

BACKGROUND

In the beginning of 2004 Qatar was ready to commence with the brand new airport building to replace the old one - the New Doha International Airport (NDIA), being constructed 4km from the existing facility to become Qatar's only international airport.

NDIA was a response to a projected demand for additional international passenger capacity in the region. The existing old airport handled 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 the new airport and its infrastructure required the protection of the existing Qatar Petroleum pipelines which were crossing the construction site at several locations. A solution was required to provide proper protection to the pipeline and safe access for service and maintenance technician teams.

The main challenge was the construction above the active pipelines and the critical project schedule which demanded a 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

As a subcontractor, we provided precast solution based on the TechSpan® arch system technology. The scope was design, mould system supply, technical assistance and supervision of the precast and construction works.

Since the construction was performed above the active pipelines, exclusion of a formwork and scaffolding required cast-in-place structures. Minimizing of construction activities in proximity of pipelines was one of the main demands, along with short on-site construction duration.

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 4 days on site. Erection procedure required only 1 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 was also able to 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.

Hamad International Airport New Doha Intl' Airport)

Doha, Qatar

TechSpan® Arches

Client: Qatar Petroleum

Consultant: Bechtel / Atkins
Joint Venture

Contractor: MIDMAC

Construction: 2006



Project Specifications

System	TechSpan®
Arch Type	Funicular shape 3 pin arch
Span	5m
Height	3m
Thickness	300mm
Length	728m
Design Life	120 years