

# **Medina: Reviving Place Identity through Public Space**

by  
Omar Al-Mahdy

A thesis  
presented to the University of Waterloo  
in fulfillment of the  
thesis requirement for the degree of  
Master of Architecture

Waterloo, Ontario, Canada, 2013

© Omar Al-Mahdy 2013



## **Author's Declaration**

I hereby declare that I am the sole author of this thesis. This is a true copy of the thesis, including any required final revisions, as accepted by my examiners.

I understand that my thesis may be made electronically available to the public.



## **Abstract**

Medina, as the second holy city for Muslims around the world and a place where the Prophet (peace be upon him) lived and is buried, has a distinctive identity. On the contrary, however, the central part of the city, the area where the old city was located, has lost its traditional identity in favour of globalization and modernization. One major factor that affects a location's sense of place is the absence of public space and green space. In other words, the negligence of the public space's role in reviving and restoring the identity of a place results in a sense of non-place. For many visitors to Medina, the current state (the contemporary urban setting) of the central city fails to match their expectations. Inserting an urban park (public space) within the area will enhance and help conserve the place's identity, meet visitors' visions, and allow more social interactions among visitors and locals. My design proposal is to create an urban park and a public space located at the periphery of the Prophet's Mosque. The park will offer visitors a quiet place of refuge within the busy surrounding urban context and will demonstrate the location's identity through shading structures. The program will consist of shading structures, mobile eateries, seating areas, public space, and vegetation.

## **Acknowledgements**

First and for most, I am grateful to God for having given me the ability and the strength to complete this research.

I would like to take this opportunity to express my appreciation to the members of my committee, Tammy Gaber and Terri Meyer Boake for their guidance and advice. I am indebted to my advisor Rick Haldenby for being a good critic of my thoughts and approaches. I would like also to thank my friends in the M.Arch program for their support and help during the process.

This project would not have been possible without the support of my dearest wife, Ola, She deserves special thanks for bearing all the stresses over the program period.

Besides, I would like to thank my parents for their endless love and support throughout my years at Waterloo.

**Dedication**

To my beloved Prophet Muhammad (peace be upon him).

## Table of Contents

Author's Declaration	iii
Abstract	v
Acknowledgements	vi
Dedication	vii
Table of Contents	viii
List of Illustrations	x
<b>00 INTRODUCTION</b>	<b>1</b>
<b>01 THE CONTEXT</b>	<b>5</b>
1.1 The Story of the City	6
1.11 The Growth of the City	6
1.12 The Growth of Religious Tourism	8
1.2 The Story of the Prophet's Mosque	20
1.21 The Evolving Role of the Mosque	20
1.22 The Mosque's Major Expansions	22
1.23 The Development Project (1985 - 1994)	26
1.24 Mosque's Piazza Shading Project (2005-2012)	30
<b>02 THE ISSUES</b>	<b>35</b>
2.1 Visitor's Experience	36
2.11 Visitor's expectation	36
2.12 The Realistic Experience	36
2.13 What is Missing?	38
2.2 Green Spaces	40
2.3 Place Identity	43
<b>03 DESIGN GUIDELINES + PRECEDENTS</b>	<b>49</b>
3.1 Introduction	50
3.2 Islamic Geometric Pattern	52



3.21	New Federal National Council's Parliament Building Complex, Abu Dhabi	54
3.22	Al-Mualla Cemetery Mural, Mecca	56
3.3	Desert Landscape	58
3.31	Deplomatic Quarter Landscape, Riyadh	60
3.4	The Mashrabiya Screen	62
3.41	Masdar Institute, Abu Dhabi	64
3.42	Louvre, Abu Dhabi	66
3.5	Super Structure	68
3.51	Munich Airport Centre, Munich	70
3.52	Millennium Dome, London	72
3.6	Sense of Place and Identity	74
3.61	Samir Kassir Square, Beirut	76
<b>04 A</b>	<b>PROPOSAL</b>	79
4.1	Introduction	80
4.2	Site Analysis	82
4.3	Design Concept	86
4.4	Project Description	94
4.5	The Design	98
4.6	Details	130
<b>05</b>	<b>CONCLUSION</b>	137
	AFTERWORD	140
	<b>ENDNOTES</b>	142
	<b>BIBLIOGRAPHY</b>	146

## List of Illustrations

### 00 INTRODUCTION

- p.2 fig. 0.1 Prophet's Mosque in Medina, *madina2013.com*, 1978, <http://www.madina2013.com/photos.aspx?c=2> (accessed November 14, 2012).
- p.2 fig. 0.2 Photograph by author
- p.3 fig. 0.3 Map of Central Zone, map, *The Custodian of The Two Holy Mosques Institute for Hajj Research*, <http://www.madinah-gis.net/mapSearch/map/m10000.html> (accessed November 14, 2012).
- p.3 fig. 0.4 Prophet's Mosque, *Fnan picture*, [http://fnanpic.blogspot.ca/2010/05/islamic-architecture-ancient-and-modern\\_3830.html](http://fnanpic.blogspot.ca/2010/05/islamic-architecture-ancient-and-modern_3830.html) (accessed November 14, 2012).

### 01 THE CONTEXT

- p.6 fig. 1.1 Geoffrey King, Bab al-Misri, *The Traditional Architecture of Saudi Arabia*, (London, New York: I.B.Tauris & Co. Ltd, 1998) 87.
- p.6 fig. 1.2 Orhan Durgut, Ar-Rawdah an-Nabawiyah, *Panoramio*, 2011, <http://www.panoramio.com/photo/17479208> (accessed November 14, 2012). Adapted by Author.
- p.7 fig. 1.3 Mohammad S. Makki, Population of Medina, Medina, Saudi Arabia: a geographic analysis of the city and region, (England: Avebury Publication Company, 1982) 94.
- p.8 fig. 1.4 Prophet's Mosque, *madaniwallpaper.com*, [http://madaniwallpaper.com/masjid\\_nabvi\\_4-wallpapers.html](http://madaniwallpaper.com/masjid_nabvi_4-wallpapers.html) (accessed November 14, 2012).
- p.9 fig. 1.5 Ekrem Ekinci, Prophet's Mosque, "Leader of Muslims," *ekrebugraekinci*, <http://www.ekrebugraekinci.com/makale.asp?id=357> (accessed November 14, 2012).
- p.10 fig. 1.6 Abdulbasit Bader, Map of Medina, *Comprehensive history of the city of Medina* (Medina: Abdulbasit Bader, 1993) 141 (*in Arabic*). Adapted by Author.
- p.11 fig. 1.7 Abdulbasit Bader, Map of Medina, *Comprehensive history of the city of Medina* (Medina: Abdulbasit Bader, 1993) 177 (*in Arabic*). Adapted by Author.
- p.12 fig. 1.8 John Buckhardt, Plan of Medina, 1829, *Travels in Arabia; comprehending an account of those territories in Hedjaz which the Mohammedans regard as sacred* (London: Cass, 1968) 321. Adapted by Author.
- p.13 fig. 1.9 Al Madina From Western Arabia and the Red Sea, *University of Texas Libraries*, 1946, [http://www.lib.utexas.edu/maps/saudi\\_arabia.html?p=print](http://www.lib.utexas.edu/maps/saudi_arabia.html?p=print) (accessed November 14, 2012).
- p.14 fig. 1.10 Mohammad S. Makki, Population of Medina, Medina, Saudi Arabia: a geographic analysis of the city and region, (England: Avebury Publication Company, 1982) 47.
- p.15 fig. 1.11 Mohammad S. Makki, Population of Medina, Medina, Saudi Arabia: a geographic analysis of the city and region, (England: Avebury Publication Company, 1982) 178.

- p.16 fig. 1.12 “Medina,” 24°28’07.39” N and 39°36’39.32” E, *Google Earth*, March 10, 2003 (accessed November 14, 2012).
- p.17 fig. 1.13 “Medina,” 24°28’07.39” N and 39°36’39.32” E, *Google Earth*, May 14, 2009 (accessed November 14, 2012).
- p.18 fig. 1.14 Al-Baqi Cemetery, *alaisalmanalvi*, <http://alaisalmanalvi.wordpress.com/2012/04/25/the-historical-sermon-of-syeda-fatima-zahra-s-a-2/> (accessed November 14, 2012).
- p.18 fig. 1.15 Alsay, Madina Hilton, *flickr*, 2008, <http://www.flickr.com/photos/alsay/483402680/sizes/z/in/photostream/> (accessed November 14, 2012).
- p.19 fig. 1.16 Shaza Hotels, Rooms & Suites, *Shaza Hotels*, <http://madina.shazahotels.com/RoomsAndSuites/> (accessed November 14, 2012).
- p.19 fig. 1.17 Dining Room, *Madinah Mövenpick*, <http://www.moevenpick-hotels.com/en/middle-east/saudi-arabia/madinah/hotel-madinah-al-munawarah/location/> (accessed November 14, 2012).
- p.20 fig. 1.18 Noushad Akambadam, The Prophet’s Mosque Al Madinah, “MadinahVision.com,” *flickr*, <http://www.flickr.com/photos/noushadali/2773629435/> (accessed November 14, 2012).
- p.20 fig. 1.19 Hisham Mortada, The Prophet’s House, Traditional Islamic Principles of Built Environment, (London: RoutledgeCurzon, 2003) 43.
- p.21 fig. 1.20 Stefano Bianca, Aerial view of central district, 1982, *Urban Form in the Arab World: Past and Present* (London: Thames and Hudson, 2000), 234.
- p.22 fig. 1.21 Prophet’s Mosqu, *Al Ameen Islamic Audio Library*, 1907, <http://www.alameenlibrary.com/pictures.html> (accessed November 14, 2012).
- p.23 fig. 1.22 Ali Hafiz, Floor plan of the Prophet’s Mosque showing the different expansions, *Chapters of the history of the city of Medina* (Jeddah: AlMadina Printing & Publication Co., 1996), 82 (*in Arabic*). Adapted by Author.
- p.26 fig. 1.23 Hisham Mortada, The Prophet’s Mosque, Traditional Islamic Principles of Built Environment, (London: RoutledgeCurzon, 2003) 88.
- p.27 fig. 1.24 Stefano Bianca, The progressive clearance of the historic fabric, *Urban Form in the Arab World: Past and Present* (London: Thames and Hudson, 2000), 233.
- p.28 fig. 1.25 Nurhani Jauhar, the movable dome, “grasp the old memories,” *Umm Ulqura Saudi*, 2011, <http://ummulqurasaudi.wordpress.com/2012/05/11/grasp-the-old-memories/> (accessed November 14, 2012).
- p.29 fig. 1.26 Image by author
- p.30 fig. 1.27 SL-RASCH GMBH, “Solar Driven Convertible Umbrellas,” <http://www.sl-rasch.de/> (accessed November 14, 2012).
- p.30 fig. 1.28 SL-RASCH GMBH, “Convertible Umbrellas,” <http://www.sl-rasch.de/> (accessed November 14, 2012).
- p.31 fig. 1.29 Ansar caravan, Umbrella installation, *qalansar*, <http://www.qalansar.com/?act=artc&id=37&print=1> (accessed November 14, 2012).

- p.32 fig. 1.30 Amal AlAbbad, “Lighting detail,” *alsada*, <http://www.alsada.org/plus/viewtopic.php?t=125037&p=1258534> (accessed November 14, 2012).
- p.32 fig. 1.31 Shading Umbrellas, *King Abdul Aziz Public Library*, <http://www.kapl-hajj.org/madina.php> (accessed November 14, 2012).
- p.33 fig. 1.32 Shading Umbrellas, *Construction Products Holding Company*, <http://www.cpcholding.com/index.php/madinah-haram> (accessed November 14, 2012).
- 2 THE ISSUES
- p.36 fig. 2.1 Ali Farnam, North Entrance, *Panoramio*, 2010, <http://www.panoramio.com/photo/33658471> (accessed November 16, 2012).
- p.34-35 fig. 2.2 A panoramic view of mountain Uhud, *skyscrapercity*, 2008 <http://www.skyscrapercity.com/showthread.php?t=563712> (accessed November 16, 2012).
- p.37 fig. 2.3 Imran Rashid, Madinah, *panoramio*, 2007, <http://www.panoramio.com/photo/5783094> (accessed November 16, 2012)
- p.37 fig. 2.4 Medina, *panoramio*, 2010, <http://www.panoramio.com/map/#lt=24.466019&ln=39.611720&z=4&k=2&a=1&tab=1&pl=all> (accessed November 16, 2012).
- p.38 fig. 2.5 Sunds, Hotel View, *sanabes*, 2011, <http://www.sanabes.com/forums/showthread.php?s=6dea5dcc95ae664df83f9ca666d2169c&t=255171> (accessed November 10, 2011)
- p.38 fig. 2.6 Medina, *panoramio*, 2010, <http://www.panoramio.com/map/#lt=24.466019&ln=39.611720&z=4&k=2&a=1&tab=1&pl=all> (accessed November 16, 2012).
- p.39 fig. 2.7 Sunds, Hotel View, *sanabes*, 2011, <http://www.sanabes.com/forums/showthread.php?s=6dea5dcc95ae664df83f9ca666d2169c&t=255171> (accessed November 10, 2011)
- p.39 fig. 2.8 Starbucks Medina, “Cafe thoughts...Some anecdotes,” *muhajabat*, 2006, <http://muhajabat.wordpress.com/2010/02/11/cafe-thoughts-some-anecdotes/> (accessed November 16, 2012).
- p.40 fig. 2.9 Quba and date palms, “Flight to Light,” *almiskeenah*, <http://almiskeenah.blogsome.com/2007/01/> (accessed November 16, 2012).
- p.40 fig. 2.10 Mohammad Makki, agricultural land 1, “The impact of urban development,” *4shared*, [http://dc254.4shared.com/doc/VT5\\_qaWc/preview.html](http://dc254.4shared.com/doc/VT5_qaWc/preview.html) (accessed November 16, 2012). (*in Arabic*).
- p.41 fig. 2.11 Mohammad Makki, satellite image, “The impact of urban development,” *4shared*, 1986, [http://dc254.4shared.com/doc/VT5\\_qaWc/preview.html](http://dc254.4shared.com/doc/VT5_qaWc/preview.html) (accessed November 16, 2012). (*in Arabic*).
- p.41 fig. 2.12 Mohammad Makki, satellite image, “The impact of urban development,” *4shared*, 2001, [http://dc254.4shared.com/doc/VT5\\_qaWc/preview.html](http://dc254.4shared.com/doc/VT5_qaWc/preview.html) (accessed November 16, 2012). (*in Arabic*).
- p.42 fig. 2.13 Mohammad Makki, agricultural land 2, “The impact of urban development,” *4shared*, [http://dc254.4shared.com/doc/VT5\\_qaWc/preview.html](http://dc254.4shared.com/doc/VT5_qaWc/preview.html) (accessed November 16, 2012). (*in Arabic*).

- p.42 fig. 2.14 Mohammad Makki, agricultural land 3, “The impact of urban development,” *4shared*, [http://dc254.4shared.com/doc/VT5\\_qaWc/preview.html](http://dc254.4shared.com/doc/VT5_qaWc/preview.html) (accessed November 16, 2012). (*in Arabic*).
- p.43 fig. 2.15 Shopping mall, “Anwar Al-Madinah Hotel,” *alsakinah*, 2009, <http://www.alsakinah.com/pages/?p=9> (accessed November 16, 2012).
- p.43 fig. 2.16 Shopping mall 2, “Anwar Al-Madinah Hotel,” *alsakinah*, 2009, <http://www.alsakinah.com/pages/?p=9> (accessed November 16, 2012).
- p.44 fig. 2.17 Rob L. Wagner, Old Jeddah in the 1950s, *13martyrs*, 1950, <http://13martyrs.wordpress.com/old-jeddah-images/> (accessed November 16, 2012).
- p.44 fig. 2.18 hotelview, “Nebras Taba Hotel Madinah Saudi Arabia,” *southtravel*, <http://www.southtravels.com/middleeast/saudi-arabia/nebrastaba/index.html> (accessed November 16, 2012).
- p.45 fig. 2.19 Image by Author.
- p.46 fig. 2.20 The Uhud Mountain, *Virtual Art Magazine*, 2011, [http://virtualartmagazine.blogspot.ca/2011/08/uhud-mountain\\_06.html](http://virtualartmagazine.blogspot.ca/2011/08/uhud-mountain_06.html) (accessed November 16, 2012).
- p.47 fig. 2.21 Madina Shareef, “Madina Sharif Images,” *madinasharif*, 1990, <http://madinasharif.wordpress.com/madina-al-munawwarah/about/> (accessed November 16, 2012).

### 03 DESIGN GUIDELINES & PRECEDENTS

- p.48-49 fig. 3.1 Ceiling Of One Of The Domes, “Mosque of the Prophet,” *smugmug*, [http://him2.smugmug.com/Travel/Madinah/IMG32932/341774936\\_aUQw9-L-1.jpg](http://him2.smugmug.com/Travel/Madinah/IMG32932/341774936_aUQw9-L-1.jpg) (accessed November 18, 2012).
- p.51 fig. 3.2 Verses on the wall, Alez Cultural Network, [http://www.al3ez.net/mag/madina\\_exp3.htm](http://www.al3ez.net/mag/madina_exp3.htm) (accessed November 18, 2012).
- p.52 fig. 3.3 Najeeb Razvi, MD Door 2, “Haramian Gallery,” *najeebrazvi*, <http://najeebrazvi.blogspot.ca/p/haramian-gallery.html> (accessed November 18, 2012).
- p.53 fig. 3.4 Penn State Libraries Pictures Collection, detail of wall, *flickr*, 2011, <http://www.flickr.com/photos/psulibscollections/5530944500/in/photostream/> (accessed November 18, 2012).
- p.53 fig. 3.5 Smsmia, motifs, *flickr*, 2010, <http://www.flickr.com/photos/smsmia/6573500055/> (accessed November 18, 2012).
- p.54 fig. 3.6 bioLINIA, Bird’s eye view, “Ehrlich Architects Wins International Design Competition,” *archdaily*, <http://www.archdaily.com/107307/ehrllich-architects-wins-international-design-competition-for-the-federal-national-council%E2%80%99s-new-parliament-building-complex/> (accessed November 18, 2012).
- p.54 fig. 3.7 bioLINIA, human’s eye view, “Ehrlich Architects Wins International Design Competition,” *archdaily*, <http://www.archdaily.com/107307/ehrllich-architects-wins-international-design-competition-for-the-federal-national-council%E2%80%99s-new-parliament-building-complex/> (accessed November 18, 2012).

- p.55 fig. 3.8 GAJ and bioLINIA, interior, “Ehrlich Architects Wins International Design Competition,” *archdaily*, <http://www.archdaily.com/107307/ehrllich-architects-wins-international-design-competition-for-the-federal-national-council%E2%80%99s-new-parliament-building-complex/> (accessed November 18, 2012).
- p.55 fig. 3.9 bioLINIA, diagram, “Ehrlich Architects Wins International Design Competition,” *archdaily*, <http://www.archdaily.com/107307/ehrllich-architects-wins-international-design-competition-for-the-federal-national-council%E2%80%99s-new-parliament-building-complex/> (accessed November 18, 2012).
- p.55 fig. 3.10 bioLINIA, landscape plan, “Ehrlich Architects Wins International Design Competition,” *archdaily*, <http://www.archdaily.com/107307/ehrllich-architects-wins-international-design-competition-for-the-federal-national-council%E2%80%99s-new-parliament-building-complex/> (accessed November 18, 2012).
- p.56 fig. 3.11 Ahmed Albadawy, Construction detail, “Al.Mualla Cemetery Mural / A Matter of Life and Death,” *bustler*, 2012, [http://www.bustler.net/index.php/article/al.mualla\\_cemetery\\_mural\\_a\\_matter\\_of\\_life\\_and\\_death/](http://www.bustler.net/index.php/article/al.mualla_cemetery_mural_a_matter_of_life_and_death/) (accessed November 18, 2012).
- p.56 fig. 3.12 Ahmed Albadawy, Girih Tiles, “Al.Mualla Cemetery Mural / A Matter of Life and Death,” *bustler*, 2012, [http://www.bustler.net/index.php/article/al.mualla\\_cemetery\\_mural\\_a\\_matter\\_of\\_life\\_and\\_death/](http://www.bustler.net/index.php/article/al.mualla_cemetery_mural_a_matter_of_life_and_death/) (accessed November 18, 2012).
- p.57 fig. 3.13 Ahmed Albadawy, Design and Scripting Process, “Al.Mualla Cemetery Mural / A Matter of Life and Death,” *bustler*, 2012, [http://www.bustler.net/index.php/article/al.mualla\\_cemetery\\_mural\\_a\\_matter\\_of\\_life\\_and\\_death/](http://www.bustler.net/index.php/article/al.mualla_cemetery_mural_a_matter_of_life_and_death/) (accessed November 18, 2012).
- p.57 fig. 3.14 Ahmed Albadawy, Close daylight shot, “Al.Mualla Cemetery Mural / A Matter of Life and Death,” *bustler*, 2012, [http://www.bustler.net/index.php/article/al.mualla\\_cemetery\\_mural\\_a\\_matter\\_of\\_life\\_and\\_death/](http://www.bustler.net/index.php/article/al.mualla_cemetery_mural_a_matter_of_life_and_death/) (accessed November 18, 2012).
- p.57 fig. 3.15 Ahmed Albadawy, Close night shot, “Al.Mualla Cemetery Mural / A Matter of Life and Death,” *bustler*, 2012, [http://www.bustler.net/index.php/article/al.mualla\\_cemetery\\_mural\\_a\\_matter\\_of\\_life\\_and\\_death/](http://www.bustler.net/index.php/article/al.mualla_cemetery_mural_a_matter_of_life_and_death/) (accessed November 18, 2012).
- p.58 fig. 3.16 Date palm, nbrass, [http://nbraas.com/inp/view\\_printer.asp?ID=327&AUTHOR=](http://nbraas.com/inp/view_printer.asp?ID=327&AUTHOR=) (accessed November 18, 2012).
- p.58 fig. 3.17 Reha Günay, Formal Shaded Walkways, *Sustainable Landscape Design in Arid Climates* (Geneva: Aga Khan Trust for Culture, 1996), 92.
- p.59 fig. 3.18 Arriyadh Development Authority, water treatment, “Wadi Hanifa Wetlands,” *Aga Khan Award for Architecture*, 2009, <http://www.akdn.org/architecture/project.asp?id=2258> (accessed November 18, 2012).
- p.59 fig. 3.19 Mohamed Akram, Formal garden areas, *Sustainable Landscape Design in Arid Climates* (Geneva: Aga Khan Trust for Culture, 1996), 93.
- p.60 fig. 3.20 Arriyadh Development Authority, Diplomatic Quarter, *arriyadh*, [http://www.arriyadh.com/ar/cgi-bin/localuser/projects/DQ/Full\\_Size/47718825.jpg](http://www.arriyadh.com/ar/cgi-bin/localuser/projects/DQ/Full_Size/47718825.jpg) (accessed November 18, 2012).

- p.60 fig. 3.21 MK2 international Landscape Architects, Diplomatic Quarter, “Riyadh Diplomatic Quarter,” *mk2-international*, 2008, [http://www.mk2-international.eu/pr\\_diplomaticquarter.html](http://www.mk2-international.eu/pr_diplomaticquarter.html) (accessed November 18, 2012).
- p.61 fig. 3.22 Arriyadh Development Authority, Diplomatic Quarter, *arriyadh*, <http://www.arriyadh.com/ar/cgi-bin/localuser/projects/DQ/index.aspx> (accessed November 18, 2012).
- p.61 fig. 3.23 Samer Bassam, Park in Diplomatic Quarter, “Riyadh Photo Gallery,” *world66*, 2008, [http://www.world66.com/asia/middleeast/saudi-arabia/riyadh/lib/gallery/showimage?pic=asia/middleeast/saudi-arabia/riyadh/diplomatic\\_quarter](http://www.world66.com/asia/middleeast/saudi-arabia/riyadh/lib/gallery/showimage?pic=asia/middleeast/saudi-arabia/riyadh/diplomatic_quarter) (accessed November 18, 2012).
- p.61 fig. 3.24 Waseef Akhtar, Park in Diplomatic Quarter, “Riyadh Photo Gallery,” *world66*, 2008, [http://www.world66.com/asia/middleeast/saudi-arabia/riyadh/lib/gallery/showimage?pic=asia/middleeast/saudi-arabia/riyadh/park\\_in\\_diplomatic](http://www.world66.com/asia/middleeast/saudi-arabia/riyadh/lib/gallery/showimage?pic=asia/middleeast/saudi-arabia/riyadh/park_in_diplomatic) (accessed November 18, 2012).
- p.62 fig. 3.25 Ahmed Al.Badawy, Mashrabiya - Bayt Al-Suhaymi, *flickr*, 2010, <http://www.flickr.com/photos/ahmedalbadaw-yshots/4674462452/> (accessed November 18, 2012).
- p.62 fig. 3.26 OneMile Grads, Mashrabiya, “House of Ahmad Katkhudaal Razzaz,” *theStoryOfMyLIFE*, 2010, <http://onemilegrads.blogspot.ca/2010/08/esncairo6house-of-ahmad-katkhuda-al.html> (accessed November 18, 2012).
- p.63 fig. 3.27 M&M, Jeddah old town, “Jeddah,” *stupidcool*, 2010, <http://stupidcool.blogspot.ca/2010/03/jeddah.html> (accessed November 18, 2012).
- p.64 fig. 3.28 Nigel Young, Masdar Institute Campus, “Masdar Institute / Foster + Partners,” *archdaily*, 2010, <http://www.archdaily.com/91228/masdar-institute-foster-partners/> (accessed November 18, 2012).
- p.64 fig. 3.29 Nigel Young, Masdar Institute Campus, “Masdar Institute / Foster + Partners,” *archdaily*, 2010, <http://www.archdaily.com/91228/masdar-institute-foster-partners/> (accessed November 18, 2012).
- p.65 fig. 3.30 Nigel Young, Masdar Institute Campus, “Masdar Institute / Foster + Partners,” *archdaily*, 2010, <http://www.archdaily.com/91228/masdar-institute-foster-partners/> (accessed November 18, 2012).
- p.65 fig. 3.31 Courtesy of Terri Meyer Boake
- p.65 fig. 3.32 Ross Palmer, Residential façade, “10 The Masdar Institute’s GRC Residential Façade,” *GRC2011*, 13.
- p.66 fig. 3.33 Ateliers Jean Nouvel, Rain of light, “Jean Nouvel in Abu Dhabi,” *dezeen*, 2007, <http://www.dezeen.com/2007/05/07/jean-nouvel-in-abu-dhabi/> (accessed November 18, 2012).
- p.66 fig. 3.34 Ateliers Jean Nouvel, Rain of light, “Jean Nouvel in Abu Dhabi,” *dezeen*, 2007, <http://www.dezeen.com/2007/05/07/jean-nouvel-in-abu-dhabi/> (accessed November 18, 2012).
- p.67 fig. 3.35 Benjamin Koren, “Jean Nouvel in Abu Dhabi,” *dezeen*, 2007, <http://www.dezeen.com/2007/05/07/jean-nouvel-in-abu-dhabi/> (accessed November 18, 2012).
- p.67 fig. 3.36 Ateliers Jean Nouvel, Rain of light, “Jean Nouvel in Abu Dhabi,” *dezeen*, 2007, <http://www.dezeen.com/2007/05/07/jean-nouvel-in-abu-dhabi/> (accessed November 18, 2012).

- p.67 fig. 3.37 One-to-One GmbH, Rain of light, “Jean Nouvel in Abu Dhabi,” *dezeen*, 2007, <http://www.dezeen.com/2007/05/07/jean-nouvel-in-abu-dhabi/> (accessed November 18, 2012).
- p.68 fig. 3.38 Glen Espinosa, The towering structures, “Lighting up the night sky,” *dailymail*, 2012, <http://www.dailymail.co.uk/news/article-2157488/Gardens-By-The-Bay-Supertrees-Singapore-light-night-sky.html> (accessed November 18, 2012).
- p.69 fig. 3.39 Joe Bates, Hajj Terminal, “JEDDAH’S HAJJ TERMINAL – A THING OF BEAUTY,” *airport-world*, 2012, <http://airport-world.com/news-articles/item/1632-jeddahs-hajj-terminal-%E2%80%93-a-thing-of-beauty> (accessed November 18, 2012).
- p.70 fig. 3.40 Werner Hennies, Winter Market, *tegernsee-magazin*, 2008, [http://www.tegernsee-magazin.de/wintermarkt-immuenchen-airport-center-2010\\_001889.html](http://www.tegernsee-magazin.de/wintermarkt-immuenchen-airport-center-2010_001889.html) (accessed November 18, 2012).
- p.70 fig. 3.41 Courtesy of Andrea Nagy
- p.71 fig. 3.42 FLUGHAFEN MÜNCHEN GMBH, MAC with Tower and Terminal 1, *munich-airport*, 2008, [http://www.munich-airport.de/en/consumer/aufenthalt\\_trans/airportstop/true\\_dreams/index.jsp](http://www.munich-airport.de/en/consumer/aufenthalt_trans/airportstop/true_dreams/index.jsp) (accessed November 18, 2012).
- p.71 fig. 3.43 Courtesy of Terri Meyer Boake
- p.71 fig. 3.44 Murphy/Jahn, East-West section, *Murphy/Jahn: Six Works* (Australia: The Images Publishing Group Ltd, 2001) 32-33.
- p.71 fig. 3.45 Murphy/Jahn, East-West section, *Murphy/Jahn: Six Works* (Australia: The Images Publishing Group Ltd, 2001) 20.
- p.72 fig. 3.46 webbaviation, Aerial photograph, *e-architect*, 2007, [http://www.e-architect.co.uk/london/millennium\\_dome\\_london.htm](http://www.e-architect.co.uk/london/millennium_dome_london.htm) (accessed November 18, 2012).
- p.72 fig. 3.47 The O2 Millennium Dome, “Construction,” *Birdair*, 2007, <http://www.birdair.com/services/construction.aspx> (accessed November 19, 2012).
- p.73 fig. 3.48 Richard Rogers Partnership, Floor Plan of the Millennium Dome, *architecture.about*, 1999, <http://architecture.about.com/od/greatbuildings/ig/Richard-Rogers-Partnership-/Millennium-Dome-Floor-Plan.htm> (accessed November 19, 2012).
- p.73 fig. 3.49 dome, “Millennium Dome,” *marvelbuilding*, <http://www.marvelbuilding.com/millennium-dome.html/dome> (accessed November 19, 2012).
- p.73 fig. 3.50 urban75, Inside view mast base, *urban75*, 2003, <http://www.urban75.org/photos/dome/dome20.html> (accessed November 19, 2012).
- p.74 fig. 3.51 Mark Heiden, Top view of a traditional market place, “The Souq in Old Jeddah,” *mrheiden*, 2008, <http://mrheiden.blogspot.ca/2008/12/souq-in-old-jeddah.html> (accessed November 19, 2012).
- p.74 fig. 3.52 Mark Heiden, traditional market place, “The Souq in Old Jeddah,” *mrheiden*, 2008, <http://mrheiden.blogspot.ca/2008/12/souq-in-old-jeddah.html> (accessed November 19, 2012).
- p.75 fig. 3.53 The Place Diagram, “What is Placemaking?,” *Project for Public Spaces*, [http://www.pps.org/reference/what\\_is\\_placemaking/](http://www.pps.org/reference/what_is_placemaking/) (accessed November 19, 2012).



