

CONSULTING ENGINEERING INCORPORATION

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RAILWAYS LIGHT RAIL SYSTEMS



Railways and Light Rail Systems



Kemalpasa - Torbali & Alsancak Harbour Connection Railway

70 km Double Lane Railway Maximum Slope (% 1.70) Minimum Curb Radius (500 m) Soil Borings (2,500 m) Seismic Tests Resistivity Tests Laboratory, Pressiometer Tests

9 NATM Tunnel (22,670 m) 1 TBM Tunnel (5,025 m) Longest Tunnel (6,350 m) 5 Box Culvert 21 Overpass, Underpass Bridge 2 Bridge 3 Station Facility

25 kV Catenery Line 25 kV Transformer Stations Section Post Buildings Signalisation Systems Communication Systems SCADA and Monitoring Systems Automatic Train Stopping Energy Transfer Systems

Environmental Impact Study Detailed Engineering Economic and Financial Analysis Cost Estimations Feasibility Study Tender Documentation Construction Specifications Geophysical Studies Geotechnical Studies Topographical Surveys



70 <mark>km</mark>

RSEP





Irmak - Karabuk - Zonguldak Railway Line Rehabilitation



415 km





Design Review Construction Supervision Commissioning Start-up Inspections Cost Control & Time Scheduling Project Management

TYPSA+SAFEGE+ESER Consortium

415 km Single Track **Passenger and Freight Railway** Operation Speed : 70 - 120 km/h 1435 mmTrack Gauge, S49 Rail 32 Station, 29 Stop 259 Level Crossing, 55 Tunnel 118 Bridge, 1421 Box/Culvert **Rehabilitation of Existing Facilities Renewal of all Rails, Sleepers and Ballasts Improvement of Drainage Systems Renewal of Platforms at 16 Station and 25 Stop Renewal of Tunnel Portals at 10 Location Renewal of Bridge Parapets at 30 Location Renewal of Retaining Walls at 21 Location Improvement of Slope Stabilisation at 24 Location New Facilities New Siding Tracks at 6 Station** MV/LV Power Supply and Distribution at 31 Station **Point Heating Systems at 31 Station Operation Center at Karabuk Station** Signalisation, SCADA and Monitoring Systems

Aut. Train Protection and Stopping Systems (ETCS Level 1)

Electronic Level Crossing Protection Systems

Communication, Fire Alarm, Clock and Announce Systems



Ankara - Sivas High Speed Railway



455 km





Environmental Impact Study Detailed Engineering Cost Estimations Feasibility Study Tender Documentation Geophysical Studies Geotechnical Studies Basic Engineering Topographical Surveys



455 km Double Lane High Speed Railway 95 km Alternative Railway Maximum Slope (% 1.60) Minimum Curb Radius (1,000 m) Expropriation (16,500 Hectare) Soil Borings (13,500 m) Seismic Tests (4,100 ea) Resistivity Tests (3,500 ea) Laboratory, Pressiometer Tests 31 Tunnel (23,875 m) Longest Tunnel (3,000 m) 6 Viaduct (3,850 m) Longest Viaduct (1,200 m) 900 Box Culvert 446 Overpass, Underpass Bridge 77 Bridge **15 Station Facility** 25 kV Catenery Line 13 each, 154/25 kV Transformer **Section Post Buildings** Signalisation Systems **Communication Systems** SCADA and Monitoring Systems **Automatic Train Stopping Energy Transfer Systems**



Erzincan - Erzurum High Speed Railway



210 km





Environmental Impact Study Detailed Engineering Cost Estimations Feasibility Study Tender Documentation Geophysical Studies Geotechnical Studies Basic Engineering Topographical Surveys





