



Building a world-class metro network in Panama

Roberto R. Roy

Metro de Panama CEO

Chairman of the Board, Panama Canal



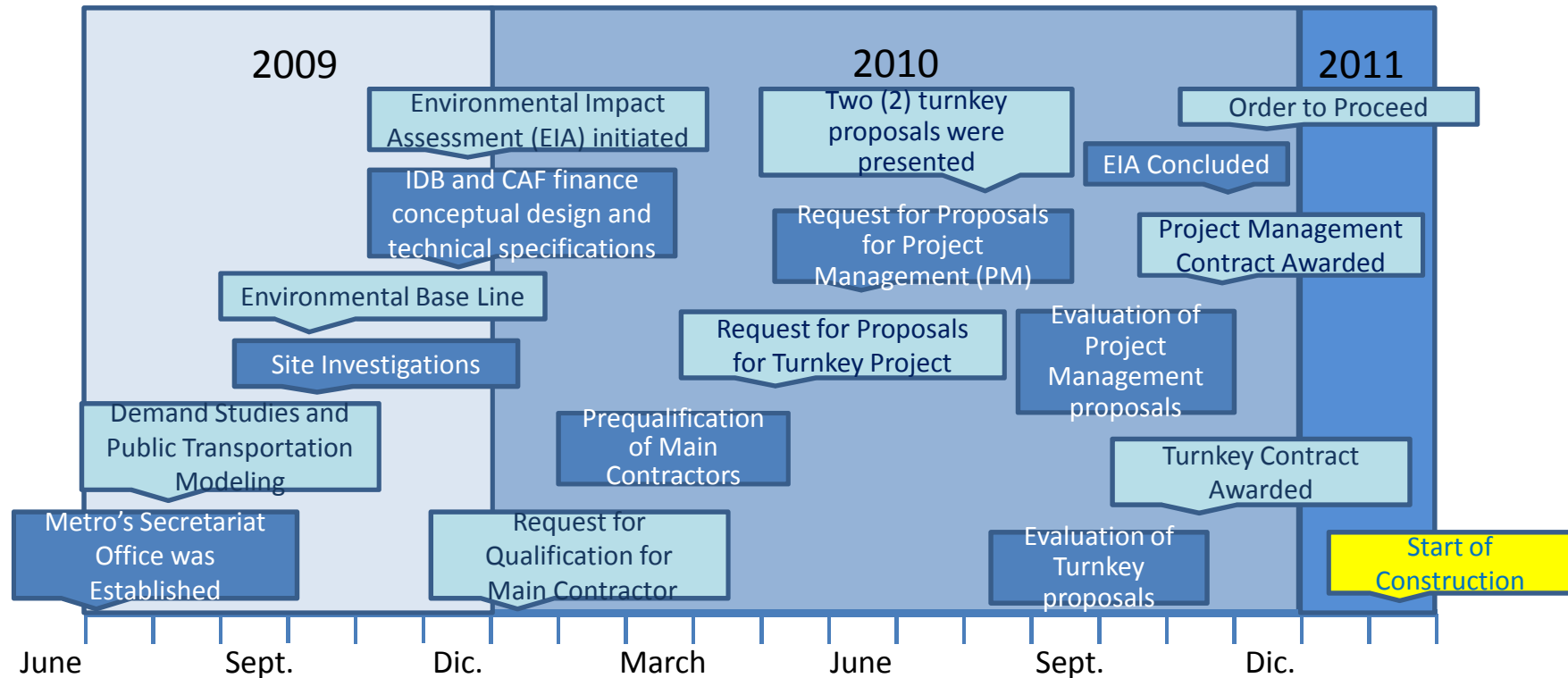


New Metros in Latam , not in big countries only anymore

- Metro de Lima
- Metro de Santo Domingo
- Metro de Panamá
- Metro de Quito

Metros small, but world class equipment.

