EURASIA TUNNEL PROJECT

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- General Information
- Technical Information and Design
- Structure of the Investment and Financing
- Ideas for the Future

General Information – Project Participants

- **Administration:** **T.C. Ulaştırma, Denizcilik ve Haberleşme Bakanlığı**

  (Ministry of Transportation, Maritime and Communication)

  Altyapı Yatırımları Genel Müdürlüğü

  (General Directorate of Infrastructure Investments)

- **Appointed Company:** **Avrasya Tüneli İşletme, İnşaat ve Yatırım AŞ**

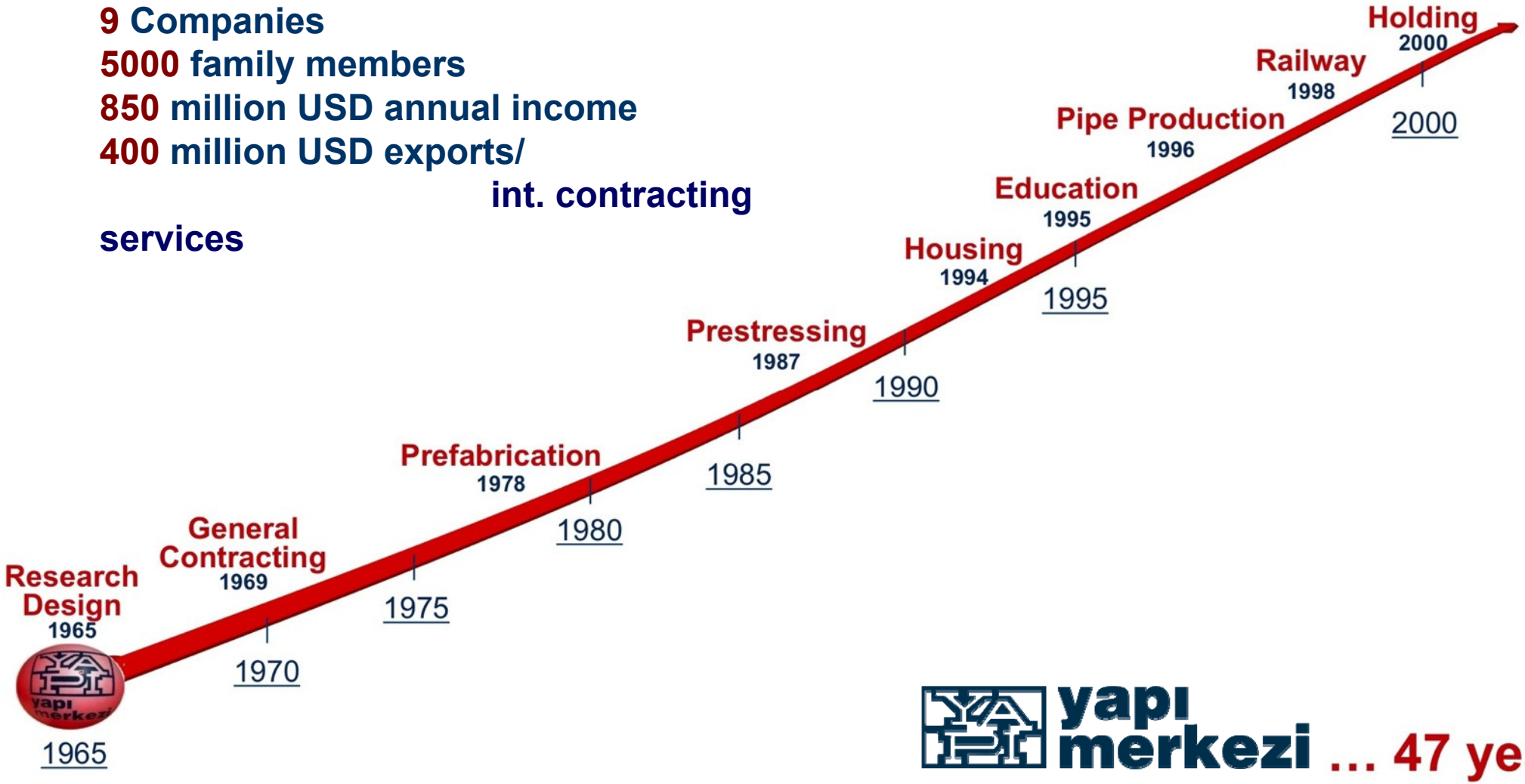
  (Eurasia Tunnel Operation, Construction and Investment Inc.)