- p.76 fig. 3.54 Mohammad al-Asad, Aerial photograph, *Samir Kassir Public Garden* (Beirut: Aga Khan Trust for Culture, 2007), 42.
- p.76 fig. 3.55 Mohammad al-Asad, photograph, *Samir Kassir Public Garden* (Beirut: Aga Khan Trust for Culture, 2007), 45.
- p.77 fig. 3.56 Mohammad al-Asad, site plan, *Samir Kassir Public Garden* (Beirut: Aga Khan Trust for Culture, 2007), 22.
- p.77 fig. 3.57 Mohammad al-Asad, photograph, *Samir Kassir Public Garden* (Beirut: Aga Khan Trust for Culture, 2007), 41.
- p.77 fig. 3.58 Mohammad al-Asad, photograph, *Samir Kassir Public Garden* (Beirut: Aga Khan Trust for Culture, 2007), 54.

#### **04 THE PROPOSAL**

- p.78-79 fig. 4.1 Photograph by Author
- p.81 fig. 4.2 Image by Author
- p.83 fig. 4.3 Image by Author
- p.84 fig. 4.4 Weatherbase, Climate data for Medina, “Medina,” *Wikipedia*, 2012, <http://en.wikipedia.org/wiki/Medina> (accessed November 19, 2012).
- p.85 fig. 4.5 Ali Farnam, Opposite the Shrine, *panoramio*, 2009, <http://www.panoramio.com/photo/33657911> (accessed November 19, 2012).
- p.85 fig. 4.6 Saqifa-bani-Saedah, Medina, *panoramio*, 2012, <http://www.panoramio.com/map/#lt=24.471525&ln=39.607773&z=4&k=2&a=1&tab=1&pl=all> (accessed November 19, 2012).
- p.85 fig. 4.7 Fikoo, Medina, *panoramio*, 2011, <http://www.panoramio.com/photo/52113615> (accessed November 19, 2012).
- p.85 fig. 4.8 al-Madinah Municipality, Prophet’s Mosque, 3dmekanlar, 2008, <http://www.3dmekanlar.com/en/prophets-mosque.html> (accessed November 19, 2012).
- p.85 fig. 4.9 beh108, Prophet’s Mosque, *panoramio*, 2010, <http://www.panoramio.com/photo/36655187> (accessed November 19, 2012).
- p.86 fig. 4.10 Image by Author
- p.87 fig. 4.11 Image by Author
- p.87 fig. 4.12 Image by Author
- p.87 fig. 4.13 Photograph by Author
- p.88 fig. 4.14 Photograph by Author
- p.89 fig. 4.15 Image by Author
- p.90 fig. 4.16 Ziad Omeirat, Green Dome, *panoramio*, 2009, <http://www.panoramio.com/photo/17931335?tag=%D8%A7%D9%84%D9%85%D8%AF%D9%8A%D9%86%D8%A9%20%D8%A7%D9%84%D9%85%D9%86%D9%88%D8%B1%D8%A9> (accessed December 26, 2012).
- p.90 fig. 4.17 Image by Author
- p.91 fig. 4.18 Image by Author

p.92-93	fig. 4.19	Image by Author
p.94	fig. 4.20	Chinx786, Underground Ablution Area, <i>flickr</i> , 2007, <a href="http://www.flickr.com/photos/chinx786/1131730304/">http://www.flickr.com/photos/chinx786/1131730304/</a> (accessed November 19, 2012).
p.94	fig. 4.21	Image by Author
p.95	fig. 4.22	Ernst and Peter Neufert, people at prayer, <i>Architects' Data</i> , (Oxford: Blackwell Science, 2000) 585.
p.97	fig. 4.23	Image by Author
p.96	fig. 4.24	Photograph by Author
p.98-99	fig. 4.25	Image by Author
p.100-101	fig. 4.26	Image by Author
p.102	fig. 4.27	Image by Author
p.103	fig. 4.28	Image by Author
p.105	fig. 4.29	Image by Author
p.106-107	fig. 4.30	Image by Author
p.108-109	fig. 4.31	Image by Author
p.110-111	fig. 4.32	Image by Author
p.112-113	fig. 4.33	Image by Author
p.114	fig. 4.34	Image by Author
p.115	fig. 4.35	Image by Author
p.116-117	fig. 4.36	Image by Author
p.118	fig. 4.37	Image by Author
p.119	fig. 4.38	Image by Author
p.120	fig. 4.39	Image by Author
p.121	fig. 4.40	Image by Author
p.122	fig. 4.41	Image by Author
p.123	fig. 4.42	Image by Author
p.124	fig. 4.43	Image by Author
p.125	fig. 4.44	Image by Author
p.126	fig. 4.45	Image by Author
p.127	fig. 4.46	Image by Author
p.128-129	fig. 4.47	Image by Author

p.130 fig. 4.48 Image by Author  
 p.130 fig. 4.49 Image by Author  
 p.130 fig. 4.50 Image by Author  
 p.130 fig. 4.51 Image by Author  
 p.131 fig. 4.52 Image by Author  
 p.131 fig. 4.53 Image by Author  
 p.131 fig. 4.54 Image by Author  
 p.132 fig. 4.55 Image by Author  
 p.132 fig. 4.56 Image by Author  
 p.133 fig. 4.57 Image by Author  
 p.133 fig. 4.58 Image by Author  
 p.133 fig. 4.59 Image by Author  
 p.134 fig. 4.60 Image by Author  
 p.135 fig. 4.61 Image by Author  
 p.135 fig. 4.62 Image by Author

**05 CONCLUSION**

p.136-137 fig. 5.2 Photograph by Author  
 p.138 fig. 5.1 Image by Author  
 p.139 fig. 5.3 Image by Author  
 p.140 fig. 5.4 Image by Author  
 p.140 fig. 5.5 Expansion model, “NEWS Mecca & Pilgrimage,” *skyscrapercity*, <http://www.skyscrapercity.com/showthread.php?t=1237079&page=128> (accessed November 19, 2012).  
 p.141 fig. 5.6 The approved scale model, “The expansion of the Prophet’s Mosque,” *Saudi Gazette*, <http://www.saudigazette.com.sa/index.cfm?method=home.regcon&contentid=20121121143526> (accessed December 26, 2012).





# INTRODUCTION

## INTRODUCTION

Medina, or *Al-Madinah*, is the second most important holy city of Islam after Mecca, containing the tomb of the Prophet Muhammad (PBUH). The city of Medina has a population of more than 1,100,000 people (2009)<sup>1</sup>, 65% of whom are of Saudi nationality, and has a total area of 589 km<sup>2</sup> (227.4 sq mi). The Prophet's Mosque in Medina is the second-most revered place of worship for Muslims around the world. Millions of Muslims visit the Mosque each year to worship, to visit the Prophet's grave, and to see the city that gave birth to Islam. Citizens have targeted the central part of the city as the preferred location in which to live, because it is adjacency to the Mosque where they perform their five daily prayers.

For all Muslims, Medina has a significant religious value as a holy city. Its significance emanates from the existence of the Prophet's Mosque, which is the most sacred site in Medina. The Prophet (PBUH) said, *“One prayer in my Mosque is better than one thousand prayers in any other mosques excepting the Mosque of Al-Haram (Mecca)”*<sup>2</sup> cited by Bukhari (Bukhari, is the author of *Sahih al-Bukhari* which is one of the six major books of authentic sayings of the Prophet Mohammad (PBUH)). For this reason, Muslims aim to be as close as possible to the Mosque to practice their rituals and to gain the mentioned reward. Moreover, the Prophet chose the city to spend the last ten years of his life (PBUH). Different places in the city have different memories of significant historical and religious events.

The city of Medina and its cultural and religious heritages have faced many challenges during the past half-century. Development projects and the ambition to modernize the city have impacted its identity as an Arab-Islamic city. More important, the city's central area, where the



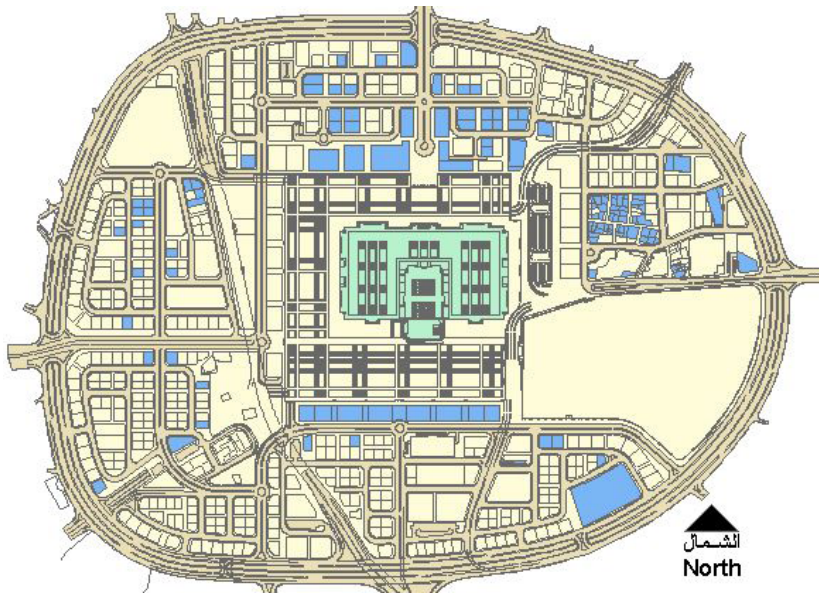
**Figure 0.1**

*Aerial view of the mosque before the mass development of the area (1978)*



**Figure 0.2**

*View from one of the southeast hotel looking toward southeastern neighbors*



**Figure 0.3**  
*Masterplan of the development plan of the central zone in Medina*

**Figure 0.4 (cover)**  
*Panoramic view of the Prophet's Mosque*

holy Prophet's Mosque is located, had changed dramatically to fulfill the high demand for investments and real estate projects. Unfortunately, the historical quarter of the city has been lost (the area surrounding the Great Mosque), and been replaced by modern, concrete, and bulky hotels. Briefly, the development plan was to destruct the entire area around the mosque (240 hectares) and build a new hotel district with the supported services. The zone is like a town inside a city with a population of 300,000 people (80% are temporary residents). It consists of bulky hotels (all 14-story buildings) arranged in a grid system with some major streets. Developing the centre of the city presented practical solutions for all the problems previously affecting the area, such as traffic jams, poor infrastructure, old or deteriorated accommodations, and the limited number of visitor capacity. Although developing the city's centre has great ambitions and provides great solutions for all users, it failed to recognize the importance of sustaining the authentic experience of the place.<sup>3</sup>

The purpose of this research is to demonstrate the importance of sustaining an authentic experience in the central part of Medina. I will begin by describing the background of the city of Medina and the major developments done in its central core which will give a clear sense of the context. In Chapter 2 I will explore the issues by analyzing the authentic experience of the city centre from a visitor's point of view. The next section discusses the local citizens' experiences in the central zone before and after the development project. After that, in Chapter 3, a set of design guidelines are drawn from similar precedents to be implemented in the design intervention. In Chapter 4 I will present my design proposal along with its characteristics. Although my interpretation draws heavily on my personal experience of the city and images of Medina, other related articles and books are used as well.







## 0 1 T H E C O N T E X T

## 1.1 The Story of the City

### 1.11 The Growth of the City

Medina, the second-holiest city in Islam after Mecca, is located in the northwest part of Saudi Arabia. Medina (Arabic for “city”) or al-Madinah al-Munawarah (the enlightened city), which was known as Yathrib, got its name after the Prophet migrated (*Hijrah*) to the city.<sup>4</sup> Since early times, the city was a hub for caravans due to its location on commercial routes, as well as the availability of food and water. It played a major role as an oasis in the Arabian Desert. In September AD 622, the Prophet Muhammad (PBUH) migrated from Mecca to Medina, and this date is marked as the first year in the Islamic calendar.<sup>5</sup> Thereafter, the Prophet lived the rest of his life in Medina until he died on June 8, AD 632 and was buried in his house adjoining the mosque.<sup>6</sup> One of the significant achievements the Prophet accomplished upon his arrival was to establish a constitution for the community of Medina. The Constitution of Madina (also known as The Medina Charter or The Charter of Medina) was composed by the Prophet Muhammad (PBUH). It was a constitution written for people of different religious faiths and the 10,000 citizens of Medina in AD 622. It is a remarkable political-constitutional document, which is regarded by scholars as the first written constitution of human history upon which all later constitutions were founded. The Prophet was aiming for a unified society, “the *Ummah*”. Thus, he established a new binding tie between people, not based on their social status or cultural background, but based on their faith. This contrasts, however, with the norms of pre-Islamic Arabia, which was a thoroughly tribal society. Denny (1977), citing Watt (1956)<sup>7</sup> “Watt has likened the Ummah as it is described in the document to a tribe, but with the important difference that it was to be based on religion and not on kinship”.<sup>8</sup> This is an important



**Figure 1.1**  
*Al-Masri (Egyptian) Gate at the West side of Medina in 1907*

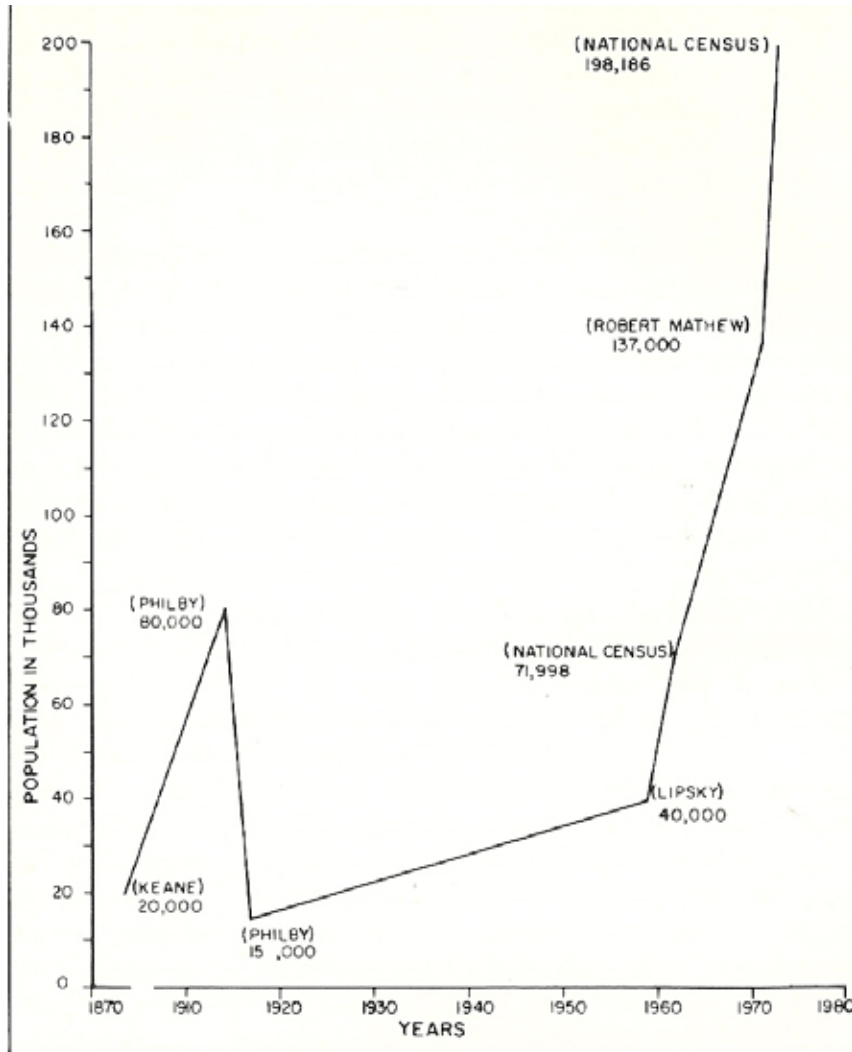
**Figure 1.2 (cover)**  
*Ar-Rawdah an-Nabawiyah (A garden from the gardens of Paradise) is a very special area in the heart of the Prophet's Mosque.*

event in the development of the Muslim community.

Medina grew as the Islamic state grew. It was the administrative hub and the capital for the new Islamic state, before these responsibilities were transferred to Damascus at the time of Umayyad dynasty in AD 661.<sup>9</sup> Though the city lost its administrative role at that time, it was still the nucleus for knowledge, religious teaching, and literature. Islamic scholars from all around the world came to and gathered in Medina to share their knowledge. However, in the third century after the *Hijra* (AD 816), life in Medina witnessed a general deterioration in all aspects of the quality of life.<sup>10</sup> The number of buildings in the city decreased and many palaces were abandoned. Security and peace become unsettled and transgressions were made on the caravans. The city contracted and for the first time in year AH 263 (AD 876) a wall was erected surrounding the city. The physical form of the city changed very little until AD 1517.<sup>11</sup> In general, Medina's historical timeline is as follows:<sup>12</sup>

- AD 622 – 632** Medina in the time of the Prophet Muhammad (PBUH)
- AD 657 – 1517** Umayyad, Abbasid, Fatimid, and Mamluk periods
- 1517 – 1917** Ottoman period
- 1925 – PRESENT** The Saudi period

During the Ottoman period, the Hajj route (*Hajj*, meaning pilgrimage, is the fifth pillar of Islam, an obligation on every able-bodied Muslim who can afford to do it and a journey with rites that must be performed at a certain time, in a certain way), which passes through Medina, was in danger of attacks by desert Bedouin.<sup>13</sup> Thus, the Turkish administration in Istanbul built the Hejaz Railway from Damascus to Medina. Besides



**Figure 1.3**  
Population of Medina (1870 - 1980)

its significance in securing the Hajj route, it played a major role in controlling the Hejaz area. As a result of the railway, the number of residents increased from 10,000 to 30,000. Likewise, the city wall was renovated several times and expanded to embrace the spread of buildings within its confines. Under the rule of Saudis, Medina entered a new era of development and modernization. As the economy of Saudi Arabia grew, Medina also changed dramatically.<sup>14</sup> Massive urban development occurred in the city during the 1950s; drinking water is brought from the desalination plants in Yanbu (a coastal city on the Red Sea) to the new neighborhoods.<sup>15</sup> Also, in 1947, the first airport was built in the city, which contributed to the development movement.<sup>16</sup> The development resulted in an increase in the population to 72,000 by the 1960s. The first university in Medina, Islamic University, was founded in 1961. Today, Medina has a population of more than 1.1 million, and is one hundred times its original size.<sup>17</sup> Furthermore, it can accommodate half a million worshippers.

### **1.12 The Growth of Religious Tourism**

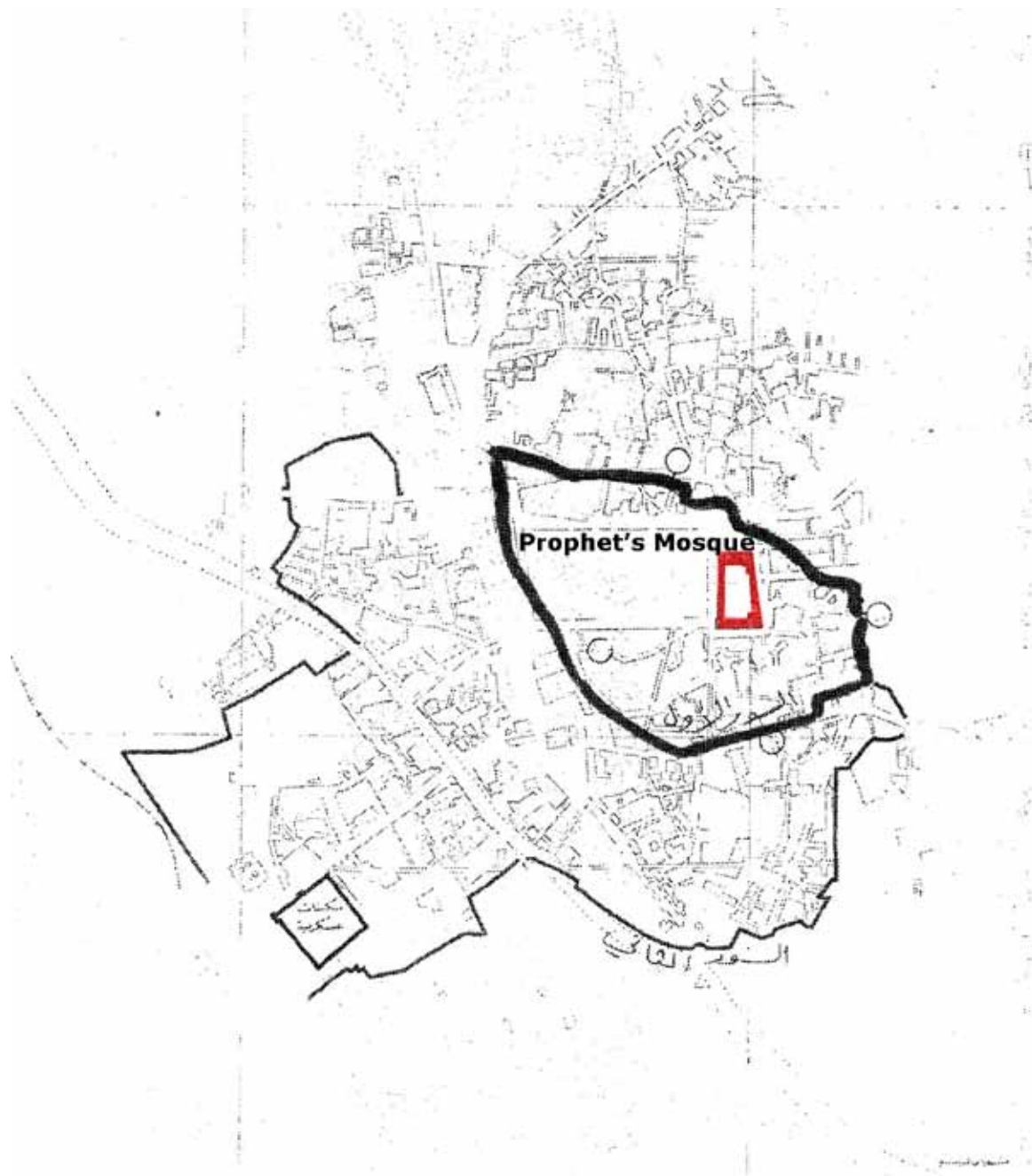
As the first capital of Islam, Medina holds a distinguished place in the hearts of all Muslims. In the heart of the city is the second most holy mosque in Islam, the Prophet's Mosque, and the final resting place of the Prophet Muhammad (PBUH). The Prophet's Mosque has been a distinguished symbol in the history of Islam. Since the day of *Hijra* (when the Prophet migrated to Medina), Medina became the centre for the Islamic state and the nucleus of faith and knowledge. Many scholars and students come to the city seeking knowledge, which they find in the lessons held in the Prophet's Mosque. Also, Muslims from all around the world come to the city to acquire Islamic knowledge and witness the place the Prophet Muhammad (PBUH) lived and is buried. Visiting Medina



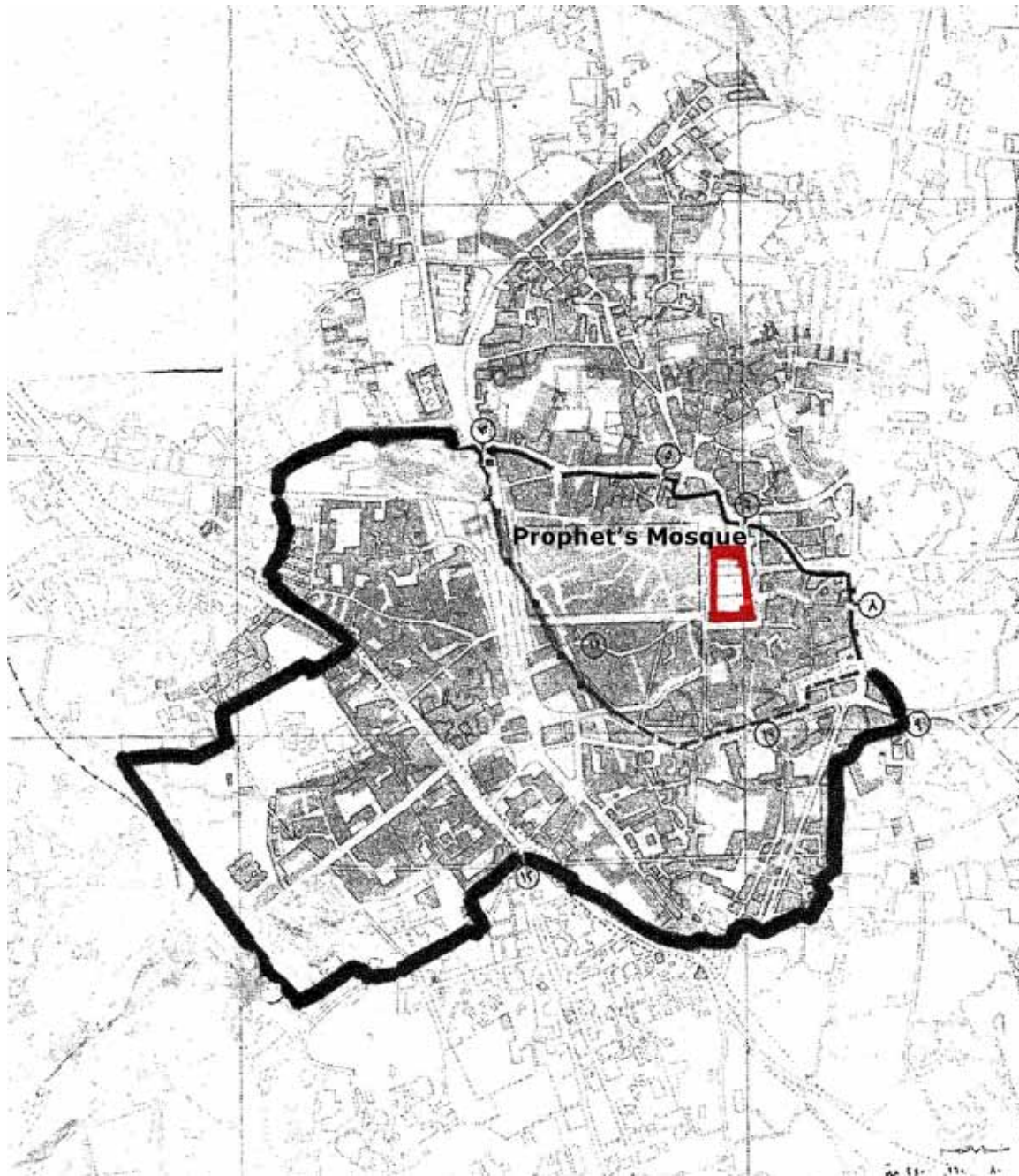
**Figure 1.4**  
*The mosque surrounded by the plaza and hotels*



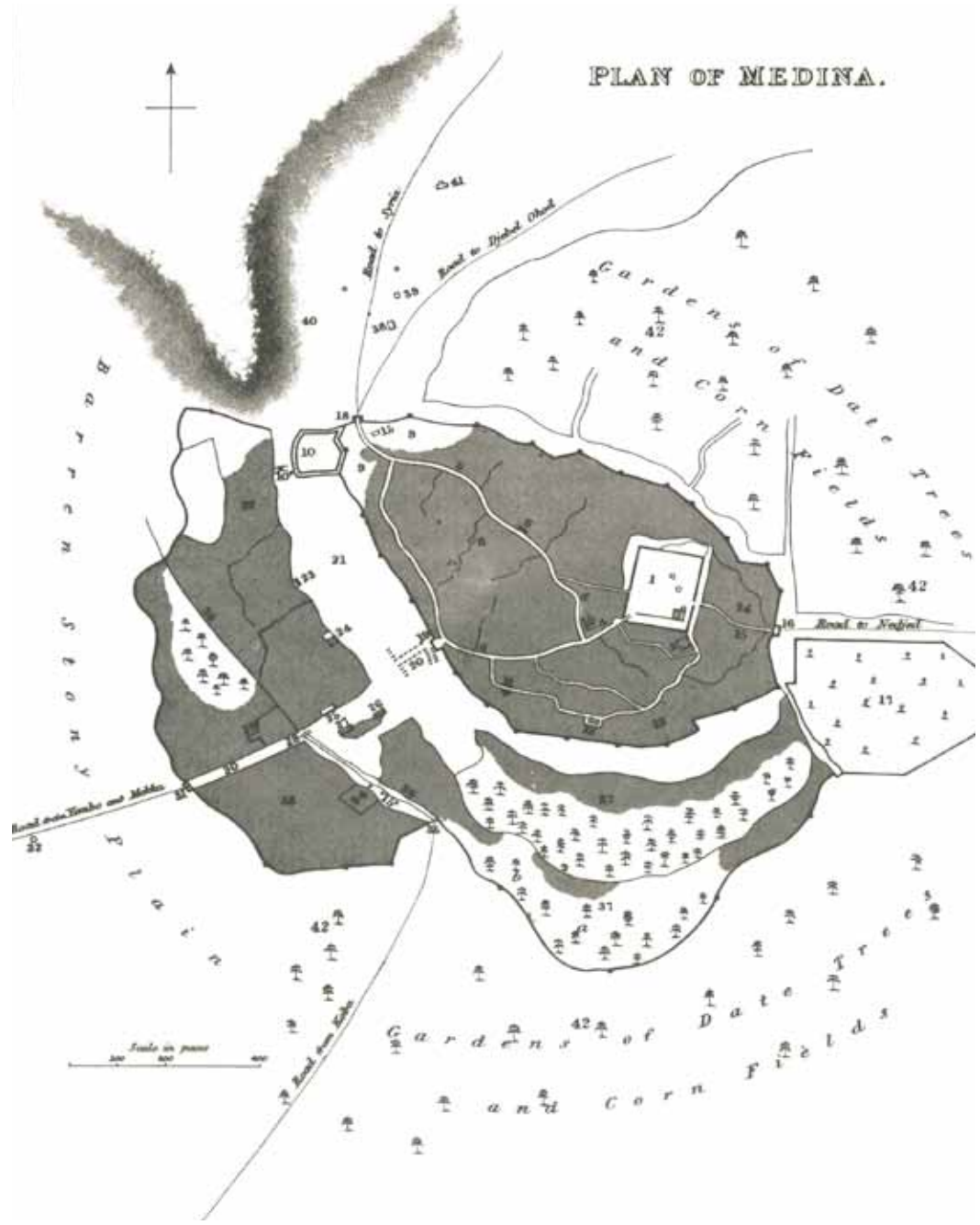
**Figure 1.5**  
*Medina at the beginning of 20th century*