Panama's Metro Line 1 Planning and Start-up





Line One Project – Panama's Metro System

General Concepts



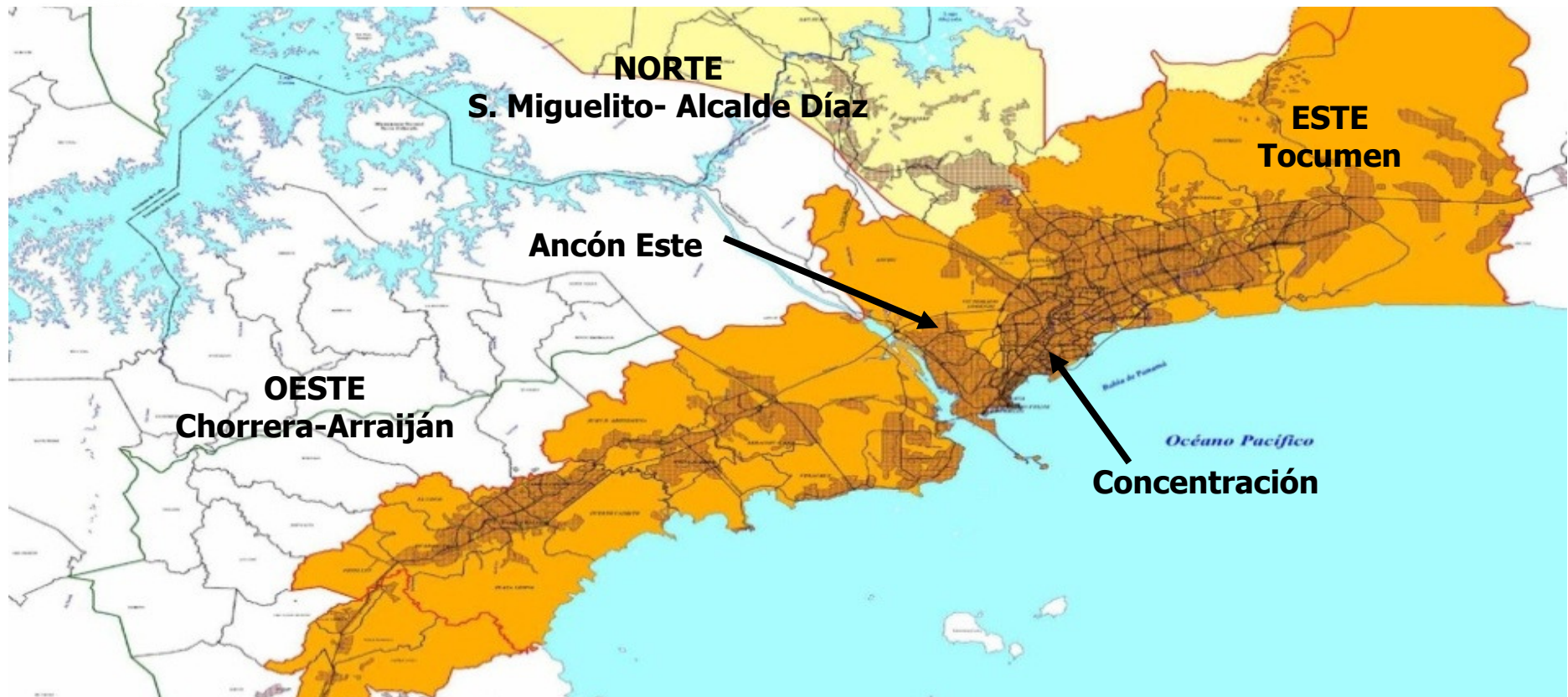
CENTRAL AMERICA







Limits to Growth





Characteristics of the City

- 3 Limits to Growth: Ocean, Canal and Watershed
- 3 dormitories
- Hence, long narrow corridors













MOBILIZATION, SMALL CITIES BIG PROBLEMS

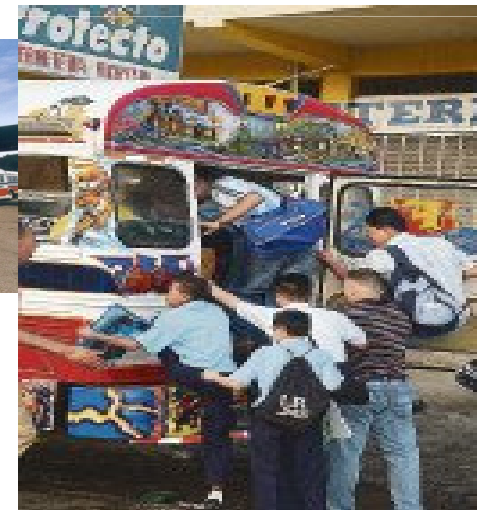
Cars sold per month
Motorized Trips per day
Average Time at peak hour

TRAFICO

→ 5000
→ 2.500.000
→ 75 minutes
Autos occupy 80% spc

Travel modes

Buses	30%
Cars	19%
Pedestrian	40%
Taxi	11%



- RED DEVIL!





Challenges

PUBLIC TRANSPORTATION IN
PANAMA REQUIRED A
COMPLETE OVERHAUL

Last Few Year's Situation

- ☐ Accelerated population growth. Strong Migration to the City.
- ☐ Dangerous old buses (Average age 18 years old).
- ☐ Bad business model
- ☐ Competition for passengers.
- ☐ Non compliance with transit laws.
- ☐ Car congestion
- ☐ Very Bad public transportation
- ☐ Lack of alternatives to the Car
- ☐ **BLISTERING ECONOMY GROWING STEADILY AT OVER 10% A YEAR**



SOLUTIONS?

Combined Multiple Solution !

- METRO+ Road Program+ Intersections, Underpasses, Widening, Asphalt
- New METROBUS System (1300 New Buses), Smart Street Light system
- Aprox 5 billion investment





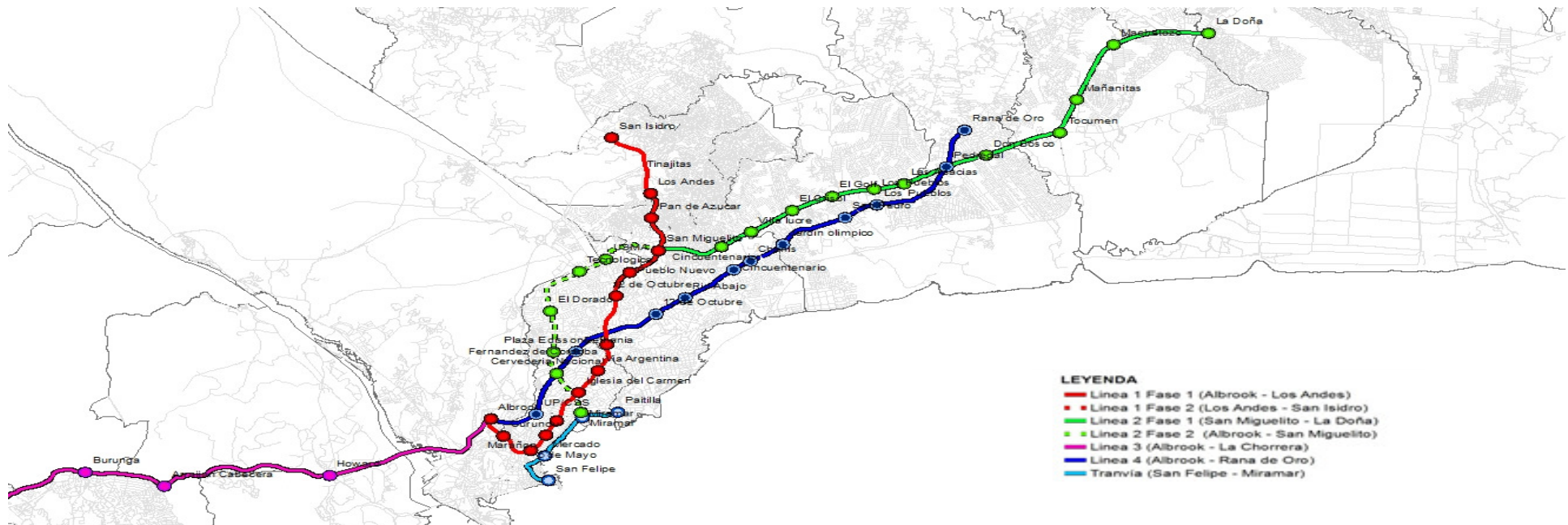
TYPES OF METRO: OPTIONS

Alternatives

- A) Light Rail on Surface (Occupied too much space)
- B) Monorail (good but unique supplier, non standard, lower future capacity)
- C) ELEVATED STANDARD METRO (Social and aesthetic problems in the heart of the City)
- D) ALL UNDERGROUND (MORE EXPENSIVE)
- E) COMBINATION: SUBWAY AND ELEVATED

