



RÍO PIEDRAS SEGMENT


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 **Río Piedras: General Information**


- Two Stations: Río Piedras and Universidad
- Located at the Río Piedras Historic Zone
- Underground Alignment : 1.4 Km tunneled and Cut & Cover
- Design and Construction by KKZ/CMA
- Community Integration

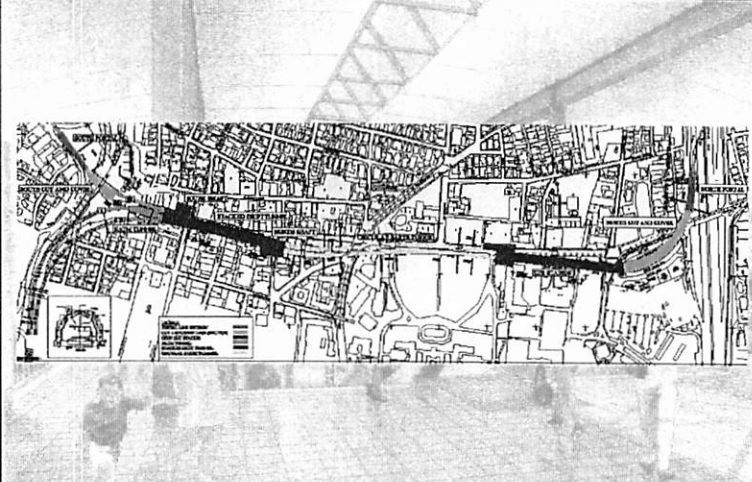



 **Technologies**

- NATM-New Austrian Tunneling Method
- Cut and Cover
- Stacked Drift
- EPBM-Earth Pressure Balance Machine






 **Technologies**



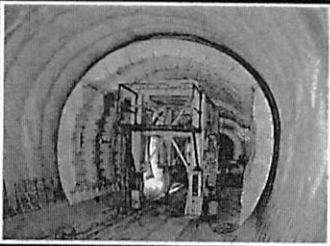
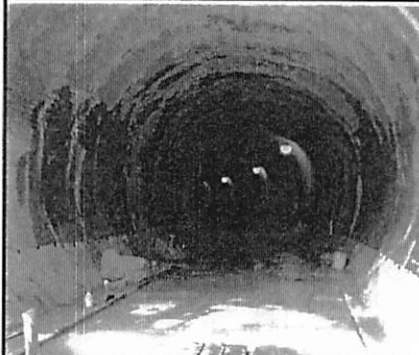
 **NATM**

- DESCRIPTION
- 4 tunnels
- 2 tunnels- integral part
- 2 tunnels- Carolina extension




 **NATM**

Needs of a system that support the subsoil in the event that excavation continues






NATM Concrete Arch & Traveler System

 **Cut and Cover**


North Retained Cut

South Retained Cut



 **Cut and Cover**



Retained Cut facing North from UPR Station



EPBM



Subsoil Drilling, Pre-cast segment Installation

- 838m mined tunnel





EPBM

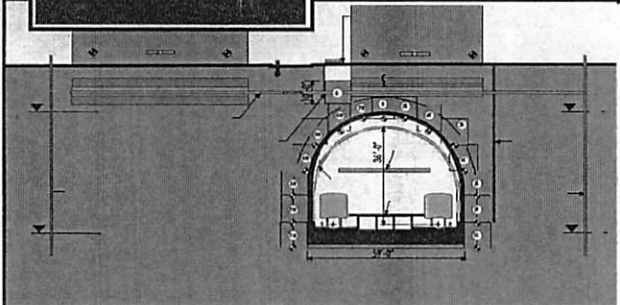
Pre-cast segment installation and invert slab construction

