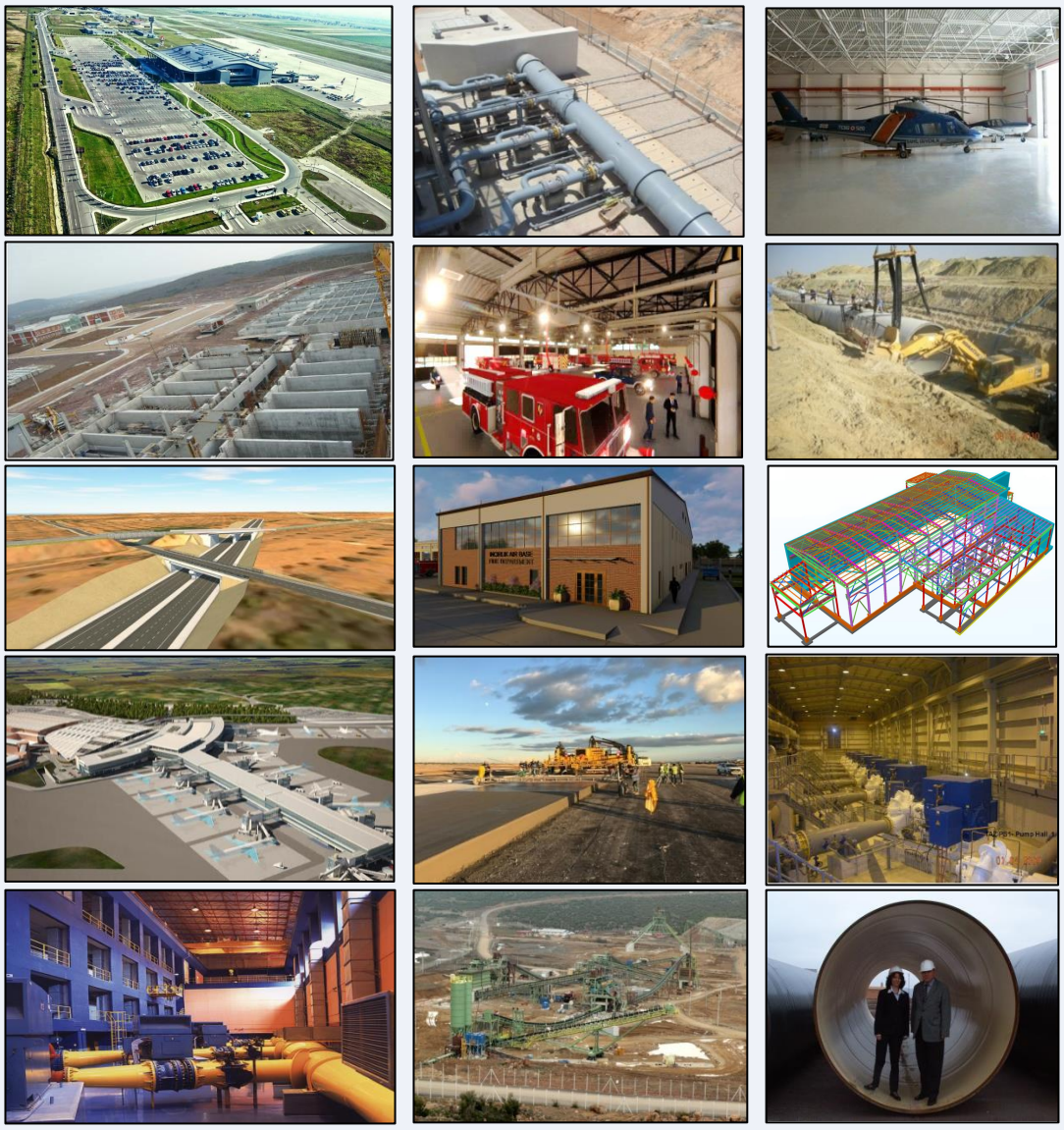
Experience..Diligence..Quality..Knowhow..Integrity..Technology



TMA mühendislik ltd.

General Company Information

History

TMA Engineering Ltd. was founded in early 1987 by three engineers to render Architect-Engineer and consultancy services to the construction industry in Turkey and abroad. The founding partners of the company bring a wealth of wide ranging experience to the company. They are actively involved with the projects.

Since its foundation TMA has completed more than 300 projects of varying magnitude and complexity. The performance record of the company is excellent. Several major Clients have become repeat customers throughout the years; a testimony in itself to the quality of work TMA delivers. During more than quarter of a century since its foundation, the company has maintained an excellent professional track record.

A great majority of the projects designed required familiarity with the international codes. TMA is equally proficient in European, British and North American codes.

Capabilities, Services Rendered

TMA is a multidisciplinary company and is capable of carrying the design work completely in house as well as partnering with other engineering companies. TMA, with its successful past performance on Turkish and International projects, with its in-house capability of providing complete design services, and with its large reference library and project archives, can response to the requirements of the projects in a timely and satisfactory manner.

Services rendered by TMA;

- Feasibility Studies
- Engineering and Architectural Design Services
- Technical Consultancy Services
- Due Diligence Services
- Structural Assessment Services
- Construction Management and Quality Assurance
- DOR (Designer of Record) Services
- Energy Efficiency Surveys
- Testing and Commissioning Services
- Value Engineering Services

Fields of Services;

- Roads, Bridges and Viaducts
- Airport Facilities, Runways, Taxiways and Aprons
- Industrial Facilities
- Military Facilities
- Water Conveyance Lines and Pump Stations
- Infrastructure Design, Water Distribution, Sewage, Storm Drainage and Irrigation Systems
- Commercial Buildings, Shopping Centers
- Housing, Hotels and Holiday Villages
- Power Generation and Transmission
- Hospitals
- Fire Engineering

Clients

Among the clients served more than once are the following organizations, government agencies, etc.

- United States Air Force Europe (USAF), Turkey
- Unites States Army Corps of Engineers (USACE), Germany
- US Embassy in Ankara
- US Consulate in Adana
- United States Army and Air Force Exchange Service (AAFES), Germany
- United States Air Force Civil Engineer Center (AFCEC)
- Ministry of Defense, Turkey
- Roketsan Missiles Company, Turkey
- Limak Construction, Turkey
- TEPE Construction, Turkey
- Kalyon Insaat, Turkey
- GAMA Güc Sistemleri Müh ve Taahhüt A.Ş, Turkey
- Aytekin-Serol Engineering Construction INC
- ERMA (Emssad - Ras Ejdyer Motorway Authority), Libya
- Man Made River Authority, Libya
- Al Nahr Corporation, Libya
- Al Nahr Engineering, Libya
- General Directorate of State Hydraulic Works, Turkey
- Eldorado Gold/Hatch - Tuprag, Turkey
- Taşyapı Insaat, Turkey
- Metis Construction Company, Turkey
- Proctor and Gamble, Novomoskovsk, Russia
- SWCC - Saline Water Conversion Corporation, Saudi Arabia

Library and Project Archive

The project documentation is kept on magnetic and optic recordable media. The company enjoys a very large library of standard details, already used on previous projects.

Computer Capabilities, Software

TMA maintains a fully computerized operation with in house main server. Each person has a dedicated computer of his or her own, connected to a network. Plotting is done in house using HP large format plotters. Where large amount of printing and plotting is required the services of printing shops are recruited. Printers used include several heavy-duty laser printers, as well as color laser printers, all networked.

Design work is backed up, automatically and periodically, to redundant disks in the main server and to storage tapes, to guard against data loss. Completed projects are transferred to DVD disks for permanent safekeeping, both in the format they are created, and as “pdf” files.

The internet link is via 50 Mbit static ADSL on 24 hour basis. For transmission of large data files we maintain several ftp access points on our web site, dedicated to different projects. This allows us to handle several projects in our sites without compromising the privacy of each project. We use company mail exchange services for our electronic mails. During travel the link to our office is maintained through mobile 3G services. In short, the IT set-up is commensurate with the modern day requirements of engineering operations.

TMA maintains a wide range of professional licensed software programs. Through active subscriptions the software programs are kept current and compliant with the latest Codes.

Design Expertise

Since its foundation TMA has completed more than 300 projects of varying magnitude and complexity.

The projects included miscellaneous architectural & engineering design and consultancy services for a variety of structures, including preparation of technical specifications, cost estimates and tender documents.

The projects were for miscellaneous building / structure types; ranging from industrial, commercial, residential and religious facilities to airfields, roadways, aprons, terminals, site utility systems, environmental projects, HVAC systems, lighting and utility systems, etc.

All design works complied with Turkish, US and other international codes. All of the projects were completed successfully, to satisfy the needs of the client.

Services rendered by the firm included complete design and consultancy services for civil, geotechnical, architectural, structural, mechanical, electrical, landscaping, fire engineering disciplines; -together with preparation of technical specifications, cost estimate and tender documents.

Other aspects covered by the projects were construction supervision and inspection, testing and commissioning, geotechnical studies, non-destructive testing, seismic / structural evaluation and structural analysis of existing structures and design of strengthening measures, design rehabilitation studies, etc.

TMA Staff

TMA maintains a permanent staff of qualified engineers and architects for each design discipline. The employment histories of the personnel are a testimony to the commitment keeping the experience gained in house. TMA keeps all major engineering disciplines and architectural department in-house. All TMA staff has necessary professional registrations in relevant professional societies.

Most of the engineers are fluent in English and have long employment history in TMA.

Membership in Professional Organizations

TMA is a member of TMMMB - Association of Turkish Consulting Engineers and Architects which is a member of FIDIC – International Federation of Consulting Engineers, and EFCA – European Federation of Engineering Consultancy Associations.

TMA is also a member of DEIK (Dış Ekonomik İlişkiler Kurulu – Foreign Economic Relations Board) International Technical Consultancy Business Council.

Additionally, the engineering staff is all registered in Professional Engineering Societies in Turkey as well as International Engineering Organizations such as NFPA - National Fire Protection Association, USA and ASHRAE – American Society of Heating, Refrigerating and Air-Conditioning Engineers, USA.

Quality System and Certification

CERTIFICATE

TÜV AUSTRIA

Management system as per
TS EN ISO 9001:2015

In accordance with TÜV AUSTRIA CERT procedures, it is hereby certified that

TMA MÜHENDİSLİK LTD. ŞTİ.
Çobanyıldızı Sokak 1/3
TR-06680 ÇANKAYA / ANKARA

applies a management system in line with the above standard for the following scope

General Engineering, Architecture, Feasibility, Design, Project Management and Technical Consultancy Services.

Certificate Registration No. 20100163001475 — Valid until 2023-10-18, Initial certification 2015-10-19

Certification Body at TÜV AUSTRIA CERT GMBH — Vienna, 2020-09-17

The certification was conducted in accordance with TÜV AUSTRIA CERT auditing and certification procedures and is subject to regular surveillance audits. The certificate period is 3 years.
TÜV AUSTRIA CERT GMBH Deutschstraße 10 A-1230 Wien www.tuv.at

ZERTIFIKAT | CERTIFICATE | CERTIFICAT | CERTIFICADO | СЕРТИФИКАТ | شهادة | 证书 | 인증서

TMA implements a Quality Assurance System with relevant quality management procedures, and maintains a current TS EN ISO 9001:2015 certification.

Principles of the Firm and Contact Information

Principles of the Company:	Munis Özer Ali İhsan Uslu Şirin Başarankut
Business Development Director:	Ayça Sağcan
Mailing Address:	TMA Mühendislik Ltd. Şti. Çobanyıldızı Sok. 1/3 Çankaya, Ankara, 06680, Türkiye
Tel:	(90) 312 467 1427 / (90) 312 467 1447 (90) 312 427 2409 / (90) 312 427 1907
Fax:	(90) 312 467 1451
E-mail:	tma@tmaeng.com munis.ozer@tmaeng.com ayca.sagcan@tmaeng.com
Web Site:	www.tmaeng.com

On-going Works

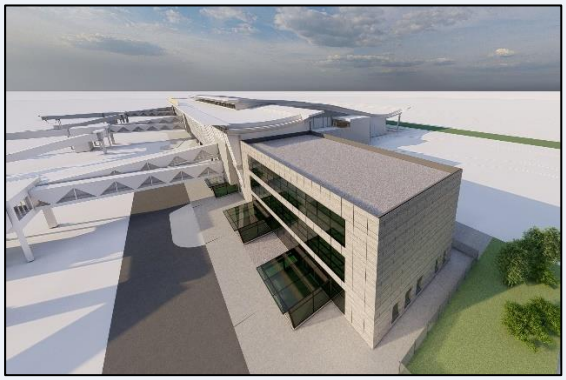
Pristina International Airport - Adem Jashari, Kosovo

Passenger Terminal Extension Phase 1 - Pier Block Extensions

Project Description

This project includes architecture / engineering and technical consultancy services for the extension of Pristina International Airport (PIA) Adem Jashari Terminal Building Pier Section in accordance with the pre-defined Final Master Plan of the airport.

Final Master Plan of the airport was prepared by the Client in 2013 in order to define and enable possible future expansions. The new passenger terminal was initially sized to handle 2,5 million passengers per year and future developments were planned in phases based on the traffic and market forecast studies. As a result of rapidly increasing air traffic following the pandemic period and airside developments, the number of passengers at Pristina Airport almost reached to 3 million. Therefore, the first expansion within the terminal building is planned as additions to the distant aircraft passenger waiting lounges in line with the urgent needs seen in the airport operation.



Four new gates and 2 new distant aircraft waiting lounges will be constructed at the North and South ends of the pier section of the existing Terminal Building.

Services Rendered

TMA performs civil, structural, architectural, electrical, mechanical, fire engineering and interior design services as well as preparation of technical specifications, Bill of Quantities and reports for the construction.