- OPTION (E) CHOSEN

METRO MASTER PLAN FOR 2030



RED LINE 1, 14 KM

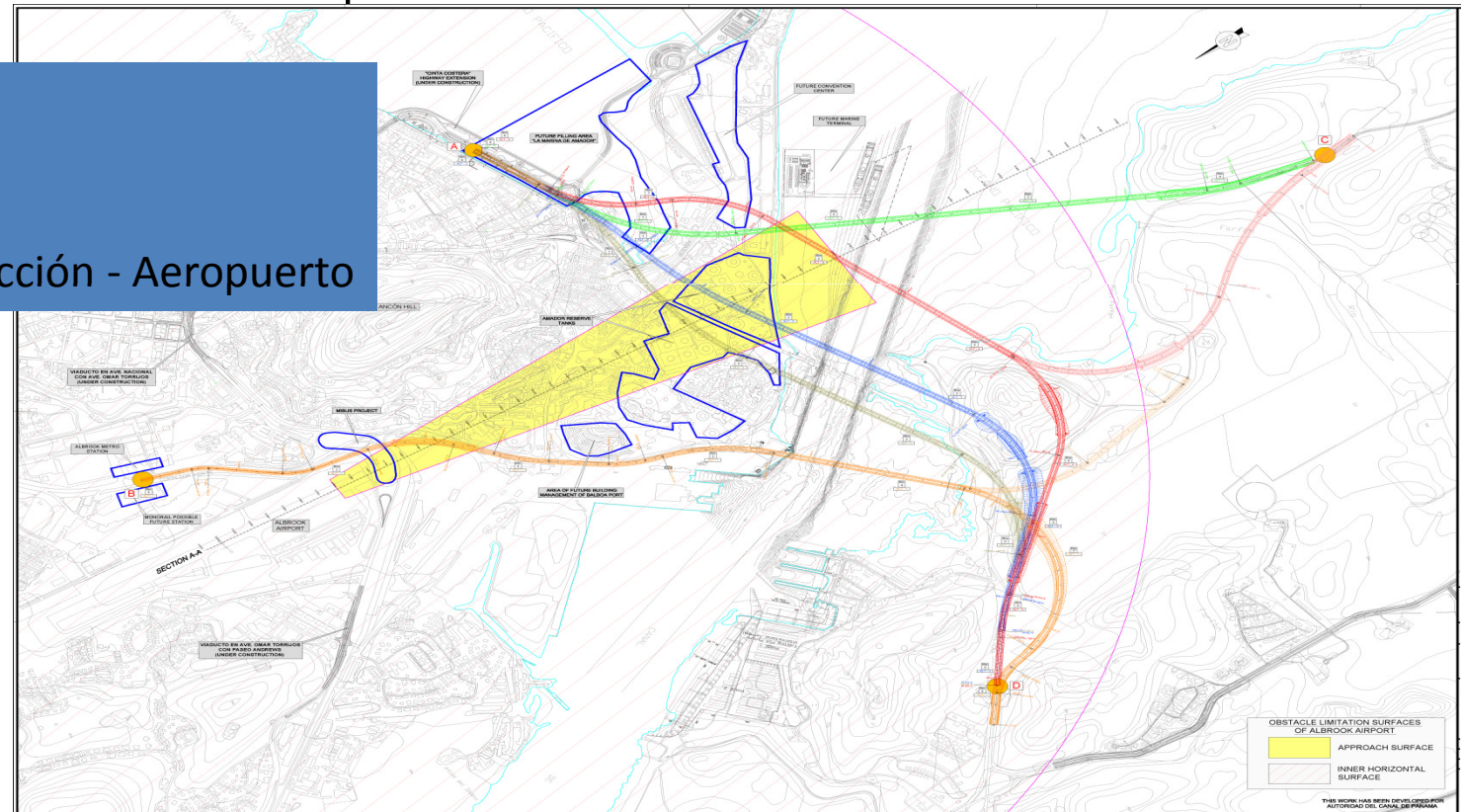
2. Estudio de tráfico – ALTERNATIVAS de paso