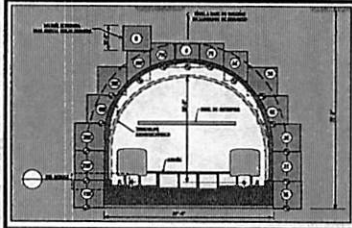
Stacked Drift



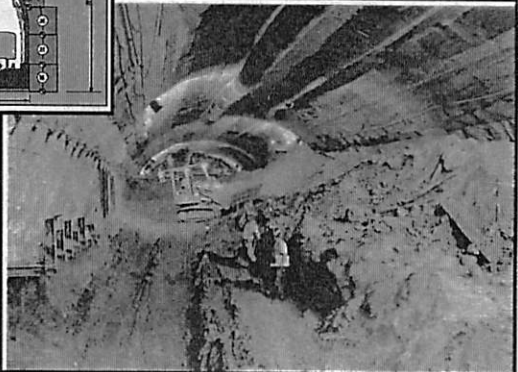
- Technology used based on the available geotechnical data and existing conditions at Río Piedras.
- Río Piedras Historic Zone



Río Piedras Station - Stacked Drift

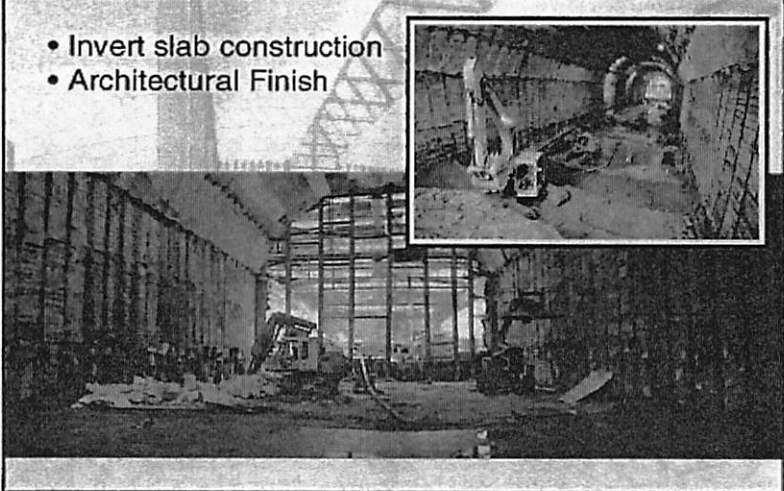



- 17 tunnels mined of 10sl, filled with reinforce concrete
- Chamber excavation- 62' wide and 53' height
- Invert slab construction