210 km Double Lane High Speed Railway Maximum Slope (% 1.60) Minimum Curb Radius (1,000 m) Expropriation (1,020 Hectare) Soil Borings (6,469 m) Seismic Tests (1,390 ea) Resistivity Tests (1,227 ea) Laboratory, Pressiometer Tests 13 Tunnel (5,970 m) Longest Tunnel (950 m) 13 Viaduct (6,990 m) Longest Viaduct (1,210 m) **690 Box Culvert** 130 Overpass, Underpass Bridge 33 Bridge **6 Station Facility** 25 kV Catenery Line 5 each, 154/25 kV Transformer **Section Post Buildings** Signalisation Systems **Communication Systems** SCADA and Monitoring Systems **Automatic Train Stopping**

Energy Transfer Systems



Erzurum - Kars High Speed Railway



204 km





Environmental Impact Study Detailed Engineering Cost Estimations Feasibility Study Tender Documentation Geophysical Studies Geotechnical Studies Basic Engineering Topographical Surveys





204 km Double Lane High Speed Railway Maximum Slope (% 1.60) Minimum Curb Radius (1,000 m) Expropriation (1,035 Hectare) Soil Borings (5,477 m) Seismic Tests (1,562 ea) Resistivity Tests (1,261 ea) Laboratory, Pressiometer Tests 8 Tunnel (7,970 m) Longest Tunnel (2,550 m) 13 Viaduct (4,165 m) Longest Viaduct (800 m) **338 Box Culvert** 54 Overpass, Underpass Bridge 20 Bridge **6 Station Facility** 25 kV Catenery Line 5 each, 154/25 kV Transformer **Section Post Buildings** Signalisation Systems **Communication Systems** SCADA and Monitoring Systems **Automatic Train Stopping Energy Transfer Systems**





238 km Double Lane High Speed Railway



238 km









Ministry of Transport, Maritime and Communication

Environmental Impact Study Detailed Engineering Cost Estimations Feasibility Study Tender Documentation Geophysical Studies Geotechnical Studies Basic Engineering Topographical Surveys







Corum - Amasya High Speed Railway



97 km



<image>

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Maximum Slope (% 1.25) Minimum Curb Radius (1,000 m) **Expropriation (450 Hectare)** Soil Borings (9,975 m) Investigation Pit (408 m) Laboratory, Pressiometer Tests 20 Tunnel (21,180 m) Longest Tunnel (9,965 m) 13 Viaduct (9,030 m) Longest Viaduct (1,715 m) **210 Box Culvert** 60 Overpass, Underpass Bridge **3 Station Facility** 25 kV Catenery Line 4 each, 154/25 kV Transformer **Section Post Buildings** Signalisation Systems **Communication Systems** SCADA and Monitoring Systems **Automatic Train Stopping Energy Transfer Systems**

97 km Double Lane High Speed Railway

RSEP

Komurler - Osmaniye High Speed Railway



78 km



Environmental Impact Study Detailed Engineering Cost Estimations Tender Documentation Geophysical Studies Geotechnical Studies Basic Engineering Topographical Surveys Transportation Study









78 km Double Lane High Speed Railway Maximum Slope (% 1.25) Minimum Curb Radius (1,000 m) Soil Borings (10,000 m) Investigation Pit (300 m) Laboratory, Pressiometer Tests 3 Tunnel (15,120 m) Longest Tunnel (10,276 m) **5 Viaduct 60 Box Culvert** 24 Overpass, Underpass Bridge **4 Station Facility** 25 kV Catenery Line 3 each, 154/25 kV Transformer **Section Post Buildings** Signalisation Systems **Communication Systems** SCADA and Monitoring Systems **Automatic Train Stopping**

Energy Transfer Systems



BUGGYINE DIACA SEA

17.5 km



Detailed Engineering Feasibility Study Tender Evaluation Tender Documentation Construction Specifications Geotechnical Studies Topographical Surveys Transportation Study Construction Supervision Commissioning







17.5 km Double Lane Light Rail System At One Direction 13,000 passenger/hour **Headway Interval (4 minute) Headway Duration (42 minute)** Travel Speed (35 -70 km/hr) 28 Station each 65 m Long Catanery System (750 VDC) **9** Transformer Rectifier Station Signalisation, Communication Systems SCADA, Fare Collection Systems **2** Junction Crossing with Underpass **Main Depot and Maintenance Facilities** (70,000 sqm) Heavy / Daily Maintenance Workshops and Car Washing Facility (5,700 sqm) Parking Area (50 Railway Car) Depot Lines (3,200 m) Administration Building (2,600 sqm) East Terminal