Ercan International Airport Upgrade – Turkish Republic of Northern Cyprus

Contract Title:	New Ercan Airport Airside Facilities, Aeronautical Ground Lighting and Jet Fuel Hydrant System Design and Consultancy Services
Contract Location:	Ercan Airport Nicosia, Turkish Republic of North Cyprus
Owner:	Turkish Republic of North Cyprus, Ministry of Public Works and Transportation
Client:	T&T Airport Operation and Construction Ltd
Work performed as:	Prime Design Contractor
Completion Percentage:	100 % for Design Works 80 % for Construction Technical Consultancy Works

Project Description

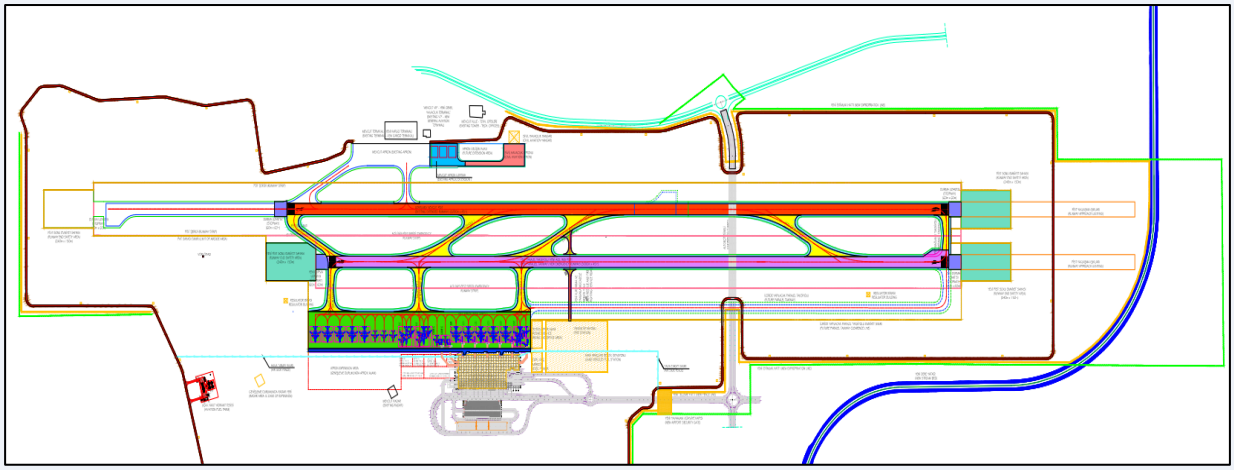
The project includes complete civil and airside facilities design including new runway, extension of the existing runway, runway end safety areas (RESA), apron for new terminal, taxiways and airfield ground lighting systems, for Ercan International Airport in the Turkish Republic of Northern Cyprus.

Within scope of this project, airside facilities of Ercan International Airport (LCEN) will be upgraded to provide the required capacity for aircraft movements planned for the future developments.

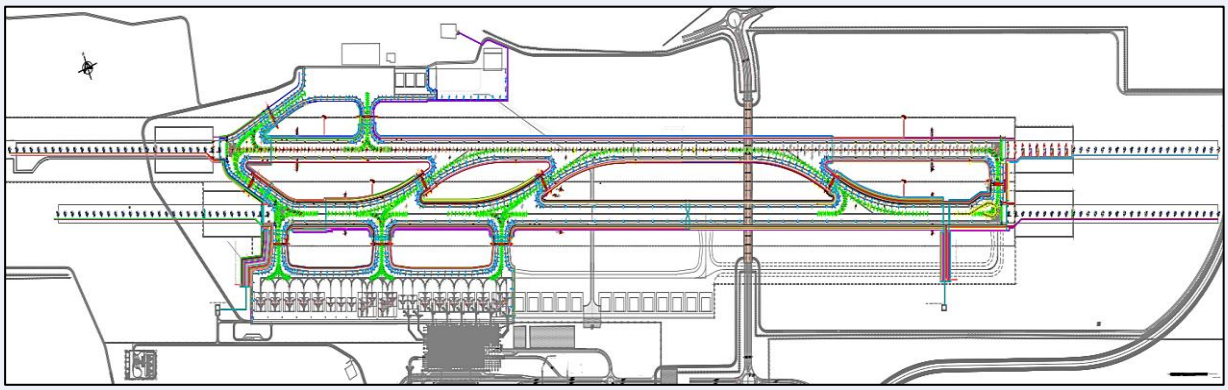
New runway-taxiway system and new apron will provide safe and efficient operation, ground traffic and parking for ICAO Code D and E aircrafts.

Services Rendered

Design engineering services for airside facilities as per ICAO and FAA regulations:



- New Concrete Runway, 3000x45m, Stopways and RESA
- Reconstruction of Existing Runway, 3200x45m concrete pavement, Stopways and RESA
- New Passenger Terminal Apron, 1075x160m concrete pavement
- 3 Rapid Exit Concrete Taxiway, 2 Exit/Entrance Concrete Taxiway, 3 Concrete Stub Taxiway
- Extension of Existing Concrete Apron and New Concrete Civil Aviation Apron
- Pavement Design
- ATC LOS and Obstruction Control
- Airside Design Report, Master Plan, Layouts, Runway Profile and Sections, Pavement Design, Airfield Ground Lighting, Apron Flood Lighting, Drainage Design, Marking, Airside GSE Parking and Roads.



- Jet Fuel Farm & Hydrant System; 3 x 1000 m3 fuel tanks, pump station, fire extinguishing system, hydrant system, apron tanker filling station.
- Technical consultancy and supervision during the construction.







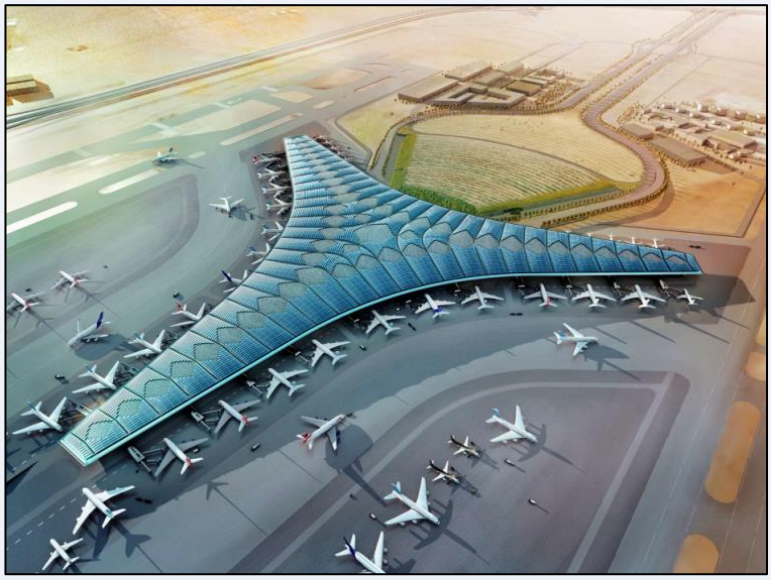

Sample Project Experiences

TMA mühendislik ltd.

Kuwait International Airport – Engineering and Technical Consultancy Services for Infrastructure and Utilities Superposition and Coordination Studies, Kuwait

Project Description

This project included engineering and technical consultancy services for infrastructure superposition and coordination studies of Kuwait International Airport.

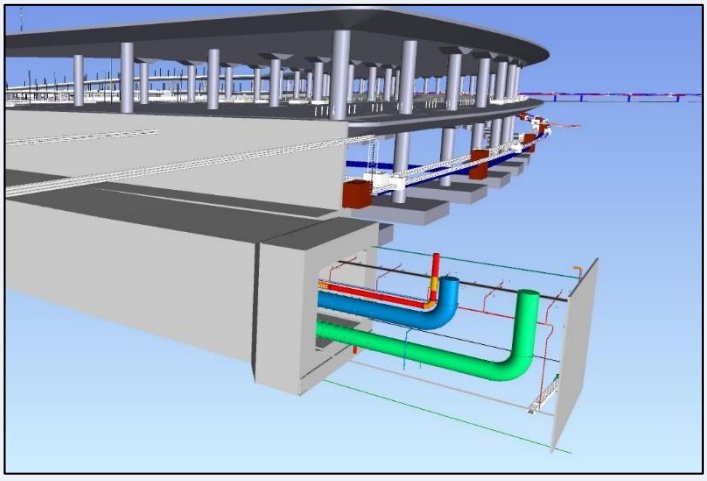


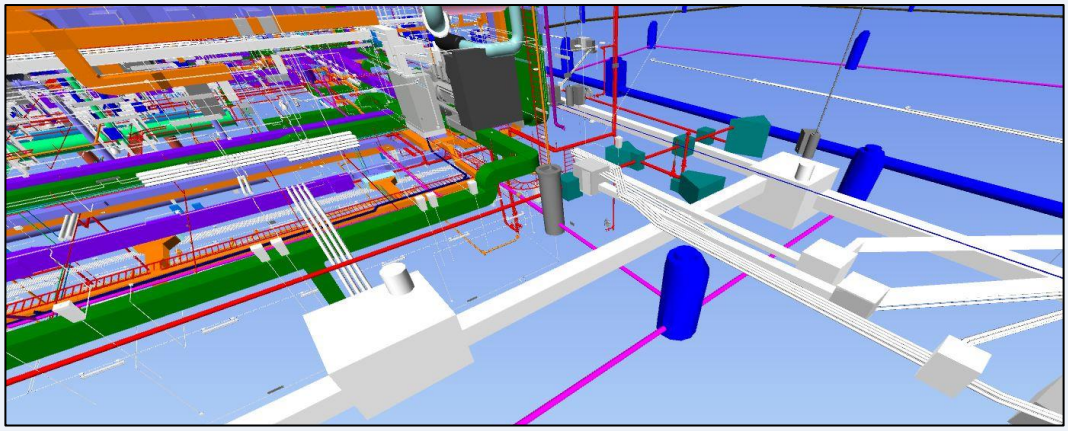
Limak Insaat Sanayi ve Ticaret A.S. has requested from TMA Engineering Ltd. engineering and technical consultancy services regarding the superposition, coordination and resolution of the design of different infrastructure systems and utilities for the new Terminal Building, Car Park area and airside areas.

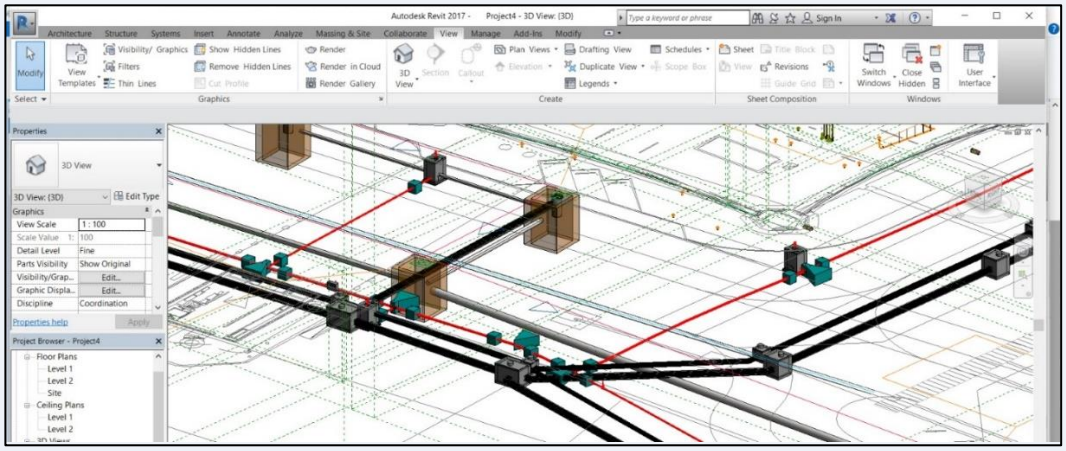
The utility systems to be superpositioned and coordinated by TMA included the following systems:

TERMINAL BUILDING AND AIRSIDE UTILITIES

- Storm Water Drainage System
- Sanitary Sewer System
- Fresh Water System
- Irrigation System
- Blue Water System
- Vacuum System
- Fire Fighting System
- Fuel Network System
- Medium voltage (11KV) lines
- ICT lines
- Diesel fuel supply system
- LPG supply system



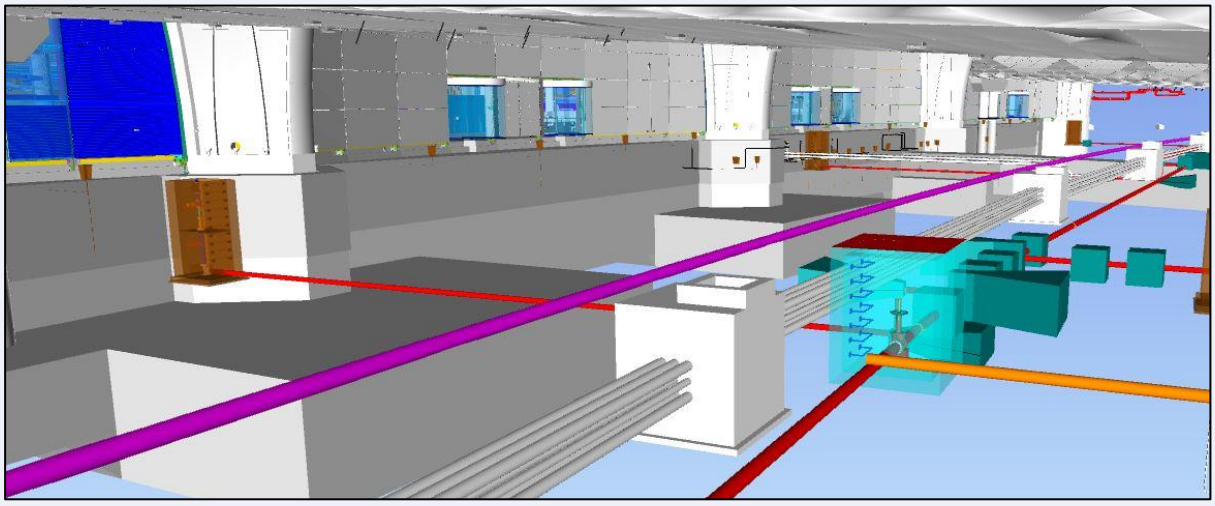




Services Rendered

To ensure proper future installation without any conflict and to provide perfect coordination between different Design Teams and Vendors working on the project, TMA performed coordination services for the above listed utility design items. Any preventive action to be taken and any re-location / diversion to be advised was done to provide proper design coordination.

Necessary relocation and/or re-routing of the affected systems were studied and reported.