- **Contractor:** **Yapı Merkezi, SK EC Joint Venture**

General Information – Project Paticipants YM

Key figures in 2012

9 Companies
5000 family members
850 million USD annual income
400 million USD exports/ int. contracting services



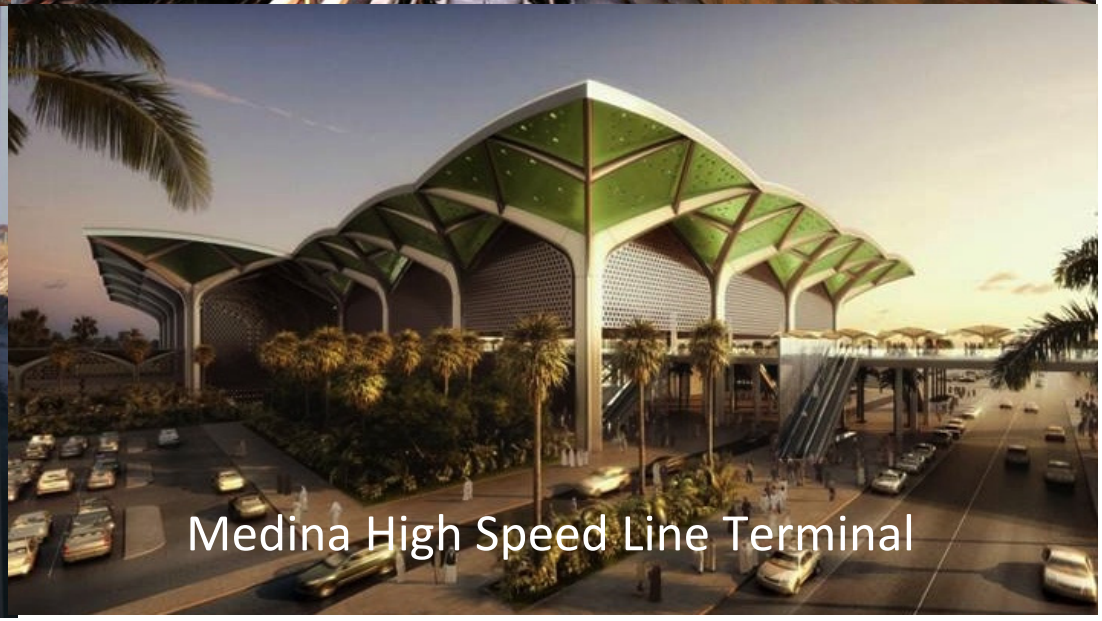
yapı merkezi ... 47 years

General Information – Project Paticipants YM


İzmir Metro

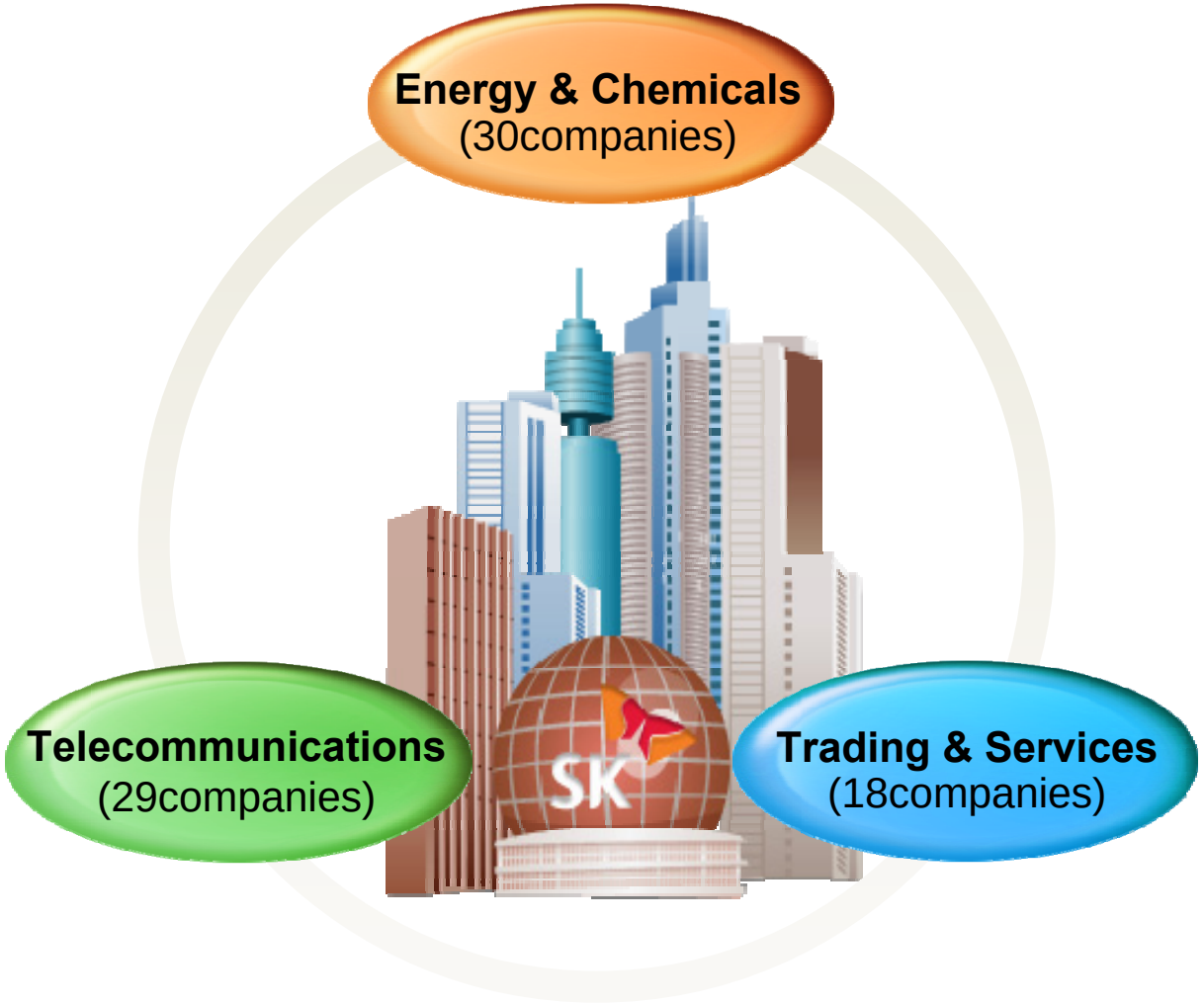

Dubai Metro


Ankara Konya High Speed Line


Medina High Speed Line Terminal

General Information – Project Paticipants SK E&C

SK Engineering & Construction Co., Ltd. is a member of SK GROUP (3rd largest group in Korea)



Energy & Chemicals
- SK Energy (40% local market share)
- SK Chemicals
- SKC
- SK Gas
- SK E&S

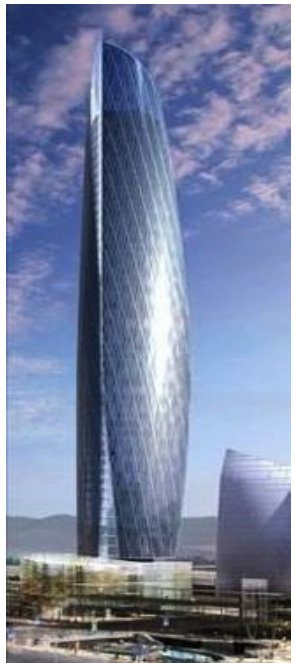
Services & Logistics
- ***SK ENGINEERING & CONSTRUCTION CO., LTD***
- SK Networks
- SK Shipping
- SK Securities
- Sheraton Walker Hill Hotel

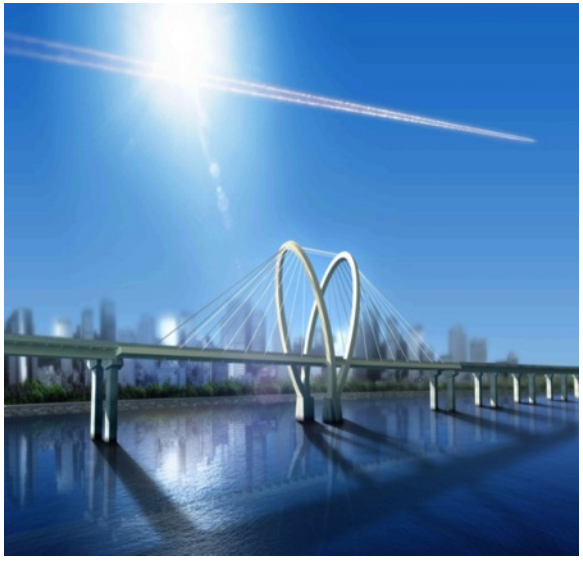
Information & Telecommunications
- SK Telecom (52% local market share)
- SK Computer & Communications
- SK Telink

General Information – Project Paticipants SK E&C

SK E&C has achieved success with its development of the newest building methods, creation of advanced systems, and its extensive experience and know-how.





