Project Location

SAADIYAT ISLAND
Saadiyat Island was comprised entirely of undeveloped land with a makeup of sandy dunes with a few wetland areas.
Different Sections

- Seven districts: Cultural District, Beach, Marina, Reserve, Promenade, Lagoons, and Retreat
- The expressways run through the heart of the island
- The Cultural District will be home to the world’s largest concentration of cultural institutions including the Sheikh Zayed National Museum, Guggenheim Abu Dhabi Museum, and Louvre Abu Dhabi Museum
Districts

- Saadiyat Beach
- Cultural District
- Lagoons
- Reserve
- Promenade
- Marina District
The Guggenheim will become one of Abu Dhabi’s most iconic masterpieces. The Guggenheim is widely recognized as one of the most important cultural institutions in the world.
Cultural District

Louvre Museum

Performing Arts Centre

will house a music hall, concert hall, opera house, drama theatre, an experimental performance space, and an Academy of Performing Arts
Marina District

A dynamic international business hub, representing the ultimate ´work-live-play´ environment. Prime residential and community facilities.
Saadiyat Beach

Nine five star highly landscaped resorts

Saadiyat Beach Golf Club will feature several beach-front holes
Dredger

Capacity of 33,000 cubic meters in its holding area
Dredger Specifications

• Vasco da Gama is the second largest super dredger in the world
• Largest one is the Cristobal Colon with a carrying capacity of 46,000 cubic meters
• Heads off about 10 to 12 nautical miles out to the sea to a designated borrow area and sucks the material from the sea bed
Depressed Expressway
Raising Ground

Ground has been raised by approximately 4 meters using the dirt from bottom of the gulf.
Study Area
Noise Regulations

- There are no existing traffic noise limits in UAE

- Abu Dhabi City residential areas similar to those planned for Saadiyat Island that are located next to major roadways were examined to determine existing noise conditions.

- Long term and short-term noise measurements were carried out to establish existing peak noise levels along three major streets in Abu Dhabi.
Noise Measurement Sites
Noise Measurement Sites
Issues with Noise Measurements

- Not able to get inside private properties
- Long term measurements with attendance
- Counting traffic on one side only
- Changing traffic pattern during month of Ramadan
- Calibration when traffic flow is stop and go
Measured Noise Levels

- **Eastern Ring Road** – 4 lane divided major highway
  
  68 to 74 dBA noise level was measured outside of the villa’s walls, which means that the noise in the yards of these villas may be 60 to 66 dBA. These levels are not considered “quiet” but they are in line with acceptable traffic noise limits in the US and Europe.

- **Bainuna Street** – four lane city street
  
  58 to 64 dBA near the walls of villas
Traffic Noise Abatement Criteria

- A limit of 65 dBA for the outdoor common use areas was used based on the results of the measurements.

- Typically noise abatement is considered feasible if at least a 5 dB noise reduction can be achieved.
Traffic Noise Predictions

- The FHWA Traffic Noise Model, TNM 2.5, was used for noise computations.
- Level of Service C traffic volumes were used for the analysis.
- Planned community walls were included in the model.
- Major buildings were also modeled.
Future Traffic Noise Levels

- **Cultural and Marina Districts**
  Traffic noise is heavily blocked by high rise building rows facing the freeway. The front of the buildings would incur noise levels ranging from 65 to 70 dBA.

- **Saadiyat Beach**
  Noise levels in the villas closest to the interchange range from 60 to 70 dBA and neighborhood north of the interchange and closer to the bridge range from 55 to 68 dBA. The apartment complexes near the bridge will incur traffic noise levels ranging from 60 to 67 dBA.
Future Traffic Noise Levels

- **Lagoons**

  The single family residences are protected by 2.1 meter walls. The apartments facing the freeway block a large amount of traffic noise for the residences behind them. Traffic noise levels for the residences behind the apartments range from 50 to 56 dBA. The single family residences north of the apartments incur traffic noise levels ranging from 60 to 64 dBA.
Noise Contours

- The peak hour average traffic noise levels were calculated at several hundred grid points which were created for the areas along the expressway.
- These points were all located 1.5 m above ground which is approximately ear height.
- Calculated noise levels were then exported to the Surfer® program to produce noise contours.
- Density of the grid points was much higher for the areas closer to the expressway to produce smooth and accurate contours.
Noise Contours
Recommendations

- Abatement was recommended where traffic noise levels were higher than 65 dBA.
- Commercial, hotel, and apartment buildings planning on utilizing any outdoor use areas close to the expressway may need to consider noise abatement measures.
- Higher residential walls are recommended for the villas along the north side of the expressway.
- Adding 1 meter to the current 2.1 meters wall would provide enough additional traffic noise abatement to reduce the noise levels below 65 dBA.
QUESTIONS?