Cairo International Airport - Egypt

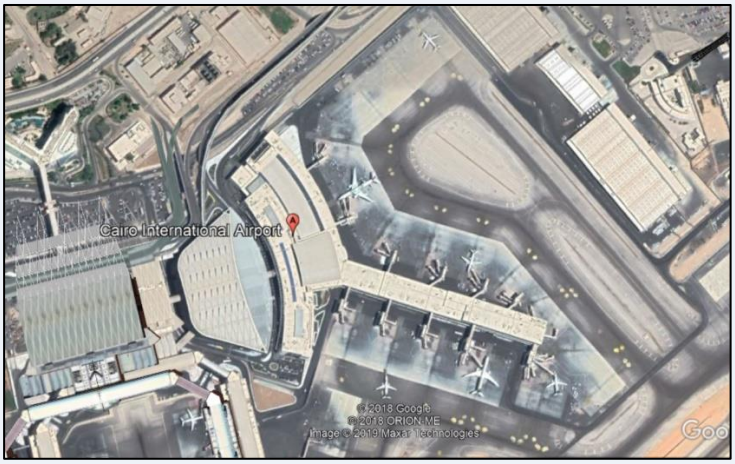
Contract Title:	Rehabilitation and Expansion of Cairo International Airport Terminal Building No.2 – (TB2) Project
Contract Location:	Cairo, Egypt
Owner:	CAC (Cairo Airport Company)
Consultant:	ECG, NACO
Client:	LIMAK Construction Company – Egypt Branch Office
Work performed as:	Prime Design Contractor
Award Date:	14 November 2011
Completion Date:	January 2014

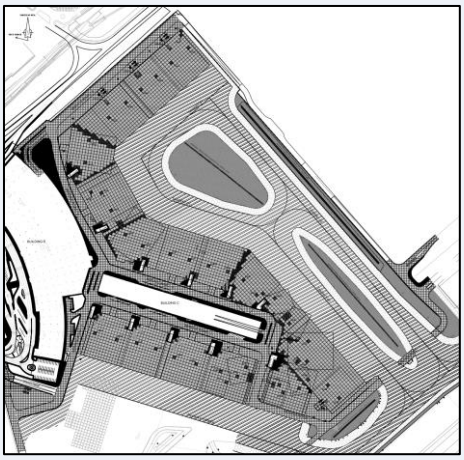
Project Description

This is part of a renovation project of Cairo International Airport Terminal Building No.2, which includes approximately 340 000 m2 of airside facilities and a new Terminal Complex approximately 230 000 m2. Construction of a new wing and airways as well as the structural evaluation / strengthening of the existing terminal building are part of the project.

Services Rendered

- All external utilities serving the Terminal Building No. 2, including, Jet Fuel Hydrant and Fuel Pits, Potable Water, Fire Fighting, Sewerage and Storm Drainage Networks, Asphalt and Concrete Pavements for Taxiways, Aprons, Shoulders and Airside Roads, Retaining Walls, New Airfield Lighting System, VDGS System, Marking.
- New Passenger Terminal Apron, 100900m2; 16 Passenger Boarding Bridge Stand Apron, 4 Remote Stand Apron for Code F,E,D,C Aircrafts.





- Exit/Entrance Taxiways
- Pavement Design
- The project includes A building structural design (80 000 m2), structural evaluation and strengthening design of Existing Terminal Building (50 000 m2), structural coordination and check for other buildings, Service Tunnel and Power Buildings structural design, Civil and Infrastructure Design (Airside & Landside), Fire and Life Safety Engineering Design Services, all Airside Facilities Design and project coordination among various subconsultants, as well as preparation of the geotechnical investigation schedule and reviewing geotechnical reports.

Pristina International Airport Upgrading Works - Adem Jashari, Kosovo
Phase I – New Terminal Building and Apron
Phase II - Runway Extension & RETs & Upgrading Navigation Equipments

Contract Title:	Phase I - Public-Private-Partnership for the Design, Construction, Financing, Operation and Maintenance of Pristina International Airport, Adem Jashari Project Phase II - Pristina International Airport Adem Jashari Runway Extension and Supplementary Work Project
Contract Location:	Pristina, Kosovo
Owner:	Republic of Kosovo
Client:	LIMAK Construction Company – Kosovo Branch Office
Work performed as:	Prime Design Contractor
Award Date:	Phase I - 01 February 2011 Phase II - 08 August 2018
Completion Date:	Phase I - 23 October 2013 Phase II – November 2020

Project Description

Phase I of the project included the design, final master plan and documentation of new terminal apron, apron services and facilities as well as infrastructure, and various airside facilities of the Pristina International Airport.

Phase II includes complete civil and airside facilities design including extension of the existing runway and parallel taxiway, runway end safety areas (RESA), rapid exit taxiways and airfield ground lighting systems, for Pristina International Airport in Kosovo.

Airside facilities of Pristina International Airport will be upgraded to provide the required capacity for aircraft movements planned for the future developments. New extended runway and parallel taxiway system will provide safe and efficient operation and ground traffic for ICAO Code E Aircrafts.

Services Rendered (Phase I)

Complete civil and airside facilities design, AGL design, as well as project coordination, structural check for building designs, technical specifications, supervision and technical consultancy works during construction.

The construction and development works for Pristina International Airport include New Terminal Building (43 000 m2), Air Traffic Control Building and Tower, Taxiways, RESA, New Terminal and De-icing Aprons (80 000 m2), Airside and Landside Roads, Runway Extension Studies, Car Parks, Infrastructure Systems, Rescue and Fire Fighting Facilities, Cargo Facilities, Airside Pavement Design and Airfield Ground Lighting Design.

- As part of the project design the following activities are carried out:

✓ Specification and design of aircraft parking positions and apron markings.

✓ Configuration of location, obstacle surfaces and height of Air Traffic Control Tower, as well as sightlines to critical areas in accordance with FAA 6480.A.

✓ Design and verification and documentation of Passenger Boarding Bridges (PBB) and Visual Docking Guidance System (VDGS) including specifications and drawings.

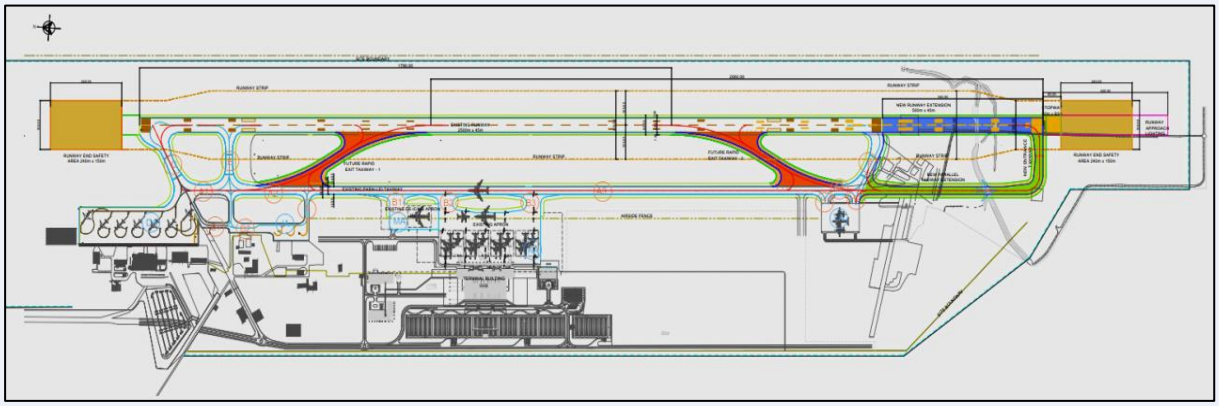
✓ Apron and Deicing High Mast Lighting and Airfield Ground Lighting design

- ✓ Rigid (concrete) pavement design for apron, taxiway, shoulders and flexible (asphalt) pavement design for roads and parking areas. Road system, roads plan and profiles, road excavation plans and road drainage, walk ways detailed engineering services.
- ✓ Hydraulic Study of the Airport and nearby catchment area, upgrading of existing Airport Drainage System and Connection of new facilities.
- ✓ Design of new firefighting training area.
- ✓ Sanitary Sewer System
- ✓ Obstacle Limitation Surfaces
- ✓ Runway extensions, Profile, Taxiways, Runway approach lights relocation, preliminary and final Reporting Services.
- ✓ Technical Specifications of the earthwork and airside facilities / systems.
- ✓ Preparation of final master plan and revised AIP Documents.

Services Rendered (Phase II)

Design engineering services for airside facilities as per ICAO and FAA regulations:

- Extension of Existing Runway to South for increasing the total Runway Length to 3040 m



- New Runway End Safety Areas (RESA) at both runway ends
- Extension of Existing Parallel Taxiway
- One Runway Entrance and Two Rapid Exit Taxiways
- Drainage systems for new airside facilities
- Extension and upgrading Airfield Ground Lighting and Approach Lighting Systems
- Upgrading and relocation of Aircraft Navigation Equipment and AWOS Systems






Grozny / Severny International Airport Airside Development and Master Planning, Chechen Republic

Project Description

The project included the conceptual planning of Grozny / Severny Airport in Chechen Republic, Russia, in order to upgrade the airside facilities to provide the required capacity of aircraft movements planned for the future developments.

A new runway-taxiway system and a new apron is designed to provide safe and efficient operation, ground traffic and parking for ICAO Code C, D and E aircrafts.

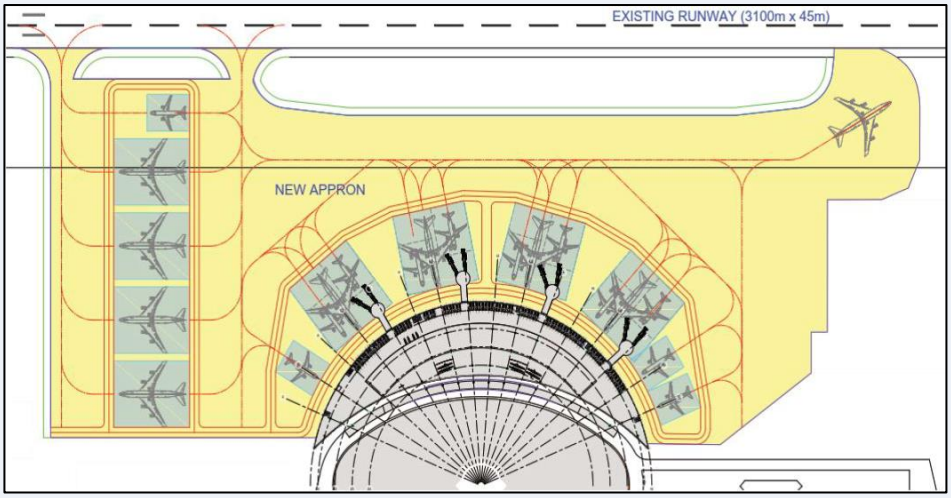
Services Rendered

Airside facilities development plan included the following main items:

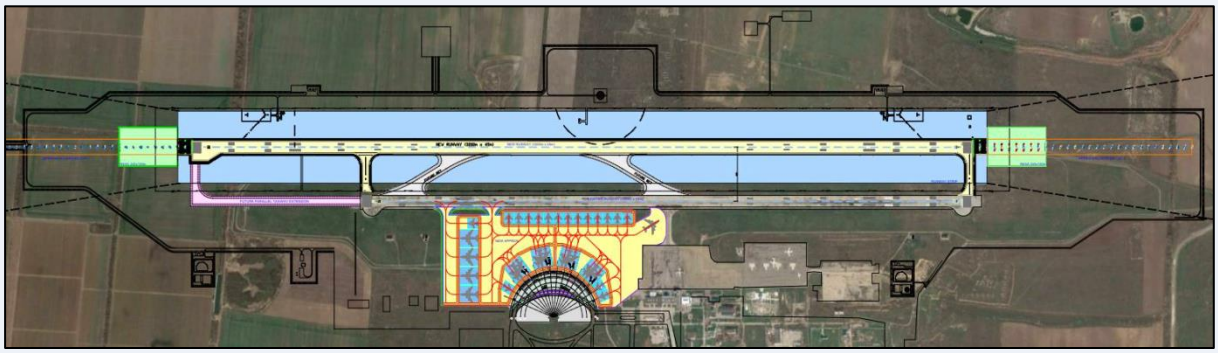
- New 3200 x 45 m Runway, Stopway, Clearway and Runway End Safety Areas (RESA)
- Upgrading of existing Runway for the Parallel Taxiway and Emergency Runway
- Connection taxiways for the new Runway
- New Terminal Apron and stub taxiways
- Drainage systems for airside facilities
- New Airfield Ground Lighting and Approach Lighting Systems for the new Runway and the new Apron
- Upgrading and relocation of Aircraft Navigation Equipment and AWOS System
- Future extension of the parallel taxiway
- Future Rapid Exit Taxiways

The design included study of two options for the Runway and a new passenger terminal apron design.

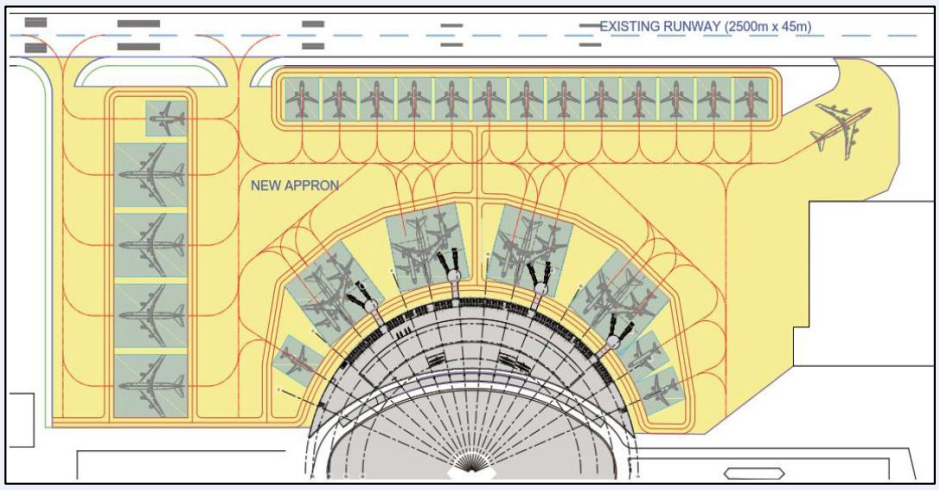
Option 1 – Extension of Existing Runway



Option 1 – New Passenger Terminal Apron Layout



Option 2 – Construction of New Runway



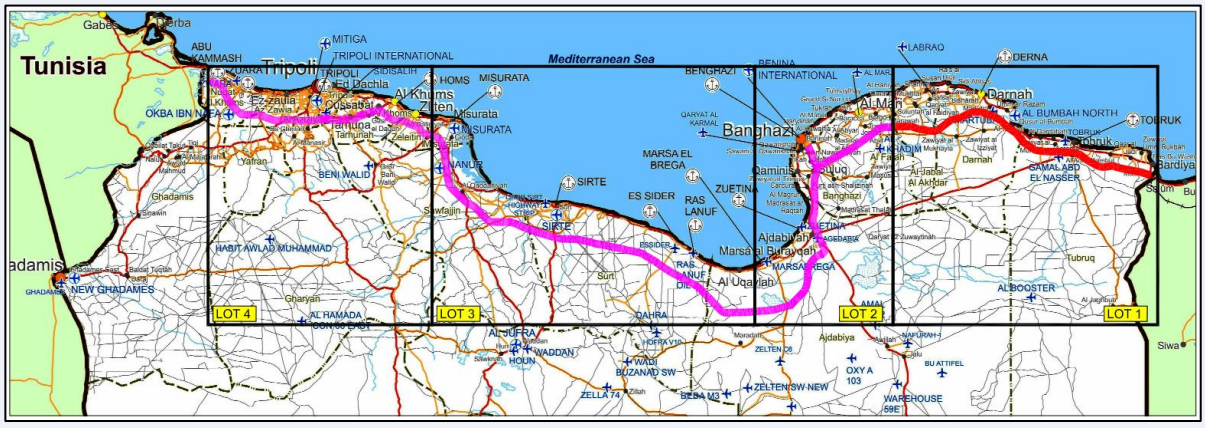
Option 2 – New Passenger Terminal Apron Layout

