

BACKGROUND

In the beginning of 2004 Qatar was ready to commence with building of a brand new airport to replace the old one, called "New Doha International Airport" (NDIA). The airport is being constructed 4km from the existing facility and will replace Doha International Airport as Qatar's only international airport.

NDIA is a response to a projected demand for additional international passenger capacity to the region. The current airport handles 4.2 million passengers a year, whereas the new airport will be able to handle 24 million a year after the first phase of construction.

The project started in early 2004.

CHALLENGE

The construction of a new airport and its infrastructure required protection of the existing Qatar Petroleum pipelines which were crossing construction site at several locations. Provided solution needed to provide proper protection to the pipeline and access for service and maintenance technician teams.

Main challenge was construction above active pipelines and critical project schedule, which demanded fast and reliable solution. Another, design challenge presented high backfill on some locations, which was reaching up to 12m measured from pipeline invert level.

SOLUTION

Employed as a subcontractor, Freyssinet Middle East – Reinforced Earth Business Unit has provided precast solution for the protection of QP pipelines, based on the TechSpan® arch system technology. Freyssinet was responsible for design, mould (system) supply and technical assistance and supervision of the precast and construction works.

Since construction was performed above active pipelines, exclusion of formwork and scaffolding required for cast-in-place structures and reduction of construction activities in proximity of pipelines was main demand together with short on site construction duration. All of these demands were successfully overcome by introduction of TechSpan® arch system.

Simple, fast and predictable installation procedure for construction of TechSpan® arch has demonstrated its advantages with astonishing 125 linear meters of culvert erected in only four days at site. Erection procedure made use of only one crane and 6 man crew.

The state of the art, TechSpan® custom design developed an arch shape that was able to meet the clearance requirements of the protection tunnels and could also carry the high embankment loads.

The cross section profile of the arch was optimized to minimize bending moments and shear forces in the finished structure. As a result, long -term reinforcement stresses are very low, minimizing crack widths and aiding durability.

New Doha International Airport

Doha, Qatar

TechSpan® Arches

Client: Qatar Petroleum

Consultant: Bechtel / Atkins
Joint Venture

Contractor: MIDMAC

Construction: January 2006



Project Specifications

| | |
|--------------------|---------------------------|
| System | TechSpan® |
| Arch Type | Funicular Shape 3 pinarch |
| Span | 5m |
| Height | 3m |
| Thickness | 300mm |
| Length | 728m |
| Design Life | 120 years |