General Information – Project Dates

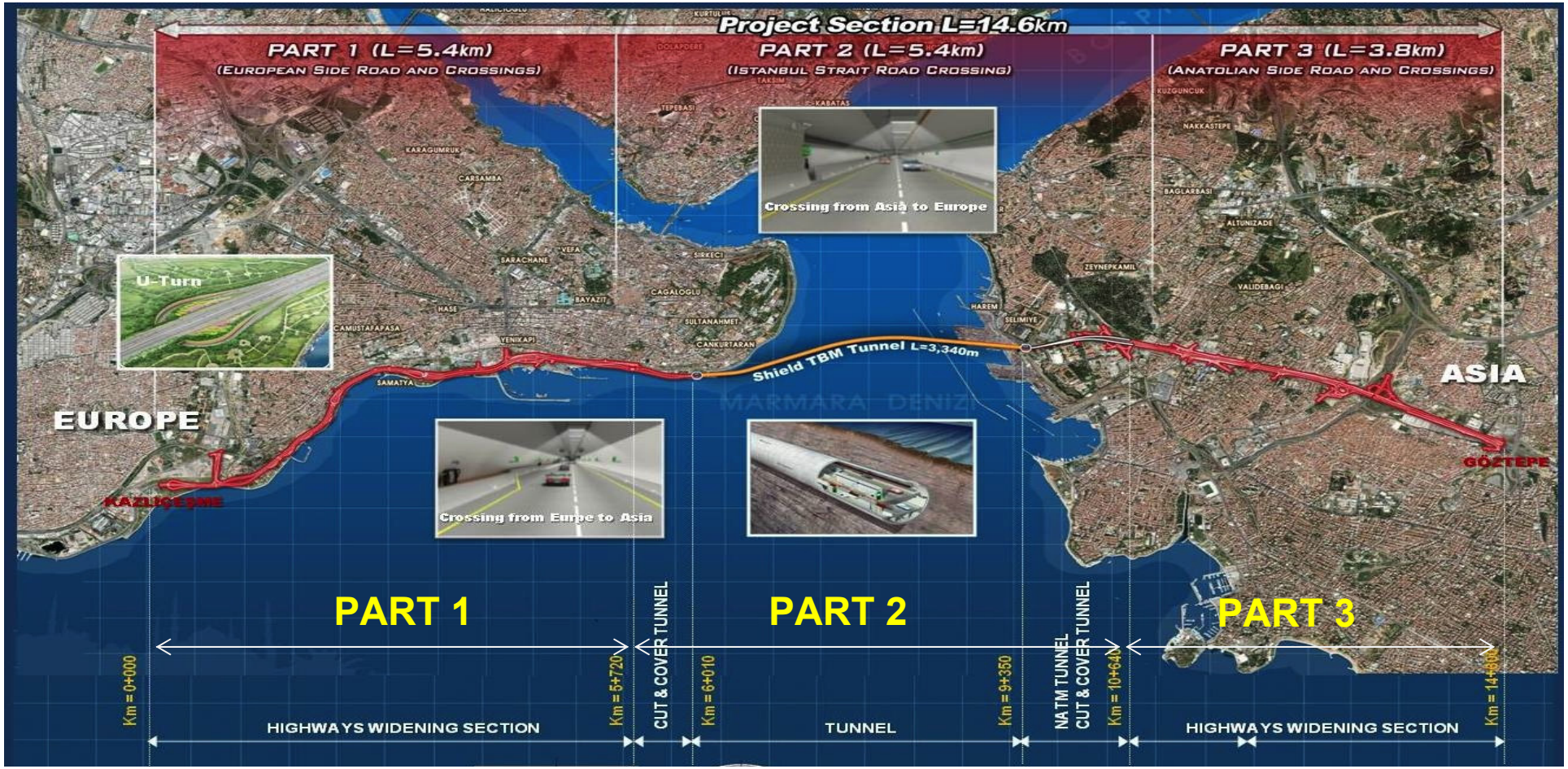
- **Tender:** June 2008
- **Contract:** February 2011
- **Financial Closing:** December 2012
- **Start of Service:** October 2016 (estimated)
- **Handing over:** April 2043