The Ras Ejdyer - Emssad Expressway Project, Libya

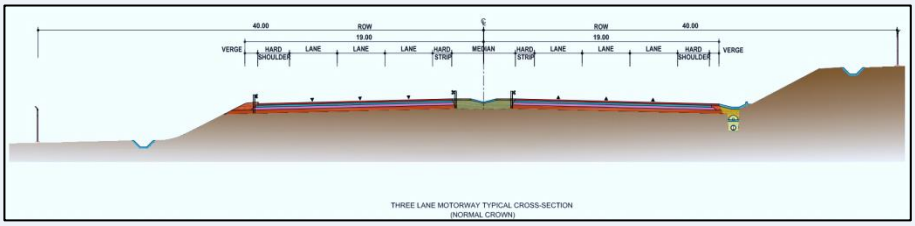
Ras Ejdyer - Al Marj Section (Lots 2, 3 & 4 - 1273 km)

Project Description

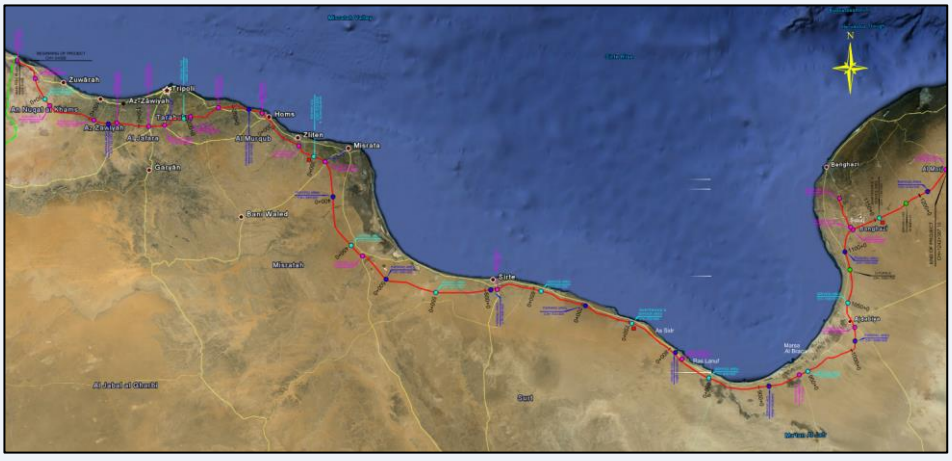
The project was undertaken as a subconsultant to Al Nahr Engineering Company of Libya. The scope of this project covers complete design of the motorway from Ras Ejdyer to Al Marj and Benghazi Connection (approximately 1273 km in total).



The motorway is to be three lane all the way.



The route was surveyed aerially and the alignment was based on the aerial survey.



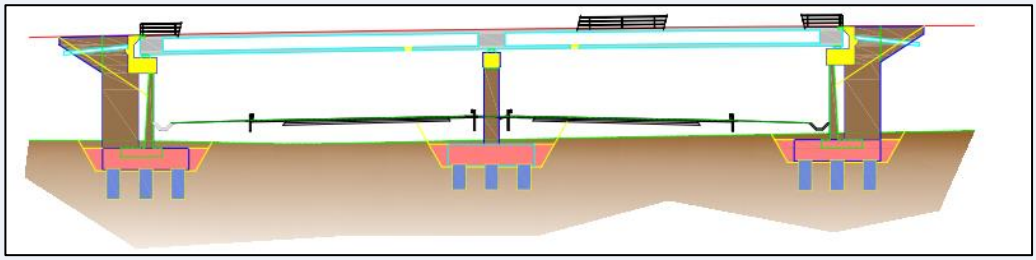
The project was suspended due to civil war in Libya on February 2011. After a 10 month period of inactivity, the project restarted and TMA finalized the preliminary design for all lots (1273 km) on September 2012.

So far on the project, 11 000 design documents have been completed for detail design of Lot 4.

Detail designs for the other two lots are now at contract modification stage due to the current political unstability in Libya.

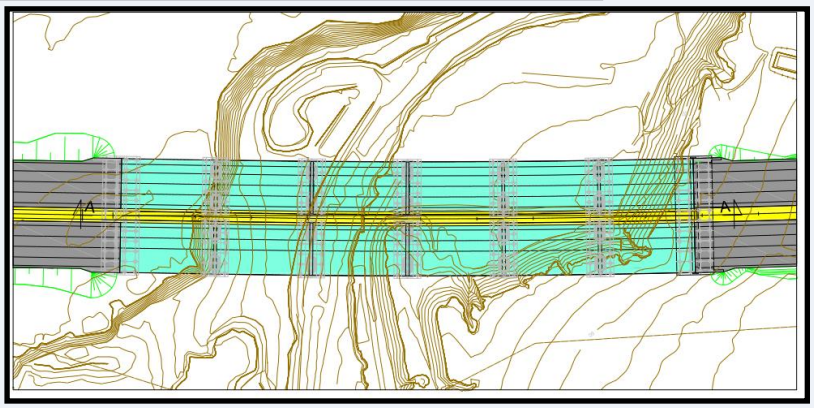
The numbers of main features along Lot 4 are:

- Interchanges 13
- Service Areas 3
- Park Areas 2
- Maintenance Area 1



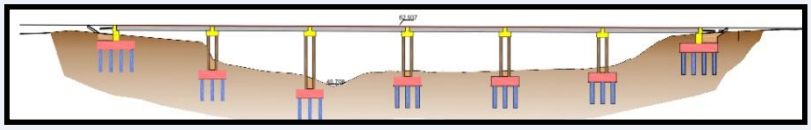
Transversal continuity elements:

- Overpasses 41
- Underpasses 49
- Railway Underpasses 3
- TOTAL CROSSINGS 93

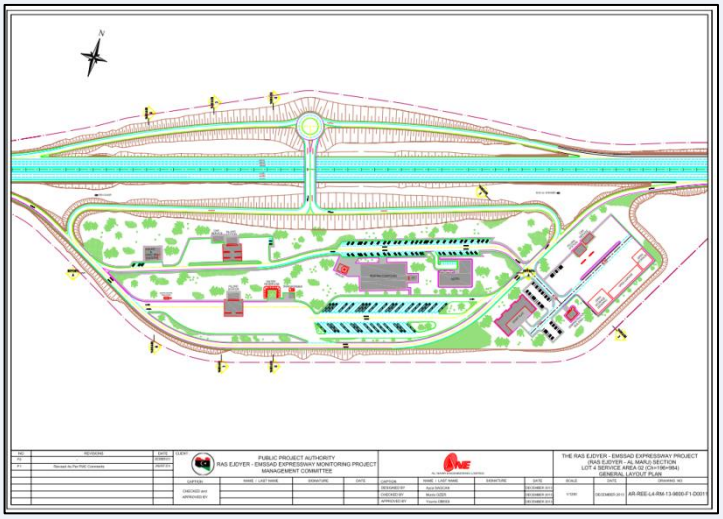


Structures along the motorway:

- Viaducts 16
- Overpasses 41
- Underpasses 49
- Railway Underpasses 3
- TOTAL NO OF STR 109



All along the motorway route, there are high embankment and cut sections with fills or cuts reaching up to 20 meters. All geotechnical design, stability and settlement calculations as well as design for possible ground treatments are performed.

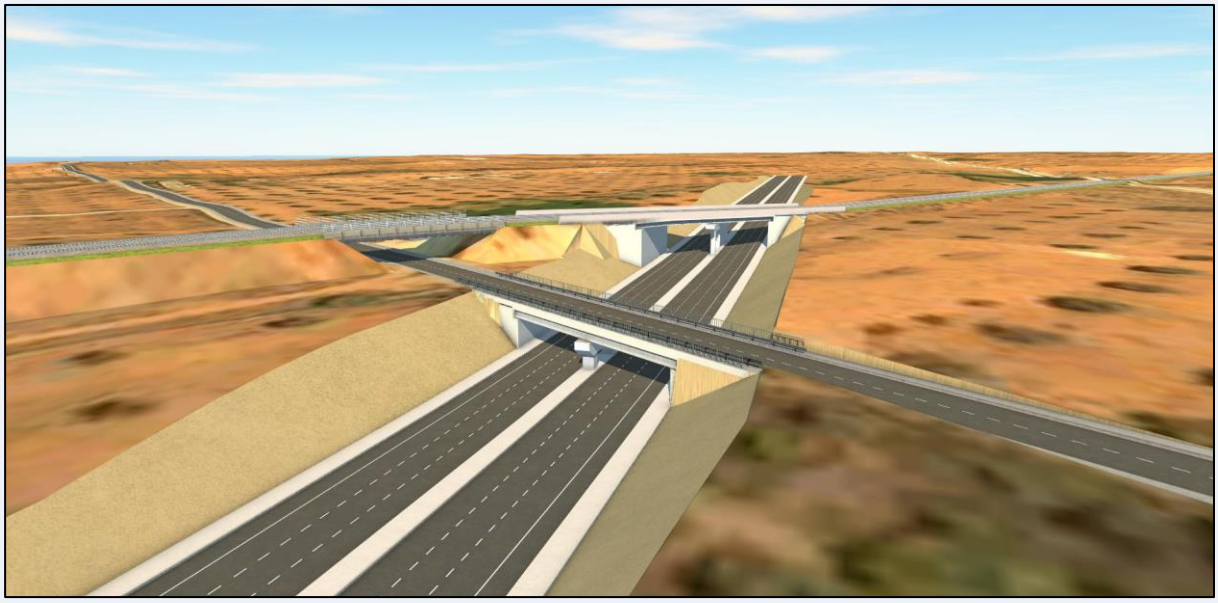


Service + Maintenance Area Buildings:

- Administration Building
- Staff Flat
- Resting Compound
- Fire - First Aid - Police Station
- Water Reservoir
- Motel Building
- Masjid
- Transformer Building
- Car Service
- Filling Station
- Waste Water Treatment Plant

Services Rendered

The work included complete preliminary design of 1273 km motorway; as well as detail design of 400 km motorway with interchanges, service, park and maintenance areas, bridges, viaducts and other structures; preparation of technical specifications and tender documents.



Construction Cost

Construction Cost for one of the lots in the motorway project was 2 150 000 000 Euros

Repairs to R11 Parking Area at Incirlik Airbase, Adana, Turkey

Project Description

This is a Design and Build Project in a Military Base for US Army AFCEC.

The project includes in general, renovating Refueller Vehicle Parking Area near Facility. The existing R11 refueler truck parking area's deteriorated concrete pavement will be demolished and removed, and it will be replaced with new heavy-duty concrete pavement.

Project also includes the following design tasks; containment for the refueler truck parking stall area with a new drainage and oil water separator system, perimeter fence, gates, security lighting, power supply and electrical upgrades and grounding.

Services Rendered

Complete design services for civil, topographical, geotechnical, architectural, structural, mechanical, electrical, landscaping; together with preparation of technical specifications.

Design required familiarity to UFC, USFG, NFPA criteria and standards.

Tashkent City International Business Center, Lot 2 Central Plaza, Agrobank Office Block, Appraisal Report for Türk Eximbank, Tashkent, Uzbekistan

Project Description

This project included preparation of an unbiased appraisal report for the project "Tashkent City International Business Centre, Lot 2 Central Plaza, Agrobank Office Block", in order to evaluate the technical and financial aspects of the project.

The report included feasibility study for general evaluation of the project and its budget.

The Client Agrobank has applied Türk Eximbank for an investment credit for financing a portion of this construction project.

Türk Eximbank has requested from Agrobank an appraisal report by an unbiased consultant company in order to receive accurate information on the amount and breakdown of Turkish/Local and 3rd Country content within the Project. This report has been prepared by TMA Engineering for these purposes to be submitted to Türk Eximbank.

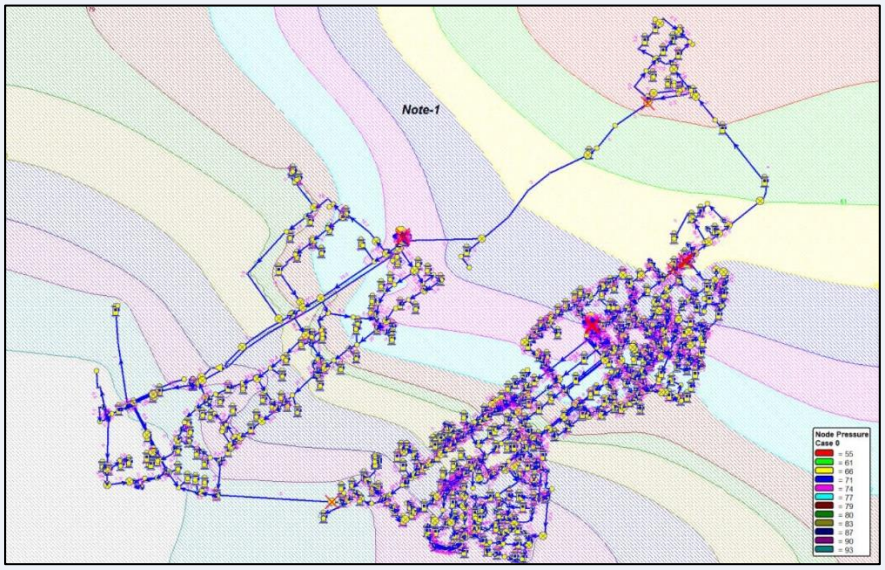
Services Rendered

Services rendered by TMA included; review and evaluation of the project design documents, bill of quantities, Contractor's construction strategy, work schedule, cash flow, general project budget, project unit prices and comparison of them with the local and international market actual costs. Risks foreseen and measures to be taken are also defined for the sponsor Türk Eximbank.

Repair Upgrade Contingency Water Distribution System Base Wide, Incirlik Air Base, Adana, Turkey

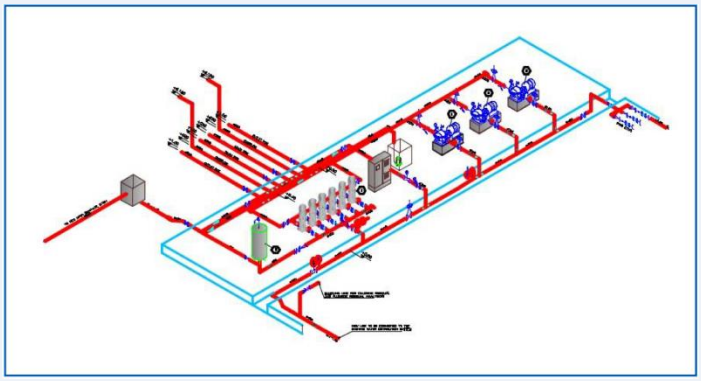
Project Description

The project covers to investigate, model and analyze the water distribution system Base wide using the KY-Pipe 2016 software and to provide concept design for upgrading the existing system to meet the increasing demands of contingency operations.