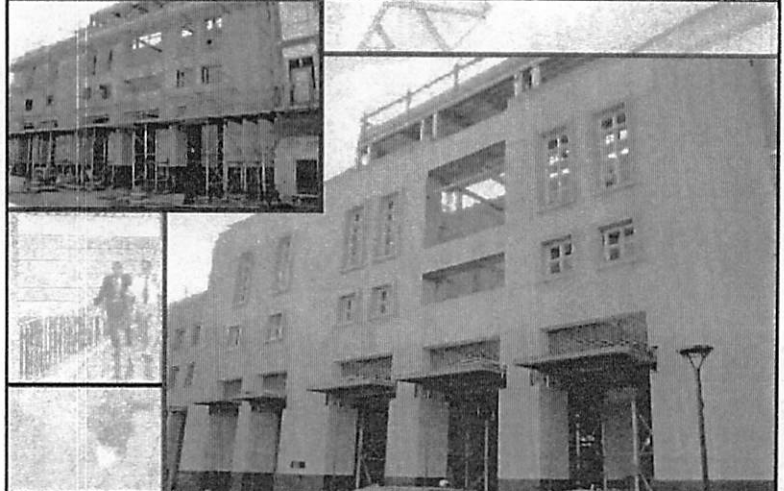



 Río Piedras Station - Stacked Drift

- Invert slab construction
- Architectural Finish

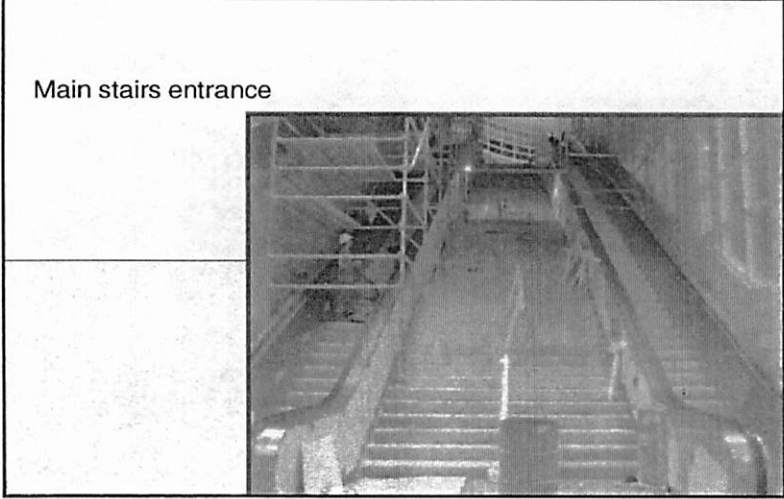



 Río Piedras Station Construction

