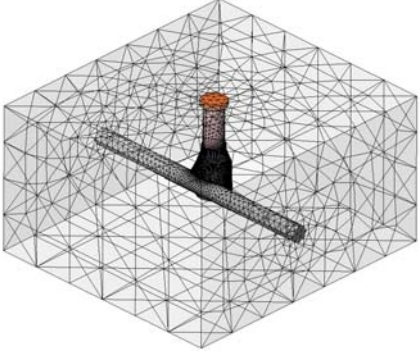
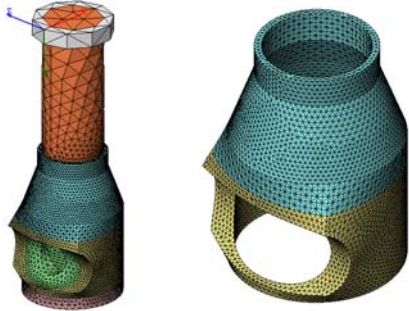
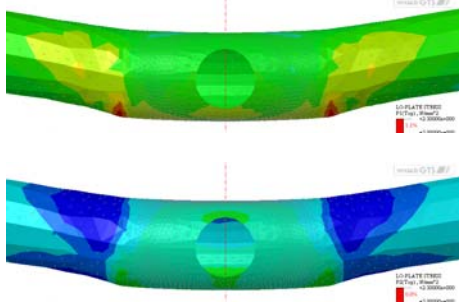
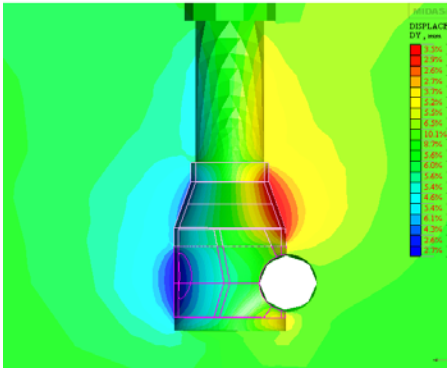
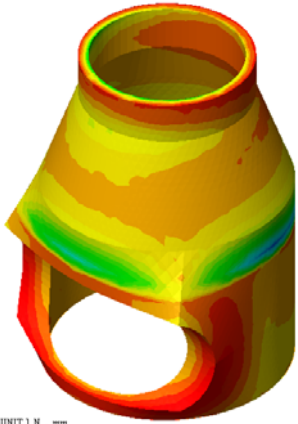
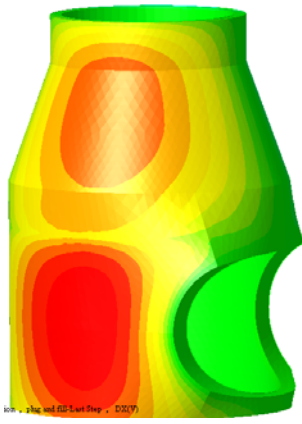


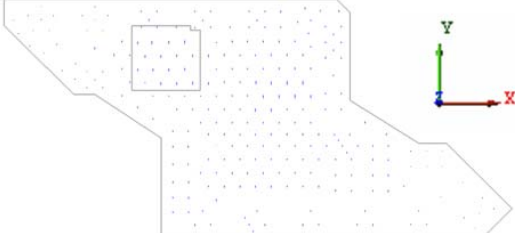
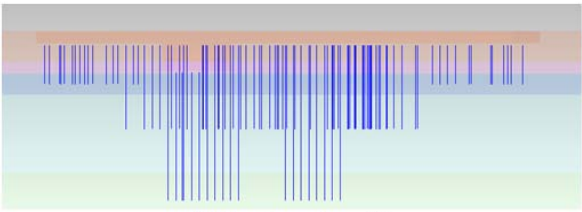
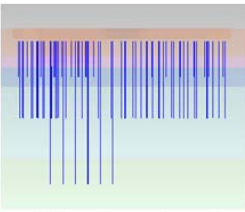