The project covers the following main items.

- Inventory of the existing water supply system
- Conducting hourly flow tests,
- Developing the hydraulic model using the KY Pipe – Pipe 2016 software
- Conduct the hydraulic and fire demand analysis using the hydraulic model developed.
- Develop 35% design for upgrading the distribution and storage systems.



Services Rendered

Complete design services for civil, architectural, structural, mechanical, electrical, landscaping and fire engineering disciplines; together with preparation of technical specifications and cost estimate.

Design required familiarity to UFC, USFG, NFPA criteria and standards.

Al Kufra Wellfield - Tazerbo - Ajdabiya Water Supply Project, Phase 3 Pump Stations, Libya

Project Description

TMA Mühendislik Ltd. (Turkey) is commissioned by AL NAHR CO. LTD (ANC) to carry out the design of the Kufra-Tazerbo-Ajdabiya-Water Supply Project Phase 3 Pump Station of the Man-Made-River Project in Libya.

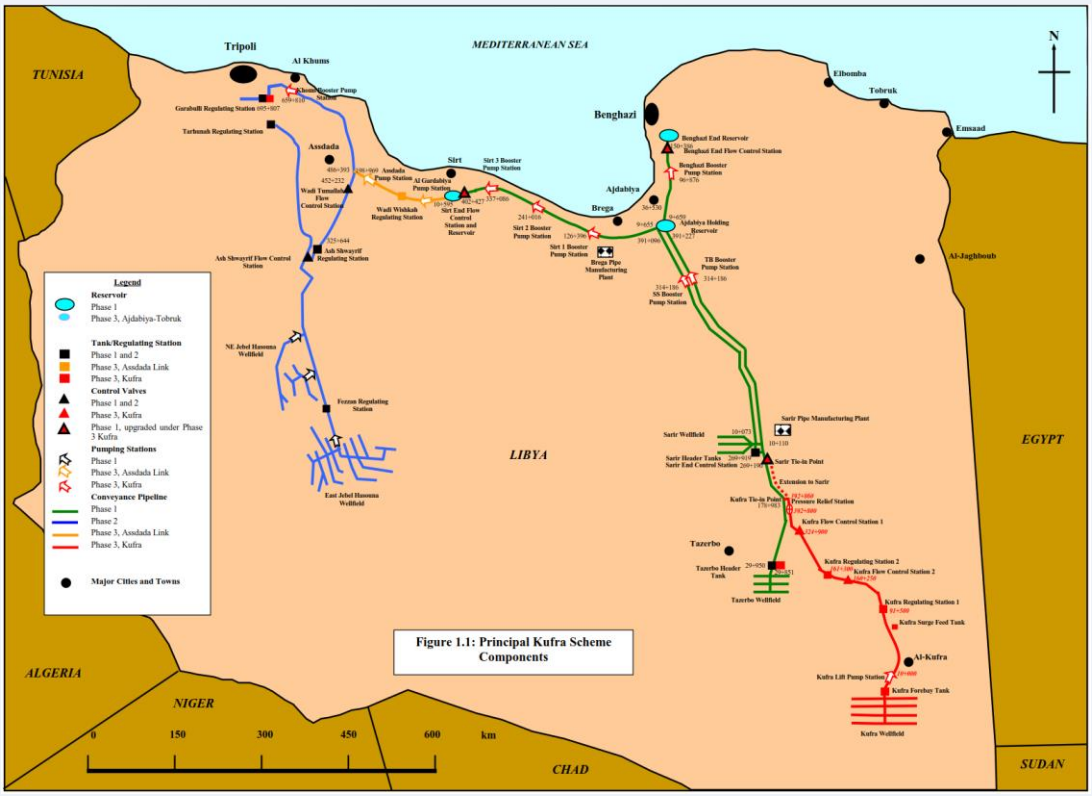


Figure 1.1: Principal Kufra Scheme Components

The Kufra Scheme is a part of the third phase of the Man-Made River Project (GMRP). The Kufra Scheme will provide an additional 1.68 MCMD of water from a new well field in the Kufra Basin in the south-east of Libya. Design capacities of the pumping stations vary from 1.68 to 3.5 MCMD.

The Scheme includes a new Kufra well field, Kufra Lift Pump Station and conveyance pipeline to supply the Kufra well field water into the existing GMRP system.

Additionally, seven new booster pump stations are planned on the existing Phase 1 and Phase 2 systems to increase the hydraulic capacity of the existing system to convey the full Phase 3 design flows.

Construction of these pump stations will be phased to meet the water demand. Initially, the construction of the three pump stations, Kufra Lift Station; SS Booster Pump Station; Sirt 2 Booster Pump Station was awarded to ANC. The remaining four pump stations will be constructed in future phases.

Hydraulic Design of whole system was fully completed and the detailed design has been supended due to current situation in Libya at about 40% completion stage.

Services Rendered

All engineering design for three pump stations to be constructed by ANC in the initial phase will be carried out to the required level of detailing in all engineering areas such as System Design, Hydraulic Studies, Civil and Structural Engineering Design, Electrical and Instrumentation Design including all specifications, drawings, calculations, technical reports, design criteria, vendor data review and procedure documents to complete the project successfully.

Construction Cost

500 000 000 US$

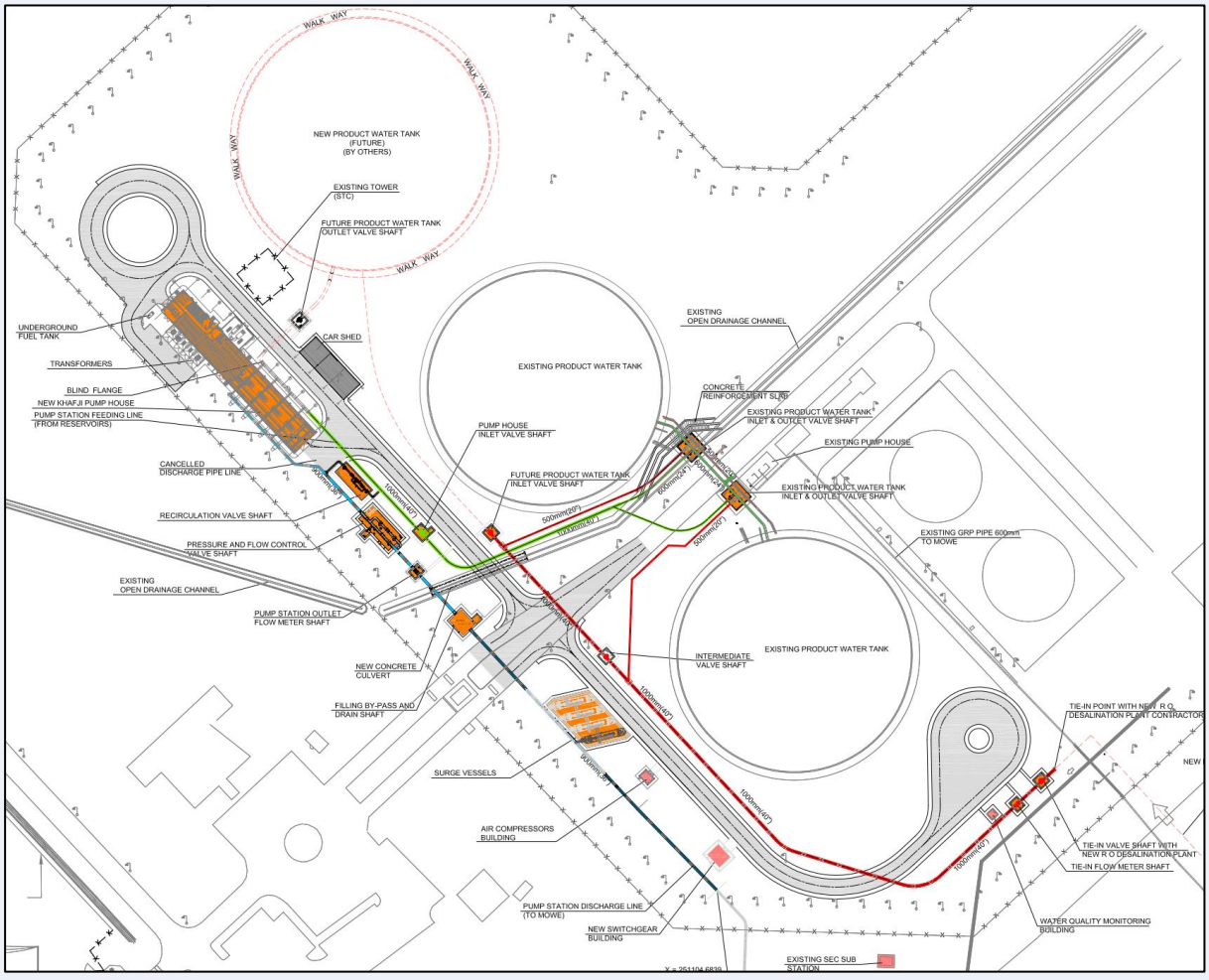
Al Khafji New City Feeder Water Transmission System, Al Khafji, Kingdom of Saudi Arabia

Project Description

Al Khafji is a city in the Eastern Region's of Saudi Arabia. It is located at latitude 27 N and longitude 48 E, 10 kilometers south of Saudi Kuwaiti borders, and 300 kilometers north of Dammam.

Saline Water Conversion Corporation (SWCC) has in Al Khafji an existing desalination plant that will be decommissioned in the near future. The site houses two existing reservoirs of 56,000 m3 capacity each, and is already equipped with necessary pumping station and pipeline system to convey the water to Al Khafji MOWE Terminal Reservoir.

Saline Water Conversion Corporation (SWCC) planned to construct a new water transmission system to convey potable water from Al Khafji Desalination Plants to Al Khafji MOWE Terminal Reservoir and a new Tap-off Station for the city.



Al Khafji New City Feeder Water Transmission System Project has the main objective of providing an adequate supply of potable water services to the resident population of Al Khafji Area while achieving the following results:

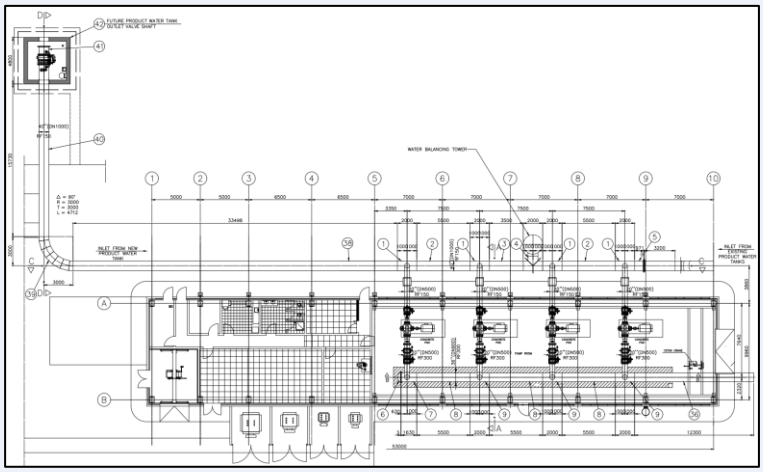
- ✓ Increase the quantity of drinking water supply till year 2050,

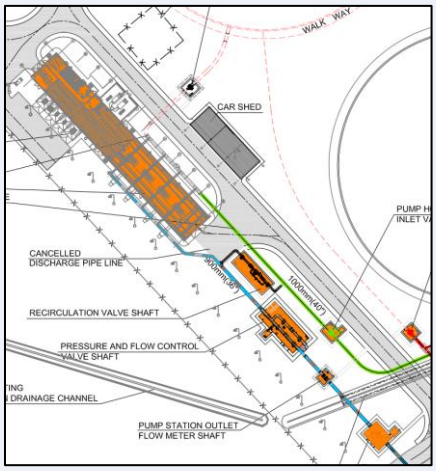
- ✓ Increase the reliability of water supply,
- ✓ Improve the quality of drinking water and eliminate sources of contamination.

The design capacity of the new Pipeline System shall be 60,000 m3/day at the first stage and 100,000 m3/day as a final stage.

The two sources of water for Al Khafji new city feeder transmission system is:

- ✓ Al Khafji Existing Desalination Plant: The product water from Al Khafji Existing Desalination Plant is feeding the existing two tanks (56,000 m3 each).
- ✓ Al Khafji New RO Desalination Plant: Al Khafji New RO Desalination Plant will deliver the desalinated water to a new product water tank of 60,000 m3.





The new desalination plant will be built in Al Khafji next to Existing Desalination Plant. It will have a daily production capacity of 60,000 m3 initially and its ultimate capacity will be 100,000 m3/day. Both sources of water are not part of the scope of work of this project.

It is also part of the scope of work of this project to connect the existing tanks to the new 60,000 m3 product water tank.