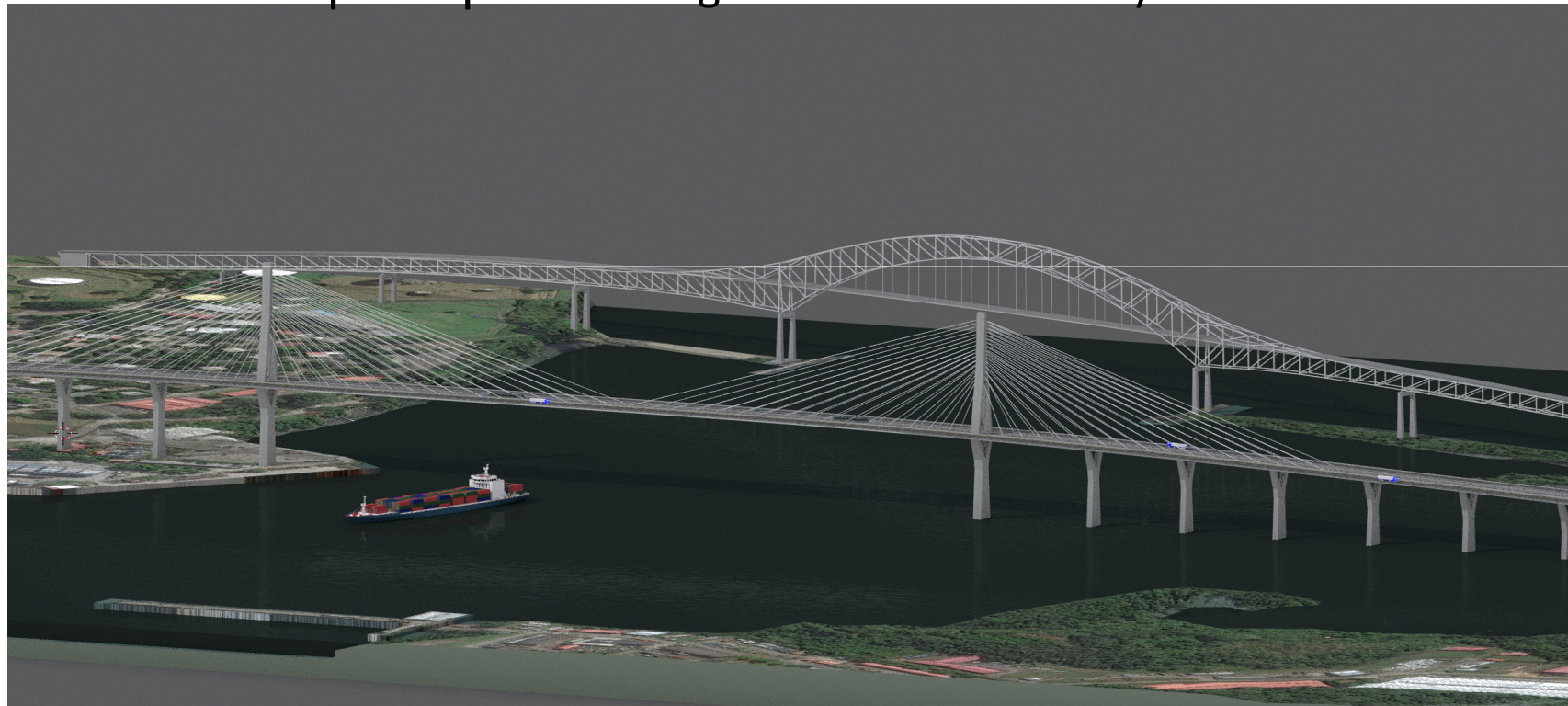
3. ALTERNATIVAS – Descripción

ALTERNATIVAS

- Visión global
- Principal restricción - Aeropuerto



7. Puente principal – Vista general: Soluciones 1 y 2



7. Puente principal – Vista general: Soluciones 1, 2 y 3





Metro Line 1 - Panama

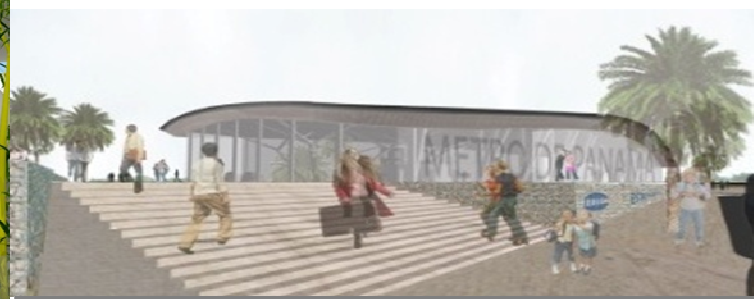
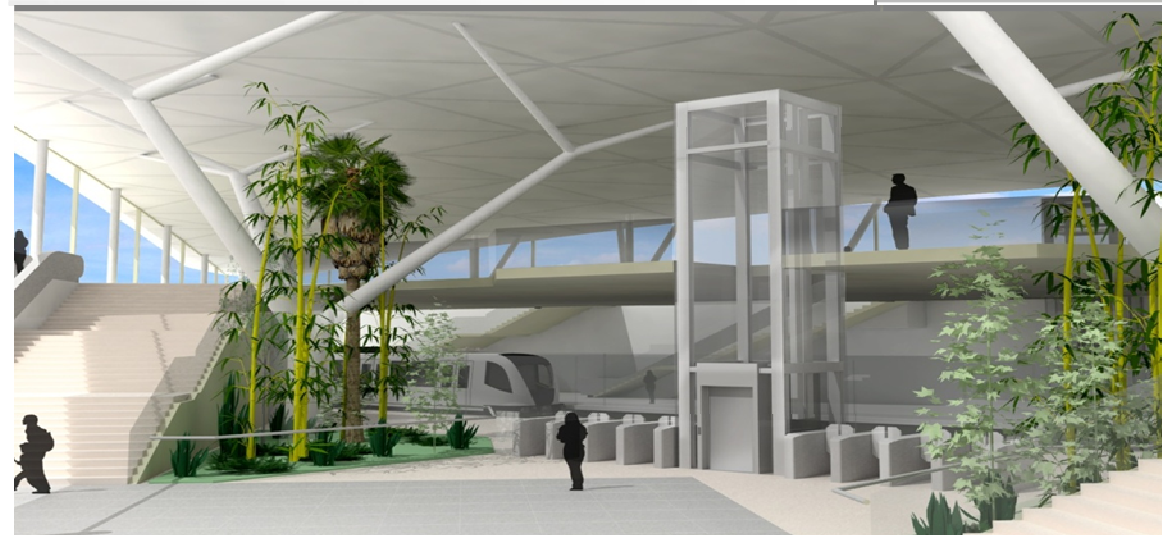
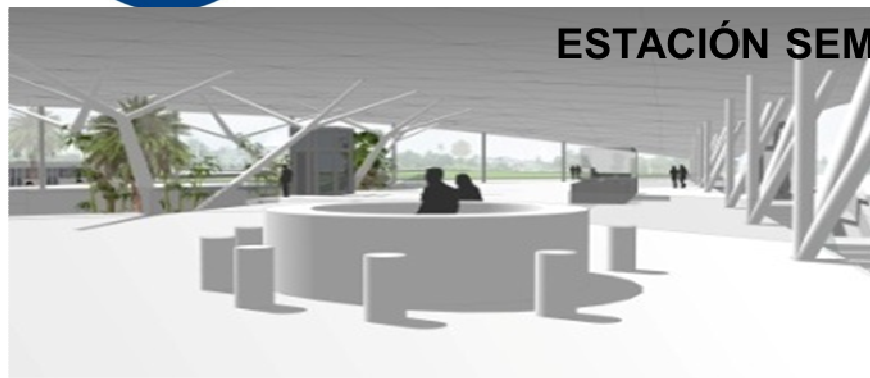
Designs for 14 km Line 1



