

Qatar is a sovereign Arab state , occupying the small Qatar peninsula on the north easterly coast of the Arabian Peninsula.

Population of approximately 2.1 million (of which 300,000 citizens only)

World's 3rd largest natural gas reserves with GDP per capita of approximately USD\$100,000.



I M Pei designed this building drawing inspiration from Ibn Tulun's mosque in Egypt (13th century ablutions fountain of the mosque) and The Al Hambra Palace in Spain

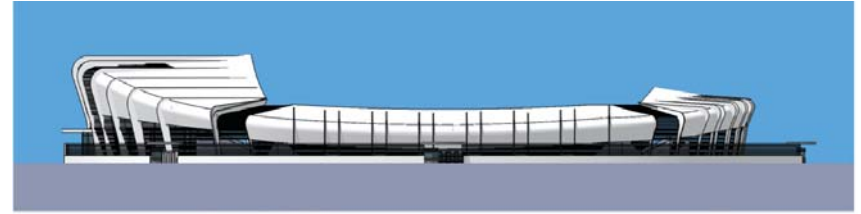
Lekhwiya Sports Club is a Qatari sports club, best known for its football team, which plays in the Qatar Stars League.

It was founded in 2009 as Al-Shorta Doha and renamed to Lakhwiya

It entered the Qatari 2nd divisions, coming 4th in the first year before winning the next season 2010.

In the club's first season in the Qatar Star's League, it finished at the top of standings and the league in 2010-2011.

It repeated its performance in retaining the league title in 2011-12



Initial Form Study Option 1

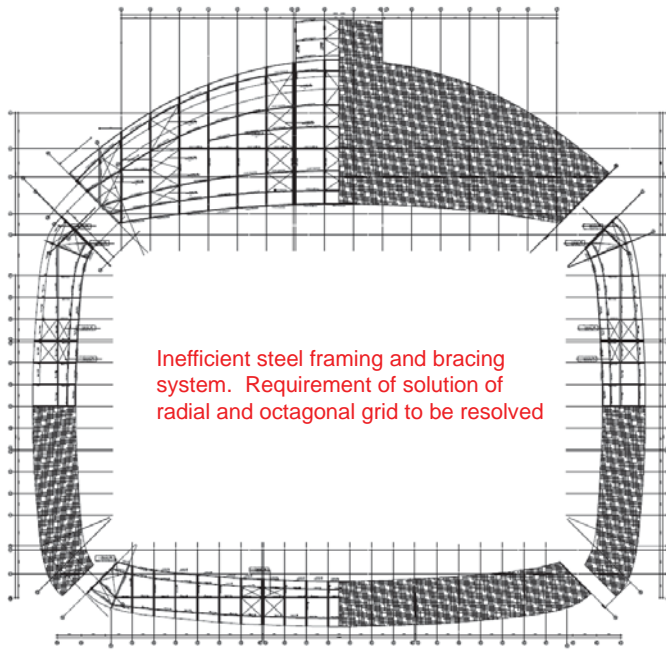


Initial Form Study Option 2



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Original consultant's steel framing layout



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First site view



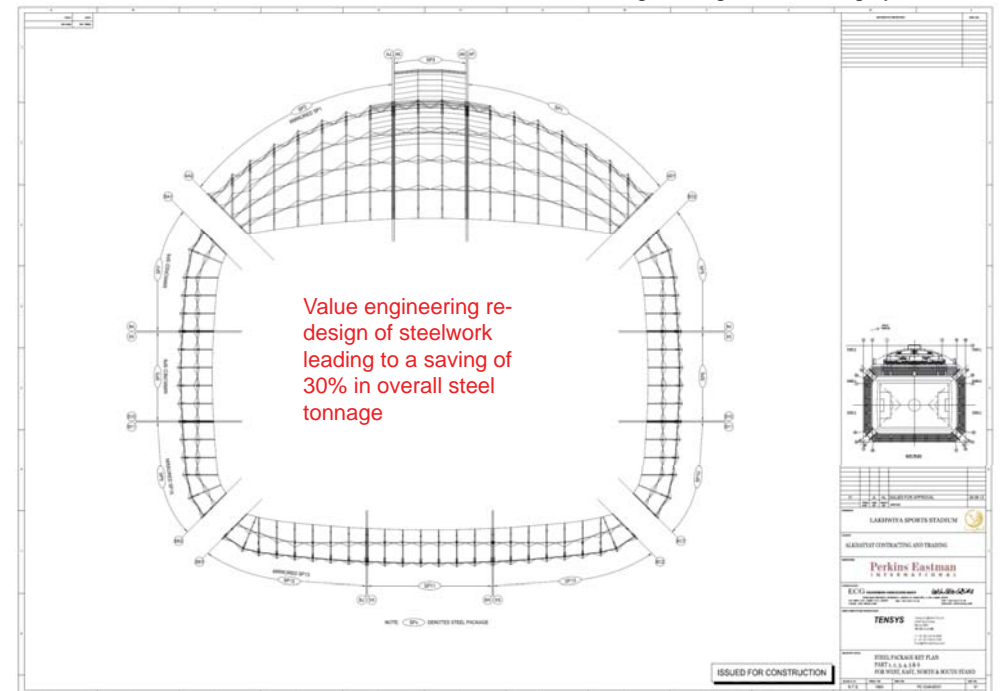
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First site view