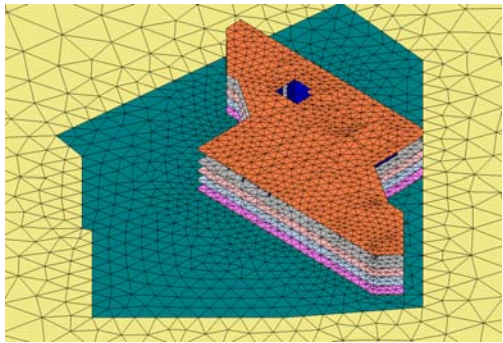
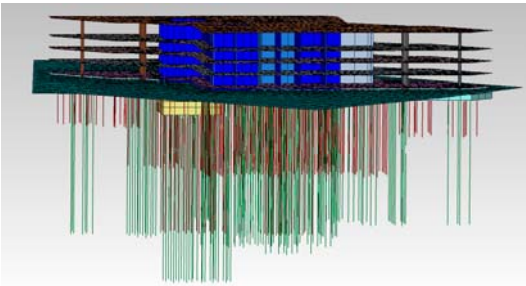
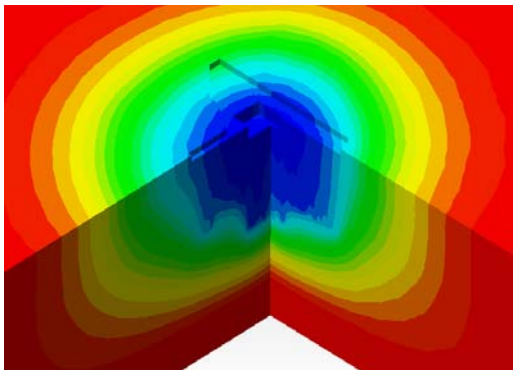
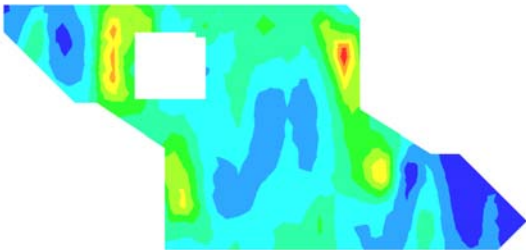
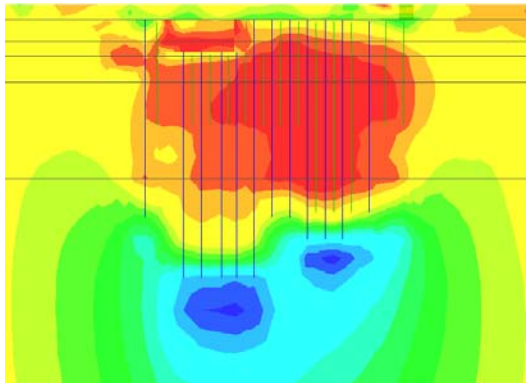
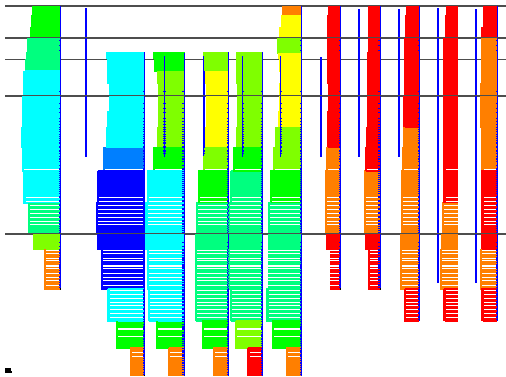
## MIDAS/GTS Program Application [1]

<b>Engineer</b>	morgan=est Consultancy for Morgan=Est, UK	
<b>Project Overview</b>		<b>Project Image</b>
<b>Title</b>	Segmental and sprayed concrete shaft construction	
<b>Project</b>	Design for construction	
<b>Scope</b>	<p>Assessment of the effects of the shaft construction on the existing tunnel and design of shaft lining:</p> <ul style="list-style-type: none"> <li>- Construction stage analysis</li> <li>- Check displacements and lining forces in the existing tunnel</li> <li>- Check forces in the sprayed concrete lining of the shaft</li> </ul>	
<b>Overview</b>	<p>The section of the existing tunnel where the shaft intersects is first strengthened with block work. The cylindrical section of the shaft is built with segmental lining. Then the tapered section of the shaft is built in 1 m deep stages and lined with sprayed concrete. After sprayed concrete strengthening, the connection is achieved and the block work is removed.</p>	
<b>Typical sections</b>		