Total Duration of Concession: 30 years 6 months 9 days

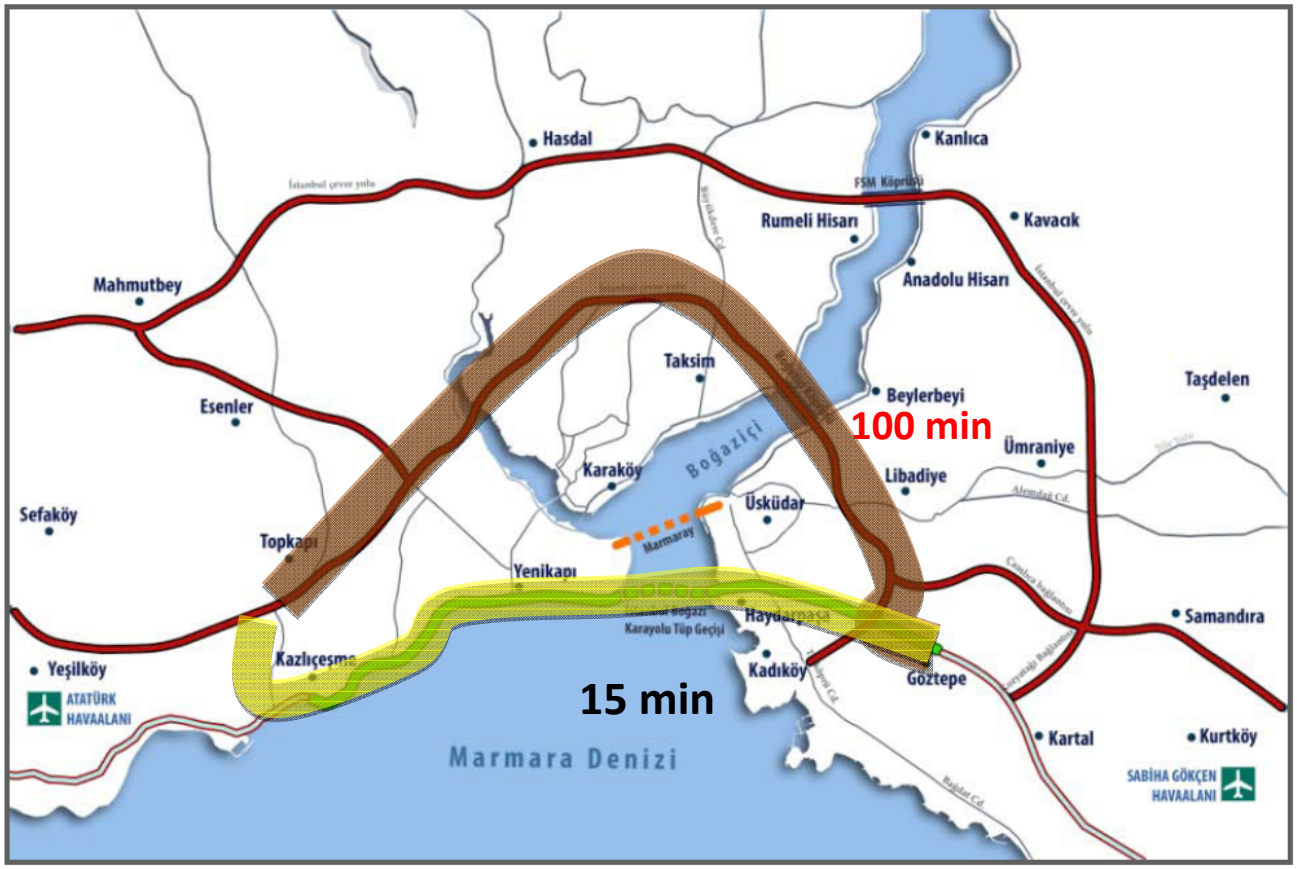
Technical – The Location and Significance of the Project

Technical – Project Sections

Out of the total 14,6 km Project alignment, underground section (Part 2) section is 5,4 km. TBM section crossing the Bosphorus is 3,4 km while another 2,0 km is constructed using NATM and cut-cover methods. Parts 1 and 3 will be handed over to the Istanbul Metropolitan Municipality and Part 2 will be operated by ATAŞ.



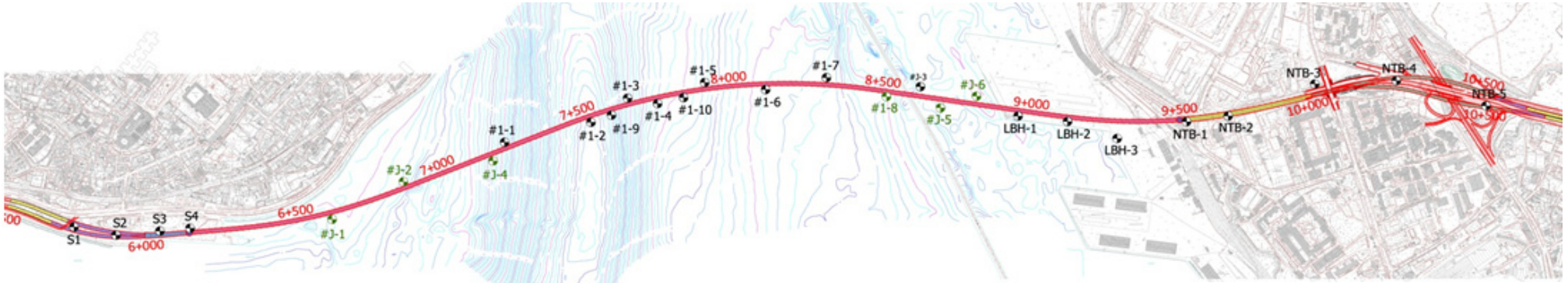
Technical – Contribution of the Project to Istanbul's Highway Network



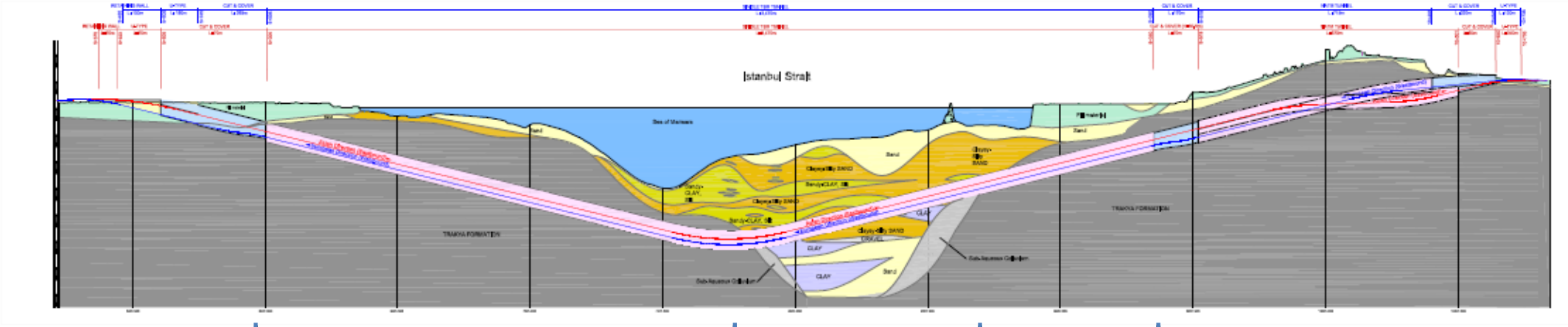
A very comprehensive environmetal and social impact assessment study has been performed according to EBRD standards. Design, construction and operation of the Project will be carried out in accordance with this study.