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Value Engineering steel framing system



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VE Form Study Model 01



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VE Form Model 02



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VE Form Model 02

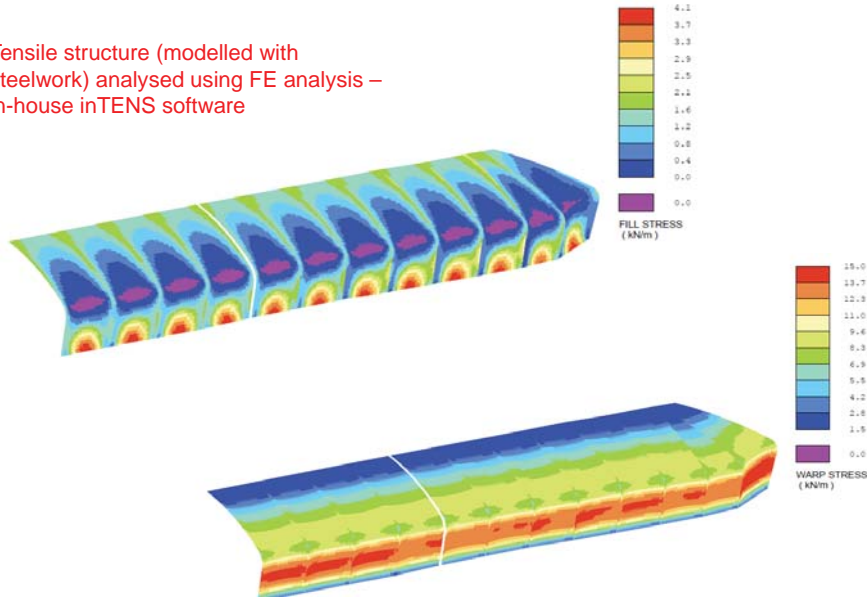


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VE Form Model 02

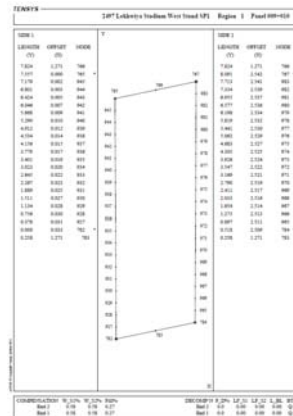


Tensile structure (modelled with steelwork) analysed using FE analysis – in-house inTENS software



Design of bolted connections to enable steelwork fabrication in UAE and Doha to enable ease of transportation and steelwork installation

Extensive use of 3D CAD modelling to generate fabrication 2D drawings (Tekla)

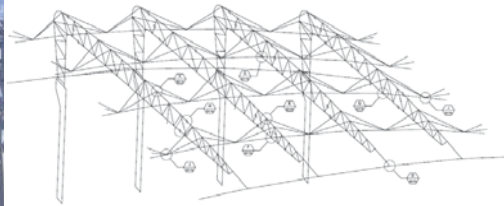


Fabric fabrication involves conversion (or flattening) of the 3D form into 2D pattern panels. These pattern panels are plotted and cut using precision large scale plotter/cutting machines. Individual panels are in turn seamed together to form the final 3D fabric modules



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Installation of bolted cross bracing

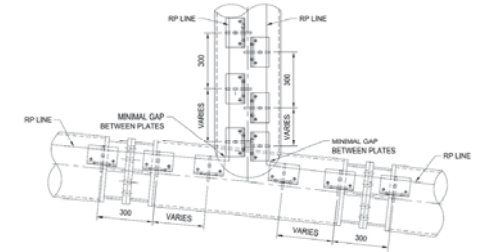


Steelwork installation required precision alignment of 2D trusses.