**Figure 1.6**  
*The map showing first wall of Medina  
around 1150*



**Figure 1.7**  
*The map showing second wall of Medina around 1537 and the expansion of urban form*



**Figure 1.8**  
 Plan on Medina 1815 (Burkhart)



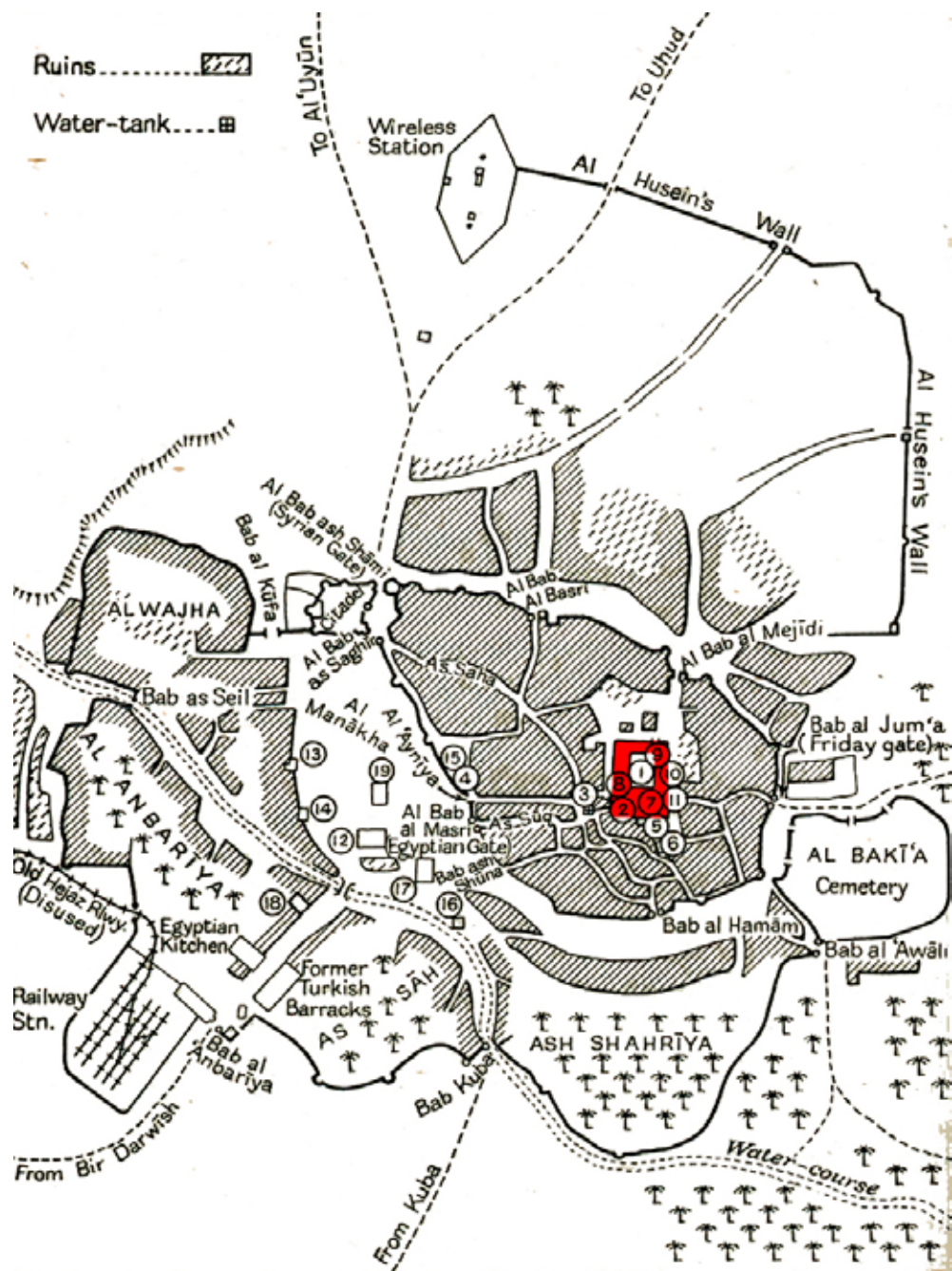
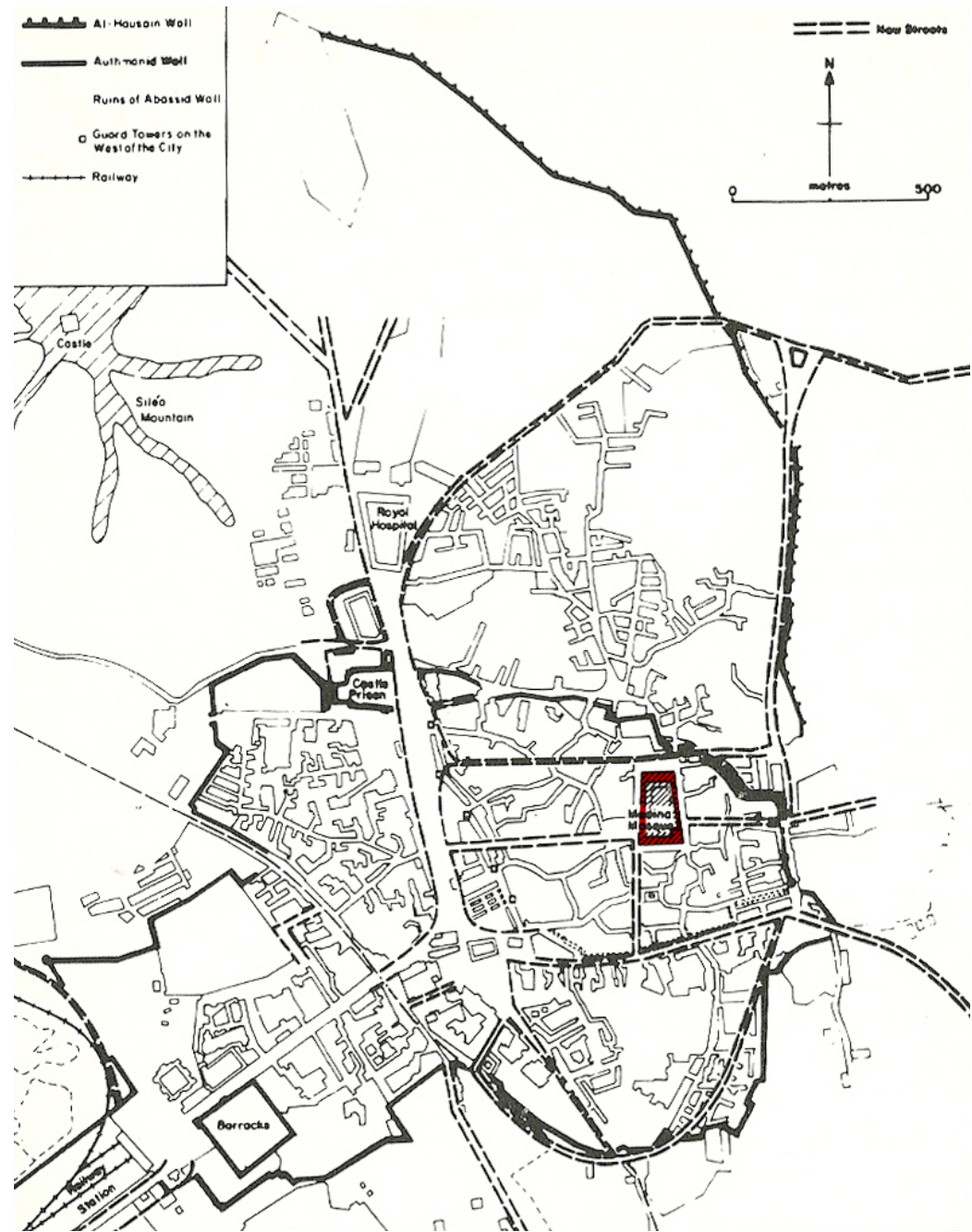
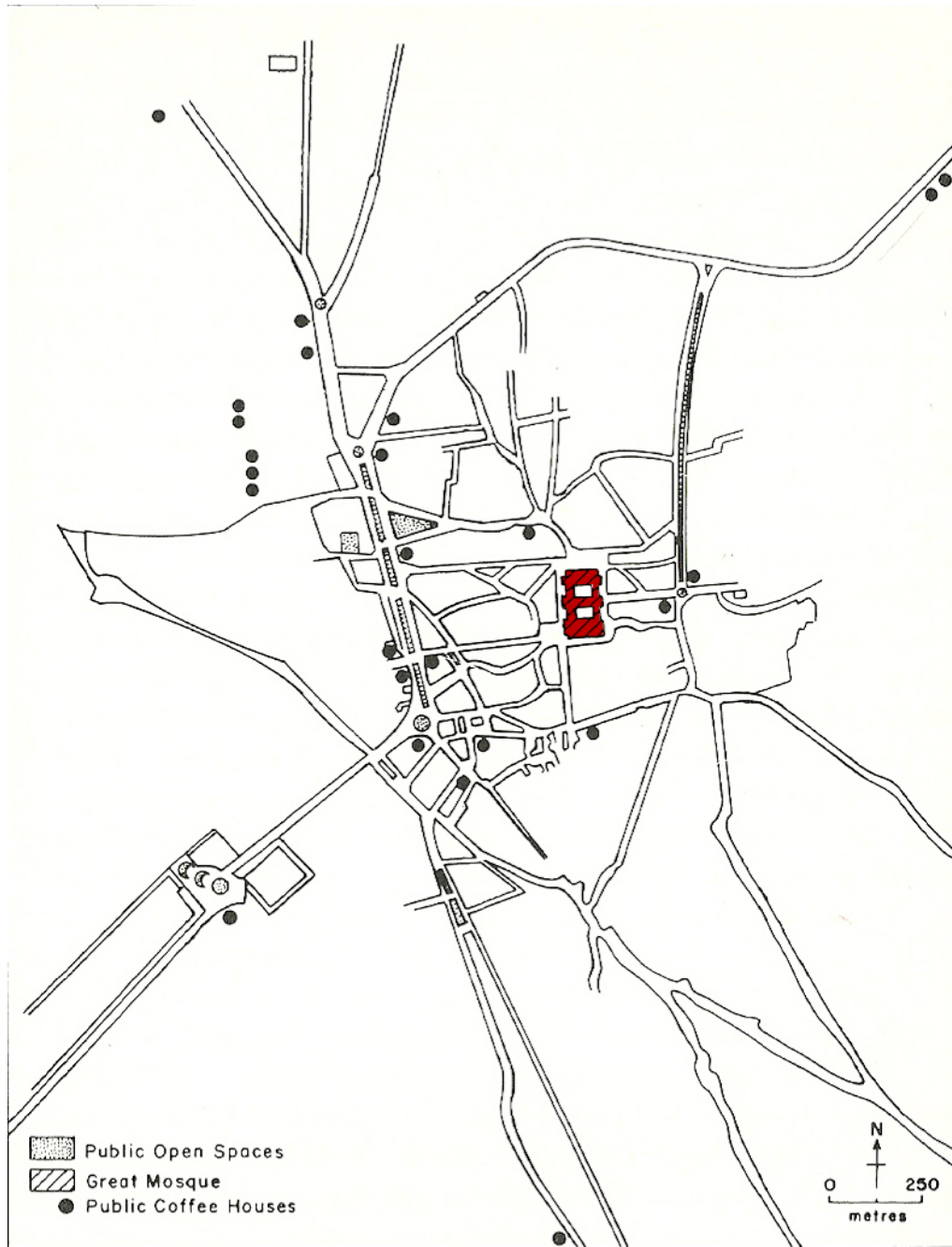


Figure 1.9  
Plan of Medina 1946



**Figure 1.10**  
Plan of Medina 1968



**Figure 1.11**  
*The location of public open space and public coffee house in Medina, 1974*



**Figure 1.12**  
Satellite image of Medina, 2003 (Google Earth)



**Figure 1.13**  
Satellite image of Medina, 2011 (Google Earth)

is recommended at any time of the year, and according to the Prophet's (PBUH) saying, "Do not set out on a journey except for three Mosques i.e. the Mosque of Al-Haram (Mecca), the Mosque of the Prophet (Medina), and the Mosque of Al-Aqsa, (Jerusalem)."18 cited by Bukhari. This is because of the great virtue of his mosque. Thus, many pilgrims visit Medina before or after the pilgrimage (Hajj) to Mecca. In Madinah, other important places of significance to Islam from legal, historic, and cultural perspectives have been preserved carefully for visitors. Among them are: Qubaa' Mosque, Qablatain Mosque, Baqi'a Al-Gharqad Cemetery, and the Graves of the Martyrs of the Battle of Uhud, which is near Mount Uhud.19

As noted above, visitors desire to come to Medina as a part of their Islamic rituals. As such, most visitors want accommodations near the Prophet Mosque, where the old city was located. Today the old city has been transformed into a central part of the city, where many international hotels and real estate developments are taking place. Since the demand on the area has been very high, the recent development plan has aimed to accommodate the maximum capacity of visitors close to the Mosque. Actually, the plan was to destroy the old city in favour of investments and to cater to the religious tourism industry. Furthermore, religious tourism has evolved since the era of industrialization and modern transportation. Also, because the cost of travelling has decreased to an affordable level, the number of visitors has increased dramatically; indeed, visitors to the area reached 12 million in 2010 and are projected to reach almost 17 million by 2025.20 The religious tourism industry is one of the strongest fields of the Saudi economy after the oil industry. According to the United Nations World Tourism Organization (UNWTO), the world's largest form of mass religious tourism takes place at the annual Hajj pil-



**Figure 1.14**  
*Old image showing Al-Baqi cemetery, one of the most visited site in Medina*



**Figure 1.15**  
*Medina Hilton, on of the five-star hotels close to the mosque*



**Figure 1.16**  
*Luxurious restaurant with a view of the mosque*

grimage to Mecca, Saudi Arabia.<sup>21</sup> Business reports have concluded that Saudi tourism, especially the religious variety, is recession-proof.<sup>22</sup> As a sign of how seriously the country is taking its tourism industry—and its potential to diversify the economy—a \$6 bn, 276-mile rail link will connect the two holy cities of Mecca and Medina, slashing journey times, and a \$2.4 bn upgrade will increase the capacity of Medina airport from 3 million to 12 million passengers annually.<sup>23</sup>



**Figure 1.17**  
*Luxurious hotel suite*

## 1.2 The Story of the Prophet's Mosque

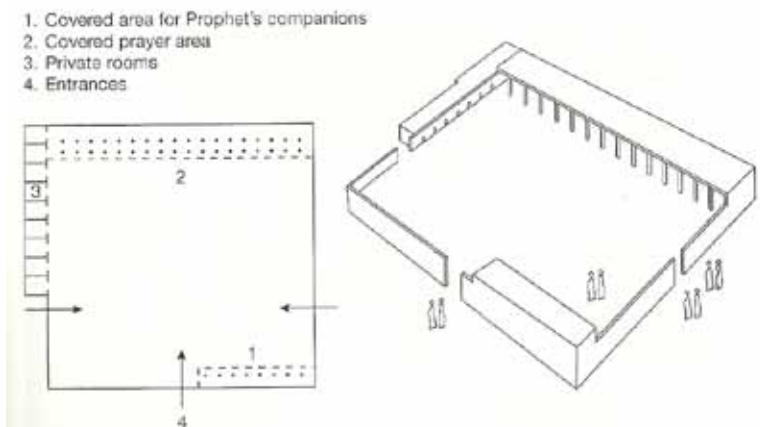
### 1.21 The Evolving Role of the Mosque

After the arrival of the Prophet Mohammad (PBUH) to Medina, he started to build his Mosque as a first step to establish the community. He wanted to create a physical place where people of faith would gather. A mosque is a place for public worship, where people gather five times a day to pray the Five Prayers. The Prophet's Mosque was not only a place for worship; indeed, it was also a gathering place, a community centre, a court house, a lecture hall, and a school. In addition, part of the mosque was a refuge for people who had no homes. Moreover, the role of the Mosque evolved as the Islamic state grew. When Medina was the capital city of the Islamic state, the Mosque was the centre of the government. The Mosque was also positioned in harmony with its surroundings as an essential component in the urban fabric of the city. In essence, it became the political, economic, and spiritual nucleus of Medina. Likewise, it was a platform for knowledge and learning related to Arabic and Islamic studies. For this purpose, many scholars have gathered in its corners to teach and lecture the teachings of Islam. However, although some classes are still being thought in the Mosque, its primary role as a knowledge centre has diminished. In addition, the recent development of the Mosque resulted in the building losing some of its dignity as a communal hub. It was previously an open space within the dense urban fabric. Today, the Mosque is isolated from the city; it is surrounded by large masses of concrete buildings and a six-lane ring road. Such recent developments did not consider the comprehensive role the Mosque plays in the city of Medina.<sup>24</sup>



**Figure 1.18**

*Imaginary sketch showing the Prophet's House and Mosque (AD 623)*



**Figure 1.19**

*The Prophet's House and Mosque (AD 623) (Courtesy of Municipality of Medina)*





**Figure 1.20**  
*Aerial view of the central district of Medina in 1982, showing the remaining part of the historic district of Al-Aghawat, south and east of the Prophet's Mosque. To the west of the mosque, the temporary prayers sheds (Courtesy Hajj Research Centre, Jeddah).*

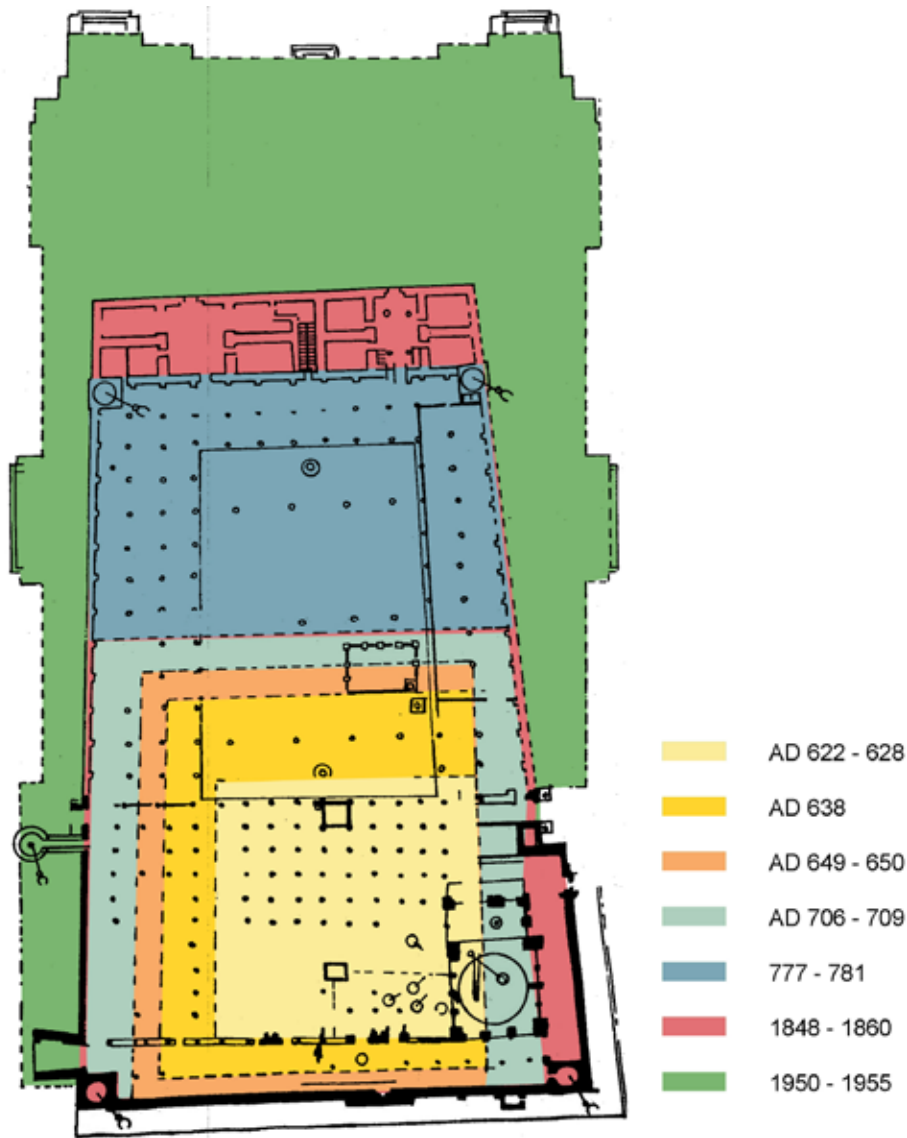
## 1.22 The Mosque's Major Expansions

After the Prophet Mohammad (PBUH) migrated from Mecca to Medina in AD 622, he started constructing his mosque on land that he bought. The first building was a simple rectangular structure (35×30m) composed of locally available materials. The walls were built of adobe and stones, and the ceiling was covered with palm fronds. The building was only covered on the north and south sides, with the remainder left open. At first, the Mosque was built facing Jerusalem (the first direction of prayers) with an area of 1,060 square meters. At that time, the Mosque had three doors: one facing the south, one facing the east (known as the Prophet's Door and sometimes called Othman's Door; today it is known as the Gabriel Door), and the third facing the West (known as Atika Door; today it is known as the Mercy Door). One year later, the direction of the prayer changed toward Mecca (south), and the mosque maintained its form. Most expansions of the Mosque occurred as a result of two main factors: the growing worshipper population and the need to maintain urgent renovations of the Mosque. Another related factor was the availability of funds and techniques during any certain period. Likewise, after a fire, the Mosque and its structure had to be completely restored.<sup>25</sup>

On the seventh year of Hijra (AD 628), the Mosque was expanded for the first time, because it was too small for the large number of people who attended. The expansion was on the east and the west sides with a total area of 2,475 square meters. Again, in AD 638, Kalipha Omar expanded it and added 1,100 square meters and three new doors, bringing the number of doors to six. Moreover, in AD 650, Khalipha Othman added another 496 square meters, which brought the total area of the Mosque to 4,071 square meters. In AD 709, Al-Walid bin Abdul Malik was the first who expanded from the east side, where the houses of the Prophet were



**Figure 1.21**  
*Farms appeared at the background of the Mosque, 1907*



**Figure 1.22**  
*Floor plan of the Prophet's Mosque showing the different expansions (622-1955)*

included in the Mosque. Similarly, during the era of the Abbasid Kalipha Al-Mahdy (AD 777–781), the number of doors was increased to 24, and the total area became 8,890 square meters. In the Mamluk era in AD 1279, the first dome was built on the tomb of the Prophet. Unfortunately, in AD 1481 the Mosque was engulfed by fire, and most of its structure had to be rebuilt. Thus, Sultan Qeit Bey gave the orders to rebuild the entire Mosque using state-of-the-art technology. Again, Sultan Abdul Majid expanded the Mosque in AD 1860 to reach 10,303 square meters.<sup>26</sup>

Since then, the Mosque expanded many times during the Saudi era (1950–1978) before the massive development at the time of King Fahd. The King Fahd expansion included a new building from the east, west, and north. In addition, the new building accommodates seven wide gates: three on the northern side and two on both the eastern and western sides. In each entrance there are seven doors. In addition, other doors lead to escalators and stairs. After the most recent expansion, the number of doors and entrances has reached 85. The most important features for the expansion of King Fahd include: a total built area of 82,000 square meters<sup>2</sup>, the capacity of the Mosque increasing to 257,000 worshipers, the number of minarets growing to 10, 27 movable domes being added, and an advanced HVAC system for cooling and ventilation being introduced. Table 1 summarizes major expansions of the Prophet's Mosque during different periods.<sup>27</sup>

**Table 1: The Growth of the Prophet Mosque in Medina by Period<sup>28</sup>**

<b>Reign</b>	<b>Date of Expansion (AD)</b>	<b>Area in square meters</b>	<b>Height of the Walls (meters)</b>	<b>Notes</b>
<b>The Prophet Mo-hammad</b>	622	1,060	2	The mosque was built using palm fronds, and the roof was made of palm trees' trunks.
<b>The Prophet Mo-hammad</b>	628	2,475	3.5	After 630, the lighting was provided by oil-fueled lamps distributed throughout the Mosque.
<b>The Khalifa Omar</b>	638	3,575	5.5	The Mosque had an inner courtyard, and it had another external court, called "Al-Butaiha'a", which is a large courtyard to the north of the Mosque, built up for those who want to speak about worldly matters and recite poetry.
<b>The Khalifa Oth-man</b>	649–650	4,071	5.5	The walls were made of engraved stones and plaster, and the pillars were built by stones, which were strengthened by iron and lead. The roof was made of strong teak, which was lifted on the pillars. At this time, the perforated cabin in the worship niche (Mihrab) was introduced to protect the Imam and allow visual contact.
<b>The Kfalipa Al-Walid bin Abdul Malik</b>	706–709	6,440	12.5	New elements included: the four minarets at each corner; the concave hollowed-out niche; and the decorated tiles on the walls. Also, for the first time, the expansion process took place from all sides of the Mosque, including the eastern side, where the houses of the Prophet were located. The tomb was surrounded by five-sided walls.
<b>The Kfalipa Al-Mahdy</b>	777–781	8,890	12.5	The number of windows increased to 60, including 19 windows in both the eastern and western walls, and 11 windows in both the northern and southern walls, thus providing natural lighting and ventilation to the Mosque.
<b>Mamluk Sultan Al-Mansur Qalawun Al-Salhi</b>	1279			During this period, the construction of the Dome above the Prophetic Chamber (the tomb) occurred. It was square from the bottom and octagonal from the top and was made from wood and lead plates.

<b>Mamluk Sultan Al-Ashraf Qait Bey</b>	1481–1483	9,010	11	Most of the doors of the Abbasid expansion were blocked and only four doors remained. Also, one minaret was added, bringing the total to five minarets. New balconies, windows, and openings were introduced in the upper parts of the walls for ventilation and lighting purposes.
<b>Sultan Abdul Majid</b>	1848–1860	10,303	11	Only one internal courtyard remained at the Mosque, and in the extreme north side of the Mosque some Kuttabs (elementary schools) were established to teach Qur'an. Electricity was introduced, and the Mosque was illuminated for the first time on September 21, 1908.
<b>King Abdul Aziz</b>	1950–1955	16,327	12.5	This expansion was constructed using reinforced concrete structure. Also, a new power station was established to illuminate the Prophet's Mosque (2,427 lamps).
<b>King Faisal</b>	1973	56,877	12.5	The land to the west of the Prophet's Mosque was allocated for prayers. Therefore, the land was paved, covered by canopies, and supplied with electricity, loudspeakers, and ceiling fans.
<b>King Khalid</b>	1974–1978	110,077	12.5	The southwest area of the Prophet's Mosque was devoted to services for worshippers and visitors, whereas the remaining area was designated as parking lots.
<b>King Fahd</b>	1985–1994	400,327	12.5	The total area of the new expansion was 384,000 square meters and included: the ground floor, the roof, the basement, and the surrounding open plaza. On the open plaza, there are small buildings spread around, which lead to toilets and parking lots that accommodate more than 4,500 cars.

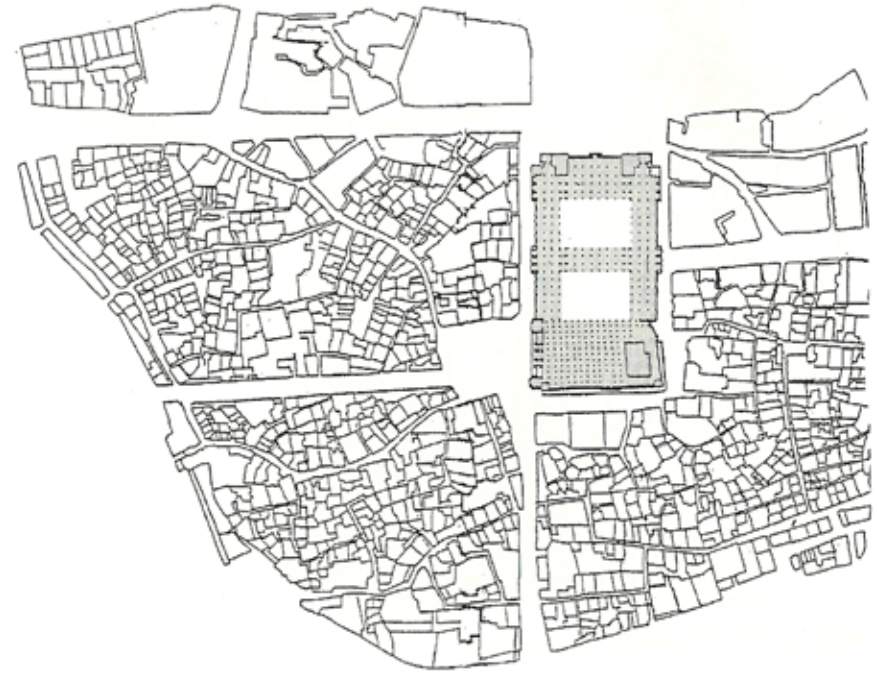
### 1.23 The Massive Development Project (1985–1994)

On October 30, 1984, King Fahd launched an expansion of the Prophet’s Mosque project, which was followed in 1990 by the order to form the Executive Committee to develop the central area of the city of Medina. The Executive Committee was given power to manage, guide, and follow-up on the development of the central region. It was clear that the authority chose a mass development rather than minor rehabilitation for the area. Table 2 illustrates land use in the central zone after the development.<sup>29</sup>

**Table 2: Land use summary<sup>30</sup>**

100,000 sq.m	The Prophet’s Mosque
270,000 sq.m	Open plazas around the mosque
180,000 sq.m	Al-Baqee Graveyard
1,580,000 sq.m	Residential and supported services
270,000 sq.m	The First Ring Road
<b>2,400,000 sq.m</b>	<b>Total</b>

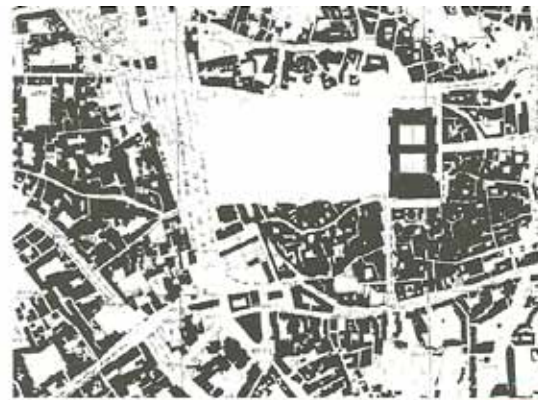
Permanent residents were assumed to reside outside the central district, which was conceived of as becoming a large tourist zone filled with hotels (with a total capacity of 300,000 people). This area is filled with visitors during season times and remains vacant the rest of the year. As a result, 80% of the dwellers are visitors, whereas only 20% are permanent residents. Reza Amin, a member of the Executive Committee for the Development of the Central Region in Medina, stated that the overall impact was positive.<sup>31</sup>



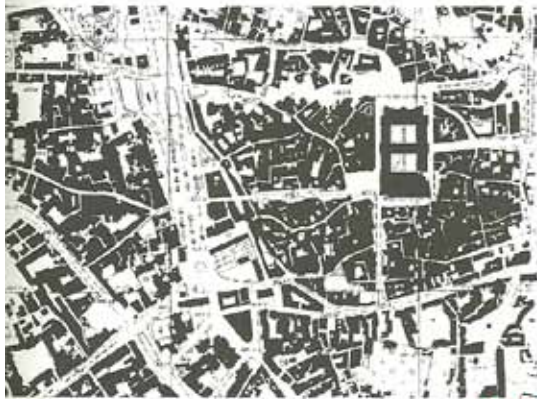
**Figure 1.23**  
*The Prophet’s Mosque dominating the traditional built environment of Medina (Bianca 2000)*