Main Design Components are;

- ✓ Al Khafji New Product Water Tank: One steel reservoir (capacity of 60,000 m3)
- ✓ Al Khafji New Pumping Station: Pumping capacity of 60,000 m^3/day (Phase -1)
- ✓ Transmission Pipeline: Water transmission pipeline with a length of 10.8 km
- ✓ Al Khafji Tap-Off Station
- ✓ Al Khafji City MOWE Existing Terminal Reservoir Tie-In Station

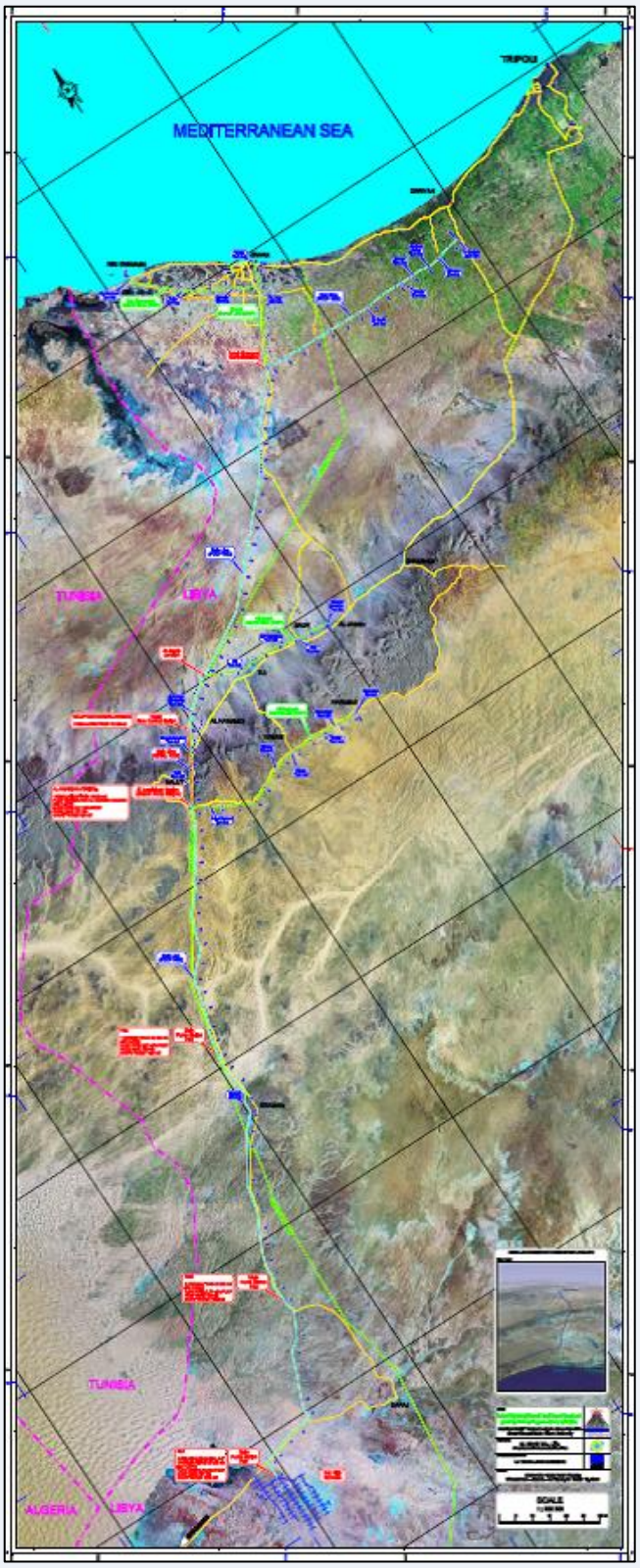
Services Rendered

All civil, structural, architectural, mechanical piping detail design is prepared by TMA Engineering, as a subconsultant to ILF.

The design period was completed in 2019. Construction of the project has been suspended.

Ghadames-Zwara-Az Zawiyah Water System; Libya

Project Description



The project includes implementation of a water supply system in Libya from the well field near Ghadames, located about 650 km south-west of Tripoli and about 400 km south of Zwara, to convey the water through pipelines and distribute to various settlements and agriculture projects en route and to the coastal towns of Az Zawiyah, Zwara and Abu Kammash.

The System will include 4 pumping stations and shall supply through 29 Turn-out Stations a maximum discharge of 2.88 m^3/s of water to the western region of Libya, mainly for domestic use and a small quantity for agricultural use.

All civil/architectural and structural detailed design of structures is prepared by TMA Engineering, as a sub-contractor to ILF.

Structures in Scope of This Project:

Pump Houses:	4 ea
Electrical and Control Buildings:	6 ea
Chlorination Buildings:	4 ea
Regulating Tank:	70.000 m3, 2 ea
Forebay Tanks:	20.000 m3, 3 ea
Feeder Tanks:	8 ea
Block Valve Stations:	10 ea
Yard Shafts:	60 ea
Turnout Shafts:	26 ea
Wash Out & Drain Valve Stations:	5 ea
Well Head Stations:	5 ea
Well Field Wells:	106 ea
Water Supply Piping:	app. 600 km

TMA completed the Civil-Structural and Architectural detail design of this project as subcontractor to ILF to the satisfaction of GMRA/ANC.

Services Rendered

All civil/architectural and structural detailed design of structures is prepared by TMA Engineering, as a subconsultant to ILF.

Man Made River Project, TAZ Conveyance System Pump Stations, Libya

Project Description

The project includes the complete architectural, civil, mechanical, hydraulic, electrical and instrumentation design of two pump stations on the Tarhunah to Abu Zeyyan Conveyance System of the Man-made River Project – Libya.

Each pump station designed for a capacity of 800,000m3/day, consists of a Pump House with 8 pumps of 16,800 m3/h capacity each, Generator Building, Compressor Building, Personnel Quarter, Security Building, Workshop, Inlet and Outlet Isolation Valve Chambers, roads and hardstands, galleries, burried services, and perimeter fencing with landscaping design.

Complete hydraulic design of 100km pipe line including the surge analysis and the SCADA and process control system for the operation of the pump stations are also included in the scope of the design work.

Valve Structure, Surge Vessels – Pump Station

Services Rendered

Architectural, civil, mechanical, hydraulic, electrical and instrumentation design.

Construction Cost

Total Construction Cost of the project is approximately 40 000 000 US$

Man Made River Project, Pump Stations at SIRT "END" and SIRT "B" Reservoirs, Libya

Project Description

TMA worked as the Engineering Design Group on the Sirt B and Sirt End Pump Stations for ABB – METIS Joint Venture. The Consultant for Sirt Pumping Stations was Halcrow Group Limited (Halcrow).

For the Sirt Area agricultural development, Sirt END and Sirt "B" pump stations provide water to the Large and Small farms from the AL Gardabia and Grand Al Gardabia Reservoirs. Two sets of pumps installed in each pump house in order to meet the varying duty requirements for the large and small farms. Each Set consists of four duty pumps with two on standby.

Project includes inlet and outlet surge vessels, screen chamber, valve chambers, Generator and compressor building and infrastructure works.

SIRT 'B' Pump Station General View

Outlet Surge Vessels

Pump Hall

Pump and Motor Set

Screen Chamber Construction

Services Rendered

Consultancy, detail design excluding SCADA and electrical, engineering supervision during construction.

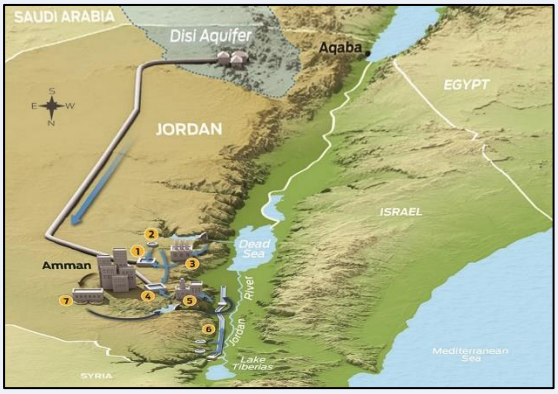
Construction Cost

Project Cost: 35 036 322 LD (Metiş Portion)

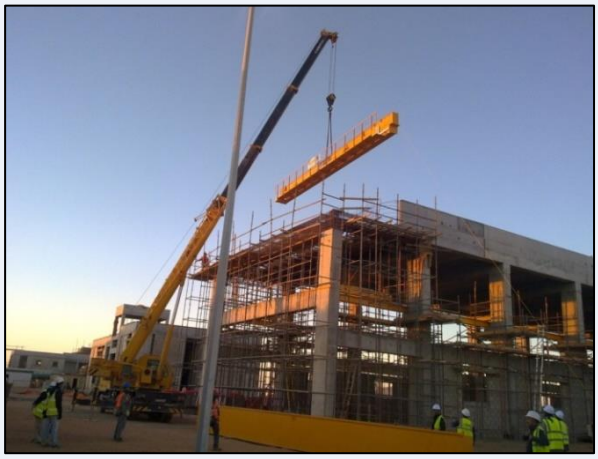
DISI-MUDAWARRA to AMMAN Water Conveyance System, JORDAN

Project Description

DISI - Mudawarra to Amman Water Conveyance Project is designed and constructed to supply potable water to the Greater Amman Area from the Disi aquifer in the south of Jordan. Water is to be abstracted from the Disi aquifer and carried approximately for 325 km to Amman via a 1600 mm diameter steel pipeline and series of pump stations. The system conveys an annual flow of 100 million cubic meters (MCM); 40 MCM to Amman City.



Construction is made by GAMA Power Systems Inc. and the consultant is Diwaco / Halcrow.



Services Rendered

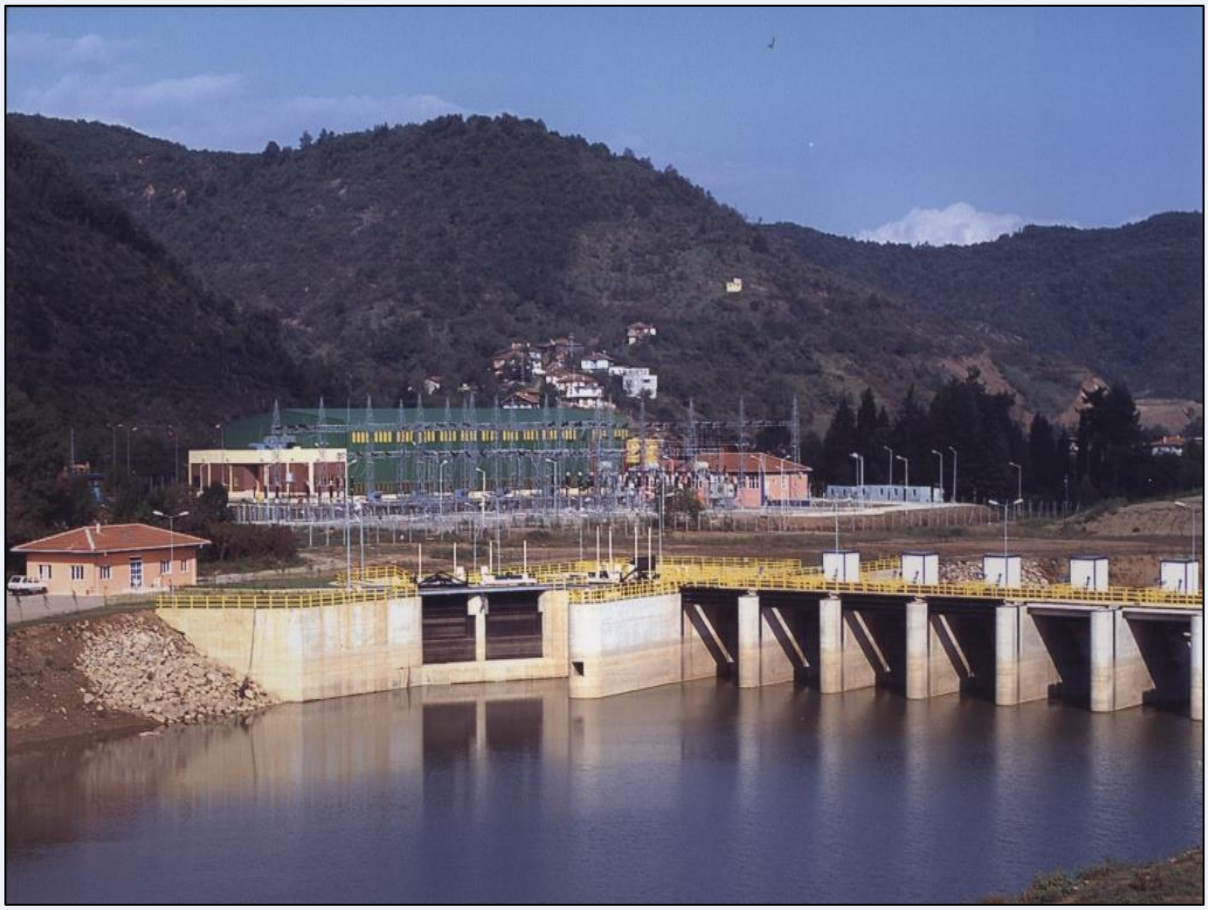
The services rendered by TMA include the second phase of detail design for Disi-Mudawarra to Amman Water Conveyance System.

All civil, electrical and mechanical detail design of structures is prepared by TMA Engineering.

Isakoy Pump Station, Istanbul, Turkey

Project Description

The work carried out included the design of a complete pump station to deliver 0.2 and 12.0 m3/second of water from the Isaköy regulator located within İstanbul Province in Anatolia side; the surge tower, and twin 2500 mm diameter suction pipes and the hydraulic design calculations of 2000 mm diameter of conveyance line. In addition, project included the full surge analysis and the design of the necessary surge protection equipment. Scope also included staff houses, heating center, guard houses, power supplies, domestic water supplies, waste water and storm runoff collection and disposal, fire detection and suppression system, lighting, heating, air conditioning and ventilation, landscaping, roads, fences.



HIGHLIGHTS OF PROJECT:

Pump Hall:	2150 m2
Administrative Building:	265 m2
Service Building:	373 m2
Staff Houses:	700 m2
Pumps:	1.75 m3/sec (8 ea), 0.75 m3/sec (2 ea)
Total Discharge :	12 m3/sec
Pumping Head:	2500 mm (2 ea)
Conveyance Line:	2000 mm
Surge Vessel:	50 m3 (4 ea)
Overhead Crane:	20 t
Generator:	1400 KVA
Installed Power :	58.25 MVA
Control System :	SCADA

Services Rendered

All civil, architectural, reinforced concrete, mechanical and electrical detailed designs were prepared by TMA Engineering for the work contracted by Limak-ABB-ABS Joint Venture.

Melen System Cumhuriyet Water Treatment Plant, Istanbul, Turkey

Project Description

The work includes the design of a complete water treatment plan to provide 720 000 m3 per day of potable water for Istanbul. The water treatment works comprise the process plan and associated buildings, an administration and social building, power supplies, domestic water supplies, waste water, lighting, heating and ventilating, landscaping, roads, fences, SCADA system and all other facilities and services necessary for a comprehensive and complete installation.

Filter Structure

Sludge Thickeners

Water Storage

Services Rendered

Complete design and engineering supervision during construction. Process design was developed by EMIT, Italy.

Construction Cost

Project Cost: 35 000 000.- US$

Kisladag Gold Mine Plant – Phase I and II, Turkey

Project Description

Kisladag Project is planned to be a 10 million tonne per annum (mtpa) open pit, heap leach gold mine located in west-central Turkey. The Kisladag Gold Project will be the largest gold mine in Turkey. The open pit, heap leach gold mine will produce 144,000 ounces in its first year (Phase-I) and 240,000 ounces annually thereafter (Phase-II).

The Kisladag ore will be processed in a standard heap leach facility containing a three stage crushing circuit, an overland conveyor to the heap leach pad, mobile conveyors and a stacker for placing the ore and a carbon adsorption facility (ADR plant) for recovering the gold. The carbon will be treated on site in a refinery and the final product will be gold doré bar.

Construction of the Kisladag facilities was completed in two phases. The first phase comprised the bulk of the infrastructure, equipment and earthworks required to process predominantly ore during the first year of operation. The second phase, in year two of operations, entailed expanding the crushing circuit to increase production throughout to the final design capacity of 10 million tons per annum.