<b>MIDAS/GTS Modelling</b>	
<b>Pre-processing</b>	
<b>Global model overview</b>	<b>Details of the shaft mesh</b>
	
<b>Post-processing</b>	
<b>Principal stresses in tunnel lining</b>	<b>Ground horizontal displacements</b>
	
<b>Principal stresses in spayed concrete section of the shaft</b>	<b>Displacements in sprayed concrete</b>
 <p>[UNIT] N , mm</p>	 <p>Unit -&gt; N and GPa Unit -&gt; mm</p>

## MIDAS/GTS Program Application [2]

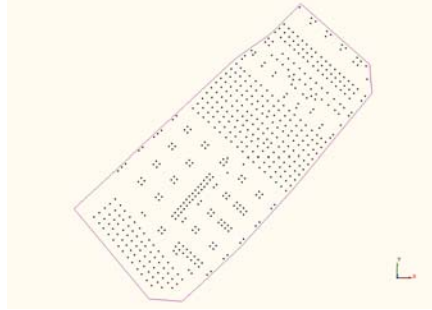
<b>Engineer</b>	 <b>Hyder Consulting Ltd, UK</b>	
<b>Project Overview</b>		<b>Project Image</b>
<b>Title</b>	Dubai Tower, Doha, Qatar	
<b>Project</b>	Piled-raft foundation design	
<b>Scope</b>	<b>Analysis results for design:</b> <ul style="list-style-type: none"> <li>- Settlements</li> <li>- Raft forces and bending moments</li> <li>- Pile forces and bending moments</li> </ul>	
<b>Overview</b>	The proposed development for the Dubai Tower project comprises the construction of an approximately eighty floor high rise tower with mezzanine, ground floor and five basement levels and will be the tallest structure in Qatar when it is complete. The tower is founded on a piled raft. In order to fully understand the behaviour of the foundation, a 3D finite element model is required.	
<b>Pile scheme</b>		
<div style="text-align: center;">  <p>Top view</p> <div style="display: flex; justify-content: space-around; align-items: flex-end;"> <div style="text-align: center;">  <p>Side view along Y</p> </div> <div style="text-align: center;">  <p>Side view along X</p> </div> </div> </div>		

<b>MIDAS/GTS Modelling</b>	
<i><b>Pre-processing</b></i>	
<b>Podium and basement levels</b>	<b>Side view, Piles and Basement</b>
	
<i><b>Post-processing</b></i>	
<b>Quarter cut on settlement results</b>	<b>Bending moments in the raft</b>
	
<b>Vertical stress in the rock layers</b>	<b>Pile axial forces</b>
	

## MIDAS/GTS Program Application [3]

<b>Engineer</b>	 <b>Hyder Consulting Ltd, UK</b>	
<b>Project Overview</b>		<b>Project Image</b>
<b>Title</b>	Abu Dhabi Tower, Al Reem Island	
<b>Project</b>	Piled-raft foundation design	
<b>Scope</b>	<p><b>Analysis results for design:</b></p> <ul style="list-style-type: none"> <li>- Raft settlements</li> <li>- Pile lateral deflections</li> <li>- Raft forces and bending moments</li> <li>- Pile forces and bending moments</li> <li>- Soil stress and strain levels</li> </ul>	
<b>Overview</b>	<p>The Shams Development is located on Al Reem Island off the northeast shore of Abu Dhabi. The First Abu Dhabi (FAD) Complex forms part of the overall Shams Development. The proposed development for Towers B and C of the FAD development comprises the construction of two approximately 50 storey high-rise towers and an accompanying podium and adjacent building. It is proposed that the towers will be founded on a piled raft and in order to fully understand the behaviour of the foundation a 3D linear finite element analysis is required.</p>	