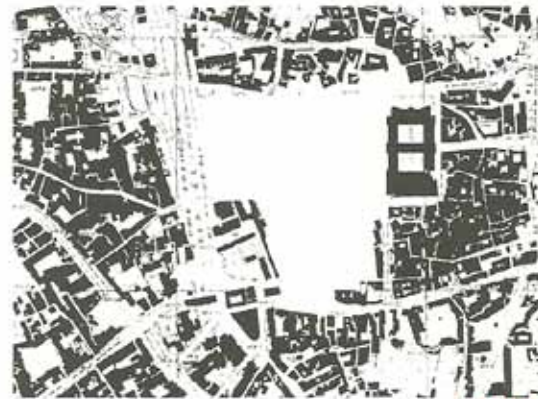
1910



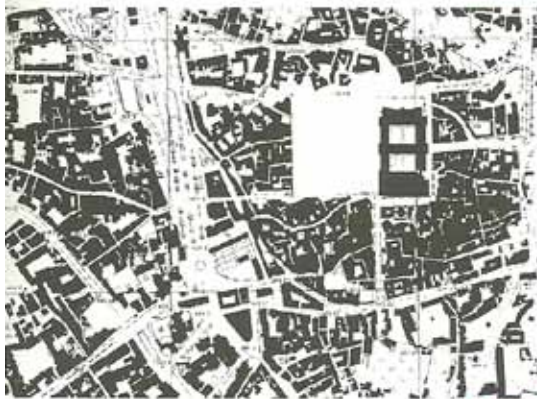
1978



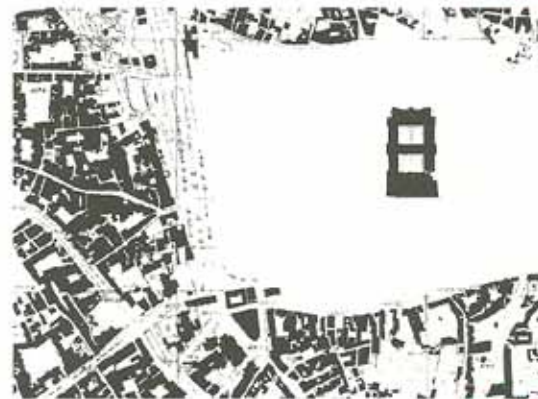
1960



1983



1970



1990

**Figure 1.24**  
*The progressive clearance of the historic fabric of Medina in the context of successive urban interventions around the Prophet's Mosque.*

“As known, the effects of any project may be positive or negative. However, it appeared to us that the effects of the project on economical, social, environmental, and planning aspects were generally positive with the exception of the social aspects, where there was a fear of losing the spirit of Islamic architecture in modern buildings, as well as the spirit of social relationship formed by people in that region. Overall, by the economical advantages created by this project, we can say with confidence that this project has positive effects on public life.”<sup>32</sup>

Eng. Reza Amin Eita  
Executive Committee for the Development of the  
Central Region in Medina

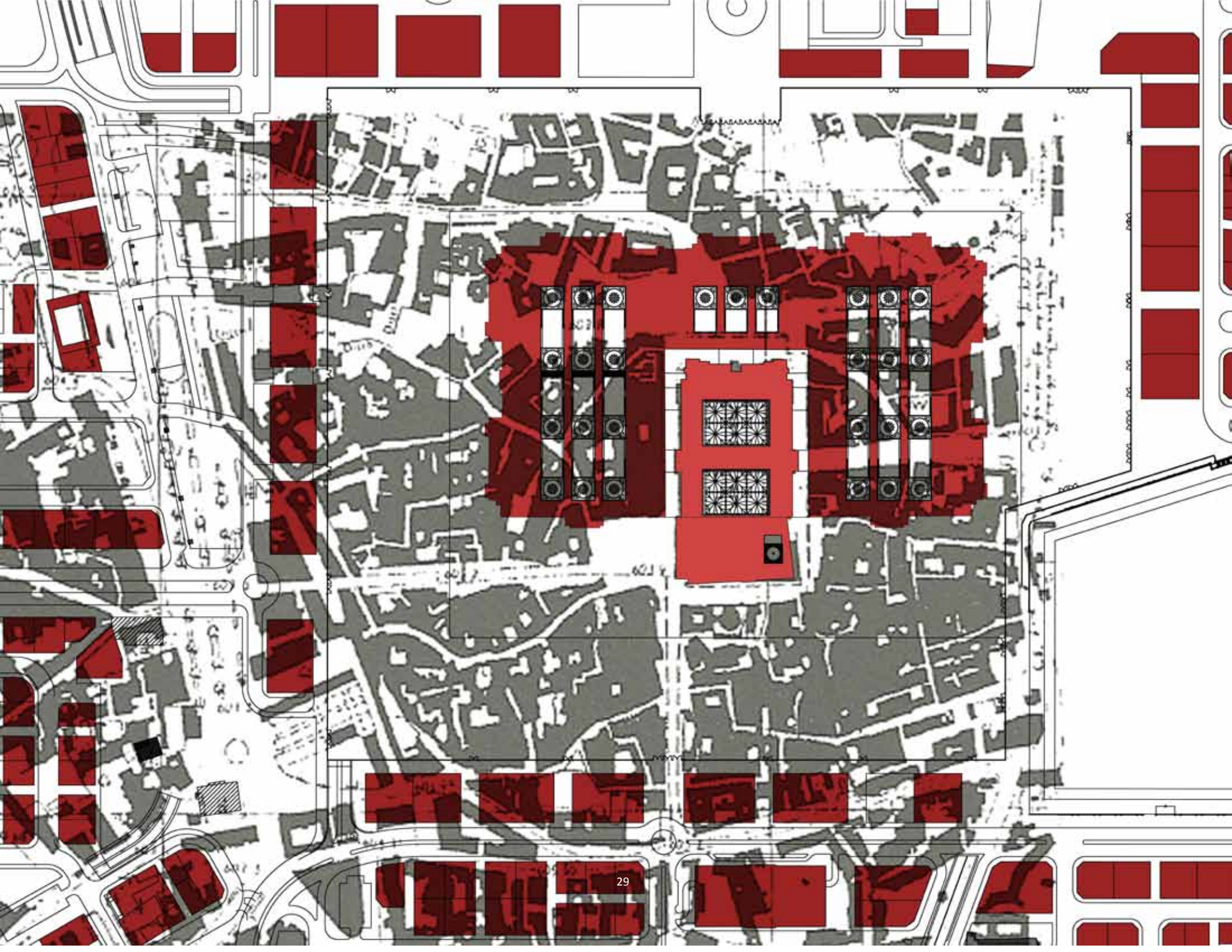
As is clearly declared in the above statement by Eng. Reza Amin, the social aspect of the area was totally ignored in the development plan. The problem is not only that the social aspect was ignored, but so too was the false estimate regarding the real impact of development on residents and visitors/pilgrims. Although the project increased capacity for Muslims visiting the Prophet’s Mosque from around the world, it had negative impacts on local inhabitants and visitors who could no longer sense the authentic spirit of the place. The social cohesion among residents of the central region, which was associated with urban morphology, disappeared with the new layout.



**Figure 1.25**  
*An operable dome One of the 27 moving domes installed in the mosque*

**Figure 1.26 (opposite)**  
*Site plan with the massive block of the mosque extension floating on the deck of a vast and exposed open plaza. Historical map is placed at the background to show the scale of the development.*



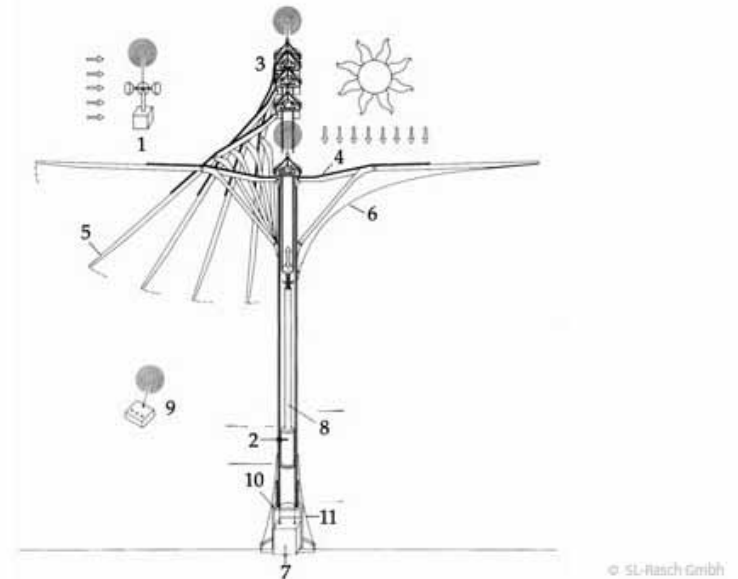


### 1.24 Mosque's Piazza Shading Project (2005-2012)

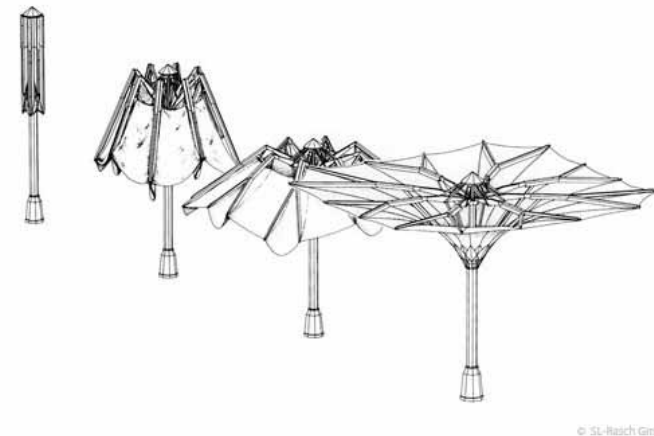
The major development project in 1994 of the mosque has resulted in 270,000 square meters of open plazas around the mosque. These plazas include services, amenities, and accesses to the underground parking. In June 2005, King Abdullah ordered the start of the Mosque's Piazza shading project. The project's main purposes are to accommodate worshippers in the plaza. The committee decided to install large scale umbrellas to allow maximum span and at the same time provide adequate shelter against sun and rain. By 2011, a total of 250 large scale umbrellas were installed at the East, North, and West sides of the mosque with a total area of 106,000 square meters. In addition, six passages were covered on the Southern side.<sup>33</sup>

One single open umbrella structure is 25.5 x 25.5 m and spans an area of 650 square meters and provides shelter from the sun and rain to about 900 worshippers. It protects from the harsh sun of Medina and against the risk of slip and fall accidents in the piazza. In addition to the protection from the reflected glare each umbrella has swing fans that are spraying cold water to enhance the microclimate. The umbrellas are designed to allow flexibility and enable everyday opening and closing. The umbrellas are opened and closed simultaneously through the use of an electronic motor.<sup>34</sup>

The Umbrellas are aligned to the plaza grid and overlapped each other at different heights. Some are 14.40m tall and some are 15.30m tall. However, when closed all umbrellas are at the same height (21.70m). Each umbrella consisting mainly of two major parts: the frame and the membrane. The frame structure is composed of eight upper support members, eight arms, eight lower support members, four diagonal arms, and eight arms attached to the diagonal arms.<sup>35</sup> Each arm is covered



**Figure 1.27**  
*Components of the foldable large scale umbrella*



**Figure 1.28**  
*Diagram showing the folding process*



*Figure 1.29*  
*The structural arms of the umbrella*

by glass fibre epoxy resin laminate, providing high tensional stiffness. When closed the arms covers protect the folded Teflon membrane. <sup>36</sup>

The membrane material is 100% PTFE (polyterafluoroethylene plastic) weaving material (weight: 900g/square meters, thickness: 0.6mm) developed specifically for this project. The membrane material has high durability and is chemically inactive. This enables the membrane to sustain under the harsh Middle Eastern weather conditions for a long term. It also has non-flammable characteristics to make it safer against fire hazards. <sup>37</sup>

**Project Brief:**<sup>38</sup>

<b>Official project name</b>	Medina Haram Piazza Shading Project
<b>Construction location</b>	Medina, Kingdom of Saudi Arabia
<b>Prime contractor</b>	Saudi Binladin Group (Kingdom of Saudi Arabia)
<b>Concept and Architectural Design &amp; Engineering</b>	SL-Rasch GmbH (Germany)
<b>Manufacturing and on-site Installation of the large scale umbrella system</b>	Liebherr Intertrading AG (Germany)
<b>Membrane fabrication</b>	Taiyo Kogyo Corporation (Setagaya, Tokyo and Yodogawa, Osaka)
<b>Dimension, quantity</b>	Approximately equal squares with 25.5m each side 250 units
<b>Total area</b>	162,000 square meters
<b>Membrane type</b>	Operable suspension membrane structure



**Figure 1.30**  
*Detail of the lighting system on the umbrella*



**Figure 1.31**  
*Large scale umbrellas (25.5m on each side) for pilgrims visiting the Prophet's Mosque*



*Figure 1.32*  
The large scale umbrellas create a soft roof for the plaza





## 0 2 T H E I S S U E S

## 2.1 Visitors' Experience

### 2.11 Visitors' Expectations

For many visitors to Medina, experiencing the distinctive identity of the city is the main purpose of their journey. For them, Medina is not only a city with a grand mosque; it is the place where the first Muslim community was found and where the Prophet Mohammad (PBUH) lived and was buried. Furthermore, the most significant events in Islamic history have taken place in this city. The place itself has held great memories from its earliest days until recent decades. The traditional-built environment (before the development project of 1985) embodied an authentic identity that accumulated over time.<sup>39</sup> As a visitor, the authentic experience means sensing originality in every aspect of a city. This includes the place, the built environment, the lifestyle, and the community. Although visitors to Medina come from different cultures and countries, they subconsciously share the same image of Medina, which has been described in Islamic history.<sup>40</sup> For a distinctive historical city such as Medina, many visitors want to feel the spirit of the place through the traditional physical form that reflects the great heritage and deep meanings of Islamic civilization.



**Figure 2.1**

*The North part of the central part. (Panoramio.com)*

**Figure 2.2 (cover)**

*Mount Uhud, Medina*





**Figure 2.3**  
*The frontline hotels at the edge of the mosque's plaza.*  
 (Panoramio.com)



**Figure 2.4**  
*The south edge of the developed area.* (Panoramio.com)

## 2.12 The Realistic Experience

The moment visitors walk into Medina's central zone, where the Prophet's Mosque is located, they notice the high rise buildings surrounding the Mosque from all directions. In essence, the central zone is the area (24 hectares) that has been developed within the recent development project of the Prophet's Mosque (1985–1994).<sup>41</sup> Furthermore, almost 66% of the central zone is allocated for residential services. The area has 12 five-star hotels and 106 four-star and three-star hotels.<sup>42</sup> All buildings were built to the same height (14 stories) and are constructed of reinforced concrete. Visitors will be both confused and amazed at the same time. They will be confused by these bulky hotels and their obscure images, which have nothing to do with the city's heritage. At the same time, visitors will be amazed by the modern technologies that have been presented in the area and in the Mosque. Particularly, they will be impressed by the modern technologies used at the Prophet's Mosque, such as the huge foldable umbrellas that cover the plazas, the sliding domes inside the mosque, and the advanced cooling system.

Generally, not all visitors can afford to accommodate in the central zone due to the high rates; thus, they are forced to reside outside the central zone (outside the perimeter of the ring road), where less expensive accommodations are available. In contrast, fortunate visitors can house in one of the frontline five-star hotels and will enjoy an astonishing view of the mosque. Such visitors will have a different experience than the unfortunate visitors who stay outside the central area. Although the five-star hotels offer a luxurious experience and first-class services, they fail to deliver the authentic experience of the place. Moreover, the first two levels of all hotels are occupied by shopping malls, where global brands are displayed. Furthermore, visitors who accommodate outside the central zone,

where the inexpensive hotels are located, must travel long distances to get to the Mosque. Most of the roads are not pedestrian-friendly roads, which create an unpleasant trip for worshippers. Safety issues are also evident, because pedestrians share the roads with large vehicles such as buses.

### 2.13 What Is Missing?

Although the contemporary architecture of the area follows global trends in design, a major drawback of this development (which affects the visitors' experience) is the total ignorance of the traditional and historical values of the place.<sup>43</sup> The problem is not with the modern building technologies, but with the shallow meanings they represent in such a place. Traditionally, the city was planned based on logical reasoning and deep meanings drawn from Islamic laws (*sharia*). For example, the Al-Manakhah area in the central part was an open space designated for commercial activities since the early history of Medina. It was a place chosen by the Prophet himself as a free market area for all people.<sup>44</sup> The physical image must truly represent the identity of the place and not borrow characteristics from different settings.



**Figure 2.5**  
*The tour's minibuses.*



**Figure 2.6**  
*Street vendor in the central part. (Panoramio.com)*



**Figure 2.7**  
*Visitors who reside outside the central zone, they have to cross the ring road to reach the mosque*



**Figure 2.8**  
*Starbucks Coffee in the central zone*

## 2.2 Green Spaces in Medina

Throughout its history, Medina has had a distinguished image as an oasis city. In fact, palm trees and gardens were the dominant character of Medina. Its natural setting along with its abundant water resources made it the perfect place for agriculture and cultivation. In essence, cultivation was one of the major economic resources for inhabitants. The city is surrounded by mountains along the northeast side and the southwest side, which create many valleys that run through the city. Medina was previously surrounded by a green belt from all directions and also along the valleys' sides. Traditionally, local farmers depended on groundwater, springs, and wells for agriculture and drinking.<sup>45</sup>

Moreover, the harmony and integration between the natural and built environments was witnessed until recent decades. Specifically, no buildings were built on agricultural lands. Most of these green spaces were used for cultivating the land and raising animals. In addition, various products such as grapes, lemons, tangerines, pomegranates, figs, and dates were produced. Imagine this: above all, Medina has produced 123 different types of dates. Again, besides the area's economic values, gardens and orchards were places for public recreation and picnics. Indeed, locals formerly picnicked outside the city's walls when the weather permitted.<sup>46</sup>

Unfortunately, in the last 30 years, the city has lost 83% of its green spaces in favour of urban growth. In essence, drought and rapid urban development have resulted in a drastic decline in the green composition of the city. Adding to this, since the dawn of the era of the petroleum-based economy, most old Saudi cities such as Medina have suffered from a conflict between traditional and modern lifestyles. This conflict has resulted in abandoning agriculture as a primary profession in



**Figure 2.9**  
*A palms' farm near Quba Mosque*



**Figure 2.10**  
*Digging an agricultural land and move its soil to other places and converting it into a residential land*



**Figure 2.11**  
*Green spaces in Medina 1987 (144,3 Sq.Km)*



**Figure 2.12**  
*Green spaces in Medina 2000 (10,7 Sq.Km)*

Medina. For example, Sheikh Hamza Saeed is a farm owner in Medina and his annual income from the farm (area 50,489 sq.m) is SR40,000 (CAD\$10,884). On the other hand, the value of his land is worth SR500,000 (CAD\$136,052) as a real estate investment. Thus, many land owners have chosen to invest in real estate rather than in agriculture.<sup>47</sup>

With the growing interest in tourism in Saudi Arabia, gardens can be regarded as a source of recreation that can attract visitors and locals alike. In addition to the spiritual aspect of visiting the Prophet's Mosque, a garden within the urban area around the mosque will offer some sort of paradise experience. As noted, the current setting of the central zone has lost the green element in the midst of the urbanization process. Many gardens and orchards disappeared because they offered a much more profitable real estate investment when developed. Yet green spaces can participate in presenting an 'authentic landscape' to visitors and locals. In other words, using native plants and traditional concepts of landscape design will offer a great opportunity to revive the area's identity. On the whole, efforts are underway from the municipality to preserve Medina's green identity. As such, these efforts must have definite codes that conserve the green spaces and maintain their survival.<sup>48</sup>



**Figure 2.13**

*A farm left to dry out intentionally and turned into a wasteland*



**Figure 2.14**

*Farm declared for sale as a real estate, and did not been refered as agricultural land*



**Figure 2.15**  
Anwar Al Madinah Moevenpick Shopping Centre, Central Zone



**Figure 2.16**  
Anwar Al Madinah Moevenpick Shopping Centre, Central Zone

### 2.3 Place Identity

“The Washington-based Gulf Institute estimates that 95 percent of the 1,000-year-old buildings in the two cities (Mecca and Medina) have been destroyed in the past 20 years.”<sup>49</sup>

Medina and its cultural and religious heritage have faced many challenges during the past half-century. Development projects and ambitions to modernize the city have impacted the city’s Arab-Islamic identity. More importantly, the city’s central part, where the holy Mosque of the Prophet is located, has changed dramatically to fulfill the high demand of investments and real estate projects. Unfortunately, the historical quarter of the city (the area surrounding the great Mosque) has been lost and has been replaced by contemporary concrete hotels.

Previously, the central districts of the city of Medina were distinguished by a traditional inner-court building typology (*alahoash*), consisting of buildings that accommodate each homogeneous category or group belonging to one tribe. Each group of houses surrounded an inside court that could be controlled within a secure social system. However, a large part of these buildings have suffered from erosion, overcrowding, and non-coordinated growth. This decay resulted from the absence of a clear planning policy. In addition, the development of new suburban housing in Medina displaced a large numbers of local families from the central part of the city to the new suburbs around the city. This migration of inhabitants has resulted in disregarding the premises in the central zone.<sup>50</sup>

Therefore, in the 1980’s, a massive expansion project of the Prophet’s Mosque was approved. It is clear that the authorities chose a mass development rather than a minor rehabilitation of the area.



**Figure 2.17**  
*An old image showing the traditional built environment of the region*

**Figure 2.18 (right)**  
*The architectural style of the contemporary built environment*

**Figure 2.19 (opposite)**  
*Author's collage of the central zone*







لي بولي بثوبيا  
THE BODY SHOP

مكة الحرام  
HARAM HOTEL

Swatch  
سواتش

مكتبة  
MAC

عبد الله محمد علي مغربي  
ABDULELAH M. ALI M. GH  
MAC

داسكين روببيني  
BR  
داسكين روببيني

دجاج كنتاكي  
KFC

ستاربكس  
STARBUCKS  
COFFEE

دايرز  
dair's

سنتار بخص  
صافيت

Briefly, the development plan included destroying the entire area around the Mosque (240 hectares) and building a new hotel district with a host of associated support services. The zone is like a town inside a city with a population of 300,000 people (80% of whom are temporary residents). The place consists of bulky hotels (all of which are 14-story buildings) arranged in a grid system with major streets.<sup>51</sup>

The main challenge for developers and planners was developing an area that has a great traditional heritage and a long history. As such, the development project had to reflect this tradition, and, at the same time, find a contemporary language that communicates the same authentic ideas. The development project failed to sustain, however, the authentic identity of the place. For example, a well-known Saudi journalist, Jamal Khashoggi, replied to a question about the impact of the recent development in Medina, when he said: “I am from Medina, and I saw it fade and become a distorted version of Manhattan. I wandered in its alleys and buildings which dating back hundreds of years, all were removed today, strange what we did.”<sup>52</sup> He argued that other cultures desired to conserve their tradition; instead, we gave it up for modernization.

On the whole, the development project presented practical solutions to all of the previous problems in the area such as traffic jams, poor infrastructure, old or deteriorated accommodations, and the Mosque’s limited capacity. Although the project provided enormous capacity for worshippers from around the world who want to visit the Prophet’s Mosque, it has had negative impacts on the local identity of the place. The social cohesion among residents of the central region, which was associated with urban morphology, and the symbiotic relationship between landlords and visitors all disappeared in the new layout.<sup>53</sup>



**Figure 2.20**  
*The Prophet’s Mosque and the hotels around it, and mount Uhud at the background.*



*Figure 2.21*  
*Prophet's Mosque major expansion in 1990.*





## **03 DESIGN GUIDELINES & PRECEDENTS**

### 3.1 Introduction

Chapter 2 concludes three major issues of the site that can be summarized as:

- 1. Visitor's experience:** the current experience is not as would be expected of a historical city like Medina.
- 2. Place identity:** the existing place identity does not reflect the long history and the great traditional heritages of Medina.
- 3. The public space:** the central zone lacks open public spaces and green spaces.

Accordingly, the thesis question that will be explored is: How could an urban park at the central part of Medina be productive? The term productive means to match visitor's expectations and to address the identity of the place. The design intervention has major design goals that can be outlined:

- Propose a multi-use public space that reflects the identity of the place.
- Restore the cultural heritage of the city.
- Enhance the experience of the central zone.
- Involve local communities to be part in the development of the central zone.
- Create a buffer zone between the public and the private zones.

However, before proposing a design intervention that will overcome the existing issues of the site and meet the design goals, a precedent analysis should be conducted to research alternative options and solutions to those issues. The selection of the coming precedents

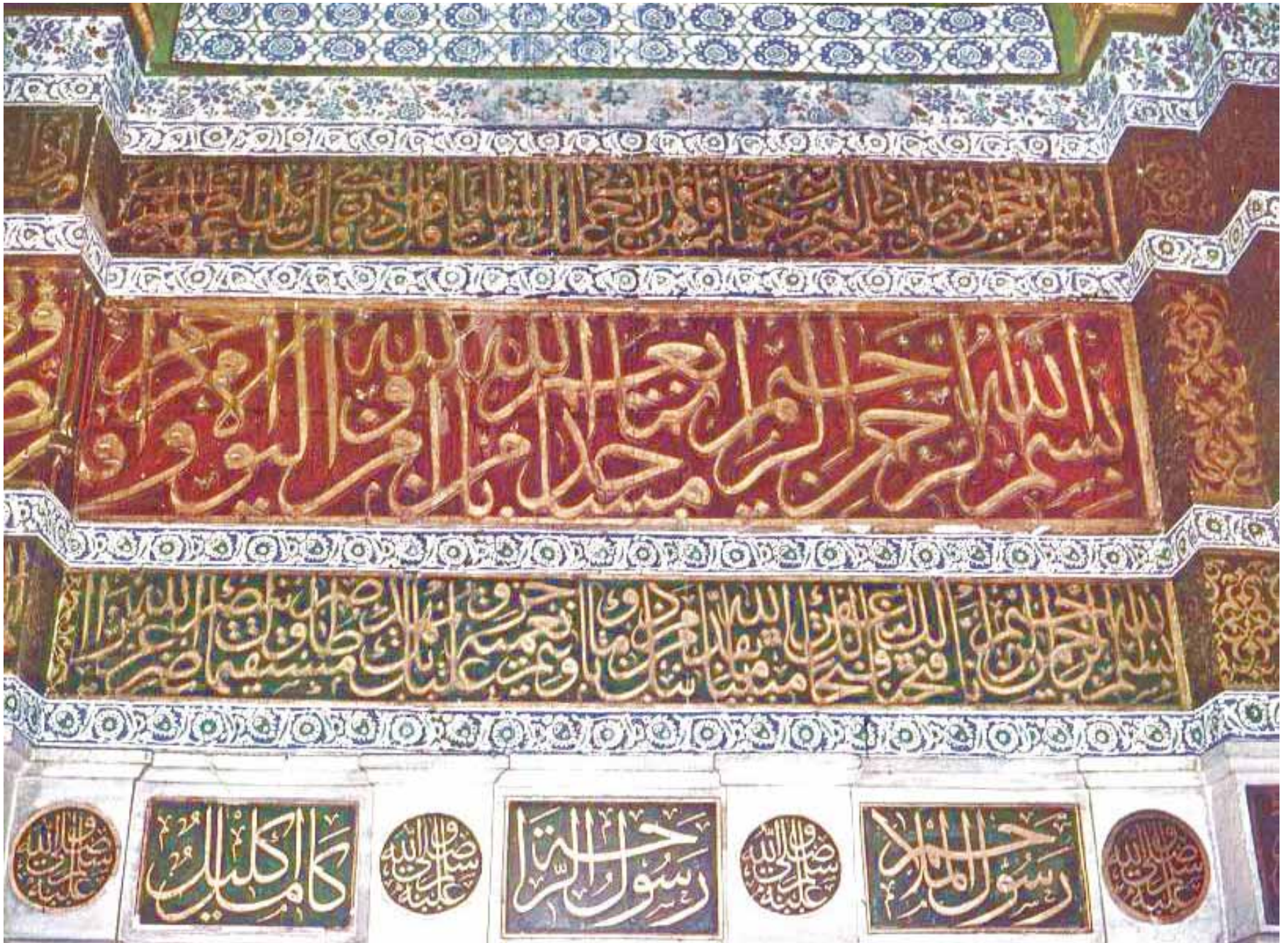
was carried out based on the following criteria: using Islamic geometric pattern, native species landscape, mashrabiya screen concept in modern language, and super structure, as well as reflecting the historic identity and memory of the place. Furthermore, the analysis was executed by looking carefully at the aesthetics, functionality, style, building materials, environment, landscape, and context of the project. The analysis includes a short description of the project, its significance, and how it relates to the proposed intervention. In addition, a number of design guidelines were generated after precedent analysis. These guidelines will be used for developing the design intervention.

**Figure 3.1 (cover)**

*Internal ceiling of one of the domes within the Prophet's Mosque, Madinah.*

**Figure 3.2 (opposite)**

*Verses from the Koran and the names of the Prophet Muhammad on the wall inside the Prophet's Mosque*



### 3.2 Islamic Geometric Pattern

The Islamic geometric pattern is a type of Islamic art that has been spread all over the Islamic world. But before exploring the geometric pattern further, we shall define the term “Islamic art”. According to Grabar (as cited in Abas<sup>54</sup>, 2007, p. 6) Islamic art means “the art produced by a culture or civilization in which the majority of the population, or at least the ruling element, profess the faith of Islam. The artist who actually produced a work of Islamic art may or may not be a Muslim”.<sup>55</sup> Moreover, Islamic civilization turned to geometry for number of reasons that could be summarized in the following quote:

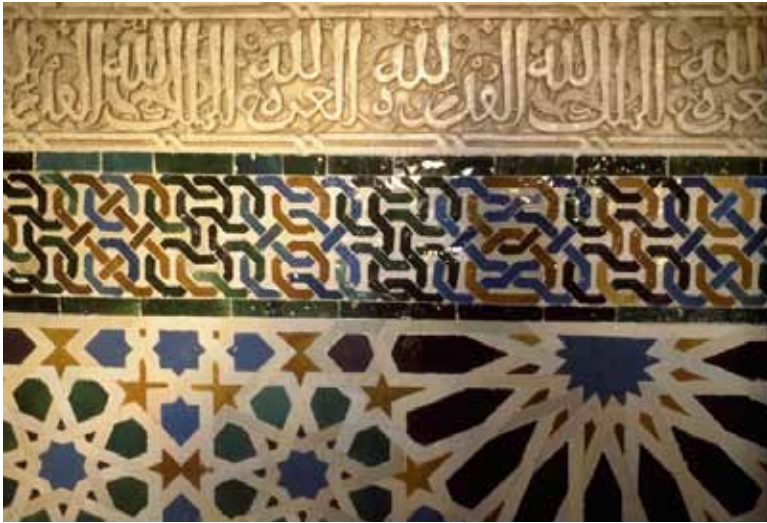
*“The passion for abstraction, the search for unity, and the involvement with heavens were the driving psychological mechanisms, which led Islamic art to geometry”<sup>56</sup>*

That is to say, the great passion to replace humanlike images of God with a single abstraction has driven the Islamic civilization to search for abstraction in geometry. For Muslims, geometry is the intermediary language between material and spiritual world and is a representation of unity. In addition, the Islamic geometric pattern has significant characteristics that it can be recognized by. The most prominent character that been commonly used is the symmetric star shape, which can have six, eight, ten, twelve, and up to ninety six rays. But the question is: why are star shapes so heavily used in the pattern? For Islamic culture stars have a unique significance for many reasons. Usually nomadic people are



**Figure 3.3**  
*Detail of patterns on one of the Prophet Mosque's gate*





**Figure 3.4**  
*Detail of wall decorated with calligraphic stucco work and glazed ceramic tile mosaics in geometric patterns, 14th century, Alhambra*



**Figure 3.5**  
*Geometric patterns on the dome's interior, the Prophet Mosque*

guided by stars when travelling. And more importantly, Muslims need to locate the direction of Mecca five times a day for praying. For this reason Muslim scholars and intellectuals studied astronomy and related science in depth. Another recognizable character is the interlaced elements that composed the pattern. Generally, for tent-dweller cultures like Arabs, Turks from central Asia, Persians, Mongols, and Barbarians, interlacing is everything.<sup>57</sup> In essence, tent and carpet making is part of their culture. That is why most patterns are interlaced to represent their identity. Again, Arabic calligraphy is integrated with patterns to celebrate the words of God, since most calligraphy are quotes from the holy Quran. Two more features of the Islamic pattern that can also be recognized are: flow and boundlessness.<sup>58</sup> The pattern is flowing with neither a focal point nor an end point. Therefore a pattern can fill as much as space or surface area desired.