- **Provides a shortcut between Bakırköy and Fatih prefectures on the West and Üskükar, Kadıköy, Maltepe and Kartal on the East...**
- **With considerable relief on the traffic load on the Bosphorus Bridges significant time savings for users and non-users**
- **Net savings in pollutant emissions...**
- **Shortest path between Atatürk and Sabiha Gökçen airports…**
- **No effect on the "Silhouette of Istanbul"…**

Technical – Tunnel Alignment



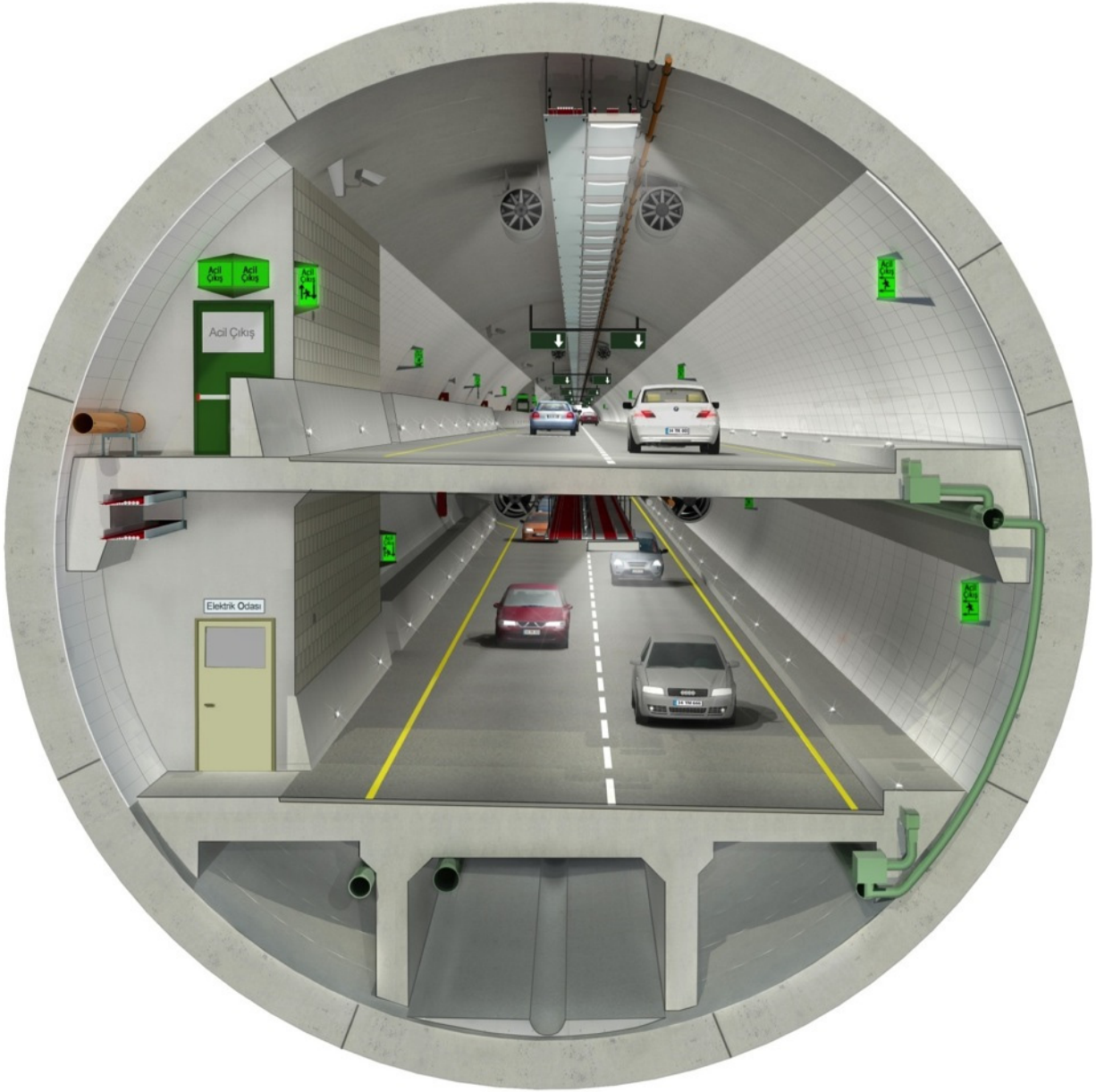
CC | TBM | CC | NATM | CC



Trakya Formation | Soft Ground | Trakya Formation

CC= Cut Cover
NATM= New Austrian Method

Technical – TBM Tunnel