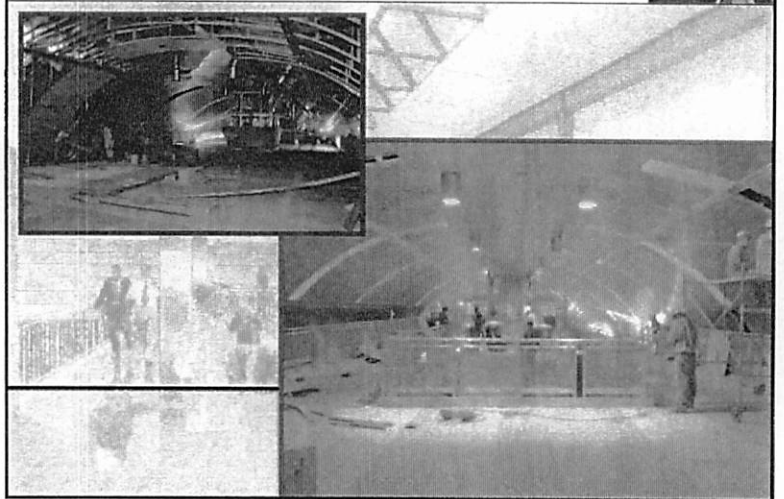


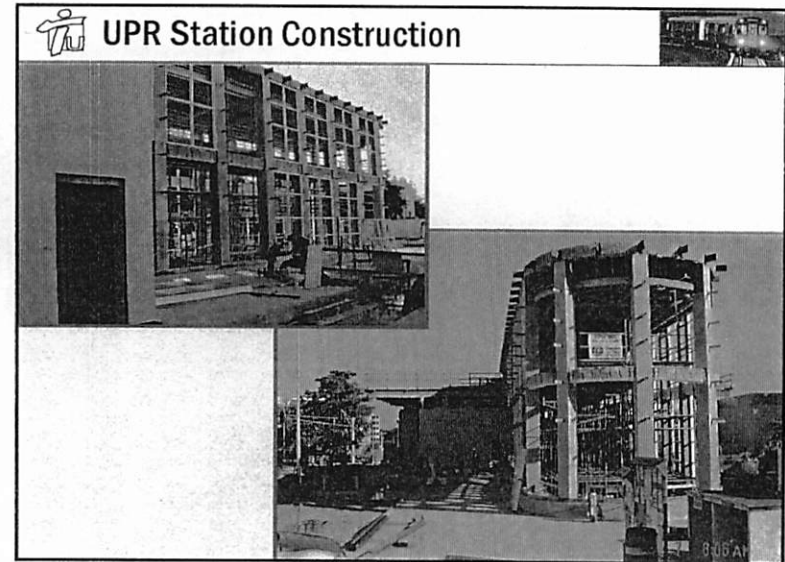
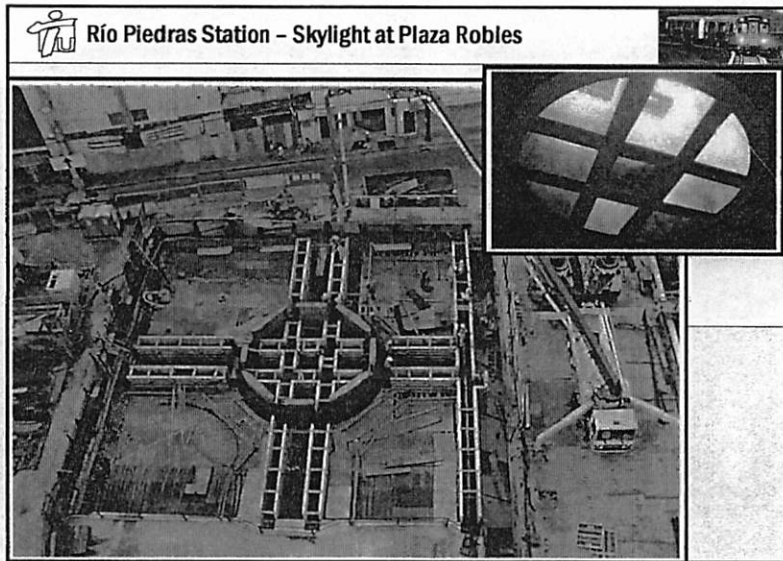
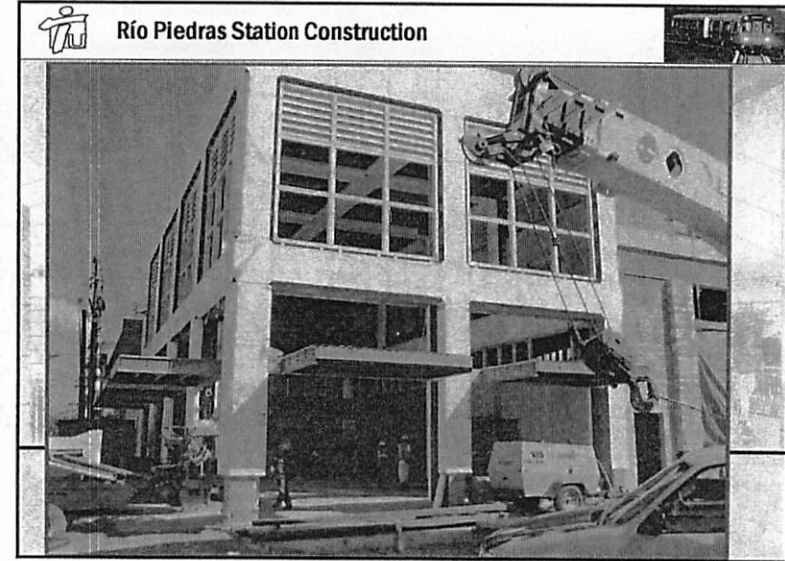
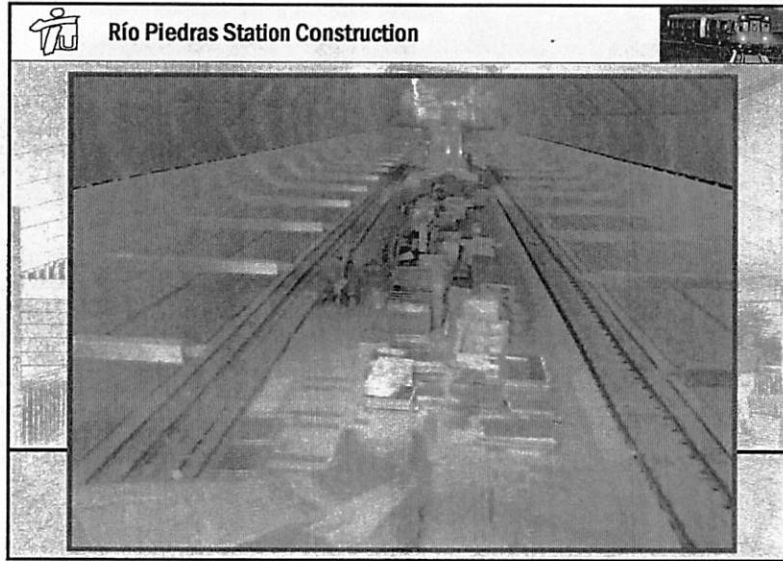
 Río Piedras Station Construction