### 3.2.1 New Federal National Council's Parliament Building Complex, Abu Dhabi

\*All images courtesy of Ehrlich Architects

<b>Category</b>	Future Projects - Competition entries
<b>Location</b>	Abu Dhabi, United Arab Emirates
<b>Architects</b>	Ehrlich Architects, Culver City, United States of America Ehrlich Architects (Design Architect), United States of America Godwin Austen Johnson - GAJ (Executive Architect), United Arab Emirates

*"The New Parliament Building Complex will balance Islamic heritage with UAE's global contemporary aspirations, where modernity and tradition are in harmonious balance," explained Steven Ehrlich, Ehrlich Architects' Design Principal.<sup>59</sup>*

The anchor feature of this project is the shading structure that is composed of concrete ribs. The pattern of the shelter is generated from a ten-sided star shape combined with the five-petaled desert flower shape. Again the infill *mashrabiya's* pattern is based on a ten-sided star shape. Unlike the traditional *mashrabiya* the sunscreen is domed instead of being flat. The Islamic geometric pattern is integrated in the masses and the plan layout is arranged in symmetrical order. The structural components were derived from the pattern. Not only that, but the pattern is also casted on the elevations when the sun hits the building. Traditionally Islamic architecture buildings exposed the pattern on the inside rather on the outside. In the New Parliament Building Complex we can see the opposite. Again, the shelter was designed based on concept of *mashrabiya*. Though it might cast some shadow, the motifs should be denser in order



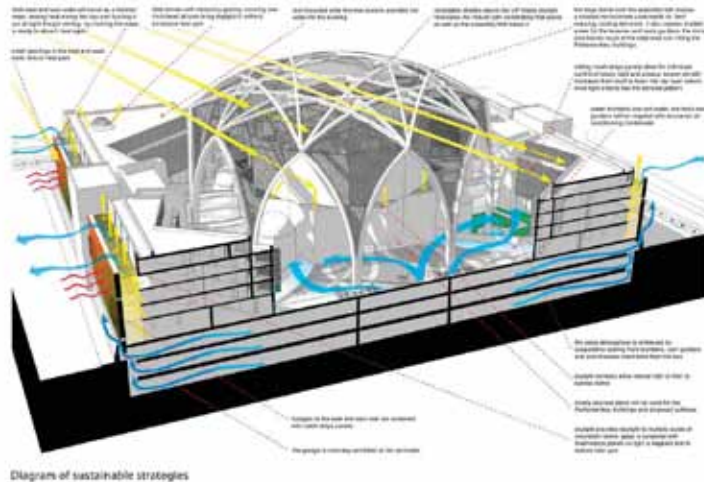
**Figure 3.6**  
New Parliament Building Complex by Ehrlich architects in Abu Dhabi, United Arab Emirates



**Figure 3.7**  
Building approach



**Figure 3.8**  
Interior view of the lighting effect



**Figure 3.9**  
Diagram of sustainable strategies



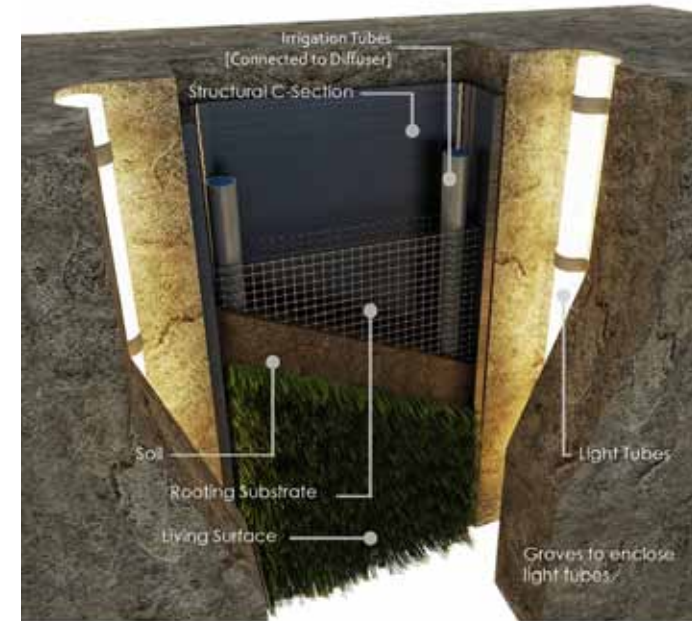
**Figure 3.10**  
Landscape Plan

to maintain enough shade. As intended by the designer, the building is a landmark on Abu Dhabi's sea front. The project integrates a sustainable strategy for energy consumption, passive cooling, and natural lighting. For example, gardens will be irrigated with recovered air conditioning condensate. The project is located in a similar climate condition to the thesis's design intervention, and it is using the concept of mashrabiya in large scale in the shelter while embracing the Islamic geometric pattern. Also, the relation between the human scale and shelter's height is interesting. In brief, the project successfully created a pleasant microclimate in this climate.

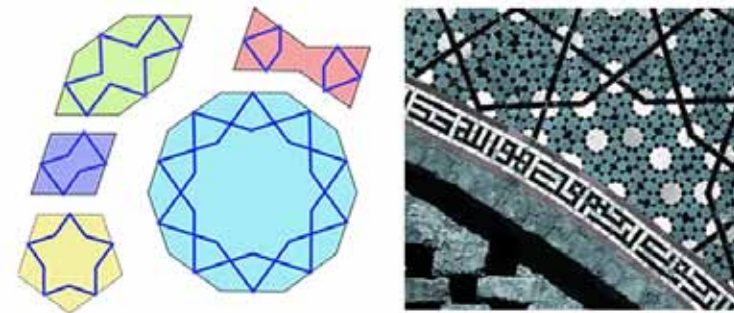
### 3.2.2 Al-Mualla Cemetery Mural, Mecca<sup>60</sup>

**Category** Future Projects - Competition entries  
**Location** Mecca, Saudi Arabia  
**Architects** Germany-based Egyptian architect Ahmed Al-Badawy next to Ahmed Enab, and Yasser Mehanna

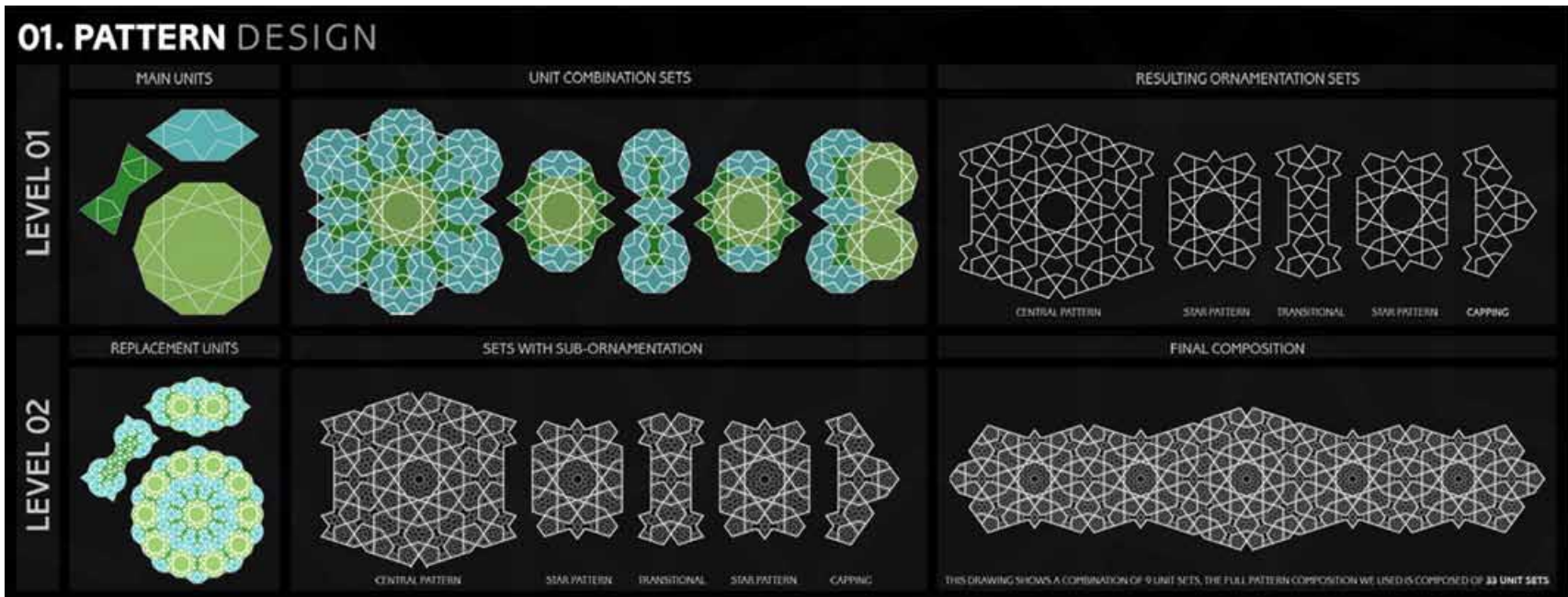
In this project, the designer wants to represent a valuable lesson of life and death. Not the death of a human being but the death of manners and morals. The existing rock formation represents the death and the carved patterns, which are filled with light and green, represent the life after death. The project is located in Mecca, which is the first holy city in Islam<sup>61</sup>. Thus, the designer has to find a suitable language that can represent the identity of the place and at the same time delivering the message he desired. The curved pattern was generated based on the Girih tiles pattern<sup>62</sup>. The designer began by generating the first level of the pattern and then added a second layer of the pattern to make it more dense and complicated. The project dominates in many features. First the pattern configuration represents the place's identity and is integrated with the rock formation. Second, the intervention did minimal alterations to the site. Lastly, the concept is simple and attractive at the same time.



**Figure 3.11**  
Technical details



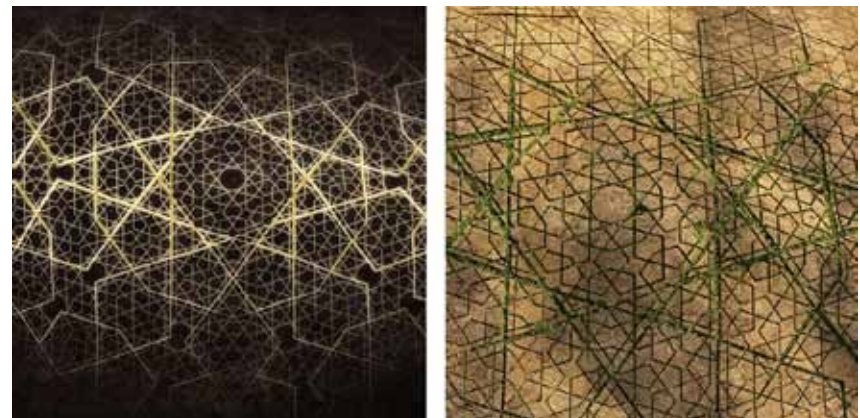
**Figure 3.12**  
Five shapes of Girih tiles



**Figure 3.13**  
Design and Scripting Process



**Figure 3.14**  
Human's eye view



**Figure 3.15**  
Night and day views

### 3.3 Desert Landscape and Sustainable Irrigation System

#### Native Species

Medina has an arid climate. Landscaping in Medina should be homogenous with the local climatic condition. For this reason a choice of native species is recommended. Native species are adapted to the local condition and can grow and flourish easily<sup>63</sup>. Adding to that is their ability to tolerate heat, drought, and desert wind<sup>64</sup>. They can resist better than introduced species. The long term local or native species also need less maintenance than other species which can maintain a low cost budget<sup>65</sup>. Moreover, as local species adapt to local conditions, they demand less water for irrigation. Aesthetically, local species have a flavour of the local identity<sup>66</sup>. And it will be a good representation of the place's identity. Again encouraging native species will enhance the national resource<sup>67</sup>. In essence, palm trees or *Phoenix dactylifera* have been associated with Medina's image since early times, and this association continues until today. Moreover, the formal symbol of Saudi Arabia is a palm tree and the colour green. Although the desert environment has a scarcity of water, adding water features to the design will help maintain a pleasant microclimate through evaporative cooling. In Islamic culture water symbolizes purity<sup>68</sup>.

#### Treated Greywater for Irrigation

Since Medina is a city located in a desert area, water resources are limited. Historically, irrigation in Medina has depended on natural resources such as wells and springs. And since the average rain fall is low



**Figure 3.16**  
*Date palm, Saudi Arabia*



**Figure 3.17**  
*Native landscape, Diplomatic Quarter, Riyadh, Saudi Arabia*



**Figure 3.18**  
*Wastewater treatment plant, Wadi Hanifah, Saudi Arabia*



**Figure 3.19**  
*Native landscape, Tuwaiq Palace, Riyadh, Saudi Arabia*

(37.4mm), today most irrigation is done by fresh water coming from the desalination plants on the west coast of Saudi Arabia. Desalinating sea water is an expensive process, and a high percentage of the fresh water is used for irrigation. Thus, an alternative sustainable strategy should be adapted. The intervention site is close to the amenities in the plaza of the Prophet's Mosque. According to statistics<sup>69</sup>, the plaza has a total of 6,314 sinks and 758 water fountains. And since all Muslims should be clean before prayer for a religious purpose. Therefore, many worshippers perform *Wudu* or ablution in the amenities of the mosque. (*Wudu*: is the Islamic procedure for washing parts of the body using water, typically in preparation for formal prayers.) According to Abu-Rizaiza,<sup>70</sup> worshippers in the Prophet's Mosque are using 3000 cubic meters of water per day for ablution and other washing purposes during the low season period, and the number can reach up to 9000 cubic meters of water per day in a high season period. The sustainable strategy that is suggested by the intervention uses the treated ablution water from the Mosque's amenities for irrigation purposes. Recycling ablution water is a less complicated process than recycling sewage water because this type of wastewater does not contain body or food waste. The treatment can be done in three procedures: first the water passes through a sand layer to isolate solid substances, then it passes through a layer of enriched carbon to get rid of any unpleasant odor. Water is then disinfected by passing through a chlorine pump to prevent the growth of bacteria<sup>71</sup>. Treated water will be gathered in a ground storage tank connected to a sprinkler irrigation system for the intervention. A similar system can be found in Mohammed Hamoud Mosque in Al-Sib, near the Omani capital, Muscat<sup>72</sup>.

### 3.3.1 Diplomatic Quarter Landscaping, Riyadh

“The site and its surroundings are desert land; the landform of the area is characterized by the vast expanse of the flat plateau, precipitous escarpment of the Wadi Hanifa and the latter’s tributaries which flow into the valley to form one of the most interesting topographical features in this area” (Master Plan Report)<sup>73</sup>

The landscaping development of the diplomatic quarter fall into two categories: intensive landscape and extensive landscape. The intensive landscaping is defined as an area requiring irrigation. But the extensive landscaping is defined as an area that will be irrigated minimally or not at all. The main issue of this project is to use water economically since the maximum average monthly rainfall of Riyadh reaches 100mm.<sup>74</sup> Irrigation water comes from sewage treated plant onsite. Also, the design principles are driven from the traditions of Andalusian gardens and the desert landscape. The project considers the socio-cultural aspects of the Saudi culture of privacy. Moreover, by applying several strategies, the project helps improve the micro-climate. And the sense of open desert is experienced throughout the site. Again the project incorporated local materials such as sand, rock, gravel, and limestone, which successfully reflects upon the local identity. Also over 10,000 Phoenix dactylifera (date palm) were planted along with other low-water consumer species.<sup>75</sup> It is not only a public garden but also a conservatory that helps recover the endangered species of plants, animals, and birds.<sup>76</sup> The diplomatic Quarter landscape is a significant precedent since it illustrates how to use native species and local materials within a similar climatic condition as Medina. Moreover, the minimal use of water and the treated sewage for irrigation is a successful approach that could be integral in the proposed design intervention.



**Figure 3.20**  
*One of small gardens in the Diplomatic Quarter*



**Figure 3.21**  
*Native species along with local stones in the park*





**Figure 3.22**  
*Diplomatic Quarter Master Plan*



**Figure 3.23**  
*Al-Kindi Plaza, Diplomatic Quarter*



**Figure 3.24**  
*Water feature in the Diplomatic Quarter*

### 3.4 The Mashrabiya Screen

Shaded areas are most preferable for outdoor public spaces, especially in an arid region. That is because the temperature can drop dramatically in shaded areas compared to un-shaded areas. Also, Medina and most cities located in the Arabian Desert have common climatic conditions where that are sunny all year around. Providing shade to outdoor spaces is a common strategy used in this region. It allows people to sit and enjoy the outdoor spaces.

However, the concept of *mashrabiya* is used for interior spaces rather than the exterior one. The mashrabiya is an Arabic term that refers to a shading technique used to cover the window openings. According to some resources, the name mashrabiya is originated from an Arabic verb, mashrab, which is a drinking place.<sup>77</sup> It refers to a place where water pots were put to be cooled by the blowing breeze. The concept was developed until it became a distinctive feature of an Arab city. The mashrabiya is made of wooden latticework that is composed of small pieces of wood which are joined together in a geometric pattern without using nails or glue. The composed screen breaks the sunlight into smaller segments so that it provides shade but at the same time allows for breezes to pass through. Also, it allows users from inside to see the outside without being seen. Traditionally it was a common feature of the Islamic region, and particularly throughout the Arab East.<sup>78</sup> It actually served as window, curtain, and air conditioner along with its privacy purpose.<sup>79</sup>



**Figure 3.25**  
*Mashrabiya screen from inside, Al-Suhaymi house, Cairo*



**Figure 3.26**  
*The Mashrabiya covers the opening*



The concept of mashrabiya will be integrated into the canopy as a design guideline. That is to say it will be as a shading device for the outdoor spaces. Again, a mashrabiya is composed of multiple layers of patterns. The overall pattern is broken down into smaller segments and each segment could be broken down into smaller segments which basically make up the entire surface. A similar composition will be used in the canopy design. Therefore, the patterned shadow will create an interesting texture on the surface.

**Figure 3.27**  
*Example of mashrabiya in downtown Jeddah, Saudi Arabia*

### 3.4.1 Masdar Institute, Abu Dhabi

A good example of a contemporary reinterpretation of mashrabiya screen is presented at Masdar institute. The institute is part of the master development of Masdar City. At the residential buildings, windows are covered and protected by a contemporary mashrabiya screens which are made of glass-reinforced concrete (GRC).<sup>80</sup> They function as the traditional mashrabiya screen. They provide shade from the sun, thus preventing solar gain on the building walls, they allow residents to look out at the street below while maintaining their privacy, and they permit air to pass through to cool the balconies. The screens were coloured in a red sand colour to integrate with the desert context and to minimize the required maintenance.<sup>81</sup> Again the perforations for light and shade are based on the Islamic geometric patterns. In general, the design incorporates many traditional, Arab architectural concepts. For example, the building's layout and the narrow pedestrian streets were incorporated to create shaded walkways while allowing local breezes to pass in the day time. Moreover, Fosters and partners developed a modern wind tower, which is a redefinition of a traditional wind tower that had been used in the Arabian Gulf region for centuries. Also worth mentioning that public spaces are cooled by air currents that are channeled by the wind tower. In addition, an evaporative cooling strategy is introduced by using green landscape and water features. Sewage water is treated and recycled on site. In conclusion, Masdar institute successfully created a comfortable microclimate within the harsh desert climate.



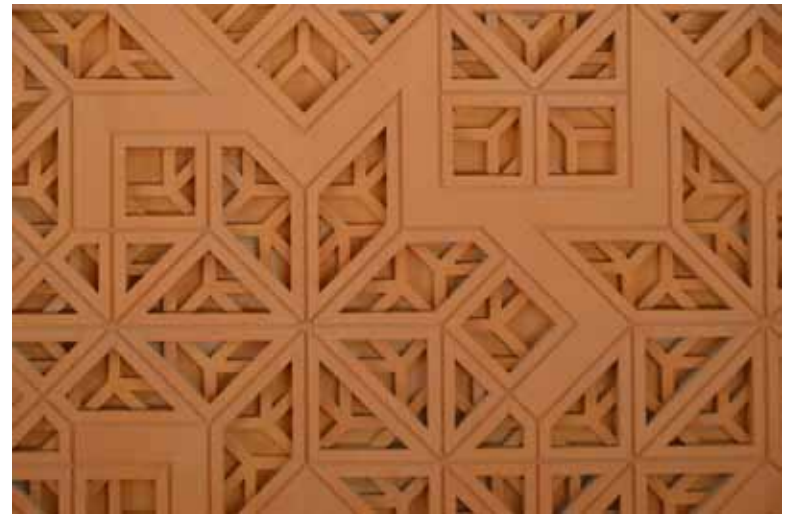
**Figure 3.28**  
*Glass-reinforced concrete mashrabiya screens shield the residential buildings' balconies*



**Figure 3.29**  
*The buildings are configured to create narrow, colonnaded urban spaces that are in shade for much of the day*



**Figure 3.30**  
*Photovoltaic panels project from the roofs over the edges of the courtyards and streets, providing shade and energy generation*



**Figure 3.31**  
*Contemporary interpretation of Islamic geometric pattern*



**Figure 3.32**  
*Residential facade, Modular unit on Site*

### 3.4.2 Louvre, Abu Dhabi

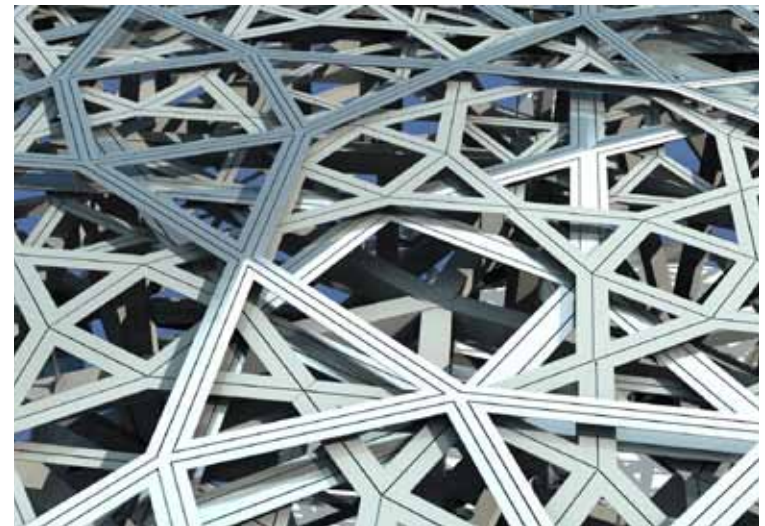
*“pluie de lumieres” (rain of light) and*

*“eclats de soleil” (bursts of sunlight)*

The proposed design of the Louvre museum in Abu Dhabi is inspired by the traditional layout of Arabian Souk. The main feature of the complex is its great dome, 8 meters (almost 600 feet) in diameter, floating above a cluster of buildings and waterways. Jean Nouvel integrated the concept of rain of light into the design. The space below is showered by diffused light from the perforation above which created by interlaced pattern. The canopy is supported by four perimeter pillars that extend to the bedrocks. The pattern of the perforation is based on the Islamic geometric pattern. The interlaced patterns have different density's based on the preferred amount of light. The canopy design also incorporates multi-layered and perforated external cladding. The structural system appeared to be a space frame dome that was covered from top to bottom to allow more refined light segments. Also, a prototype model at a scale of 1:33 was constructed and tested on the same location of the building.<sup>82</sup>



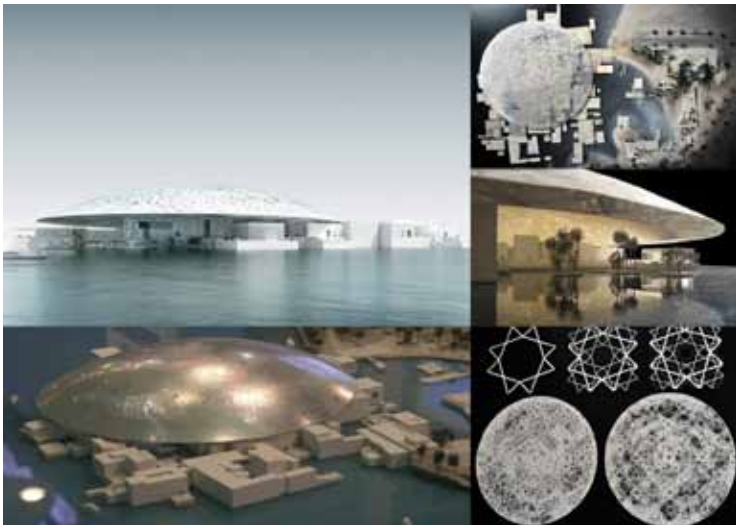
**Figure 3.33**  
*Rain of light in the interior spaces*



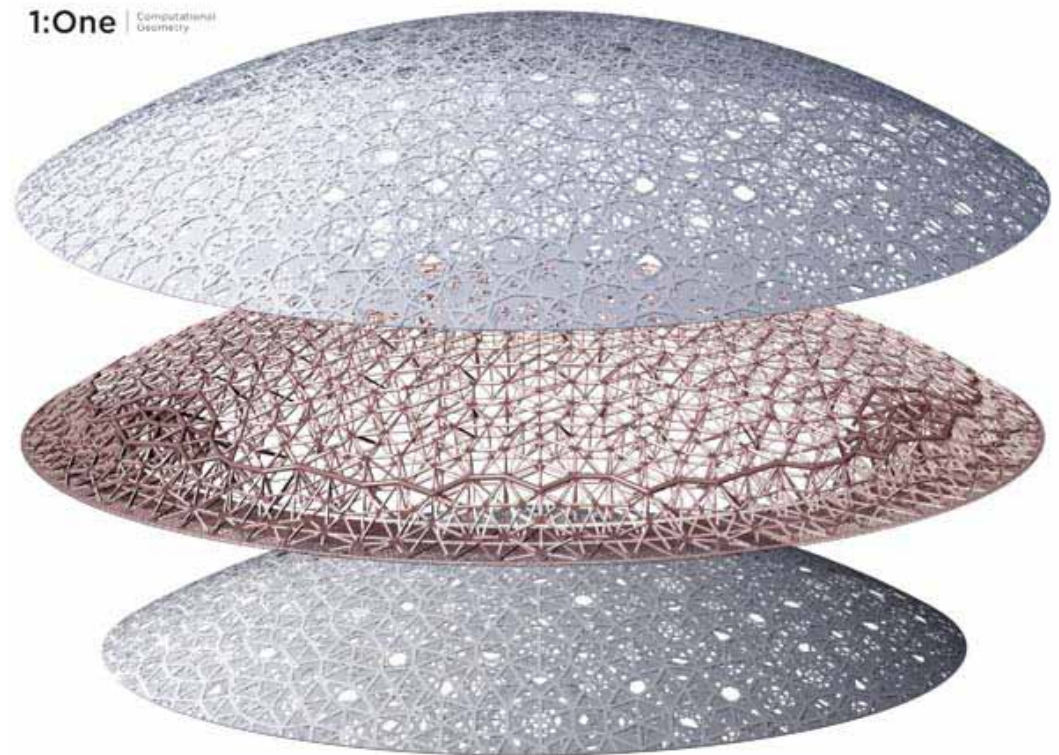
**Figure 3.34**  
*Detail of Light-filtering structure*



**Figure 3.35**  
The structure of the Louvre model at scale 1:33



**Figure 3.36**  
Parti diagrams



**Figure 3.37**  
Light-filtering cladding and structure of the dome

### 3.5 Super Structure

The proposal site is located at the heart of the central part of Medina, where the Prophet's Mosque and the surrounding hotel buildings are located. Medina's Development Commission established building codes for the central part, the code specified a maximum of 14-storys. And the plaza of the mosque is covered by 15m-high umbrellas. Therefore, the intervention should be in an intermediate scale between the 15-meter-umbrella and the 50-meter-hotels to fit within the context. Again, the site area is 51,330 square meters. Thus, to maintain a reasonable proportion, the design intervention should accommodate the designated volume. To have a shaded canopy with an approximate scale, a special structural solution is needed. One way is to combine tension and compression structure. Using super structure is not only for functional purposes but also for the technology show case. The project will exemplify the art and the science of the engineering of the era. Although respecting the identity of the place is a primary goal of the design intervention, using the modern technology to translate the same idea in a modern language does not conflict with the conservation goal. Using a large structure to cover a long span is preferable, especially when designing for public activity.



**Figure 3.38**

*Walkway in the heavens: The aerial bridge suspended high in the 'tree' tops offer panoramic views of the surrounding area, Gardens by the bay, Singapore*

**Figure 3.39 (opposite)**

*The roof of the Hajj Terminal in Jeddah, Saudi Arabia, echoes the design of shelters and pilgrim tents*





### 3.5.1 Munich Airport Centre, Munich

<b>Location:</b>	Munich, Germany
<b>Building ground floor:</b>	50,000 square meters
<b>Roof area:</b>	18,800 square meters
<b>Roof span:</b>	90 meters
<b>Roof height:</b>	41 meters

The Munich Airport Centre or MAC is a great example of combining public space, business centre, and transportation facility all together. The main function of the space is not for transportation only, but also for an urban experience. It creates a livable and visible identity of the city of Munich. It represents the local identity within global networks. Moreover, the overall plan enhances the concept of integrating the landscape into an airport. It demonstrates a synthesis image of landscape, forums, spaces, and nature. The dominant feature of the centre is the glass and steel structural roof that covers the space. The MAC roof has crossing box girders supported by rods from tall towers with infills of Teflon-coated fiberglass membrane and glass.<sup>83</sup> This precedent has many things to offer for the proposed design intervention due to its similar structure, scale, proportion, and function. Although, the ground plan is open to allow more flexibility in the time of an event, it is a large empty space in a non-event period. Moreover, the glass roof offers natural daylight which enhances the quality of the place. On the contrary, the building could incorporate architectural elements that maintain a pedestrian friendly scale.