SOUTH TERMINAL STATON



ESTACIÓN SEMIENTERRADA- ALBROOK





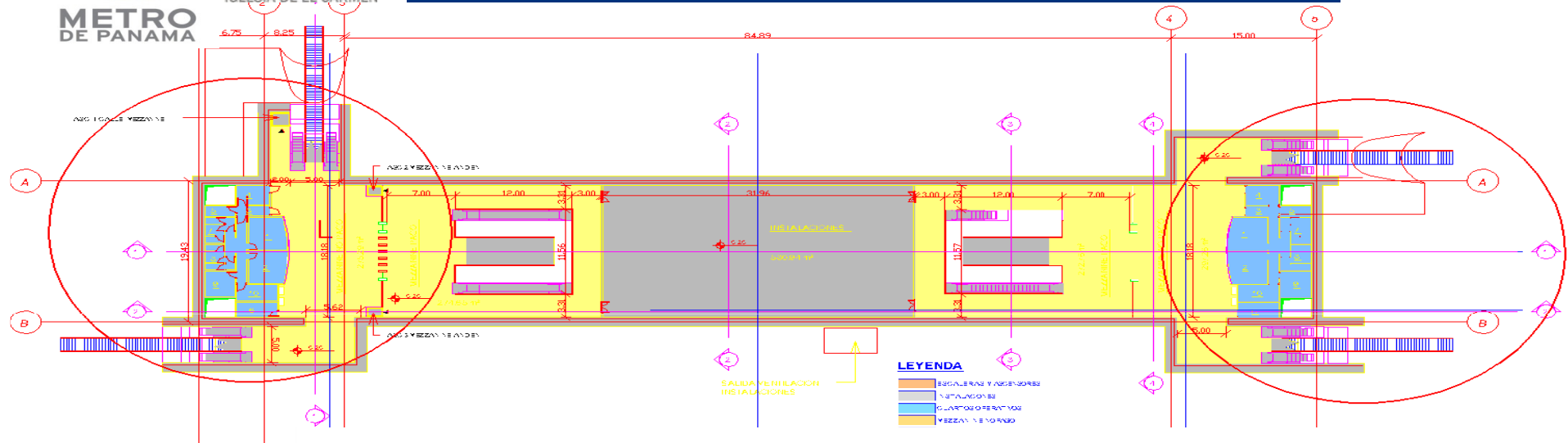
BASIC UNDERGROUND STATION DESIGN

BASIC PROJECT

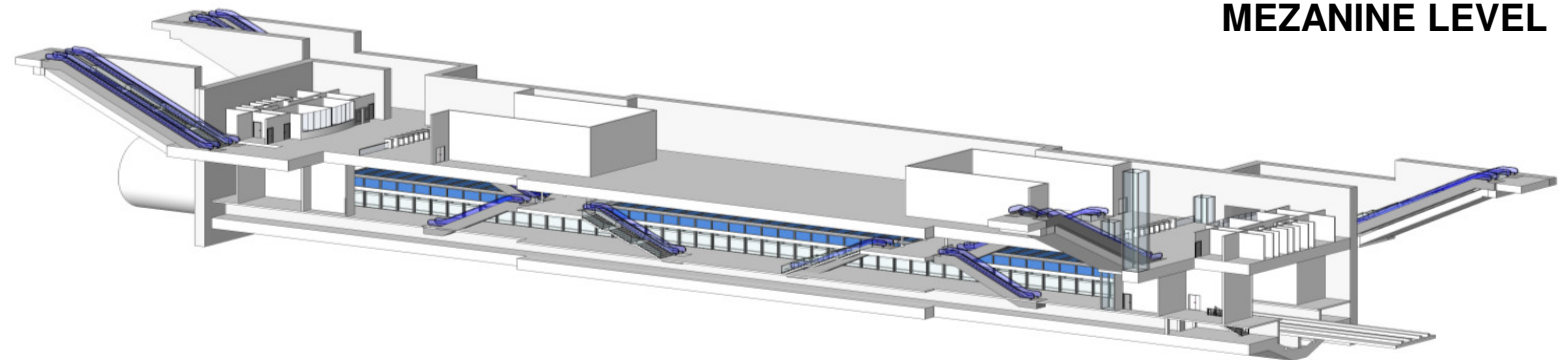




BASIC PROJECT



MEZANINE LEVEL