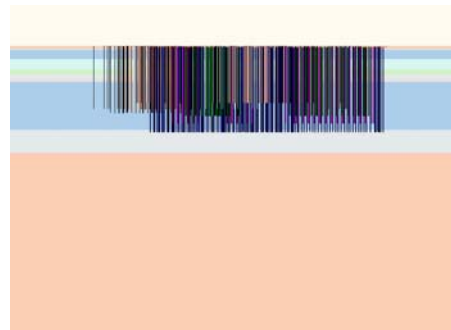
### Pile scheme



Top view



Side view looking north

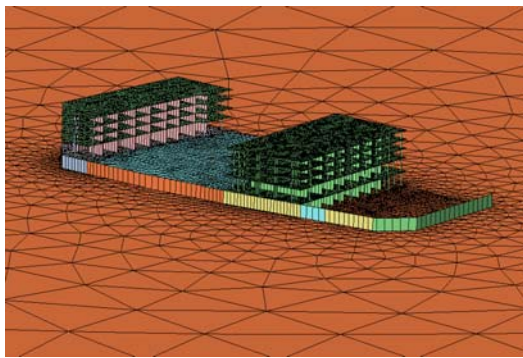


Side view looking east

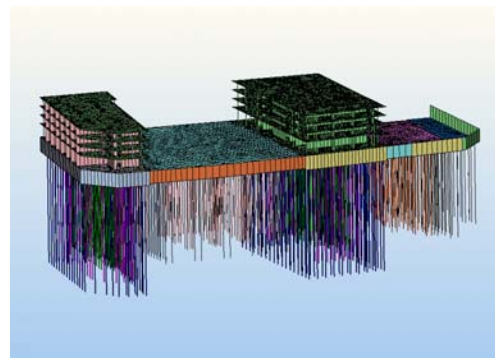
### MIDAS/GTS Modelling

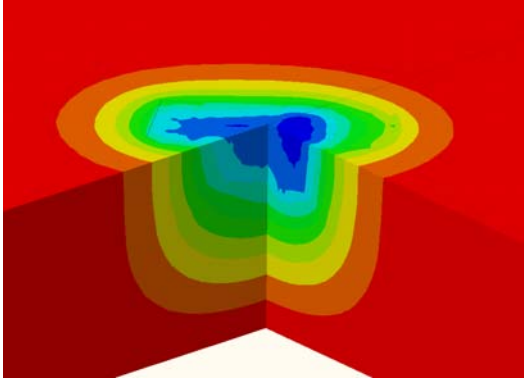
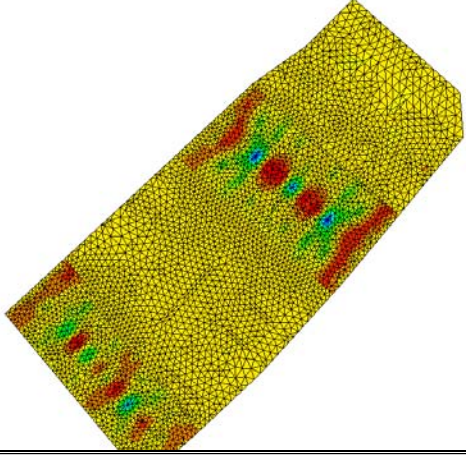
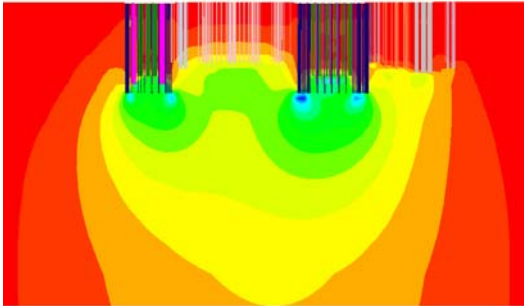
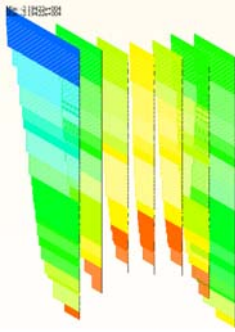
#### *Pre-processing*