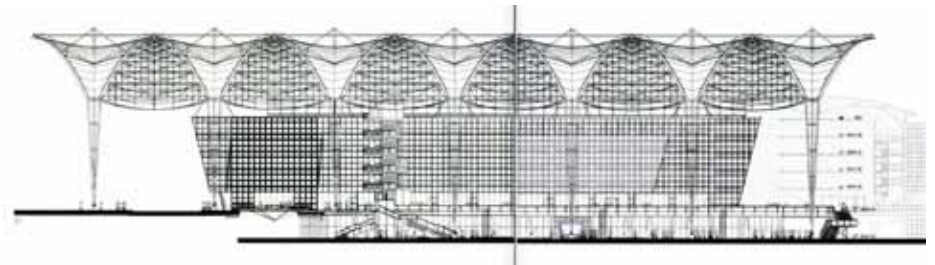
**Figure 3.40**  
*Public event under the roof*



**Figure 3.41**  
*Interior view showing the scale of the canopy, courtesy of Andrea Nagy*



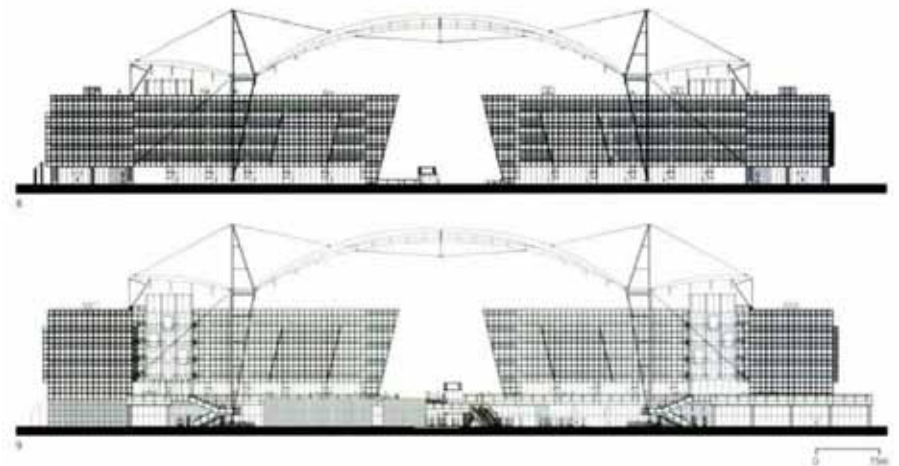
**Figure 3.42**  
*Bird's view for the whole complex*



**Figure 3.43**  
*East-West section*



**Figure 3.44**  
*Structural details, courtesy of Terri Boake*



**Figure 3.45**  
*West elevation, bottom: East elevation*

### 3.5.2 Millennium Dome, London

Architect: Richard Rogers Partnership  
Dates: 1996 - 1999  
Awards: Civic Trust Award Commendation 2000  
European Structural Steel Design Award 2000  
RIBA Award 2000  
Royal Academy Summer Exhibition 1998

- Providing 100,000square meters of enclosed space (2.2 million cubic metres), the structure is 365m in diameter, with a circumference of one kilometre and a maximum height of 50 m.
- The Dome is suspended from a series of twelve 100m steel masts, held in place by more than 70km of high-strength steel cable which, in turn, support the Teflon-coated glass fibre roof.

Source: rsh-p.com<sup>84</sup>

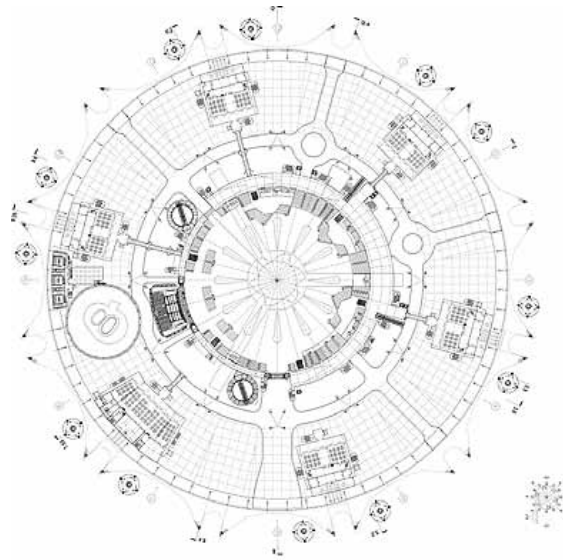
Millennium Dome is a significant project that has many influences to the design intervention. It is a good example of a contemporary large scale lightweight structure. Moreover, the project represents a successful development on a contaminated gas work (Brownfield) area and an iconic symbol that celebrates the new millennium. However, the main focus of the analysis is on the structural system of the complex and how large of a span has been accomplished through tension cables. In essence, the dome shape form is supported by 12 yellow mast towers that are each composed of 8 circular hollow section members. Each mast is 90m high and is supported on a pyramidal base 10m high. There are 23 cables connecting into each masthead. The site had to accommodate a vent structure for the Blackwall tunnel which passed under it. The material for cladding the dome is PTFE coated glass fibre, which is a durable and dirt resistant material.



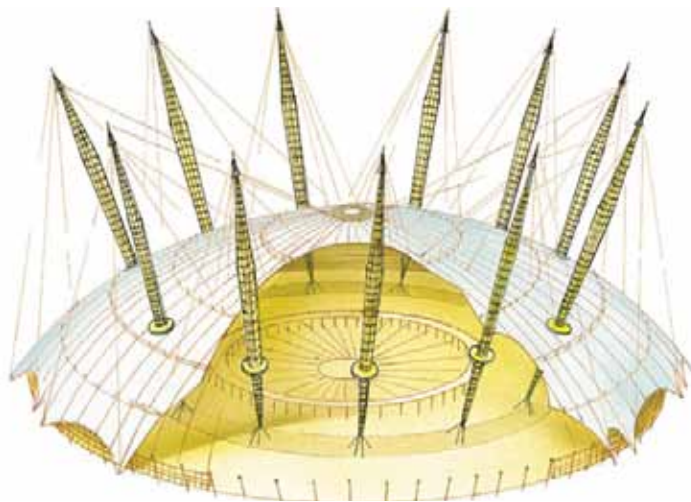
**Figure 3.46**  
*Bird's eye view of the Millennium Dome*



**Figure 3.47**  
*The structural components of the dome*



**Figure 3.48**  
*Ground floor plan of the Millennium facility*



**Figure 3.49**  
*Diagram showing the masts and their connections*



**Figure 3.50**  
*The pyramidal base 10m high*

### 3.6 Sense of Place and Identity

The absence of a definite place identity in Medina's central zone affects the sense of place which, as a result, affects the experience of the place. Lack of place identity resulted from the globalization and modernization trends in the region. Most public spaces in the region were built ignoring the local identity of the place and only following the global trends. A sense of place is a term referring to the attribution of non-material characteristics to a place<sup>85</sup>. It is the spirit of the place; its genius loci. Moreover, sense of place does not only help conserve the cultural heritage of the region, but it makes the experience memorable.<sup>86</sup> The proposed design intervention should enhance the sense of the place which will improve the overall experience. Medina is a historic city and it has a great tradition and memory. It does not need to construct a new identity; it already has one. However, the identity should be revived in order to make a sense of the place. The design should reflect the value of the place which is recognized by most users. Again, it should revive the historical and traditional identity of the place. Making a place should not focus only on the physical components of the place, but should encounter the social and spiritual qualities of the place<sup>87</sup>. Careful attention should be paid to the symbolic meaning of a settlement. The proposed site has some existing features that could be integrated in the design. Adding local features, local materials, and native plants will also enhance the sense of the place<sup>88</sup>. The experience of the place should be enjoyable and memorable for both locals and visitors.



**Figure 3.51**  
*Top view of a traditional market place in downtown Jeddah, Saudi Arabia*



**Figure 3.52**  
*Traditional market place in downtown Jeddah, Saudi Arabia*



**Figure 3.53**

*The Place Diagram is one of the tools PPS has developed to help communities evaluate places. The inner ring represents key attributes, the middle ring intangible qualities, and the outer ring measurable data.*

### 3.6.1 Samir Kassir Square, Beirut

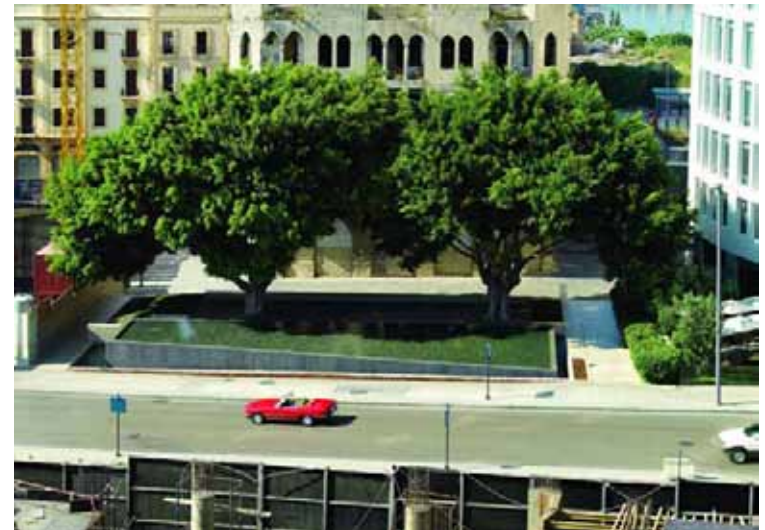
Beirut, Lebanon

Architect: Vladimir Djurovic Landscape Architecture

Total site area: 815 square meters

Total actual cost: US\$ 322,170.00

Samir Kassir Square, formerly known as Four Square, is located in the heart of the old city of Beirut, Lebanon. The square does not only provide a public space but also reflects upon the historic identity and memory of the place. It is designed by the Lebanese landscape architect Vladimir Djurovic, who was inspired by the existing historic Ficus trees. The trees are anchor points in the project and were integrated in the design. They protect and provide shade to the site. The site has a Mediterranean climate that is fairly mild during the year; however it considers being cold in the winter and hot and humid in the summer. The square contains a water feature that acts as a mirror and provides visual balance to the site. The designer carefully chose local materials to be incorporated within the layout. For instance, a 20-meter-long stone bench made of a local stone called ‘Kour’.<sup>89</sup> The square does not only contribute to the city at an urban scale, but also at individual scale. It is a landmark and a place for solitary contemplation. The challenge was to create a quiet place of refuge in the middle of the city on a limited piece of land. However, the designer successfully creates a sense of presence by a simple design solution. Sitting under the shade, listening to sound of water, and seeing the image of the city reflected on the surface of the water, is the pleasant experience offered by the square.

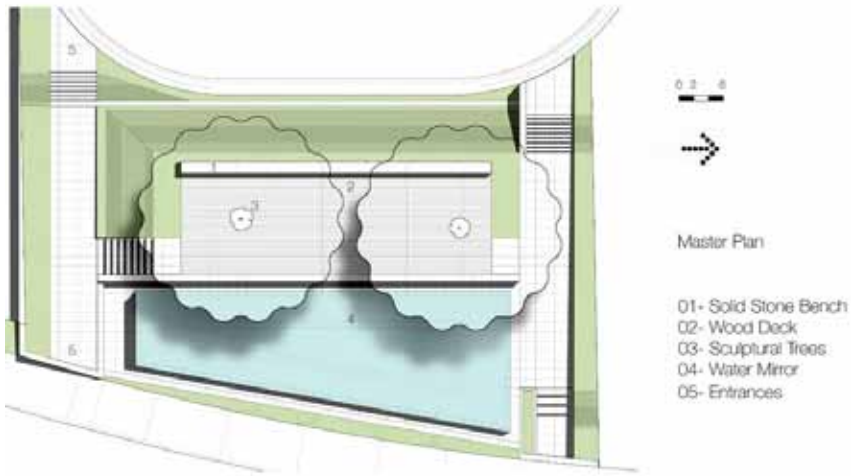


**Figure 3.54**  
*Bird's-eye view of site from the east*



**Figure 3.55**  
*View of reflecting pool from the northeast*



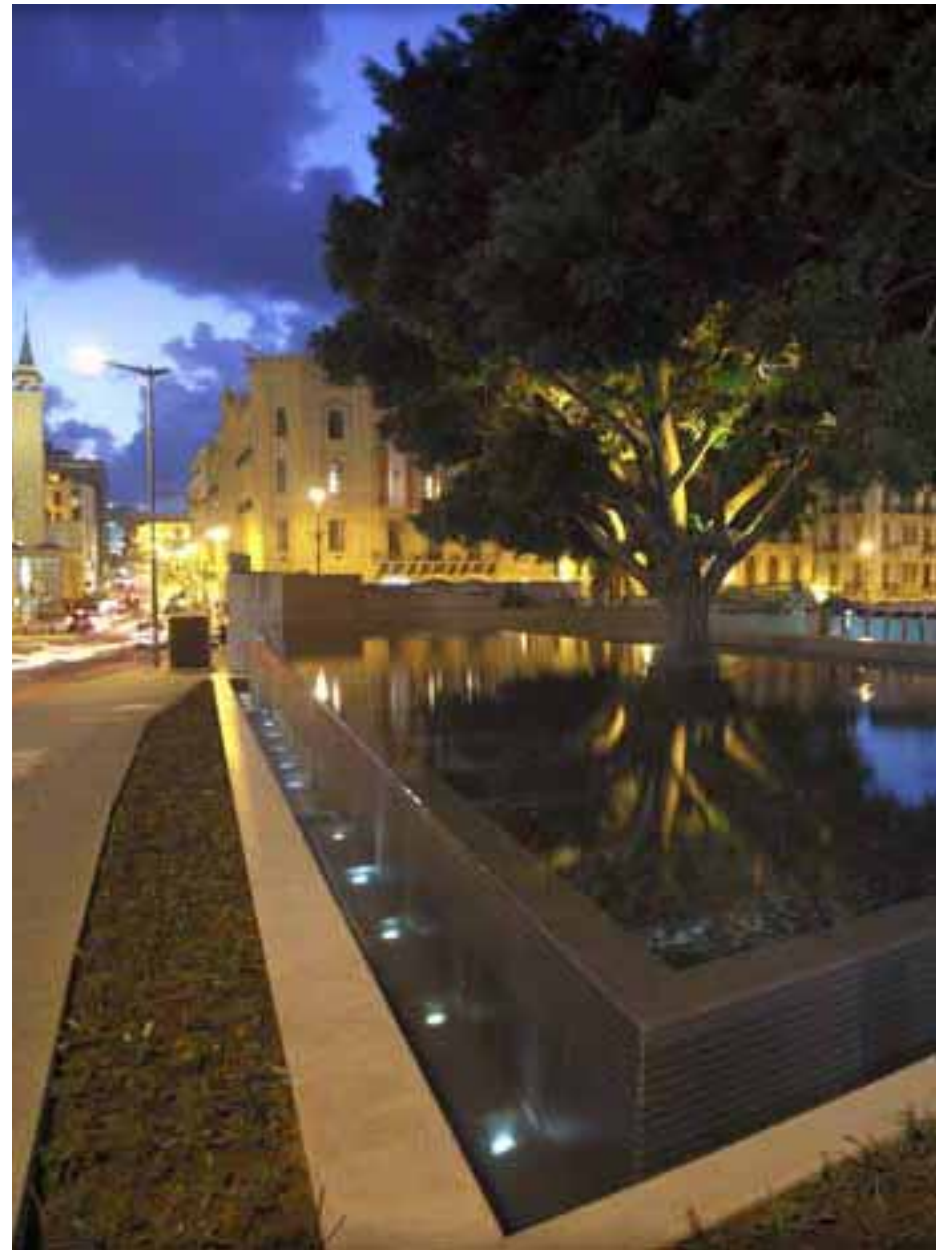


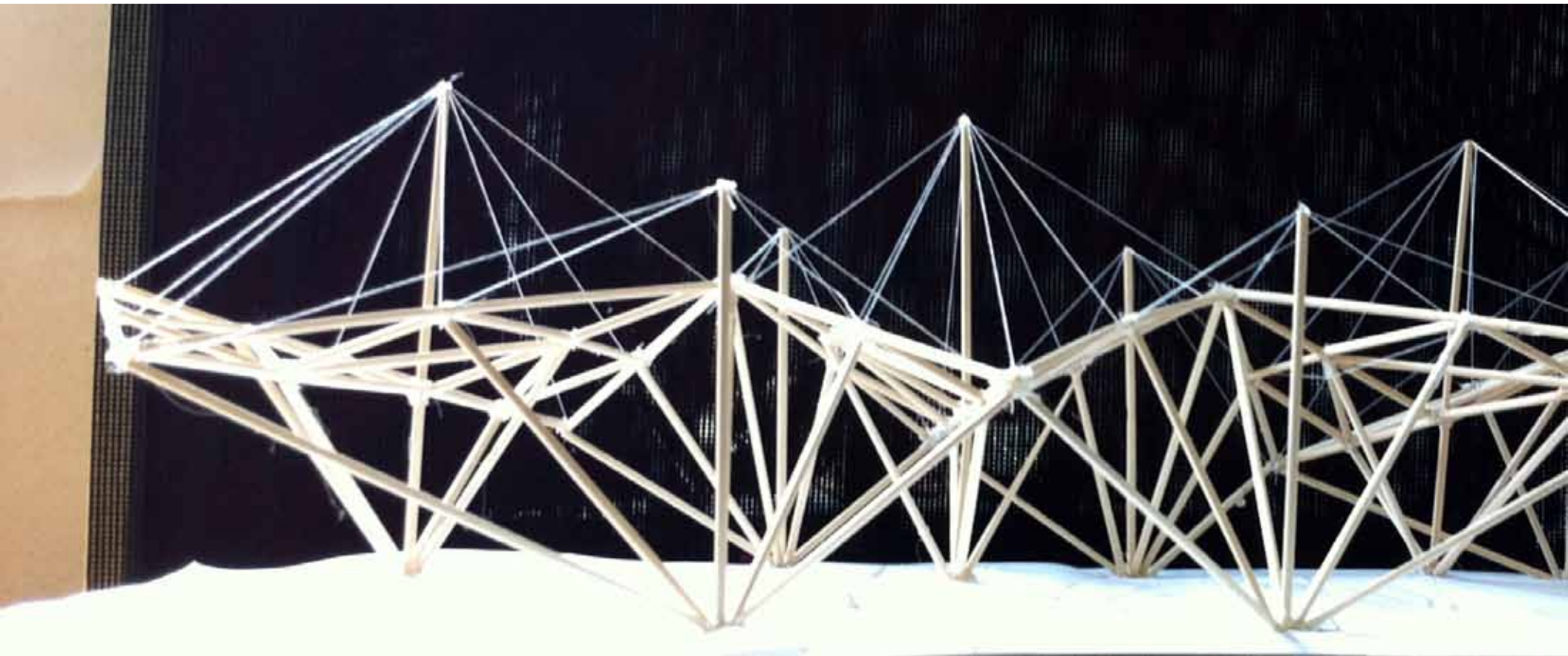
**Figure 3.56**  
Site plan

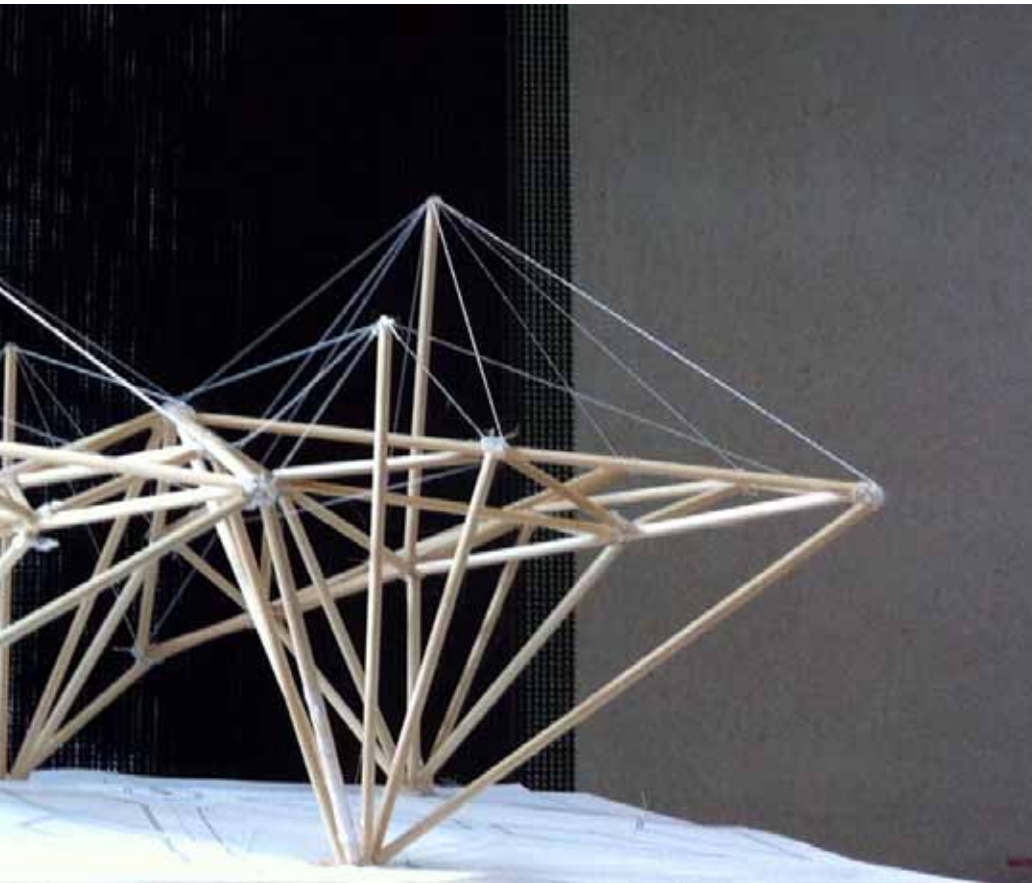


**Figure 3.57**  
View of reflecting pool from the south showing stairs leading to wooden deck area.

**Figure 3.58 (right)**  
Water feature integrates with context







## **04 THE PROPOSAL**

*Figure 4.1 (cover) study model*

*Figure 4.2 (opposite) site location*

## **4.1 Introduction**

My design intervention is an urban park (public space) located at the west periphery of the Prophet's Mosque. The park will offer visitors a quiet place of refuge within the busy surrounding urban context and will enhance the place identity and conserve some of the traditional heritage of the place. The program will consist of shading structures, eateries, seating areas, public spaces, walking paths, and vegetation. Chapter 4 includes five sections: Site analysis, design concept, project description, the proposal, and the details.

## Site Location



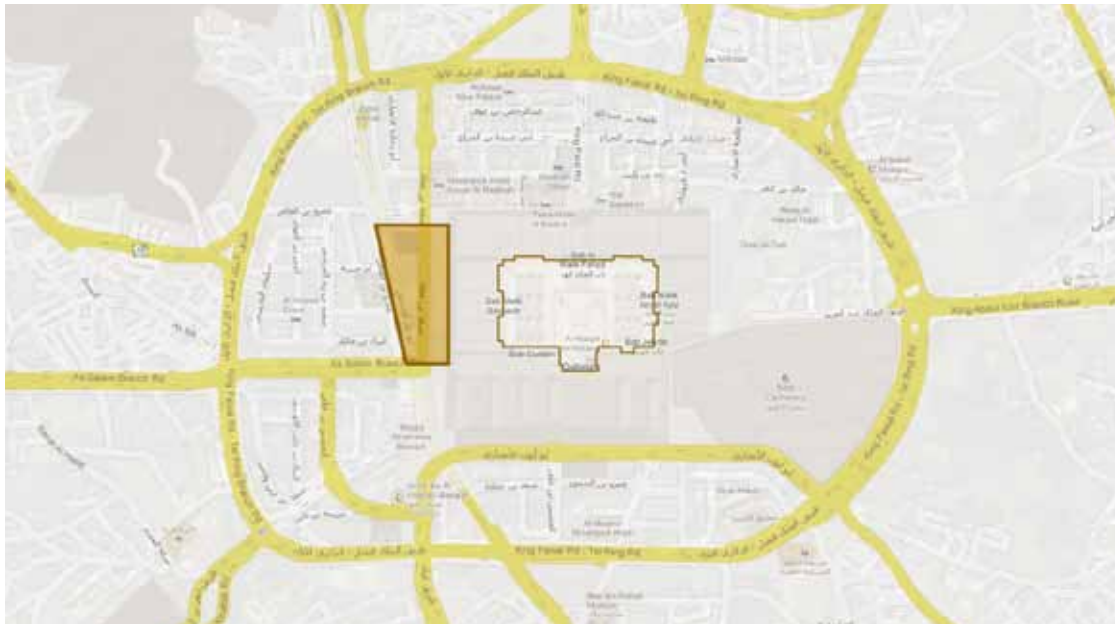
Kingdom of Saudi Arabia



Al-Madinah Province



City of Medina



Central Zone



Site Location

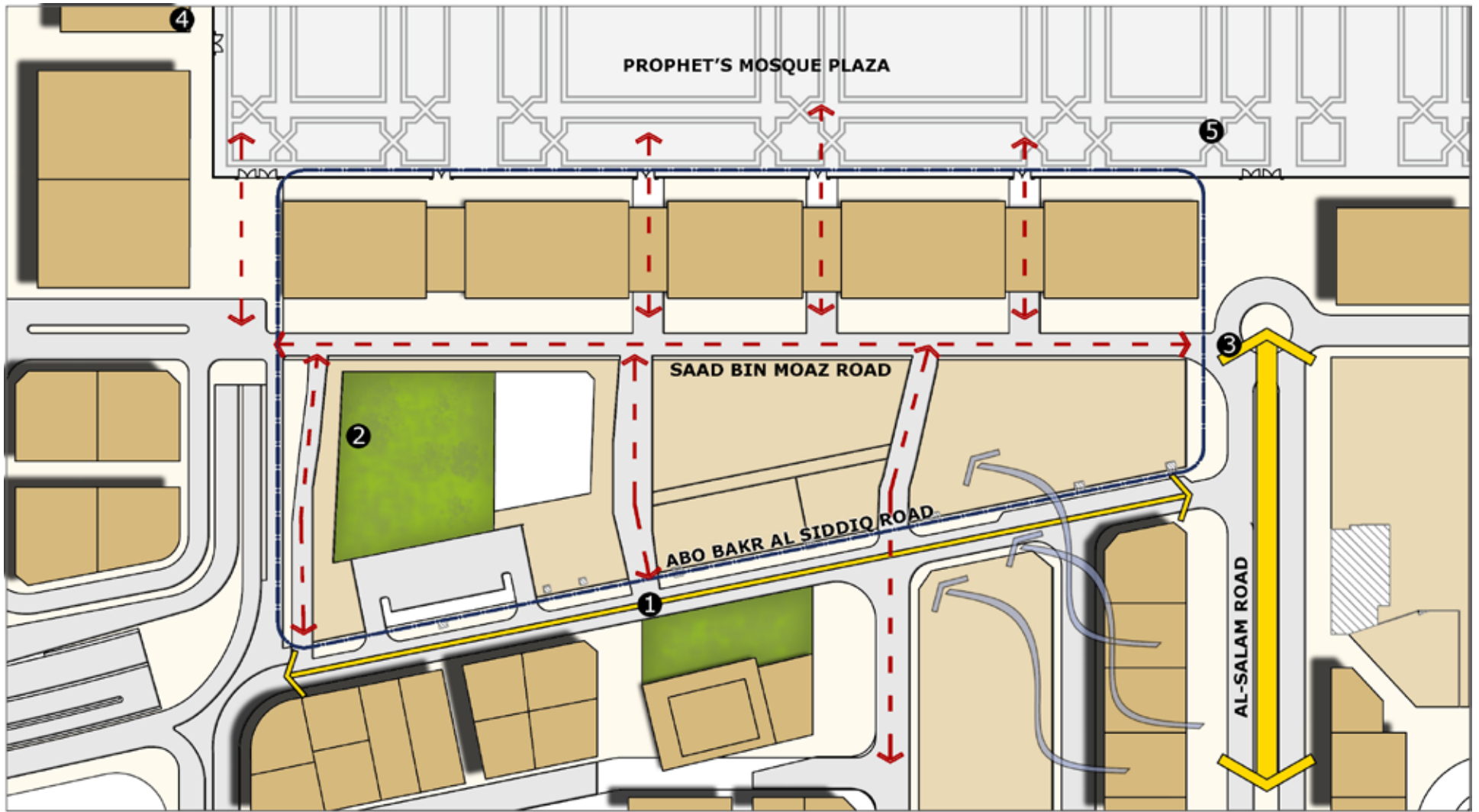
*Figure 4.3 (opposite) site analysis diagram*

## 4.2 Site Analysis

The intervention site was chosen based on a number of criteria. Firstly, it is located at the edge of the mosque's plaza, which gives it an advantage of accessibility to visitors. Secondly, it is at the line where the plaza meets the hotels. In other words, it is at the threshold of the mosque. It defines the boundary between the private, where luxurious hotels are, and the public, where all different classes can gather. Thirdly, most visitors who reside on the west side of the mosque are passing through the site during their journey to the mosque. Fourthly, the site was historically allocated for public use (market place) since the days of the Prophet (PBUH). When the community of Medina asked the Prophet (PBUH) to

allocate a market place for them, this site was chosen to be a public market. Prophet Muhammad (PBUH) is reported to have said: "This is your market, it is not to be narrowed (by acquiring and building, for instance) and no tax is to be collected from it." (Ibn Majah, tradition No. 2224)<sup>90</sup>.

The site is a trapezoid shape with a total area of 48,893 square meters. The main feature of the site is the existing public garden. The garden was believed to be at the location of *Saqifah bani Sa'idat* (a shelter where Bani Sa'idat tribe gathered at the early days of Islam). It is the place where people of Medina



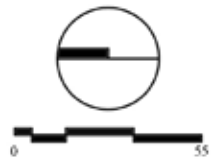
← - - - → PEDESTRIAN CIRCULATION

← - - - → TRAFFIC FLOW

↻ PREVAILING WINDS

HOTELS

GREEN SPACE



Climate data for Medina													
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
Average high °C (°F)	23 (73)	26 (78)	29 (85)	34 (93)	39 (102)	42 (107)	42 (107)	42 (107)	41 (106)	36 (97)	29 (85)	25 (77)	33.9 (93.1)
Average low °C (°F)	12 (54)	14 (57)	17 (63)	22 (71)	26 (78)	28 (83)	29 (84)	29 (85)	28 (82)	23 (73)	18 (64)	13 (56)	21.6 (70.8)
Precipitation mm (inches)	5 (0.2)	0 (0)	10 (0.4)	13 (0.5)	5 (0.2)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	10 (0.4)	5 (0.2)	48 (1.9)
Source: Weatherbase													

**Figure 4.4** Climate data for Medina

had gathered to discuss the next Muslim leader after the death of the Prophet Muhammad (PBUH). Abandoned market buildings are located on the east part of the site; they were designated for commercial use but they have been left uncompleted. The rest of the site is vacant land with pedestrian paths passing through it. The site is surrounded by hotels from the north and on the west side there are a number of hotels along with King Abdul-Aziz Library. Again, the plaza is located at the east side where four gates are opened. Generally, pedestrian circulation is actively flowing around and within the site, especially during the prayer times. Instead most vehicular circulation happens on the west and south

side. On the south side at Al-Salam Road, a high traffic volume occurred as opposed to the low traffic Abo Bakr Al-Siddiq Road on the west.

Medina is characterized by an arid climate<sup>91</sup>, which is characterized by drought and lack of rainfall. The high temperatures, ranging between 30° C and 45° C in the summer, and ranging between 10° C and 25° C in the winter. In addition, the average relative humidity ranges between 16 percent and 32 percent. Moreover, winds blow south-westerly, and are often hot and dry with an average speed 16 km/h.<sup>92</sup>





**Figure 4.5** (1) King Abdul-Aziz Library



**Figure 4.6** (2) Site of Saqifa-bani-Saedah



**Figure 4.7** (3) Southeastern corner of the site



**Figure 4.8** (4) Bird's eye view of the site from northeastern corner



**Figure 4.9** (5) The green dome

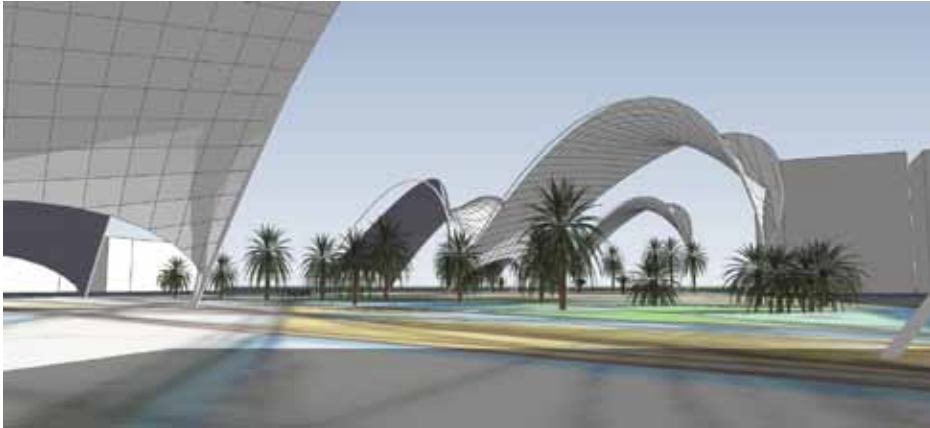
### 4.3 Design Concept

#### Alternative I

The design intervention went through many stages and had a number of alternatives. The first alternative was generated based on the rays from the Prophet Dome that connected together. The concept illustrates a set of waves that move away from the dome. It symbolizes simplicity, lightweight structure, dynamic, and openness. The main focus was on the tensile structure and the lines toward the dome. The form was generated after soap film experiment. Several wire frame models were made and dipped in a soap bowl to create the form of a tensile membrane. This experiment helps with understanding the relation between the frame and the membrane form. However, one of the major concepts of the design intervention is to reflect traditional Islamic geometry that will enhance the sense of the place. Unfortunately the form already has a dynamic representation which needs to be reconsidered.