6th Largest Tunnel

Excavation Diameter = 13.7 m

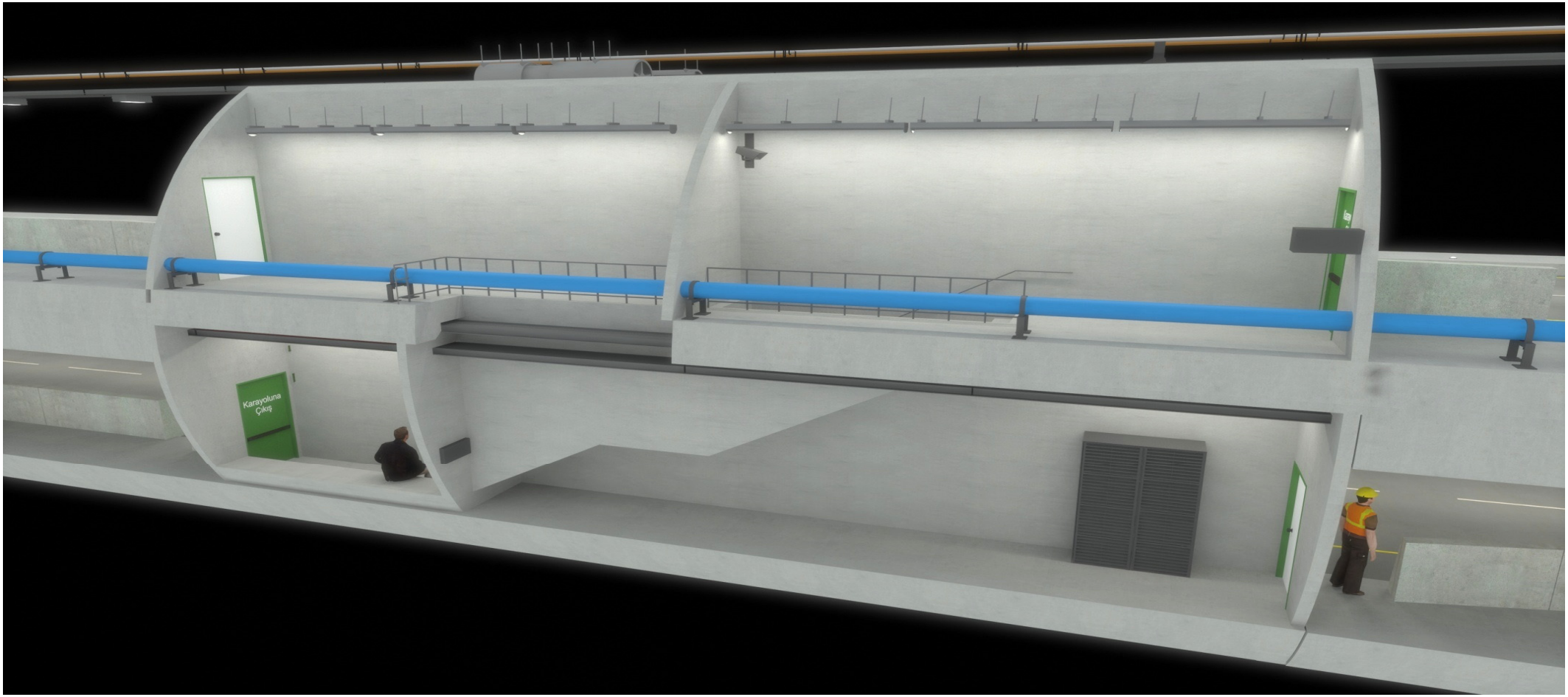
Inner Diameter = 12.0 m

Lining Thickness = 60 cm

Technical – Emergency Passages and Rooms

Protected emergency rooms every 300 meters to provide safe haven for the disabled and elderly, also escape route to the other level.

Technical – Emergency Rooms



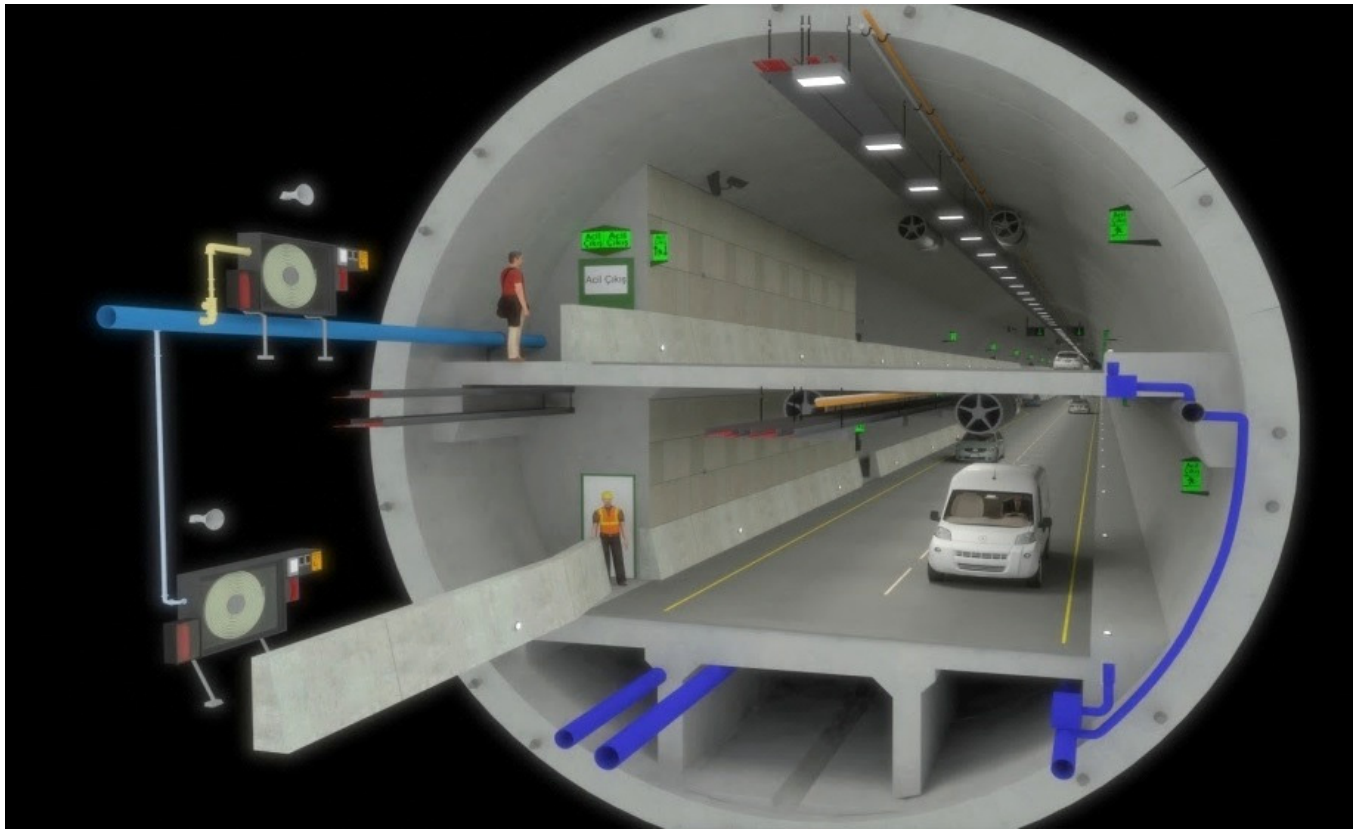
Internal view of emergency rooms

CCTV to view the number and status of occupants.

Technical – Emergency Lane

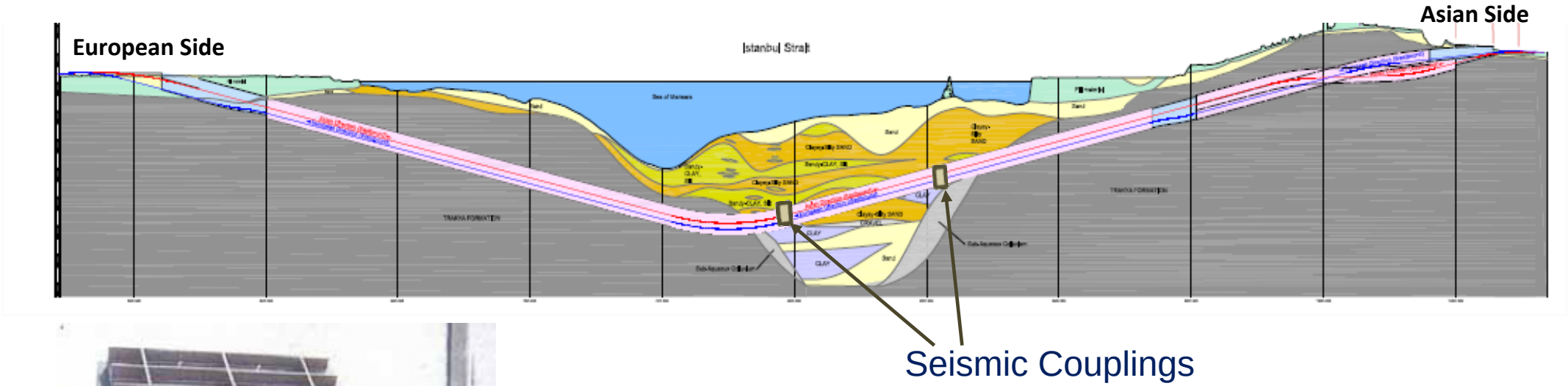
- Emergency Lanes are provided every 500 meters.
- Emergency Telephones
- CCTV