Kayseri Light Rail System - Phase 1

18 Car Parking Area, Office Building Railway Cars

52 each, % 100 Low Floor Bidirectional Driving, Multi Articulated Track Span (1,435 mm) <u>Energy Receiving Type</u> (Pantograph)

Power (460 - 465 kW) Passenger Capacity (AW3 - 276 Pas.)

Kayseri Metropolitan Municipality



0001-0314





16.5 km





Kayseri Light Rail System - Phase 2 and Phase 3

Detailed Engineering Economic and Financial Analysis Cost Estimations Feasibility Study Tender Documentation Construction Specifications Geophysical Studies Geotechnical Studies Topographical Surveys Transportation Study

KRTS 2 nd Phase Mimar Sinan Junction - Ildem : 9 km

KRTS 3 rd Phase Cumhuriyet Square - Erciyes : 7.5 km







Kayseri Metropolitan Municipality





3.2 km

Izmir Ege University - Bornova Center Metro Line

Tender Documentation Construction Supervision Construction Management Commissioning Start-up Inspections Geotechnical Studies Project Management Topographical Surveys







Izmir Metropolitan Municipality





Cut and Cover Station (381 m) 3 Metro Station

Cut and Cover Tunnel (1366 m)

3282 m Metro Line

(700.000 passenger/day)

U Section Tunnel (774 m)

Bored Tunnel (761 m)

Integrated with Konak-Bornova Metro

10.5 kV, 34.5 KV Power Supply Catenery System Signalisation System Communication System SCADA System



Istanbul Beyoglu - Karakoy Funicular Tunnel Modernization



573 m



Detailed Engineering Cost Estimations Tender Documentation Construction Supervision Construction Specifications Construction Management Commissioning **Start-up Inspections Geotechnical Studies Basic Engineering**



Tunnel brick walls were strengthened by injecting special polyurethane and acrylic base filling material.

Renewal and Modernization Works Rails and Catenary Lines Car Bodies and Equipment Tunnel Security Systems Communication System Tunnel Electrical Systems Beyoglu and Karakoy Stations















32 km

Konya Light Rail System

32 km Light Rail System 50,000 Passengers/day at year 2020

New Kunduracilar-Saracoglu (Fetih Street) Line, 9.1 km New Alaaddin-Peripheral Road Line, 4.6 km Capacity Increase of Alaaddin-Selcuk University Line, 18.7 km

> 2 each Sleeping Area Maintenance Workshop (2x450 sqm) Crew Building (2x120 sqm) Parking Area for cars 12 each new 1,250 kVA TR/REC Station (Each having 1,000 KW Rectifier) Capacity Increase of Existing 6 x 1,100 kVA Transformers 750 VDC Catanery System SCADA and Signalisation Systems



Economic and Financial Analysis

Cost Estimations

Feasibility Study Basic Engineering

Topographical Surveys

Transportation Study







Konya Metropolitan Municipality



12 km

Isparta Light Rail System

12 km, 8.000 Passenger/hour/one way, 22 Stations 35 km/h (in city), 70 km/h (other routes) 33 Cars at year 2017

> Sleeping Area Parking Area for 9 Cars Office Building

Depot Area (50.000 sqm)

Daily Maintenance Shop Car Washing Facility Car Depot Area Heavy Maintenance Shop Control and Administration Building

7 each 34.5 KV Transformer/Rectifier Station (Each having 2x2000 KVA Rectifier) 750 VDC Catanery System Signalisation and Communication Systems SCADA System Toll Collection System

Detailed Engineering Economic and Financial Analysis Cost Estimations Feasibility Study Tender Documentation Construction Specifications Geophysical Studies Geotechnical Studies Topographical Surveys Transportation Study





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