*Figure 4.10 Parti sketch*



*Figure 4.11 Digital sketch*



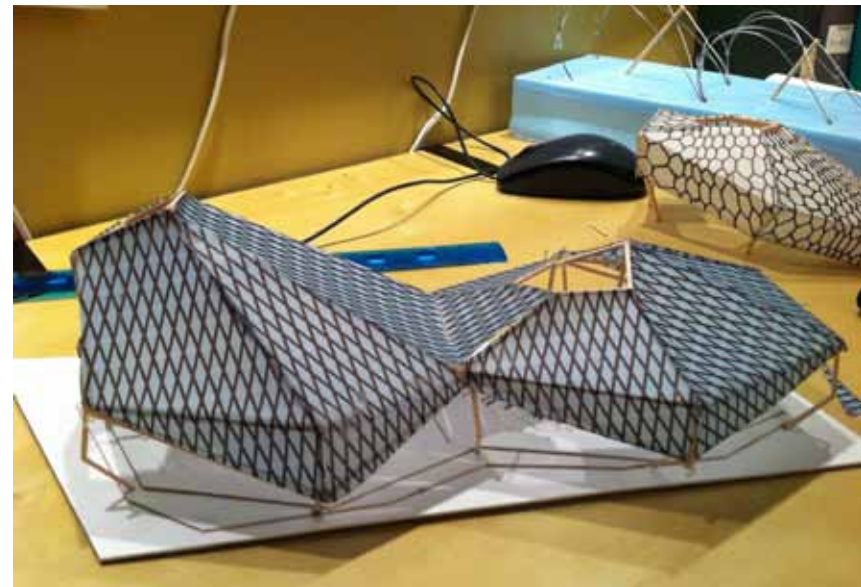
*Figure 4.12 The intervention within the site context*



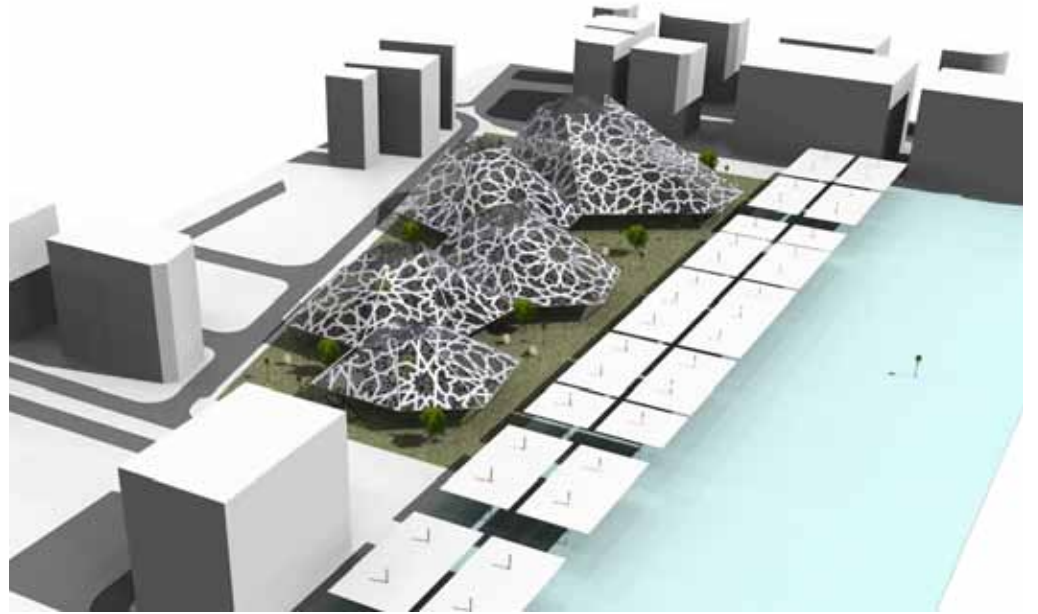
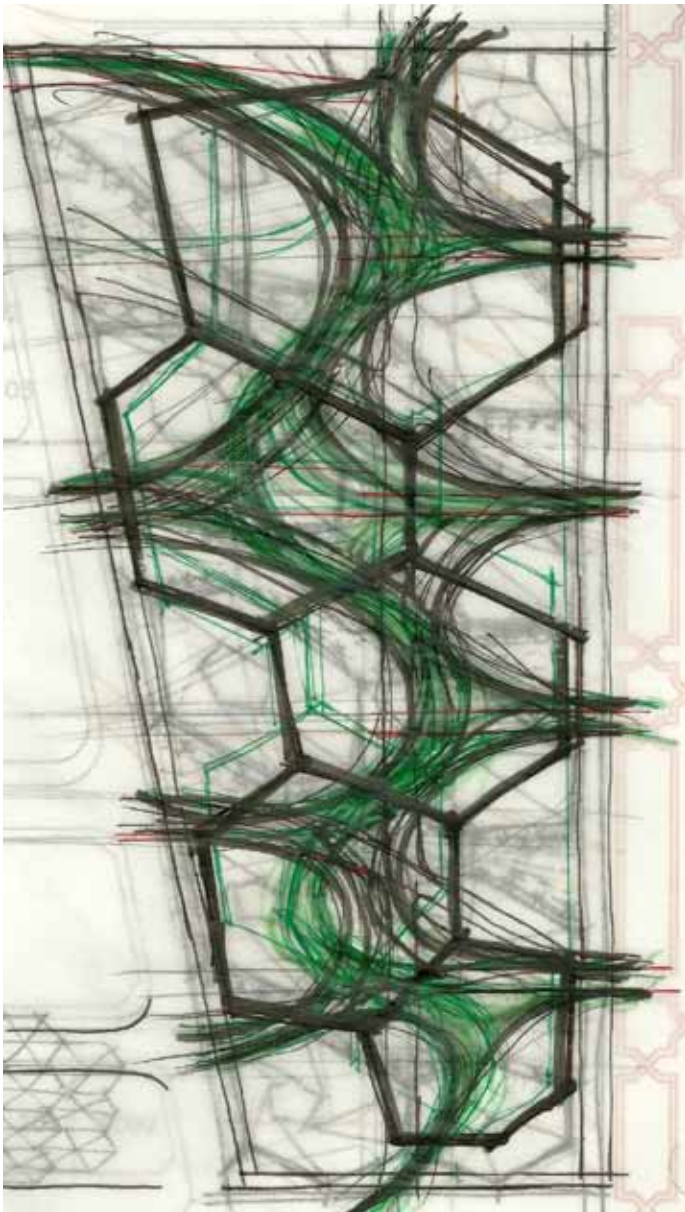
*Figure 4.13 Wire frame models*

## Alternative II

The second alternative was developed based on the geometric pattern of the plaza with respect to the orientation toward the dome and the concept of framing the sky. In this alternative, the steel lattice was introduced as a structural and aesthetic material. The design layout was based on the basic geometric grid in Islamic art e.g. hexagonal grid. Moreover, the skin of the structure is composed of double layers of steel lattice that constitute Islamic geometric pattern. Although the second alternative has more potential than the first, it has a number of issues to be considered. The overall form is composed of a number of units, each unit has a great representation alone than when attached to others. In addition, the layout design was not connected to the site context. In other words, the lines should be generated from the context and have strong relation with major axes. Moreover, the form will create a dark interior space because it is too heavy and bulky. Besides, the overall representation is not as dynamic as the first alternative.



**Figure 4.14** *The second alternative model*



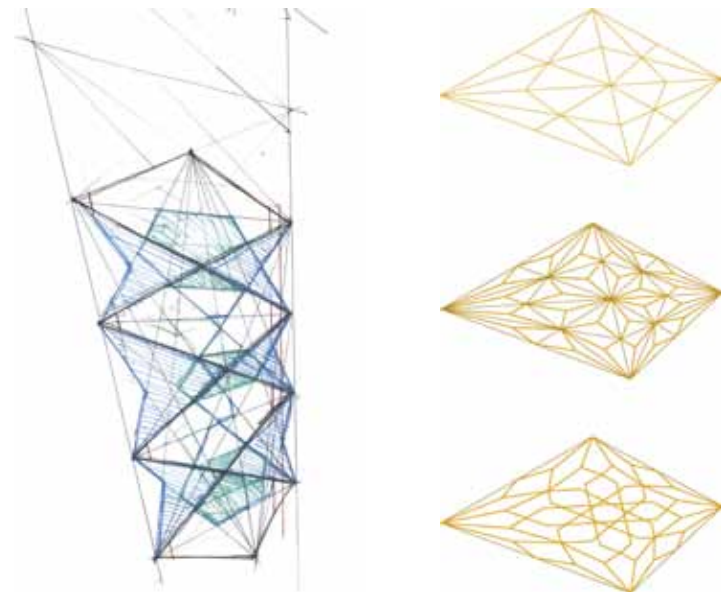
*Figure 4.15* Parti sketches



*Figure 4.16 The Green Dome*

### Alternative III

After considering the pros and cons of the first and second alternatives, the third alternative was developed. The design concept embodies three main ideas: Islamic geometric pattern, unification, and the threshold. The lines were generated from the site context and oriented toward the Prophet's Dome. In essence, the Prophet's Dome (or the green dome) which is built above the tomb of the prophet, is the symbolic identity of the city and a distinguished landmark of Medina. Moreover, integrating the Islamic geometric patterns with the introduced geometry created the threshold three dimensionally. Dynamic is represented here through Islamic geometry and origami concept. It shows four folded rhombuses that attached to each other. Each rhombus has a masts tower that suspend the shape through tension cables.

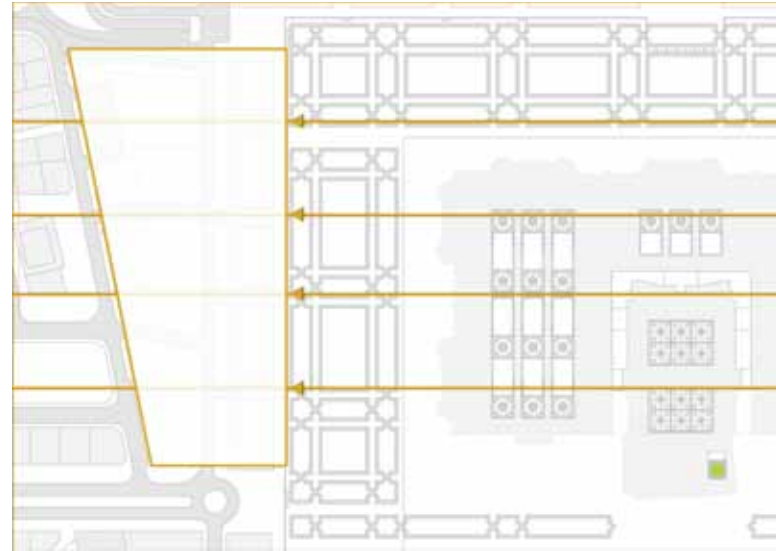


*Figure 4.17 Parti sketches*

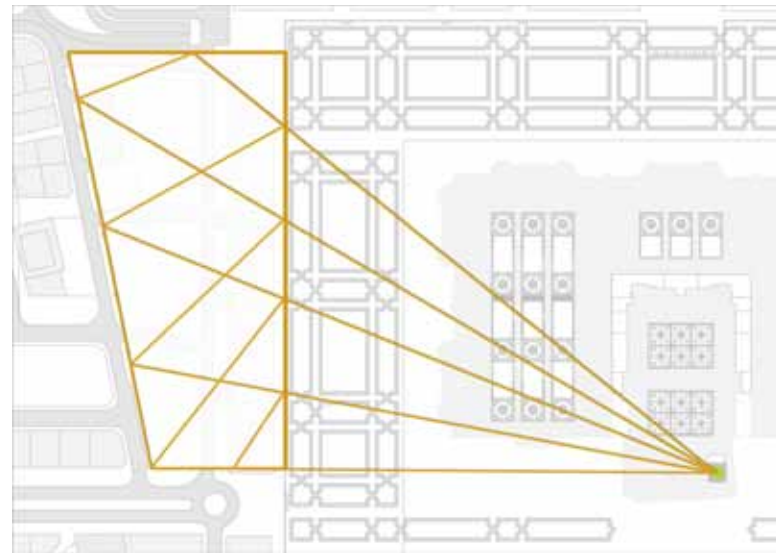


*Figure 4.18 site plan*

**Figure 4.19** *Parti diagram*

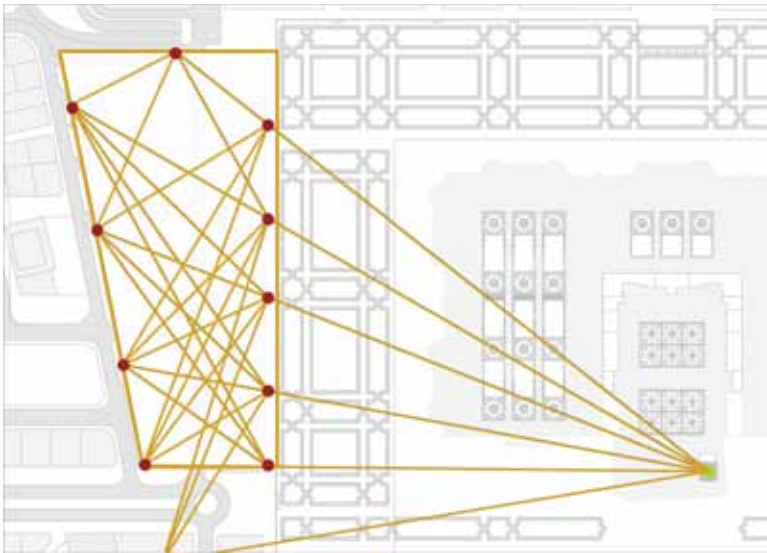


a. The existing prayer lines that pass through the plaza's gates were used as the primary lines.

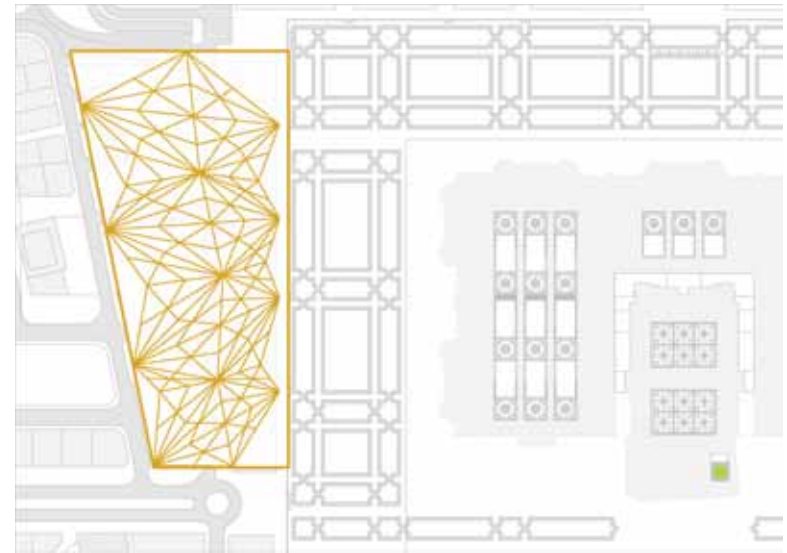


b. From the intersection points of prayer lines and the plaza's gates, another set of lines were extended toward the Prophet Dome and were extended back toward the site boundary. Then, all end points of each line were connected with the plaza's gates.

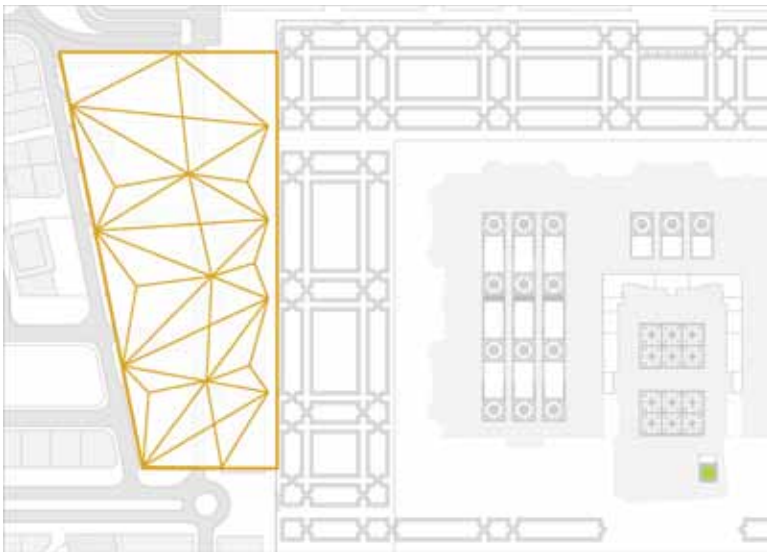




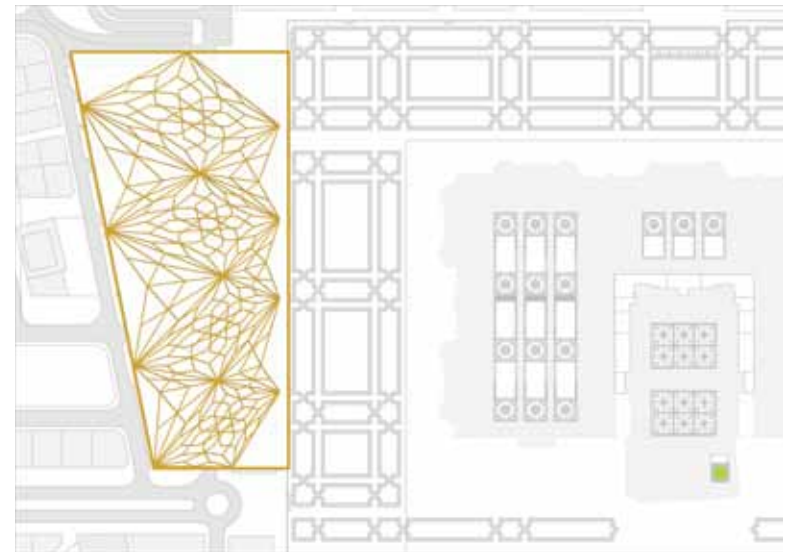
c. Then, all (red dots) end points of the shape were connected to all adjacent points.



e. Then, all axes of symmetry were generated by connecting each point to the midpoint of the adjacent segment.



d. The outline of the shape was kept and all points were connected to adjacent points to generate the triangular form.



f. After that, the drawing method of an eight-pointed star was used to generate a star shape from the existing axes.

## 4.4 Project Description

The design intervention consists of three major elements:

### 4.4.1 Shading Canopy

The structural shading canopy is a steel structure that is composed of RHS members, steel lattice and a coated glass fibre fabric PTFE. The shading canopies are the dominant feature of the design intervention. Since the early stages, the idea of a shading structure was presented in all the design alternatives. And the focus was to have an intervention that mediates between the height of the mosque umbrellas (20m) and the surrounding hotels (50m). Thus, proposing an intervention that will cover the designated area will result in a large scale structure.

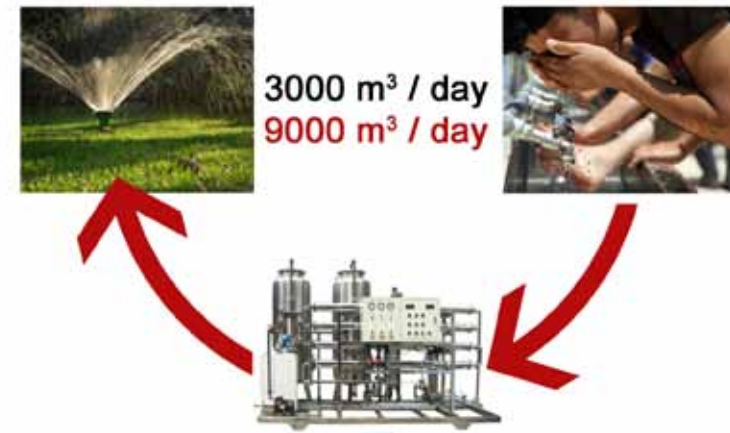
In order to revive the place's identity, the Islamic geometric pattern will be integrated in the design of the canopy members. The Islamic pattern reflects the long history and great traditional heritages of Medina. The main features of the geometric pattern which are incorporated in the design are the symmetric star shapes, interlaced elements, and the flow of the pattern. The geometric pattern has not only been represented two dimensionally, but also three dimensionally. The canopies along with the support cables illustrate diamond shapes. Moreover, all canopies are connected to compose one entity.

The *mashrabiya* screen concept was integrated in the canopy design. The canopy was composed of three layers that embody the Islamic geometric patterns. The main layer made of double

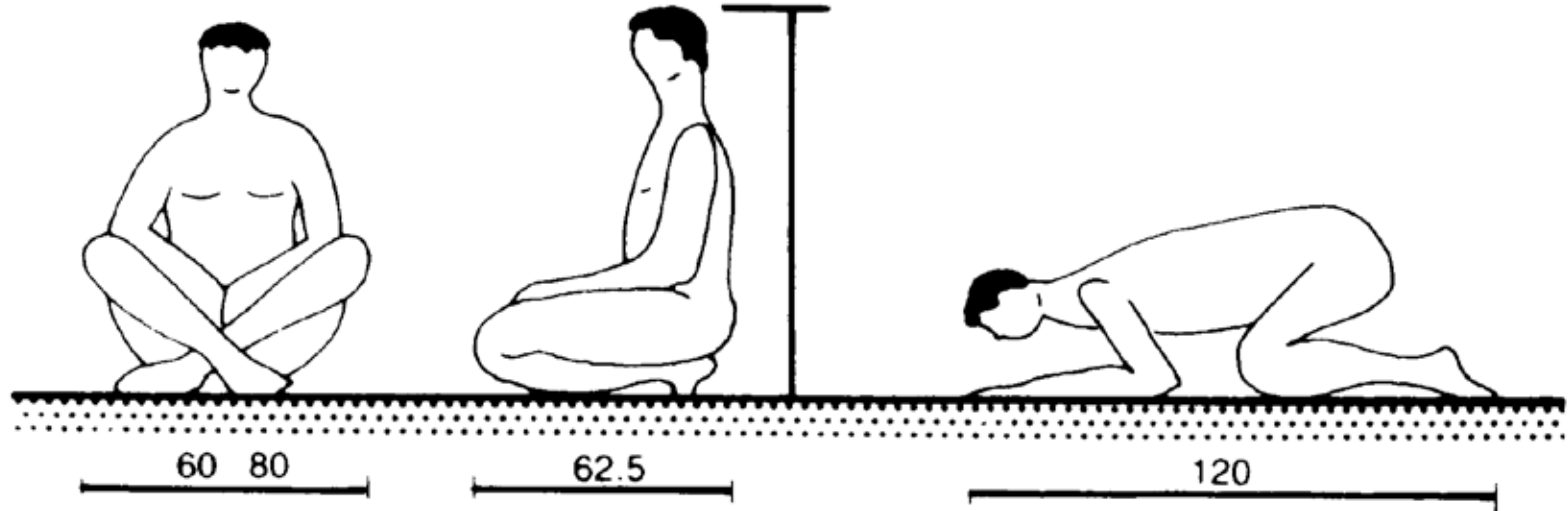


**Figure 4.20** *Underground Ablution Area.*

## Recycling Ablution Water



**Figure 4.21** *The treated grey water from ablution will be used for irrigation.*



*Figure 4.22 Dimension at prayer (cm)*

(300×1000mm) RHS members that form the geometric pattern. The RHS members are bolted by centered pins and welded to a rhombus frame. The second layer is a patterned steel screen which is connected to the RHS members. The third layer is a translucent membrane that is attached to the steel screen. The concept of the canopy is not only to provide shade and shelter for users but also to create a patterned light.

A number of structural systems will be incorporated in order to support the canopy structure. The design concept aimed to minimize vertical elements that will be used to support the canopy. For this reason, a cable structural system was introduced to work as a tension force. However using cable structures requires a large mast to connect the cable to. All structural details are designed to have the same language as the canopy.

#### 4.4.2 Seating and pathways

The socio-cultural factors were taken into consideration when designing the master plan. The design offers variant gathering places within one site. The site is divided into four main plazas and smaller public spaces and green spaces. Different groups can gather and do different activities at the same time. Also, the site is designed to control pedestrian movement from and to the mosque, by using pathways and landscape. Each plaza is surrounded by eight large floral planters that will offer a pleasant scent along with a comfortable seating and is accessible by eight paths from all directions. The plazas will be places for public gathering and activities, and a number of mobile kiosks run by local vendors will be placed there. Again the paving pattern incorporates the geometric pattern of the canopies and, more importantly, the prayer

lines pattern. Prayer lines are the lines where people stand behind the Imam (prayer lead) in order to perform the prayer. These lines help people straighten their rows during the prayer. As the Prophet (PBUH) said: “Make your rows straight, for straightening the rows is part of perfecting the prayer.” Narrated by al-Bukhaari (723)<sup>93</sup>.

According to standards the comfortable space between prayer rows is 1.5m. However, the prayer line patterns are 3m apart, which is double the required space for praying. People will use the pattern lines as a reference and can construct a middle row if desired.

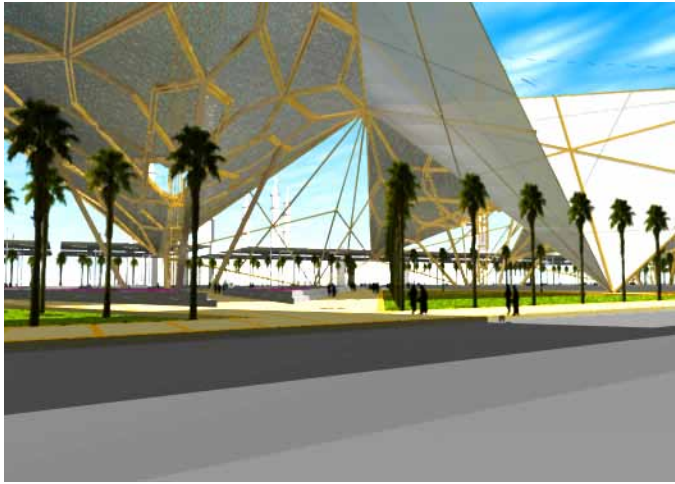
#### 4.4.3 Green spaces

As previously explained in chapter 3 there are many advantages of using native species in designing the landscape. The design intervention will incorporate two types of landscape: the accessible and the inaccessible landscape. The accessible landscape is composed of date palms and low-maintenance lawn as Bermuda grass. These green spaces are designed for recreational activities. People can gather, interact, have snacks, and relax on them. However, the inaccessible landscape is composed of a variety of native species and flowers (see table 4.1). It will give the space a charming and fragrant perfume. Irrigation is critical in arid region like Medina, since water resources are limited and the desalination process is expensive. As previously discussed in Chapter 3, a potential sustainable irrigation system is to use the treated grey water from the mosque amenities.