Technical – Design Criteria



- Adequate ventilation with longitudinal fans
- Electronic monitoring of air quality
- Continuous CCTV surveillance
- Emergency communications
- Fire detection system
- Fire fighting system
- Intelligent lighting system
- Provisions for fast reaction in all kinds of emergencies

Technical – Seismic Provisions



Due to potential differential movement of rock mass and soft soils seismic connections are provided in the transition zones. These special connections provide for elastic behavior up to 70 mm of differential movement.

European portal area is elevated from sea level to provide for potential Tsunami waves.

Technical – Key Consultants and Advisors

- Design Leader: **Parsons Brinckerhoff** *(USA)*
- Design Verification: **HNTB** *(USA)*
- Technical Due Diligence: **ARUP** *(UK)*
- Traffic Studies: **Jacobs** *(USA)* **and ARUP** *(UK)*
- Insurance Advisors: **Marsh, JLT**
- Lead Re-insurers: **Münich Re, Zurich Re, Korean Re, Swiss Re**
- Tunnel Operation: **EGIS** *(France)*
- Geotechnical Studies: **Fugro** *(Netherlands)*
- TBM Supplier: **Herrenknecht** *(Germany)*
- Environmental Consultant**: ERM** *(Germany)*
- Financial Adviser: **Unicredit**
- Legal Advisers: **Clifford Chance, Skadden, Fidan&Fidan, HBO**

Financial Structure – Bankability Support

1. Minimum Revenue Guarantee

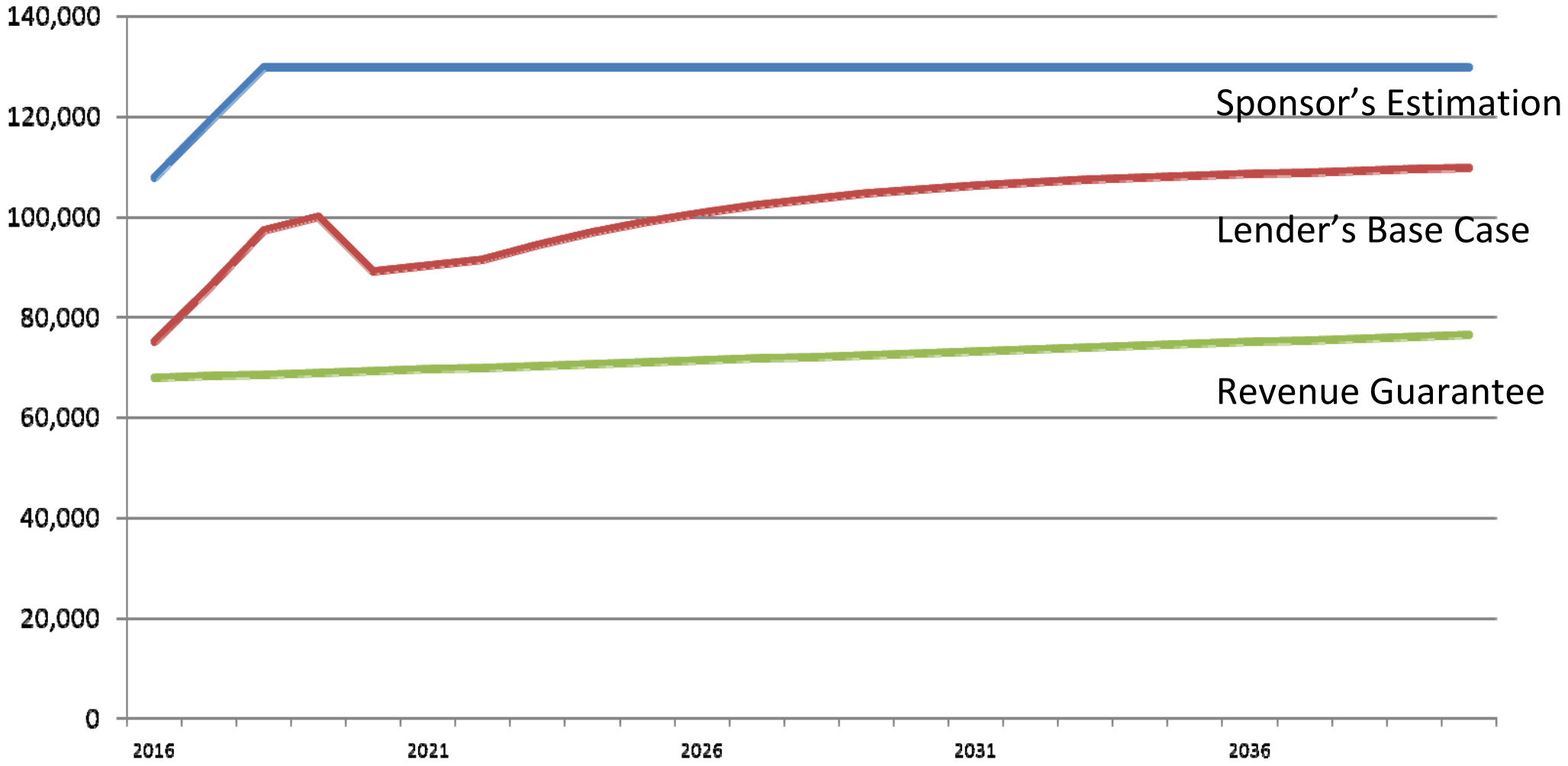
Ministry of Transportation's Infrastructure Investments Directorate (AYGM) is providing a revenue guarantee of 25 million crossings per year. (68.000 per day)

According to traffic studies, it is estimated that this guarantee will never be used. %30 of the excess revenue to be paid to AYGM.