#### Podium and basement levels





#### Side view, Piles and Basement

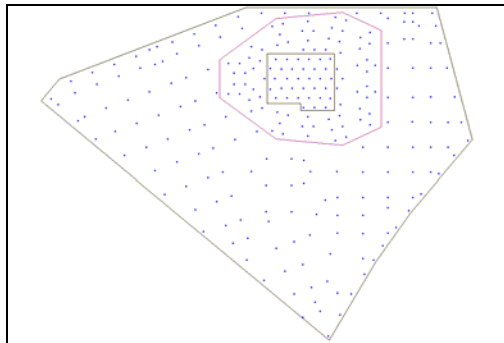


<i>Post-processing</i>	
Quarter cut on settlement results	Bending moments in the raft
 A contour plot showing settlement results in a quarter cut. The plot features a central blue region with concentric rings of green, yellow, and red, indicating the distribution of settlement across the structure.	 A 3D wireframe mesh of a raft structure with a color-coded bending moment distribution. The colors range from blue (low moment) to red (high moment), showing the internal stress distribution within the raft.
Vertical stress in the rock layers	Pile axial forces
 A contour plot showing vertical stress in the rock layers. The plot displays a central yellow and green region with vertical lines extending upwards, representing the stress distribution in the rock layers beneath the structure.	 A 3D bar chart showing pile axial forces. The bars are color-coded from blue (low force) to red (high force), illustrating the axial load distribution on the piles.

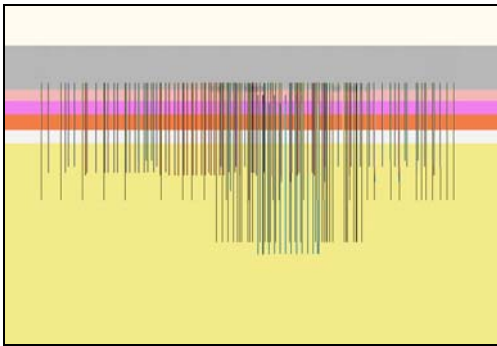
## MIDAS/GTS Program Application [4]

<b>Engineer</b>	 <b>Hyder Consulting Ltd, UK</b>	
<b>Project Overview</b>		<b>Project Image</b>
<b>Title</b>	Palazzo Versace and D1 Tower, Dubai	
<b>Project</b>	Piled-raft foundation design	
<b>Scope</b>	<p><b>Analysis results for design:</b></p> <ul style="list-style-type: none"> <li>- Raft settlements</li> <li>- Pile lateral deflections</li> <li>- Raft forces and bending moments</li> <li>- Pile forces and bending moments</li> <li>- Soil stress and strain levels</li> </ul>	
<b>Overview</b>	<p>The Palazzo Versace and D1 tower are located on the west side of the creek in Dubai. The development comprises the construction of the D1 tower, a hotel and condominiums of 88, 9 and 8 storeys respectively. The tower will be interlinked by a low level podium structure, which will house 3 basement levels. The D1 Tower will be founded on a piled raft and in order to understand the behaviour of the foundation a 3D linear finite element analysis is required.</p>	