General View

Primary Crusher

Secondary & Tertiary Crusher

Secondary & Tertiary Crusher

Coarse ore Stock Pile -1

Conveyor Line-1

Services Rendered

Civil, structural, architectural and electrical design of Primary Crusher, Secondary and Tertiary Crushers, Screening, ADR Plant and Conveyors, as Subconsultant to Hatch of Canada.

Construction Cost

Total Construction Cost of the projects is approximately 55 000 000 US$

Fire / Crash Rescue Station, US Air Base, İncirlik, Adana, Turkey

Project Description

This is a Design and Build Project in a Military Base for US Army Corps of Engineers Europe District.

The project includes design services for the new Fire / Crash Rescue Station in İncirlik American Air Base, Adana.

Programmed gross area of the new FCRS construction is approximately 3600 m2.

The New FCRS facility will be Headquarters (HQ) class and combined (Structural / ARFF) type.

- Five (5) structural companies will provide fire protection to facilities (buildings)

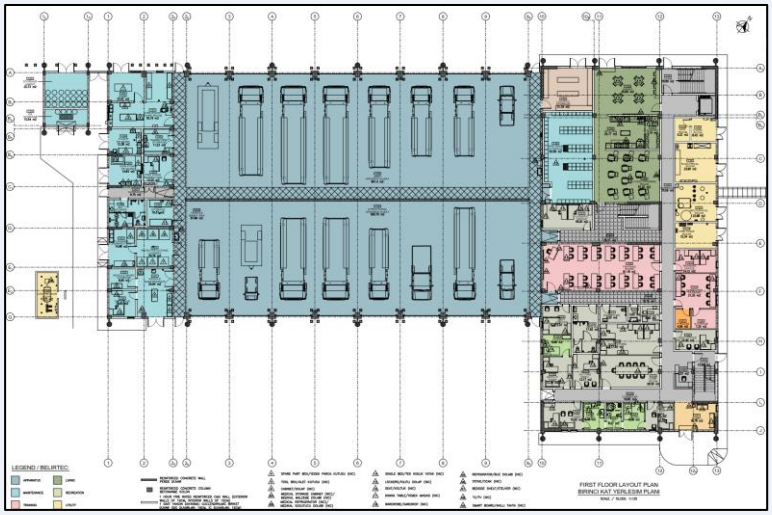
- Six (6) ARFF companies will provide fire protection to flight lines and aircraft.

The building has three major sections:

- Maintenance Block

- Apparatus Bays

- Administration and Residential Block



The maneuvering area and access roads for the fire trucks have also been designed in scope of this project.

Services Rendered

Complete design services for civil, topographical, geotechnical, architectural, structural, mechanical, electrical, landscaping, life safety and fire engineering disciplines; together with preparation of technical specifications.

Design required familiarity to UFC, USFG, NFPA, Life Safety, ATFP, ADA, ASHRAE criteria and standards. ATFP and Force Protection Design were also performed.

TMA also provided Designer of Record (DOR) services during the construction.

Coast Guard Helicopter Maintenance Facility and Headquarters Building, Izmir, Turkey

Project Description

This project covers the design and construction supervision works for the Turkish Coast Guard Facilities to be constructed in İzmir Adnan Menderes Airport. The project includes a 1800 sqm Headquarters building; a 2200 sqm Hangar Building including the mezzanine floors, concrete aprons/taxiways, roads and other utility systems.

These facilities are constructed under an offset agreement between Turkish Undersecretariat of Defense Industry and Italian AGUSTA Company. All design and construction works performed jointly by TMA and an Italian Engineering firm STI.

Services Rendered

- Complete design services with Technical Specifications and Cost Estimate and preparation of Tender Documents.
- Evaluation of tenders and construction supervision and inspection services during construction.
- Acceptance of construction, including testing and commissioning.

Improve Family Housing, Phantom, Incirlik USAF Air Base, Turkey

Project Description

The project involves the improvement of 235 ea. Military Family Housing (Phantom) Units at Incirlik AB, Turkey. The improvements address the findings and recommendations of the 2003 Housing Community Profile study, as well as the deficiencies in relation to the recent upgraded standards of "Air Force Family Housing Guide" , August 2004 Revision, and in the structure of the buildings as per the current seismic code in Turkey.

In addition to renovation and modernization works there will be a conversion of some of the existing facilities with the addition of new bedrooms and 2 units will be converted to handicapped accessible.

Project includes the improvement and structural strengthening of 235 dwelling units, such as general interior and exterior modernization and renovation, and conversion of some 2BR units to 3BR and 4BR units. It also includes upgrading of kitchen and bathrooms, doors, windows, floor and wall finishes, electrical, HVAC and fire protection systems, floor plan improvement, roof repair and replacement, increased energy efficiency, as well as exterior works, such as upgrading the patios, pavements, utility systems, playground and recreation areas.

The project addresses the following utility and infrastructure improvements;

- ✓ Upgrading of internal roads and cul-de-sacs pavements
- ✓ Reconstruction of interior walkways
- ✓ Improvement of storm drainage system

- ✓ Replacement of water service connections to housing units
- ✓ Landscaping and re-seeding of construction/sloping areas.
- ✓ Replacement of sewer connections of housing units.
- ✓ Low Voltage Electrical Power Distribution
- ✓ Replacing transformer substation

Work also includes landscaping of the total construction site.

Services Rendered

Complete design services with Technical Specifications and Cost Estimate.

Construction Cost

Total construction cost is approximately 20 000 000 US$.

ROKETSAN – Design Services for Miscellaneous Projects

Project Description

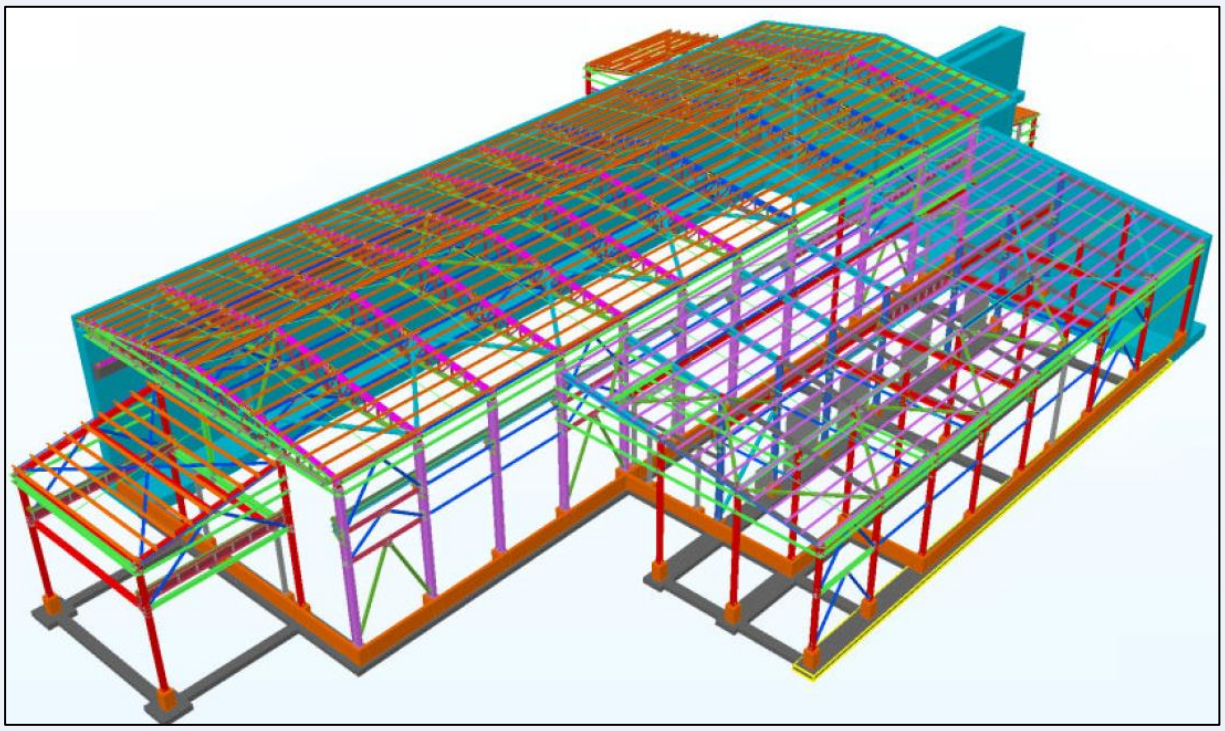
This project has been prepared for Roketsan A.Ş. manufacturing missiles for Turkish Defense Industry. Project covers explosive critical facilities such as munition storages, rocket integration plant and testing facilities.

Design has been performed in accordance with “USA Department of Defense - Safety Manual for Ammunition and Explosives”.

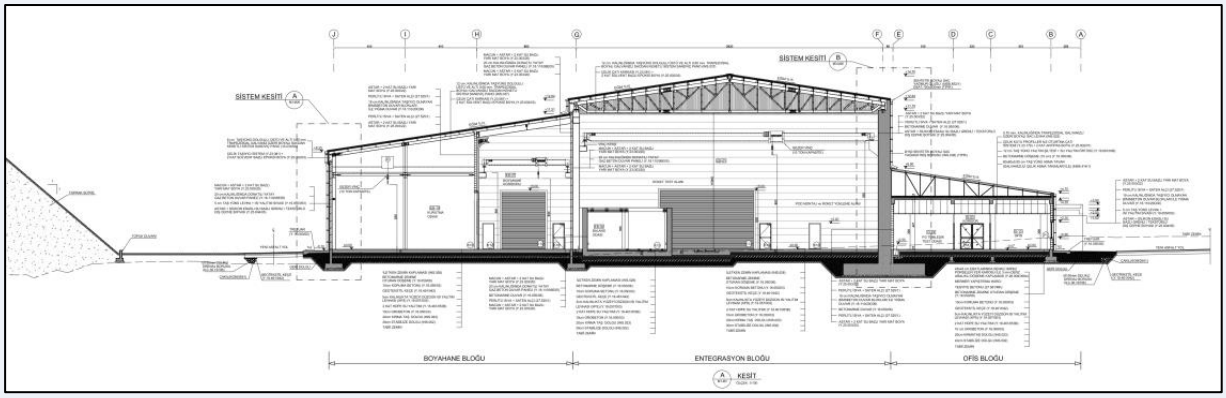
The project package includes architectural & engineering design services for a variety of buildings/structures in a wide range from military and industrial facilities to office places.

Design items in the package are;

- ✓ Munition Indoor Test Building (100 m2)
- ✓ Insensitive Munition Open Field Test Area (140 m x 200 m)
- ✓ Appurtenant Office Building (120 m2)
- ✓ Ammunition Stores (544 m2, 640 m2, 800 m2)
- ✓ Chemical Materials Stores (900 m2, 800 m2)
- ✓ Rocket Integration Plant (4000 m2)



All design works comply with Turkish, US and other international codes.



Services Rendered

The project package included architectural & engineering design services for a variety of structures, including preparation of technical specifications, construction cost estimates and tender documents.

Building functions included Explosion Protection measures.

Medical System Infrastructure Repair, Building 865, Incirlik Air Base

Project Description

The project objective is to design and construct multiple mechanical and electrical upgrades to the Ambulatory Surgery Clinic, Bldg 865. The project consists of delivery of fully functional, turnkey type facilities. The work includes the design, fabrication, equipment, delivery, installation, testing, and construction.

The upgrades consist of the following work items.

- ✓ Chilled Water Plant Upgrade – includes the removal and replacement of chillers, pumps and modification to the chilled water distribution system.
- ✓ Building Automation Upgrade – includes replacement of the existing building automation system with a new BACnet compliant system including automating the manual facility isolation process (CBR/Button-Up Procedure).
- ✓ Air Handling Unit Replacement – includes the replacement and repair of air handlers.
- ✓ Emergency Power Upgrade – includes the replacement of the emergency power controls and switchgear
- ✓ Fire Alarm Upgrade – includes the replacement of the building fire alarm system
- ✓ Boiler Replacement – includes replacement of a fuel-oil fired steam boiler
- ✓ Plant Clean-up – includes cleaning, patching, repairing and painting of mechanical rooms and replacing piping insulation

The design had to take into account the fact that the Clinic had to stay operational during the construction. Power outages were critically planned and kept to bare minimum. During those periods of power cuts emergency generator were provided to keep the medicine cabinets cooled to avoid medicine becoming unusable.

TMA was the Designer of Records (DOR) on the project.

Construction Cost

Construction Cost: 6 500 000 US$

Repair ATA Floors for Clinic and Community Center, 425 ABS/LGC, Izmir, Turkey

Project Description

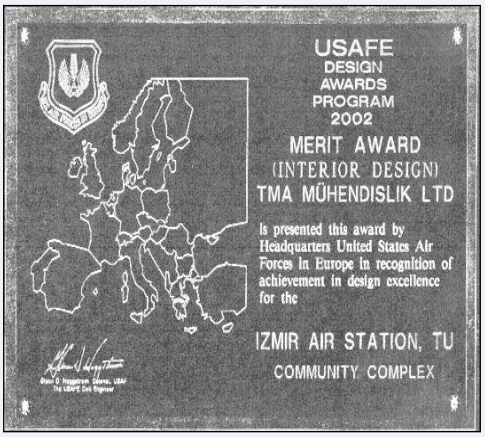
This project, won a merit award from USAFE in 2002. The project was completed on time in a race against time. The project involved relocating all USAF functions in Izmir in a rental place of 8000 square on four empty unfinished floors of a commercial building which also housed the Hilton International Hotel of Izmir.

One of the floors was to be a Clinic which turned out to be the most challenging floor. The services that were built for a commercial rental space such as office had to be modified to satisfy the needs of the clinic.

One of the floors
before construction started.

The same place after the
construction was completed.(Club)

The interior of the Physical Fitness Section



Award

Services Rendered

Complete design services with Technical Specifications and Cost Estimate.

Construction Cost

Total Construction Cost 2 500 000 US$

MIKES Mikrodalga Elektronik Sistemler A.Ş., Ankara, Turkey

Project Description

This is a defense related project, originally owned by a joint venture between LORAL of USA and KAVALA of Turkey. The factory was later on bought by ASELSAN. The factory is designed to build electronic warfare devices for F-16 fighter planes also built in Turkey. The project is constructed on a plot of land approximately 30 000 square meters. The total constructed covered area is 6000 square meters.

The factory facilities consists of a two story administration facility, a production building, and auxiliary service facilities such as transformer building, boiler house and sewage treatment facility. To provide direct access to the production floor, the administration facility is built adjacent to the production floor. Due to the nature of the production, the both the administration building and the production building are completely air conditioned, with certain test areas requiring year round cooling. The service lines run suspended from the ceiling concealed above suspended ceiling.