Once this is achieved, bolting of the 3D bracing elements can be carried out

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Fabric clamping system



EXAMPLE OF CORNER CLEAT PLATE SETOUT
SCALE 1:10

The tension fabric clamping system requires precise detailing and welding of special steel cleat plates (aligned and rotated in space) at discrete 300 mm centres around the frame of each fabric module.

The steel plates form the basis for fabric tensioning and interface between fabric and steelwork

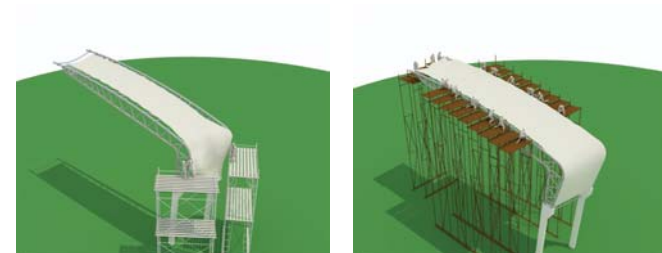
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Steelwork installation on West Grandstand



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Installation methodology – typical fabric module



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Creation of shaded and shelter concourse access



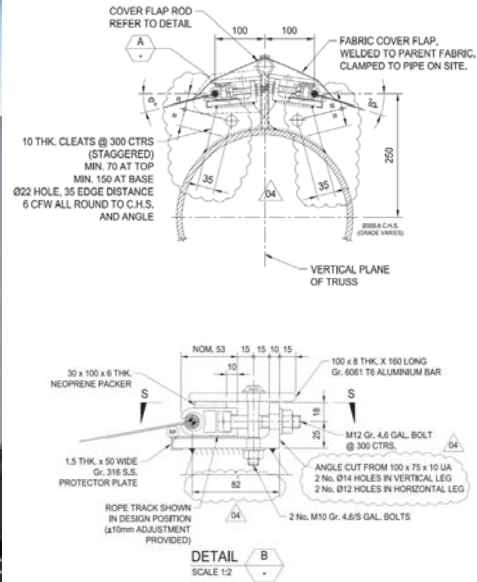
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Sequential installation of steelwork & fabric



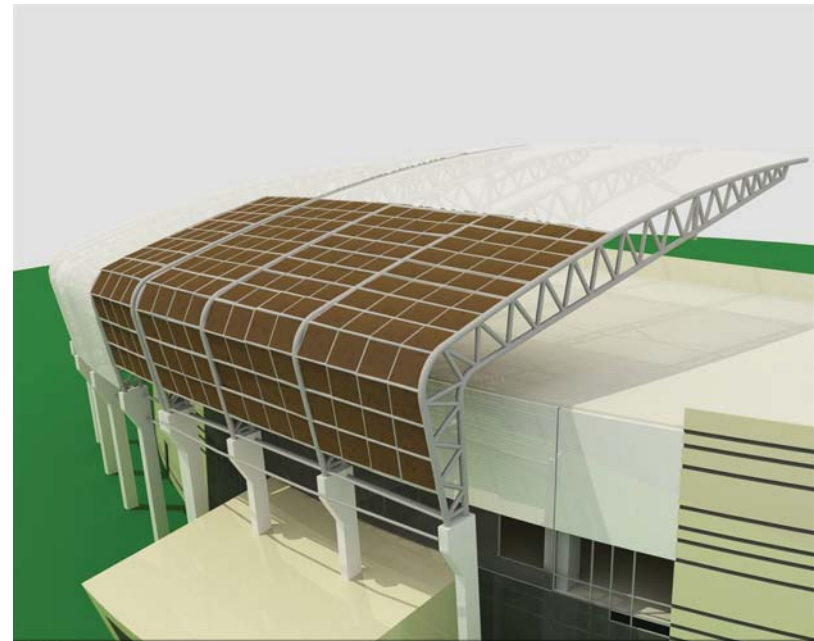
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Coverlap details between modules