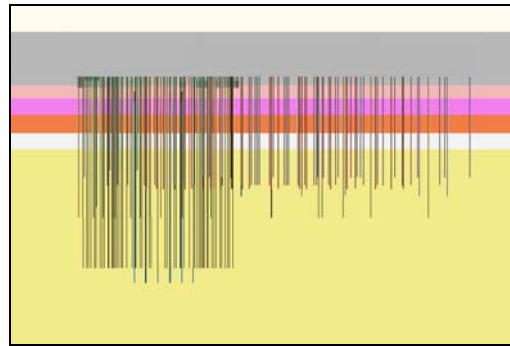
### Pile scheme



Top view



Side view looking north

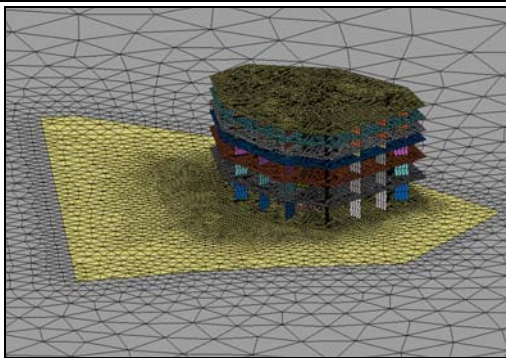


Side view looking east

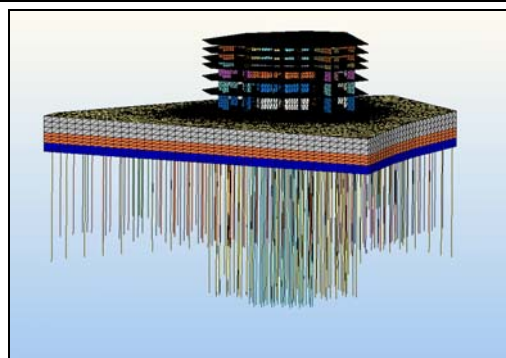
### MIDAS/GTS Modelling

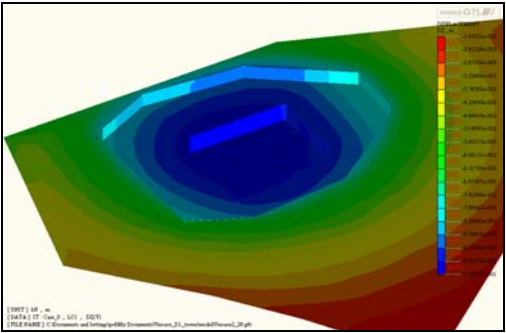
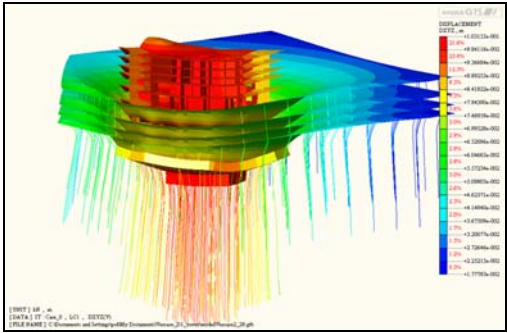
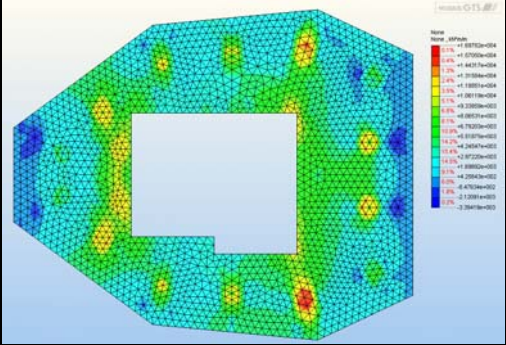
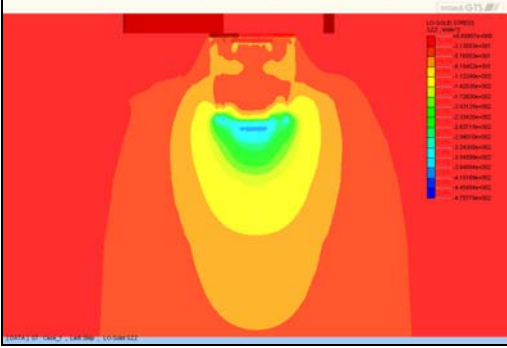
#### *Pre-processing*

#### Podium and basement levels



#### Side view, Piles and Basement



<b>Post-processing</b>	
<b>Podium and raft settlement viewed from below</b>	<b>Deformed superstructure</b>
 <p>3D visualization of podium and raft settlement viewed from below. The model shows a central rectangular structure surrounded by a larger podium. The settlement is indicated by a color gradient from blue (low settlement) to red (high settlement). A vertical color bar on the right shows the settlement scale.</p>	 <p>3D visualization of the deformed superstructure. The structure is shown with a color gradient representing displacement. A vertical color bar on the right shows the displacement scale.</p>
<b>Bending moments in the raft</b>	<b>Vertical stress in the rock layers</b>
 <p>3D visualization of bending moments in the raft. The raft is shown with a color gradient representing bending moments. A vertical color bar on the right shows the bending moment scale.</p>	 <p>3D visualization of vertical stress in the rock layers. The rock layers are shown with a color gradient representing vertical stress. A vertical color bar on the right shows the vertical stress scale.</p>