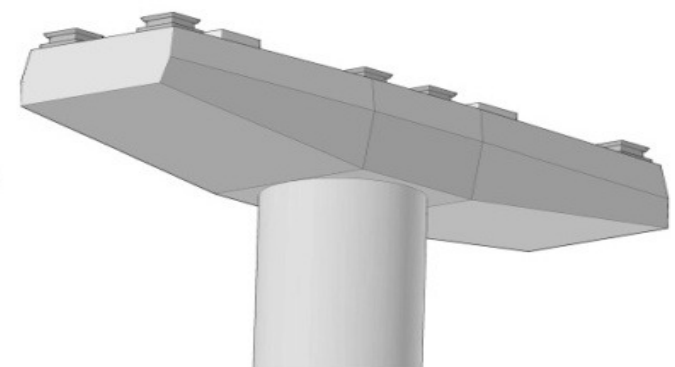
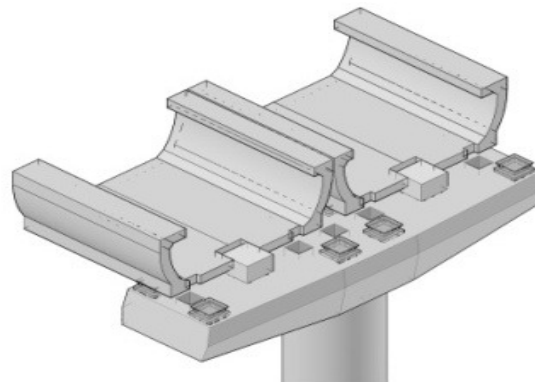
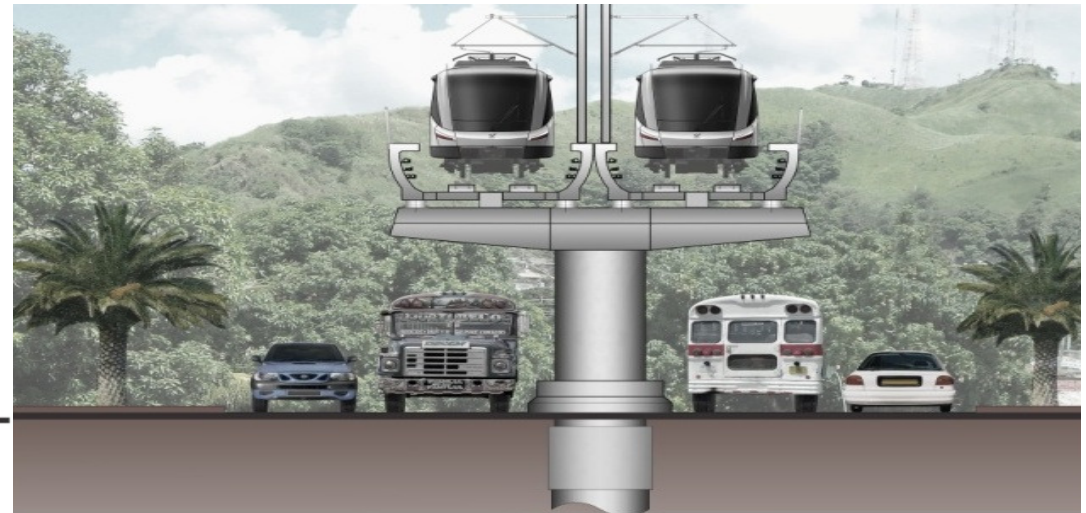
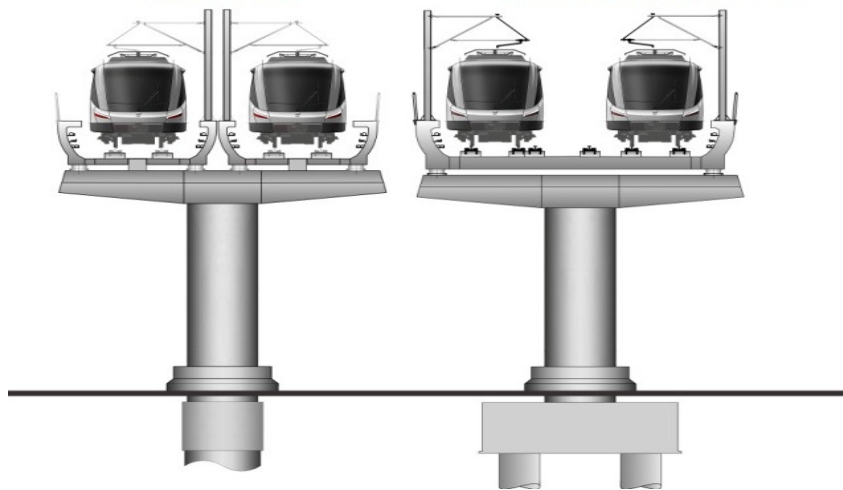


METRO

Tablero Monovia

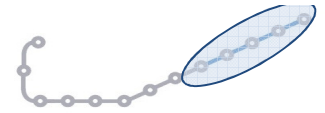
Tablero Doble Via (para aparatos de via)