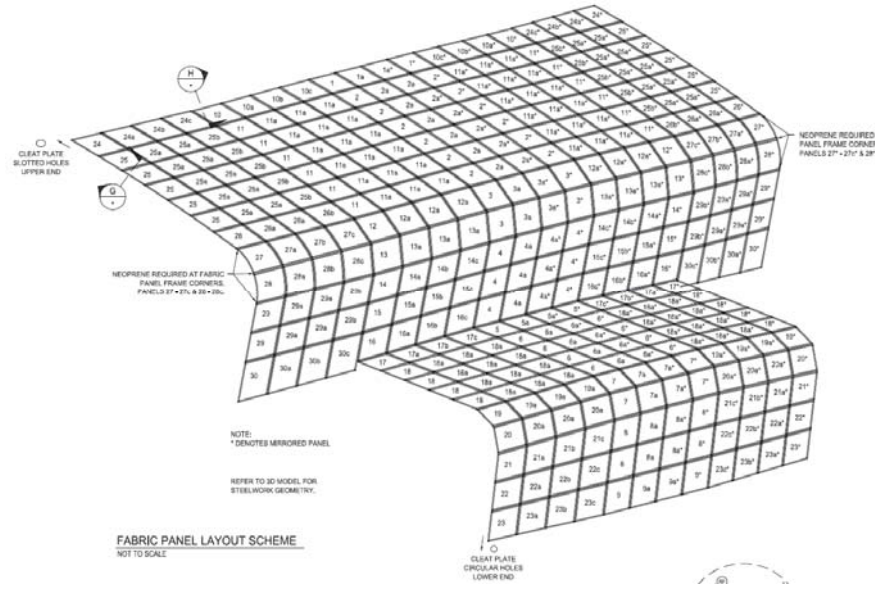
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West Façade system



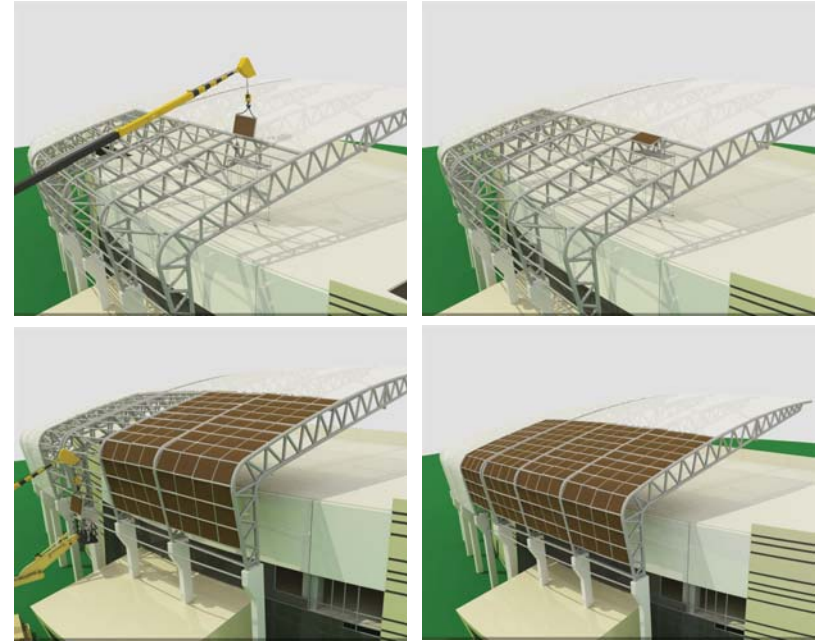
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West Façade system



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West Façade – installation methodology



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West Façade – installation



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West Façade system



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Abdullah bin Khalifa Stadium , Doha Qatar



Lakhwiya Stadium was officially inaugurated when the home team played Al Khor in their round 16 match in the Qatar Star League (QSL) on Friday 15th February 2013

His Excellency Sheikh Abdullah bin Nasser bin Khalifa Al Thani, Lakhwiya Sports Club President ,and His Excellency Sheikh Hamad bin Khalifa bin Ahmed Al Thani, President of the Qatar Football Association (QFA) were present for the first match at the new venue which carries the name of His Highness Sheikh Abdullah bin Khalifa Al Thani.

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Abdullah bin Khalifa Stadium , Doha Qatar



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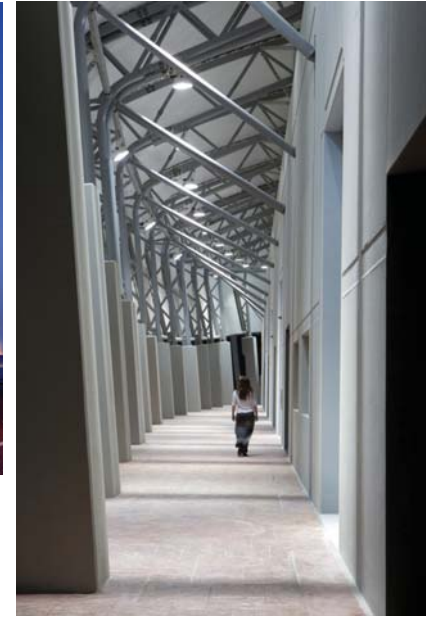
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