Main stairs entrance

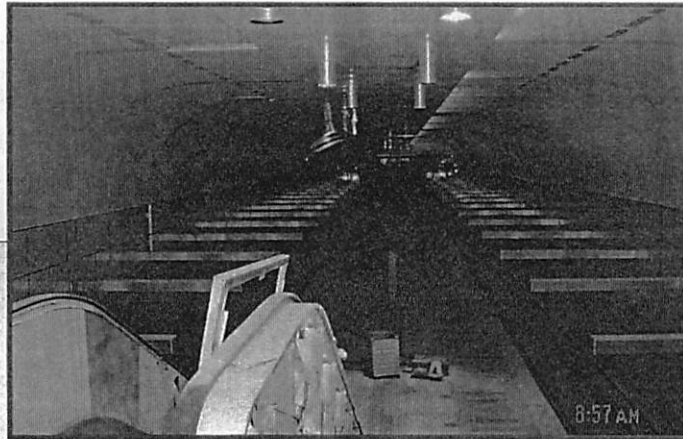



 Río Piedras Station Construction






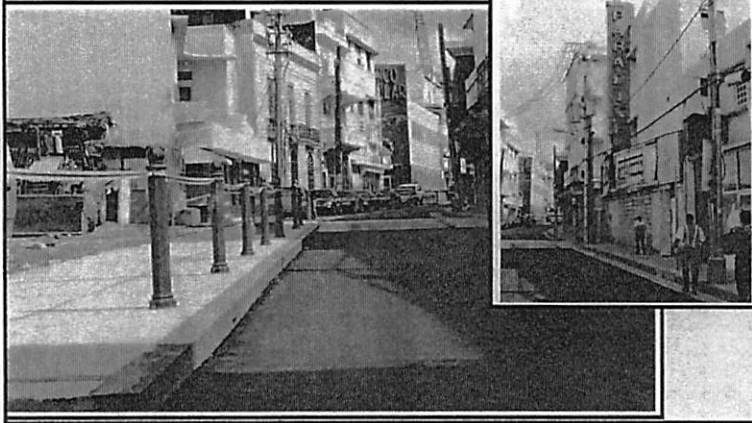
 UPR Station




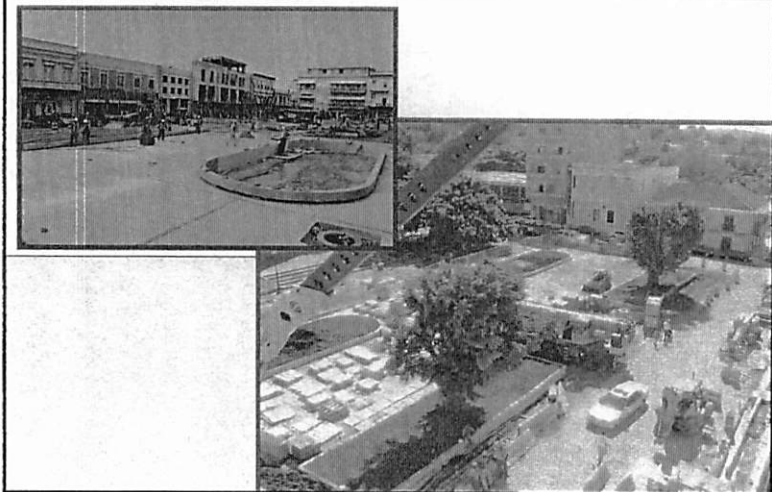
 Improvements and Future Projects

- Improvements
 - Ponce de León Avenue
 - Asphalt Pavement, sidewalks, utilities relocation
 - Plaza del Pilar Restoration
 - Plaza del Roble Construction
- Future Projects
 - Stations Area Access Improvements
 - Paradise Theater Rehabilitation

 Ponce de León Avenue and Paradise Theater



 Plaza del Pilar Restoration





Plaza Robles