DOUBLE "U" ELEVATED TRACK





BASIC PROJECT



DOBLE “U” TRACK RENDERING



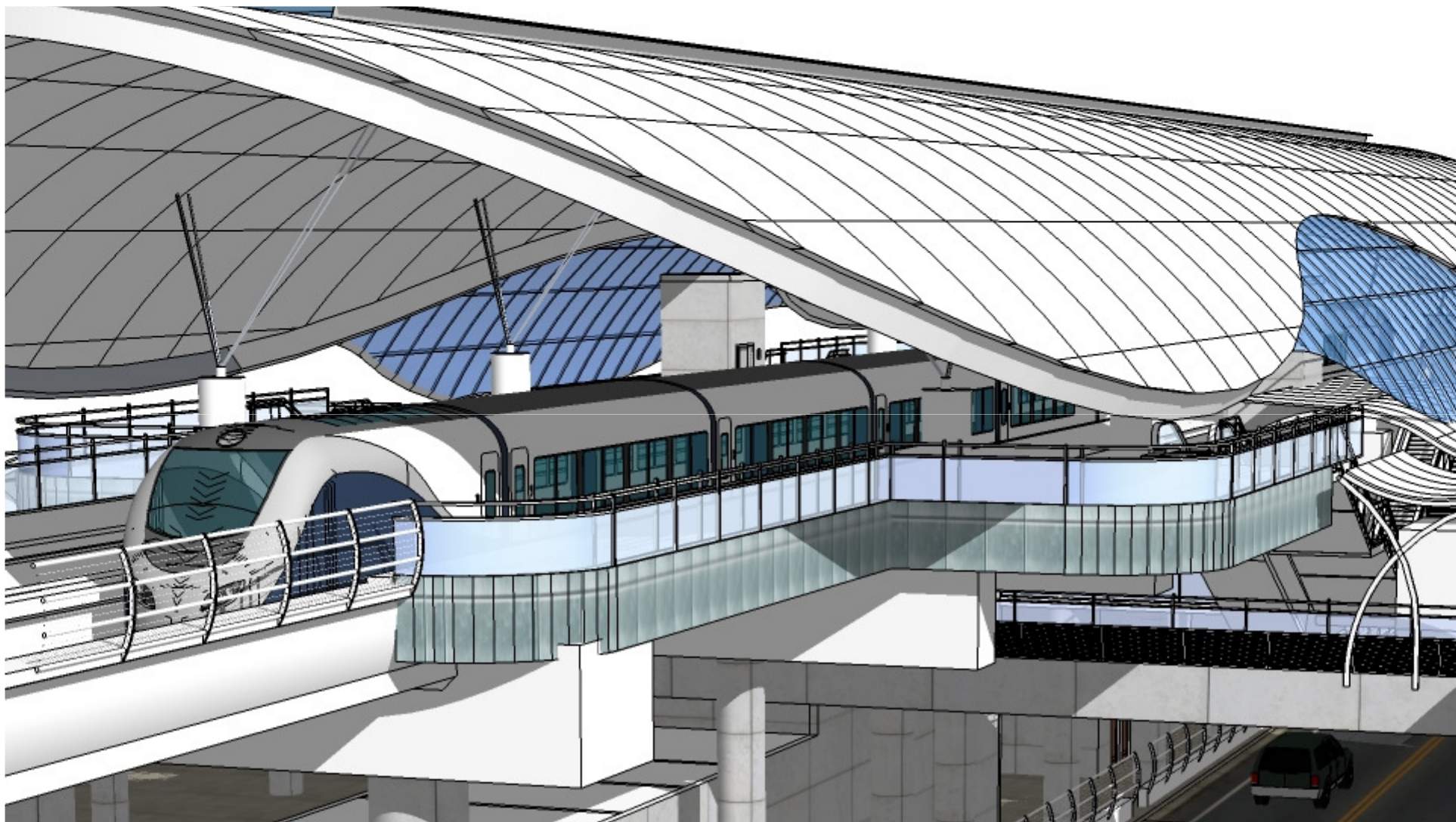


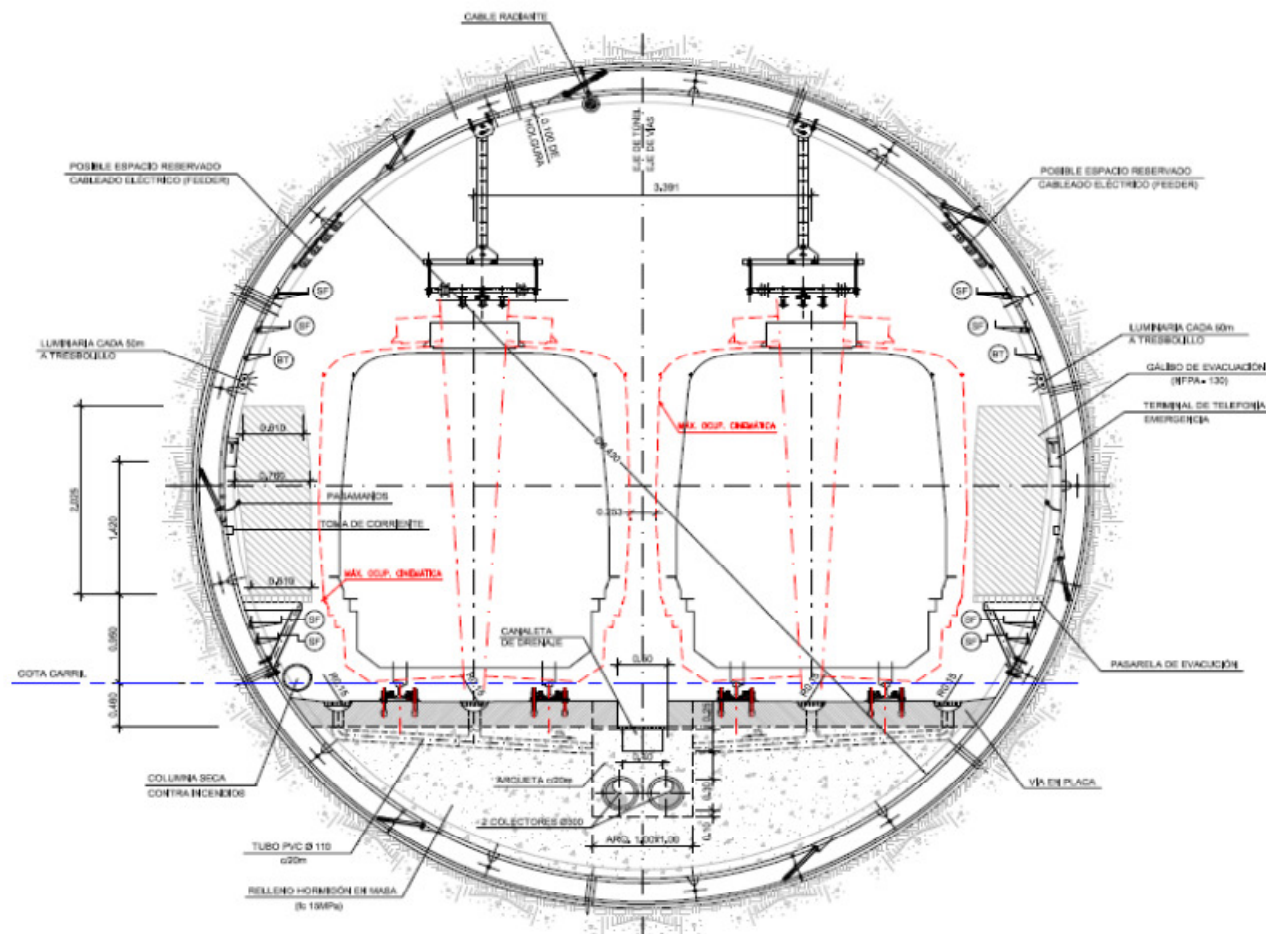
BASIC PROJECT



TYPICAL ELEVATED STATION







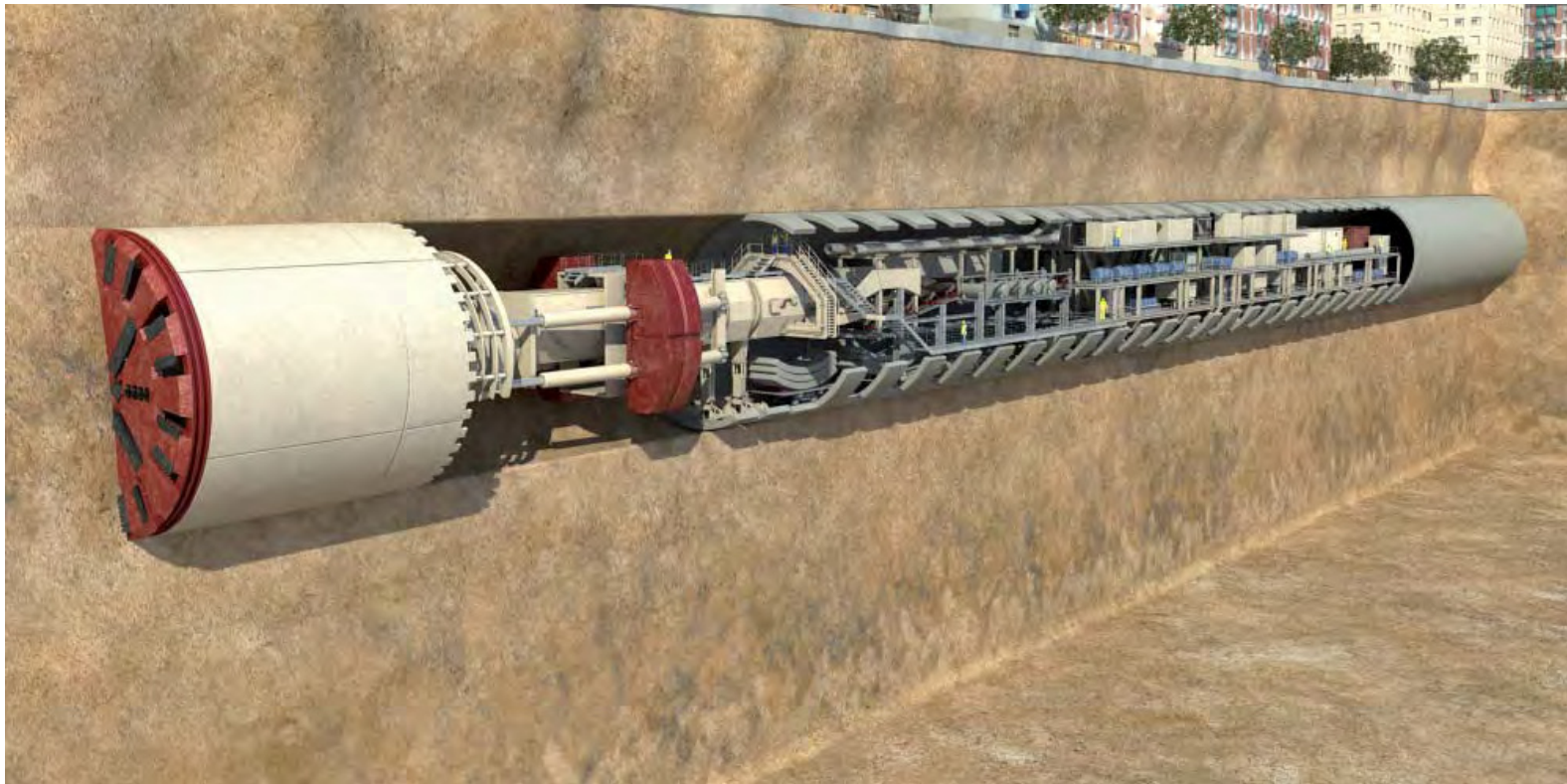


TUNNEL BORING MACHINES (TBMs)

TWO BRAND NEW EPB TYPE TUNNELING MACHINES



Tunneling Machine



P d ió 3D



PUBLIC UTILITES

18.7 kms Relocation of existing Electrical Lines

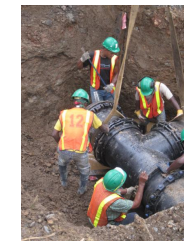
5.7 New Electrical Lines

9.8 kms New Potable Water Lines

6 kms Sewers

70 kms Phone Lines

98 kms FIBER OPTIC





Sustainability



PROJECT FINANCING Cost 1.5 billion + City Works and options





PROGRESS PHOTOS

- RELATED WORKS
- UNDERGROUND STATIONS
- TUNNEL
- ELEVATED TRACK





CORDOBA STATION





























Beam Installation



Beam Installation



COMPLETED ELEVATED TRACK













Station Structure



SYSTEM SUMMARY

ALSTOM METROPOLIS

ATP-ATO

CBTC Signaling. Int. System by THALES

14 km line (8 km underground, 6km viaduct)

19 TRAINS (57 Cars)

Contractors: Odebrecht + FCC

Project Managers: TMB +AYESA+Inelectra



RECIPE to build NEW METROS IN SMALL COUNTRIES, FAST

- POLITICAL WILL !
- NEW ENTITY WITH NO PREVIOUS BAGGAGE
- EMPOWERED LEADER with UNIFIED COMMAND
- SMALL , COMMITED, GUERRILLA TYPE TECHNICAL TEAM THAT INCLUDES FOREIGN ADVISORS AND EXPERT PM
- ONE TO THREE CONTRACTS AT BEST FOR LINE 1 more later
- EIA AND CLEAR RIGHT OF WAY, IMMEDIATELY
- COMPENSATE THE PEOPLE AND MERCHANTS FAIRLY
- FINANCING TEAM APART FROM TECHNICAL TEAM



Metro heads the transportation of the future

**Panama City of the
21st Century**

Thank you!