2. Debt Assumption Provision

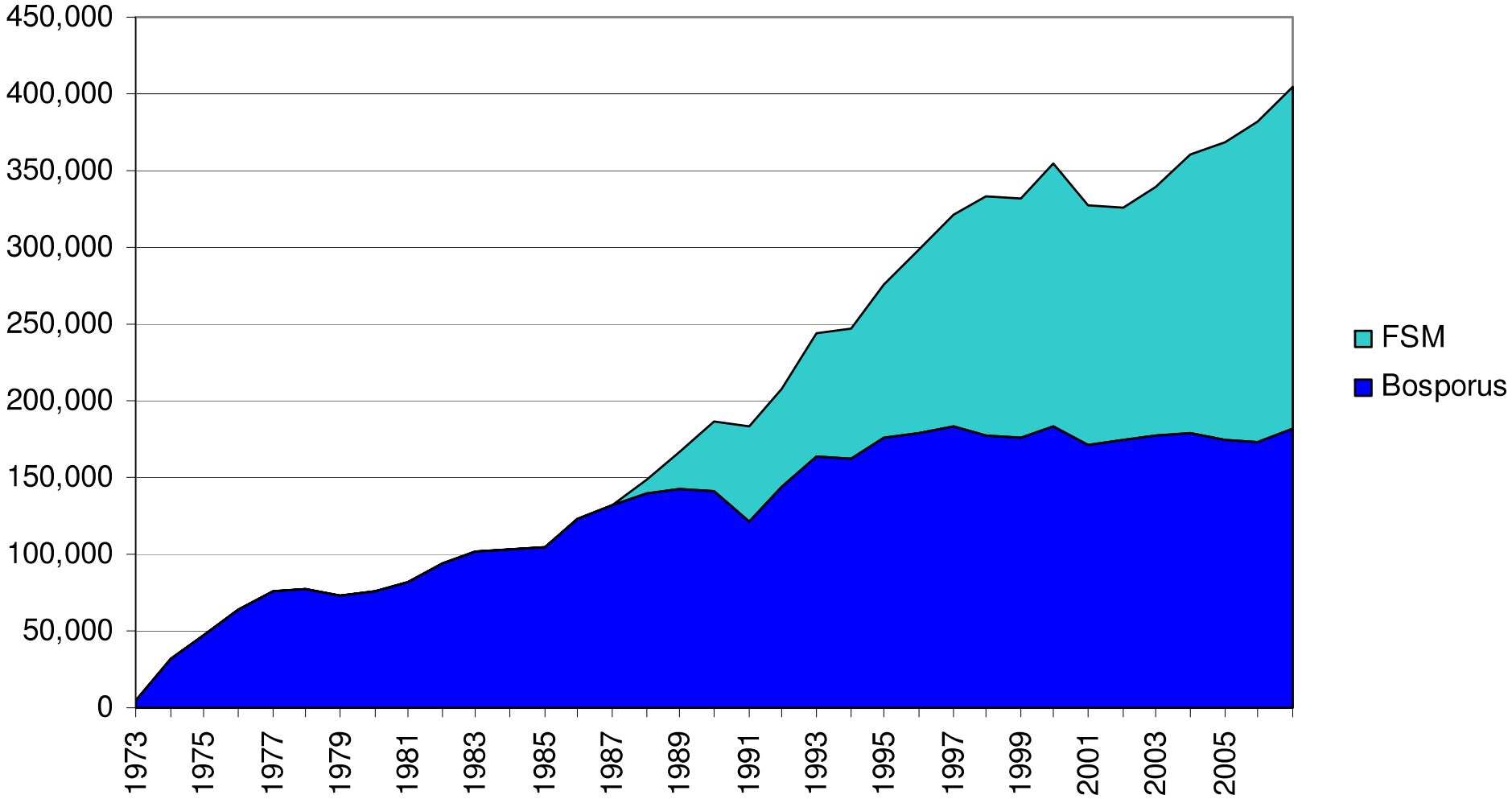
In case of termination of the Implementation Contract for any reason, senior facilities (up to 80% of total investment cost) will be assumed by the Treasury.

Financial Structure – Traffic Studies



- Debt service sculpted according to MRG.
- Cash sweeps up to LBC
- WALL is 10 years under LBC

Financial Structure – Traffic Studies



- Today, nearly 600.000 vehicles are crossing the two bridges.
- The tunnel will bring an additional 20% capacity across the Bosphorus.
- Huge suppressed demand due to constant capacity since 1987.

Financial Structure – Summary Investment

TOTAL INVESTMENT COST:	**1,237**
Equity:	**277 (%22.4)**
Senior Loans:	**960 (%77.6)**
Standby Equity:	*75 (%6.1)*

All figures in millions of US Dollars

Financial Structure – Credits

- Direct Facilities: 550.0
- Facilities under Export Insurances: 210.0
- Facilities Guaranteed by Turkish Banks: 200.0

Total Credits: 960.0

Term for each facility: 18 years

All figures in millions of US Dollars

Financial Structure – Financial Institutions Involved

- **Multilateral Institutions:**
  - European Investment Bank
  - European Bank for Reconstruction and Development
- **Export Insurance Providers:**
  - Korean Exim Bank
  - Korean Export Insurance Agency (K-Sure)
- **Commercial Banks:**
  - Standard Chartered Bank
  - Sumitomo Mitsui Banking Corporation
  - Mizuho Bank
  - Garanti Bankası
  - Türkiye İş Bankası
  - Yapı Kredi Bankası
  - Deutsche Bank

Financial Structure – Development Phase Technical

- **Technical Surveys:**
  - Bathymetric and marine geological surveys
  - Geological surveys on land
  - Mapping studies
  - Determination of locations and features of utilities
  - Determination of inputs for seismic design
- **Design Development:**
  - Traffic Study
  - Environmental Study
  - Basic/Preliminary Design
  - Scope and cost verification
- **Structuring of the Insurances**

Financial Structure – Development of Legal Framework

- Development and updating of City Plans
  - Approvals from Protection Councils and other authorities
  - Creation of City Plans
  - Updating of Existing City Plans by Municipalities
- Development of Debt Assumption Agreement

  (between Lenders and Turkish Treasury)
- Development of Direct Agreement

  (between Lenders and Ministry of Transportation)
- Development of Cooperation Protocol

  (between Ministry of Transportation, Istanbul Metropolitan Municipality, Turkish National Police and Turkish Highway Authority)

Financial Structure – Lessons Learned

- Coordination and Cooperation between various Government organizations *(continuous support from all parties is critical)*
- Development of such complex projects takes a lot of time and effort *(especially the first ones)*
- Accurate scope definition is very helpful in projects that span through several municipalities and intersects several authorities
- Adequate contingency needs to be built in the model

THANK YOU FOR YOUR KIND ATTENTION …