This is a high security factory with access control and surveillance systems. The building functions and security features are controlled by building automation systems. The system monitors temperature in the building controls HVAC devices, indicates an alarm when a fire door is opened without authorization, and is interfaced with the surveillance system.

The factory is fed through two transformers each 1600 KVA, and has an emergency generator of 675 KVA standby power. To provide flexibility to production floor layout, the power distribution is by overhead busways installed right under the suspended ceiling. The computer center where equipment related software is developed is tempest protected, and shielded against electronic eavesdropping.

Services Rendered

TMA's introduction to this project was toward the end of the design phase. The Owners wanted another A-E firm to review the design and to provide value engineering, as well as ensuring compliance with US Codes, and General Manufacturing Practices. Following the design review TMA was asked to stay on to assist the Owner with tendering works, and then to supervise the construction and provide quality assurance services. TMA handled the task with a permanent site team of four. When need be support was provided by the TMA Head Office.

Construction Cost

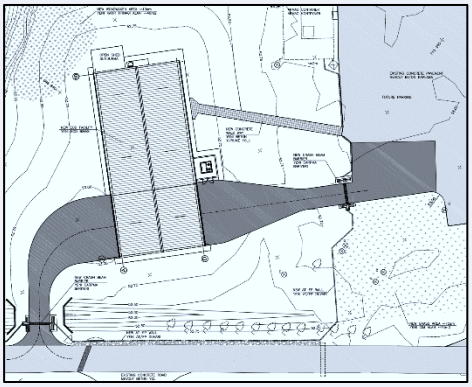
The cost of the construction, including the building equipment was 5 500 000 US Dollars. This was about half a million dollars above the initial estimate. But this increase was due to additional items introduced to the scope by the Owner. Production and test equipment installed in the facility is estimated to be 25 000 000 Us Dollars.

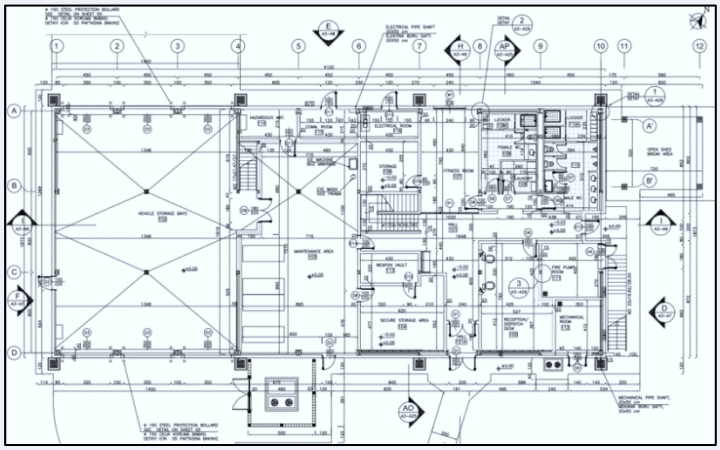
Explosive Ordnance Disposal (EOD) Facility, US Air Base, İncirlik, Adana, Turkey

Project Description

Scope includes the design of a new Explosive Ordnance Disposal (EOD) Building in İncirlik Air Base.

EOD Facility has a total area of 1300 m2 and comprises of an office block, a vehicle storage bay and a maintenance area. The work includes all civil, structural, architectural, plumbing, HVAC, electrical, communication, MNS/fire protection systems and lightning protection system.





The EOD Building has two major functions. One of them is offices, the other major function is vehicle storage bay and maintenance area including secure storage and primary weapons vault. Rest of the building is dedicated to support sections such as a mechanical room, fitness room, wet spaces, a communication room, a server room and an electrical room.

An office function has been designed with two floors since vehicle storage bay and maintenance area (VSB/MA) required almost two floor high bays. VSB/MA area structure designed as a metal structure. Office area structure has been designed as composite concrete structure with steel columns embedded in concrete and composite mezzanine floor. The entire building structure is shrouded with fire resistant insulated sandwich panels.

The EOD Facility is a typical single-story building with a mezzanine floor, consisting of primary and secondary steel frame structure, cladding and associated bracing.

Infrastructure works include access roads and parking areas, water and fire water supply, waste water disposal system, communication and power supply to the new facility. Facility designed in accordance with the ATFP Criteria with ATFP barriers and swing type crash barriers.

Services Rendered

Scope includes design and engineering services as well as the preparation of the tendering package including technical specifications.

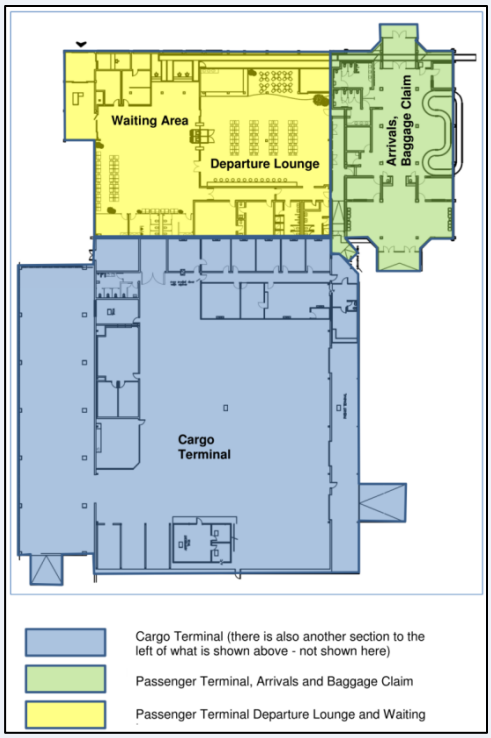
Construction Cost

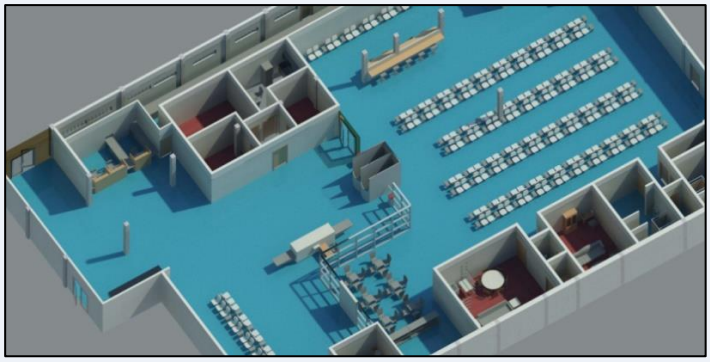
Construction cost is around 1 500 000 US$.

PAX Terminal Renovate Design, B500, Incirlik Air Base, Adana, Turkey

Project Description

The project scope included full renovation of the existing Passenger Terminal Building in Incirlik Air Base, Adana.





The building was to be redesigned in order to make it n compliance with the latest requirements of the relevant design codes & standards. Sustainable repair/renovation of the building including architectural, plumbing, HVAC, electrical and fire protection systems design was requested.

The requirements of the project include full renovation of the entire building to comply with the requirements of the latest standards.

Design for renovation work included whole interior design, check-in counters, waiting and baggage handling systems, as well as replacing the suspended ceiling, repairing windows, doors, flooring, painting, and replacing built-in furniture.

The mechanical systems including hot water system, piping system, mechanical room, exhaust and ventilation system, duct works, and moisture control systems were also upgraded as necessary.

Design also included upgrading the lighting fixtures, providing additional 110 electrical outlets, installations of a new conveyor system, installation of HVAC control system, electrical panels, replacement of electric, telephone and local area network wiring, replacement of emergency lighting system, replacement of cable television system, and replacement of receptacles and grounding systems.

Fire sprinkler and fire alarm system was also upgraded.

Seismic/Structural Evaluation of US Department of Defense - Europe Schools In Turkey

Project Description

The project covers the structural and seismic evaluations of the DoDDS-E School buildings in Ankara Support Facility (Balgat), Izmir, and Incirlik Air Base.

The Owner is US Department of Defense.

Eleven buildings having a total area of nearly 26,500 m² were structurally analyzed. The analysis was made in accordance with all applicable US Codes and regulations as well as the current Turkish Seismic Code.

The project had three major parts:

- ✓ Field Study; included Geotechnical investigations and tests to identify building material characteristics, review and verification of as-built drawings and rapid visual survey of buildings.
- ✓ Evaluation; included the structural analysis of the buildings for its present structural capability to resist the dead, live and seismic loads and to determine the structural and non-structural deficiencies.
- ✓ Rehabilitation Design; covered the structural measures and design details needed to retrofit the buildings to meet the current code requirements. Cost estimates for the recommended rehabilitation work were prepared for each recommended solution.

Listing of buildings surveyed and evaluated:

Ankara DoDDS School, Ankara Support Facilities, Balgat

✓ Education Building	5500 m2	single story	reinforced concrete
✓ Gymnasium	1120 m2	single story	steel building
✓ Library	720 m2	single story	reinforced concrete

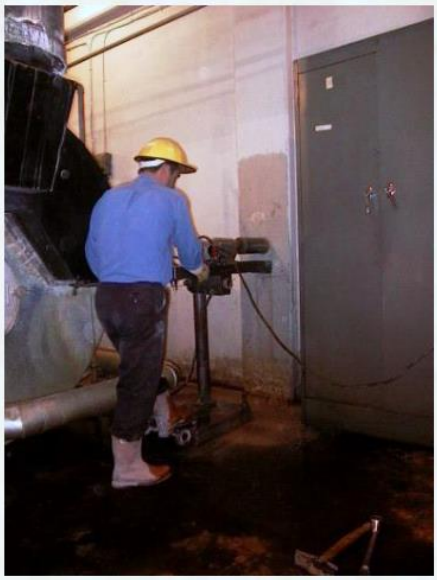
İzmir DoDDS School

✓ Education Building	5500 m2	six story + basement	reinf. concrete

İncirlik DoDDS School

✓ Elementary School	1300 m2	single story	reinforced concrete
✓ Elementary School	2900 m2	two story	reinforced concrete
✓ Elementary School Addition	2800 m2	two story	reinforced concrete
✓ Gymnasium	1350 m2	single story	reinf. concrete + steel roof
✓ Physical Education	325 m2	single story	reinf. concrete + steel roof
✓ High School (New)	2540 m2	two story	reinforced concrete
✓ High School (Old)	2350 m2	two story	reinforced concrete
TOTAL	**26405 m2**		

Magnetic Scanning



Taking Core Sample

Sample Location

Mini Boring Machine

Services Rendered

Non-destructive testing, geotechnical investigations, structural analysis to assess strengthening requirements, design of strengthening measures.

Seismic/Structural Evaluation of the U.S. Consulate Building, Adana, Turkey

Project Description

The project covered the seismic / structural evaluation and structural rehabilitation design of the US Consulate Building in Adana, Turkey.

The project consists of two parts:

- ✓ Comparison of Turkish and US Seismic Codes and recommendation of Federal Management Agency Publication, (FEMA) 2224 - NEHRP Recommended Provision for Seismic Regulations for New Buildings is made to determine the methodology to be followed.
- ✓ Evaluation and analysis of the building structure and the rehabilitation design. The deficiencies and recommended rehabilitation measures are detailed.

Services Rendered

Geotechnical Study, Non-destructive Testing, Seismic / Structural Evaluation, and Rehabilitation Design.

Seismic/Structural Evaluation and Blast Mitigation of the USAF Bayrakli Facilities, Izmir, Turkey

Project Description

The project included the seismic/structural evaluation of fifteen buildings at Bayraklı Area, used by US Air Force in Izmir, Turkey, and the design of rehabilitation measures for strengthening of the structures. What made this project especially challenging was the fact that most of these buildings were very old and had load bearing stone walls. Furthermore, a blast mitigation design for protection of the buildings against terrorist attacks had been prepared by CH2MHILL of the USA. In the structural design effort, the blast mitigation design was also incorporated into the final design.

An extensive field survey was performed for the verification of as-built drawings and gathering missing data; non-destructive testing for concrete strength, scanning of reinforcement and geotechnical investigations were performed.

The major features of final design were as follows:

- Strengthening of Buildings
  - Providing supplemental vertical resisting elements
  - Addition of steel members

- Filling the frames with reinforced concrete walls
- Addition of new diagonal bracings

- Improvements against liquefaction
  - Addition of pile foundations to improve the ground characteristics. In some of the buildings because it was not possible to reach the side of the buildings from outside the property line, mini piles were used from within the building.

- Repair of structural members
  - Using high strength epoxy mortars

Services Rendered

Geotechnical Study, Non-destructive Testing, Seismic / Structural Evaluation, and Rehabilitation Design.

Procter and Gamble, Novomoskovsk Catamenials Project, Russia

Project Description

Project covers the building upgrade and fit-out of a 5 000 m² existing old factory building, to make it suitable for a new hygienic paper production operation. Project included 1 000 m² new office building, production and warehouse sections. New utility building, HVAC and dust removal systems, power distribution new exterior platforms, train loading dock and all utility connections.

Services Rendered

Architectural and Engineering design services.

Construction Cost

Total construction cost is approximately 2 100 000 US$.

Atlantis Resort Hotel Complex, Antalya, Turkey

Project Description

Atlantis Resort Hotel located in Belek region of Antalya, consists of a main building and two resort buildings having 45 000 square meters of floor area with 466 guest rooms.

Hotel complex has 20 blocks including of Administrative Building, Restaurants, Turkish Hamam, Sauna and Fitness Center, Congress Center, Shopping Center, indoor and outdoor pools.

Congress Center featuring a total covered area of 4100 square meters has 9 major halls. An exhibition area of 1500 square meters.

It was a fast track project and all design and construction was completed in 24 months and hotel opened on May 2002.

Services Rendered

Structural Design.

M1 Adana Shopping Mall and Gaziantep Shopping Mall

Project Description

Two Shopping Mall Complexes: Supermarket, hardware store, food courts, shops and movie theatres, each having 80 000 sqm of floor area.

Services Rendered

Adana Shopping Center: Whole structural design including formwork, reinforcement and steel roofing performed by TMA.

Gaziantep Shopping Center: Whole mechanical and electrical design performed by TMA.

Marconi – Scimitar H-HFSSB Systems Electronic Factory, Ankara, Turkey

Project Description

The project included an electronic factory constructed in Ankara. It consist of a two story office building and an adjacent factory building with a total floor space close to 4000 square meters.

Services Rendered

TMA designed the factory complex completely and provided construction management services.

Cayırhan Thermal Power Plant - FDG Project - Gypsum Dewatering Facility

Project Description

Architectural and structural design of Gypsum Dewatering Facility including mat foundation resting on piles, equipment foundations and 24 m high steel structure.

Soma B Thermal Power Plant

Project Description

TMA Scope included civil, structural and architectural design of the following

- 4 km conveyor line and transfer stations,
- Coal storage yard and coal stacker foundations
- Electrical Substations,
- Primary and Final Crusher Structures.

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