ◆ Separate line crossing Ponce De León alignment at R. H. Todd station.
- ◆ R. H. Todd will provide for transfer connection in the same station.
- ◆ This new line can also provide service to other parts of the metropolitan area, south of Santurce.



Impacts on the Community

- ◆ The Santurce area is a diverse community.
- ◆ It has important centers of activity such as:
 - ◆ Sagrado Corazón University
 - ◆ Minillas Government Center
 - ◆ Luis A. Ferré Fine Arts Center
 - ◆ Central High School
 - ◆ Centro Europa
 - ◆ Sagrado Corazón Academy
 - ◆ Colegio Presbiteriano



Impacts on the Community

- ◆ This area also has very vital commercial activity and serves as residence for many people.

Alternative A has an alignment that passes south of the central core of Santurce, away from the main centers of activity, until it reaches Minillas.



Impacts on the Community

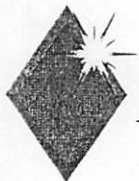
Alternative B has an alignment that passes through the central core of Santurce, with an intermediate station right under the Ponce De León Av. Serving the needs of the users.



Impacts on the Community

Both alternatives require property acquisition.

- ◆ Alternative A requires more acquisitions because of the elevated structures.
- ◆ Alternative B requires little acquisition because it is underground.



Property Displacement

Alternative A:

- ◆ 171 displacements, of which 155 are residential

Alternative B:

- ◆ 28 displacements, of which 20 are residential

With the elevated alignment there is little opportunity for redevelopment because the structure occupies the space.

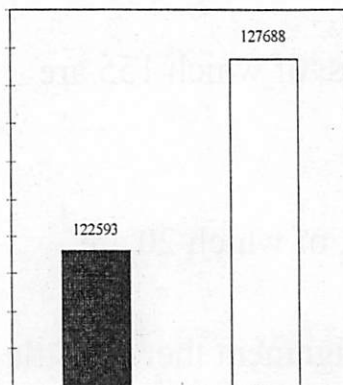


Ridership

Projections for both alternatives for the year 2010 are based on the Tren Urbano Phase 1 (November 1995).



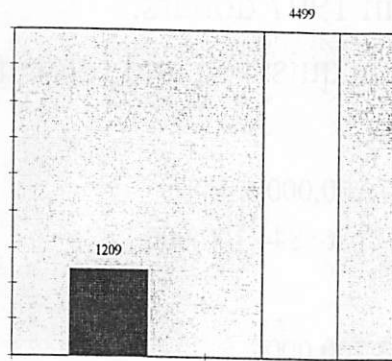
Ridership



- ◆ 1: Alternative A
 - ◆ 2: Alternative B
- B has 5095 more boardings.



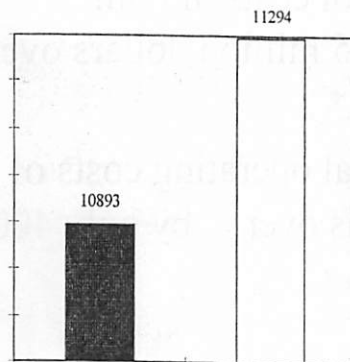
Ridership



- ◆ 1: Alternative A, Los Angeles Station
 - ◆ 2: Alternative B, San Mateo Station
- Boarding in B is 3290 higher.



Ridership



- ◆ 1: Alternative A
 - ◆ 2: Alternative B
- B has 401 more boardings.



Capital and Operating Costs

These are estimated in 1997 dollars.

Include right-of-way acquisition and relocation.

◆ Alternative A:

- ◆ Capital Cost : \$287,200,000
- ◆ Annual Operating Cost : \$44,100,000

◆ Alternative B:

- ◆ Capital Cost : \$383,700,000
- ◆ Annual Operating Cost : \$44,500,000



Capital and Operating Costs

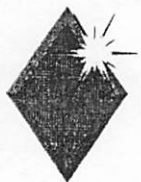
Comparing the capital costs of both alternatives, B is 96.5 million dollars over A.

Comparing the annual operating costs of both alternatives, B is over A by only 400 thousand dollars.



Conclusions

- ◆ Both alternatives can be expanded to Miramar, Viejo San Juan and the Luis Muñoz Marín International airport. But B can provide for a more extended service to other parts of the metropolitan area.
- ◆ Intrems of property acquisition and the impact of the community alternative B takes more into consideration these factors, creating less impact.



Conclusions

- ◆ The benefits in ridership of alternative B are significant compared to A.
- ◆ Alternative B meets the needs of the user and recognizes the development of the area along the Ponce De León corridor.