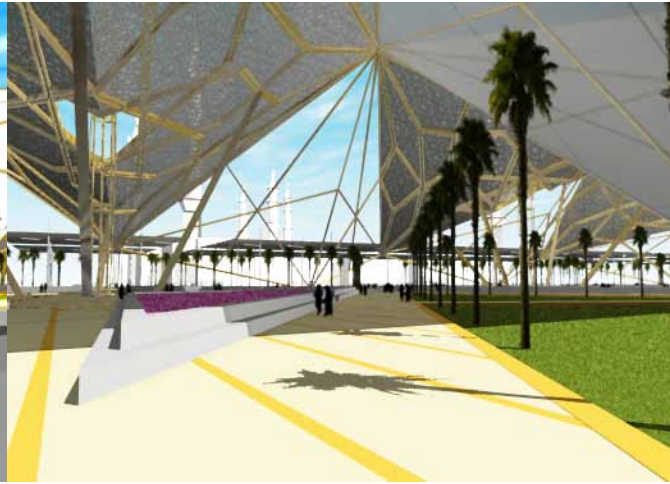
*Figure 4.23 (opposite) Image series showing human's eye views while walking through the site toward the Prophet's Mosque.*



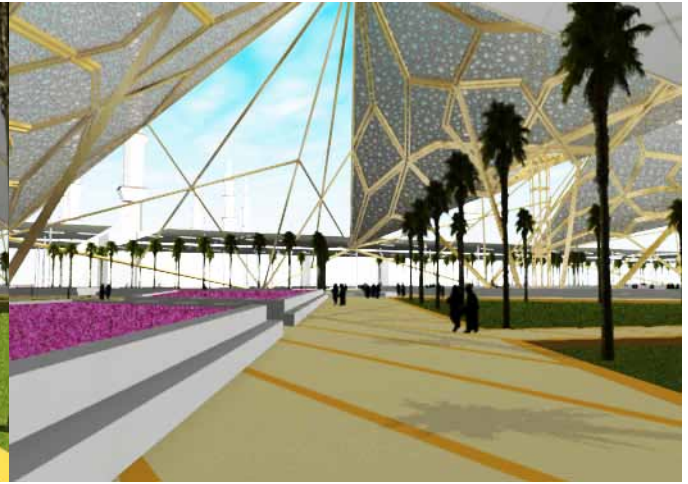
*Figure 4.24 The second alternative model*



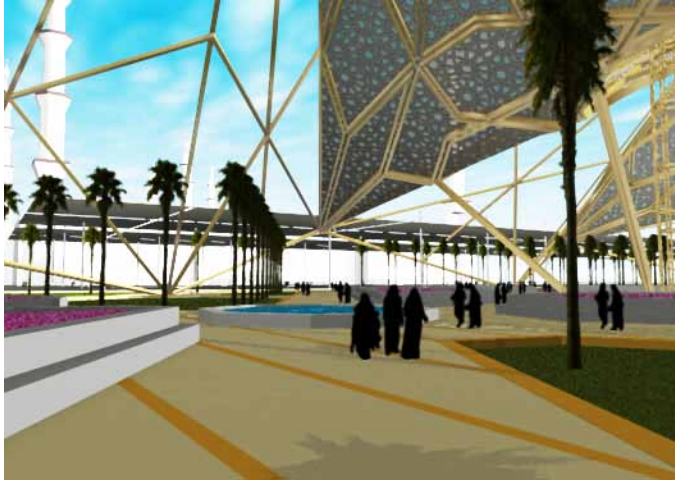
1



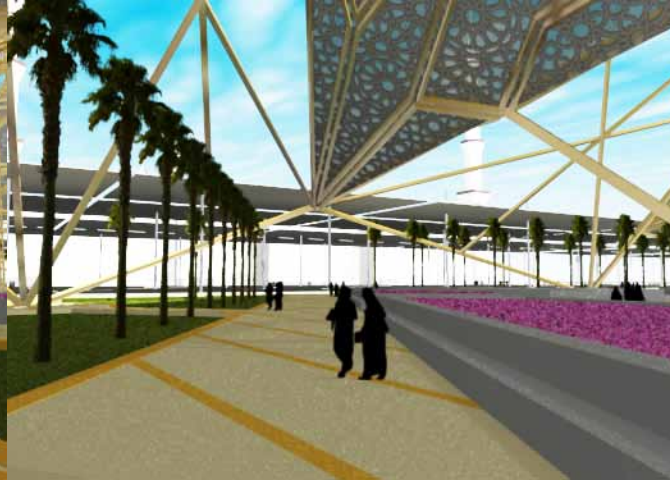
2



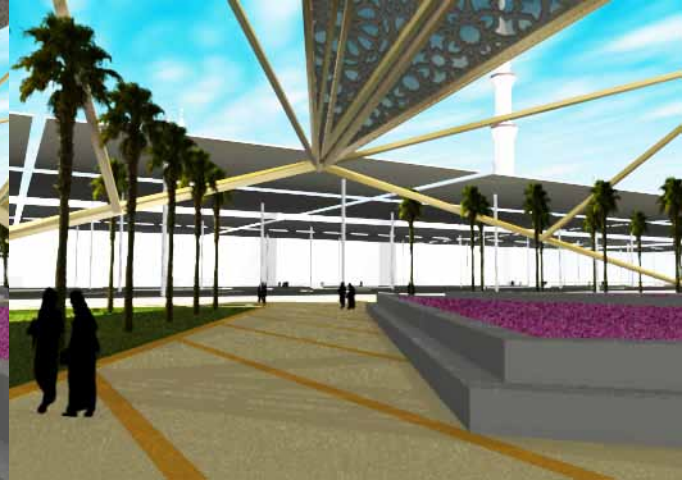
3



4

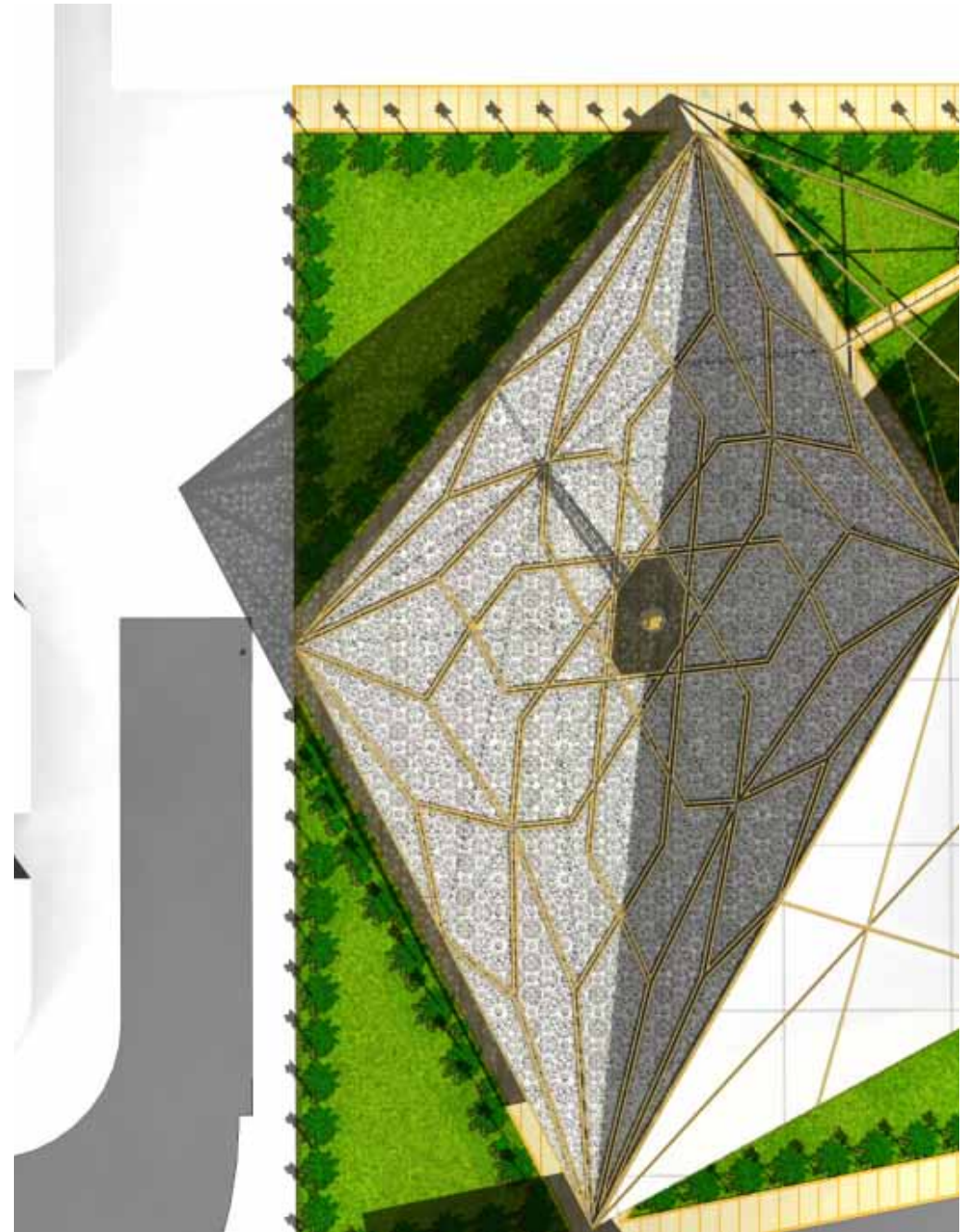


5

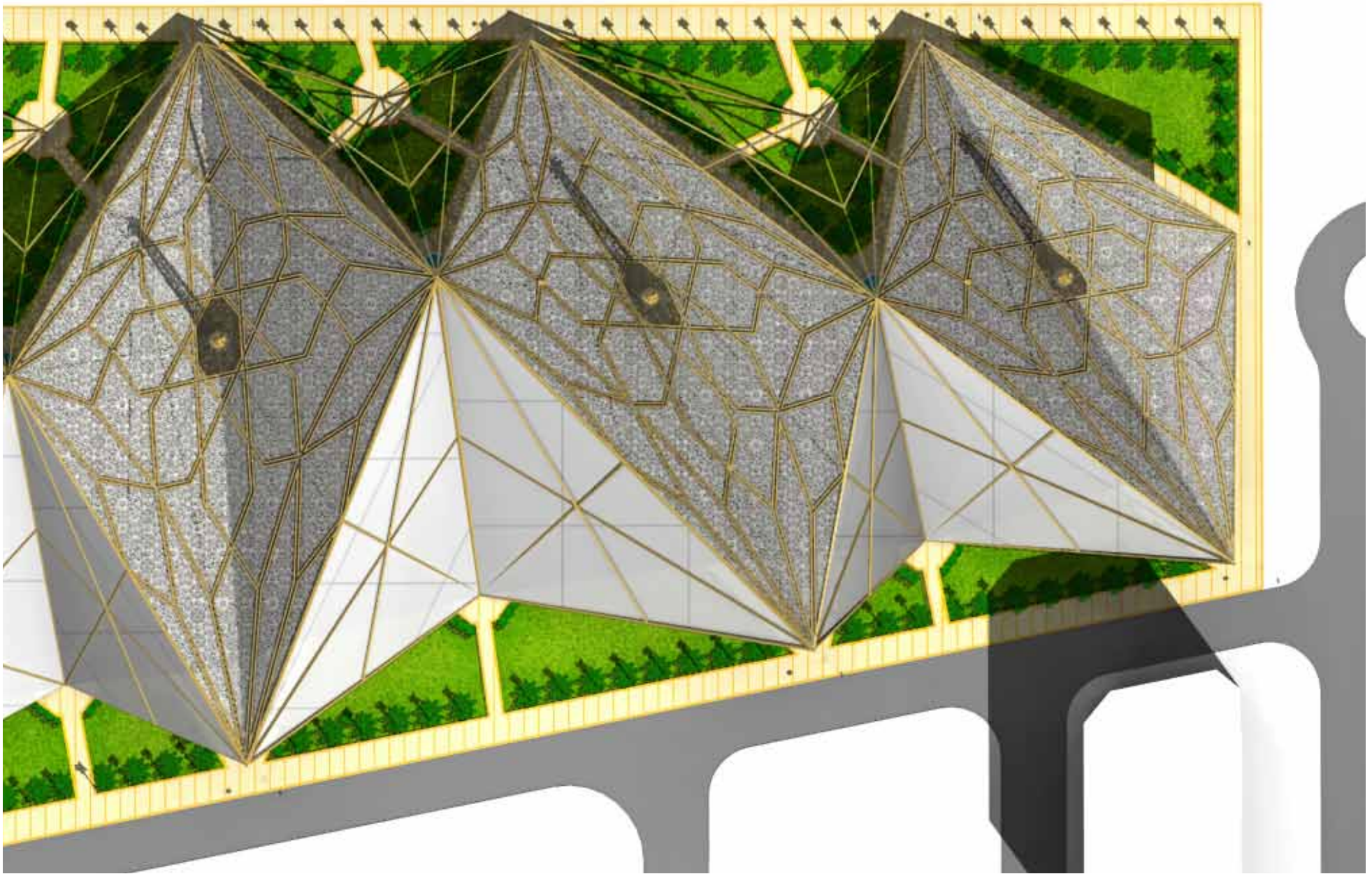


6

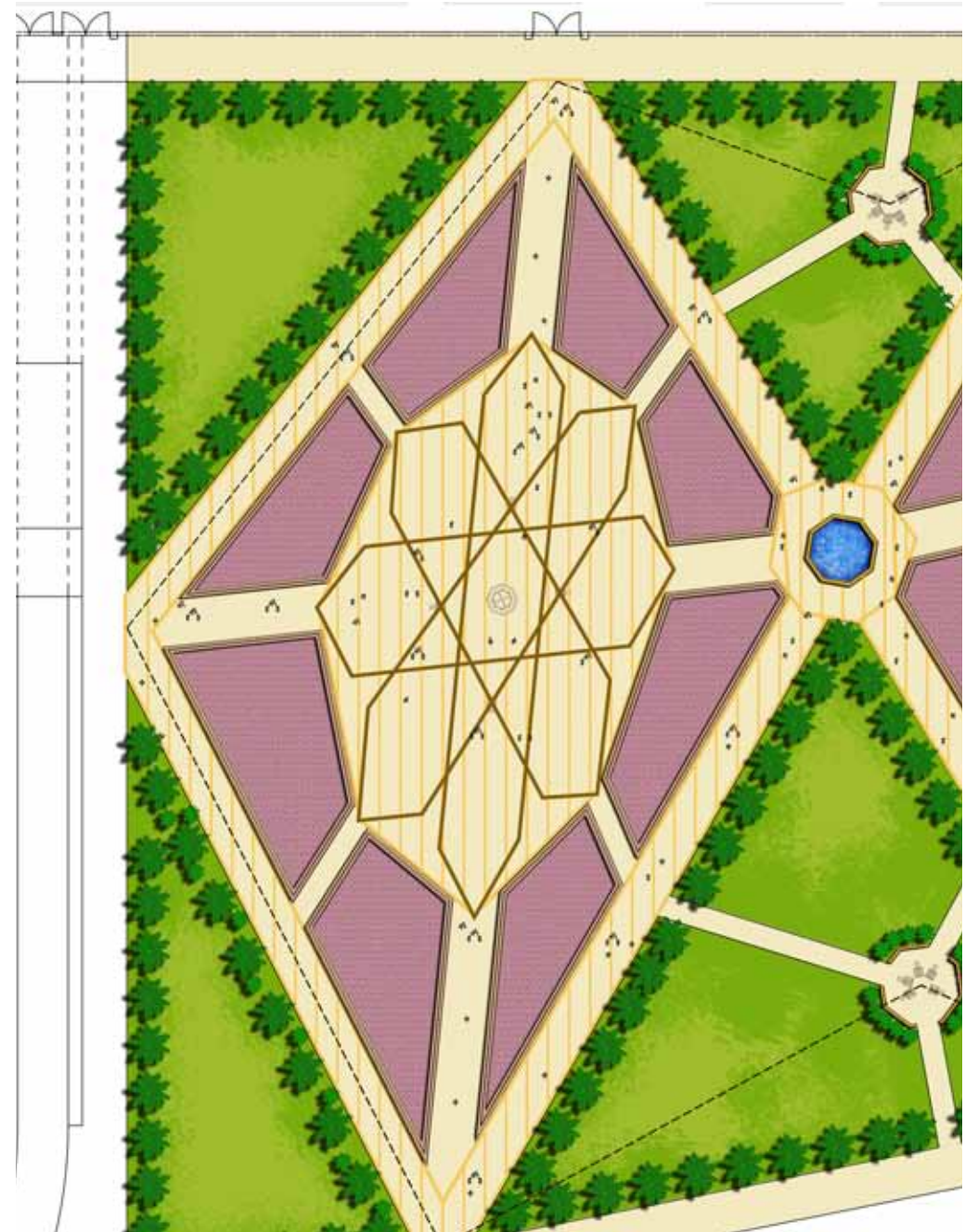
## 4.5 The Design



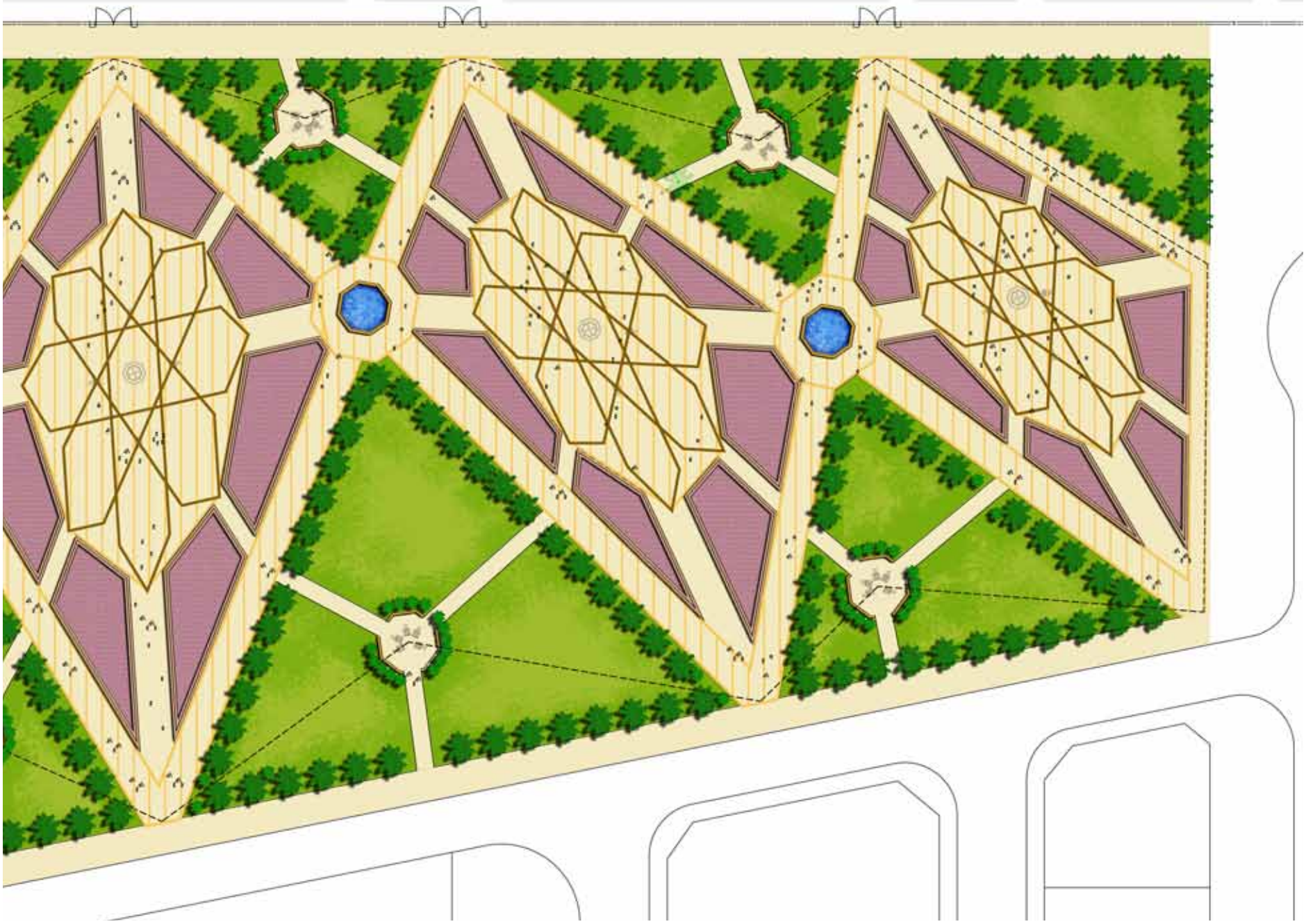
*Figure 4.25* Aerial view showing the Islamic geometric pattern created by the steel members (gold) and the perforated steel lattice (grey) that provide soft shadow for the area below. Also, the canopy is covered by membrane fabric at the West side to maximize the shaded area.



**Figure 4.26** Site Plan showing the landscape design that is integrated with the design of the canopy. The green areas are the accessible landscapes which are composed of date palms and low-maintenance lawn. However, the purple areas represented the flowers planters which composed of a variety of native species and flowers. They are inaccessible but users can set around them. Also, the pavement pattern is designed to incorporate geometric pattern and prayer lines (vertically) as shown.







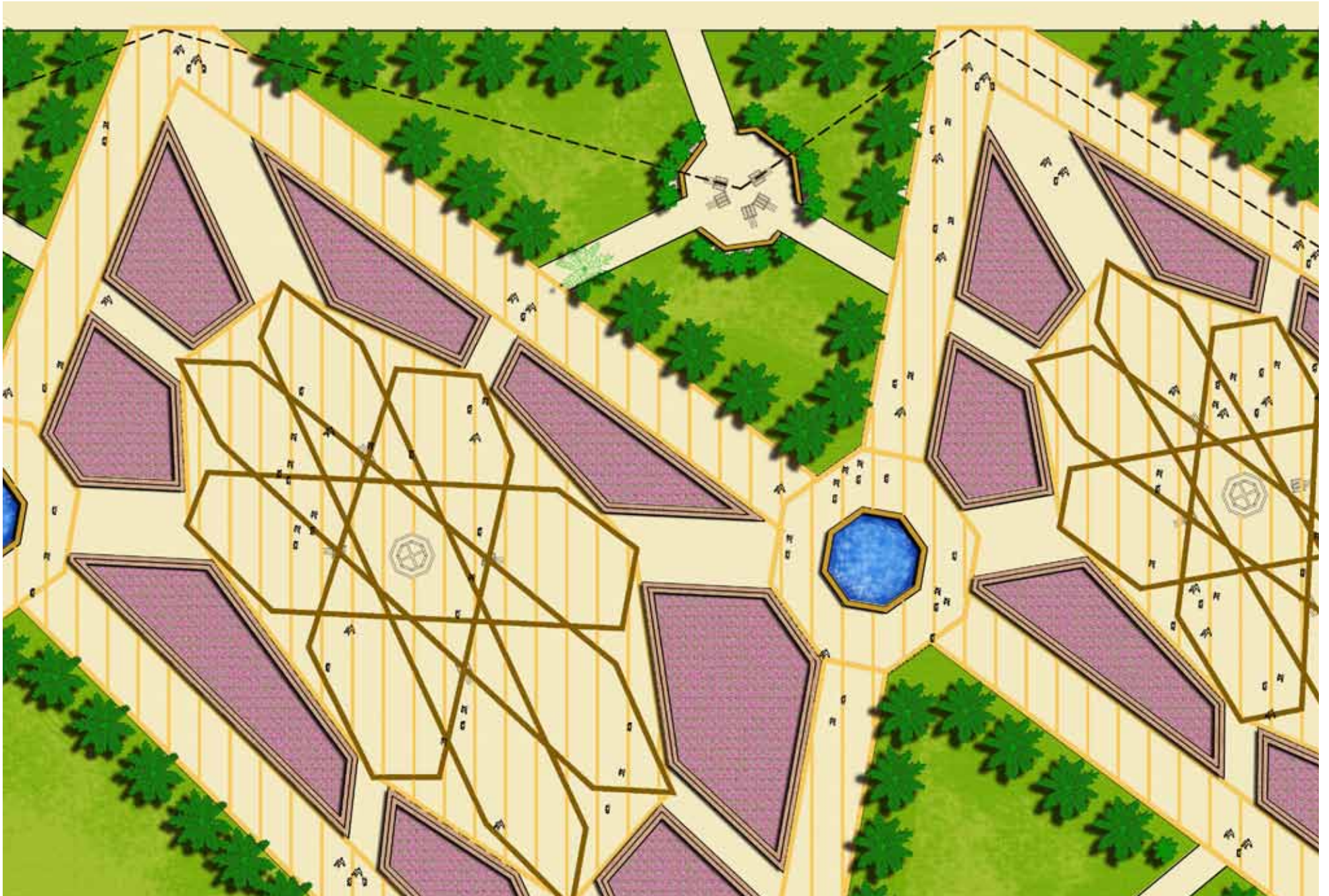






**Figure 4.27**



*Isometric view of the 3D model showing the plazas under the canopy. Also, major accesses to the mosque are shown.*

**Figure 4.28 (opposite)**

*Detailed site plan; showing the details of the green spaces, pavements, floral planters, water features and the prayer lines. Also, the plan is showing the scale of the spaces with respect to human scale.*



	<p><b>Date palm</b> <i>Phoenix dactylifera</i></p> <p>An erect palm; 25m x 10-12m; spreading grey-green leaves up to 4m long; familiar dates on female trees; slow growing. Drought resistant, phreatophytic; wind resistant; frost tolerant.</p>
	<p><b>Bermuda Grass</b> <i>Cynodon dactylon</i></p> <p>Long-lived perennial with creeping stolons and rhizomes that allow spread over wide areas; leaves are soft, linear and grey-green to bright green; erect culms bear the digitately arranged spikes, that are green to purple; fast growing. Drought tolerant, but yellow without regular irrigation; wind resistant.</p>
	<p><b>Wild Jasmine</b> <i>Clerodendrum inerme</i></p> <p>Can be used as sprawling shrub, clipped or hedged into a variety of shapes, trained over fences and shade structures or used as a wide-spreading groundcover. Although not particularly drought resistant, this plant can be especially useful in hot arid regions because of its tolerance of extreme heat and salinity.</p>
	<p><b>Spear Mint</b> <i>Mentha spicata</i></p> <p>The leaves are 5–9 cm long and 1.5–3 cm broad, with a serrated margin. Spearmint grows well in nearly all temperate climates. Gardeners often grow it in pots or planters due to its invasive spreading roots. The plant prefers partial shade, but can flourish in full sun to mostly shade. Spearmint is best suited to loamy soils with plenty of organic material.</p>

	<p><b>Damask Rose</b> <i>Rosa × damascene</i></p> <p>The Damask rose is a deciduous shrub growing to 2.2 metres tall, the stems densely armed with stout, curved prickles and stiff bristles. The leaves are pinnate, with five leaflets. The roses are a light to moderate pink to light red. The relatively small flowers grow in groups. The bush has an informal shape. The flowers are renowned for their fine fragrance, and are commercially harvested for rose oil. The flower petals are also sometimes used directly to flavor food or to make tea and are considered safe for human consumption.</p>
	<p><b>Athel Tree</b> <i>Tamarix aphylla</i></p> <p>Small trees, often bushy and irregular in outline, difficult to distinguish the species; 3-9m x 2-8m; leaves insignificant, dull grey-green, closely appressed to branches; small white or pinkish flowers in terminal spikes; very fast growing. Drought resistant, phreatophytic; wind resistant; frost tolerant.</p>

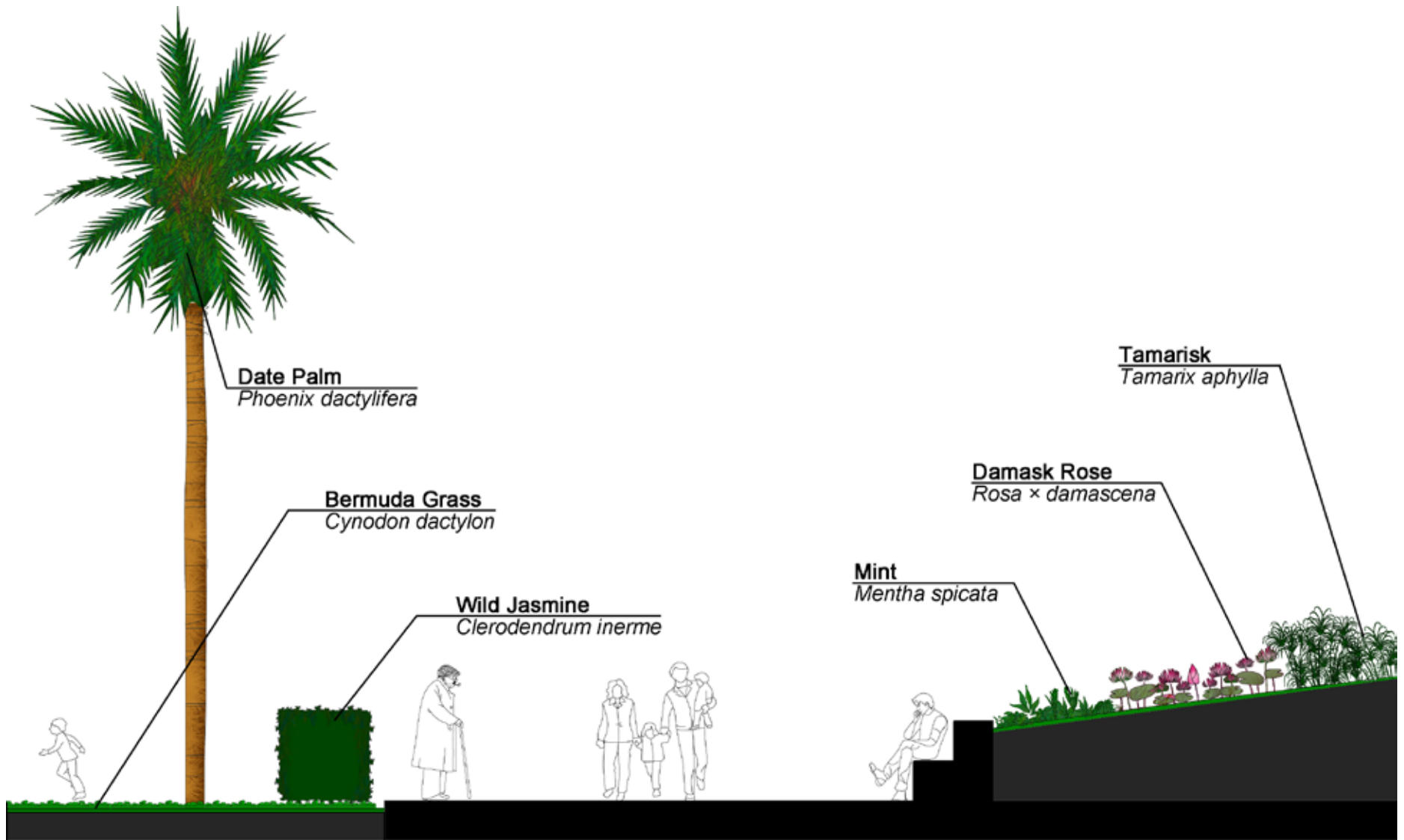
**Table 4.1**

*Local species and plants*

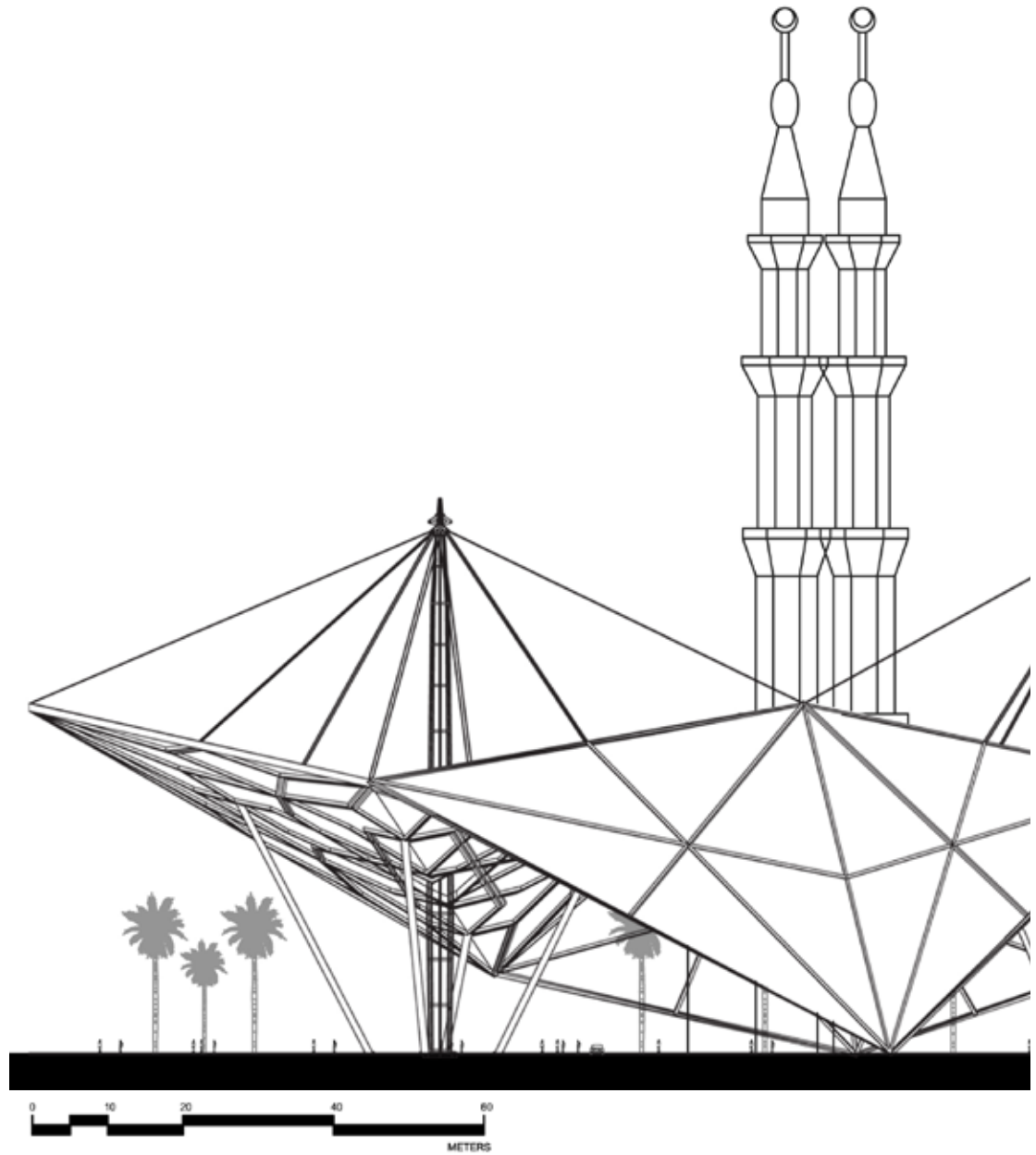
source: Ricks (1992)<sup>94</sup>; and Jones & Sacamano (2000)<sup>95</sup>

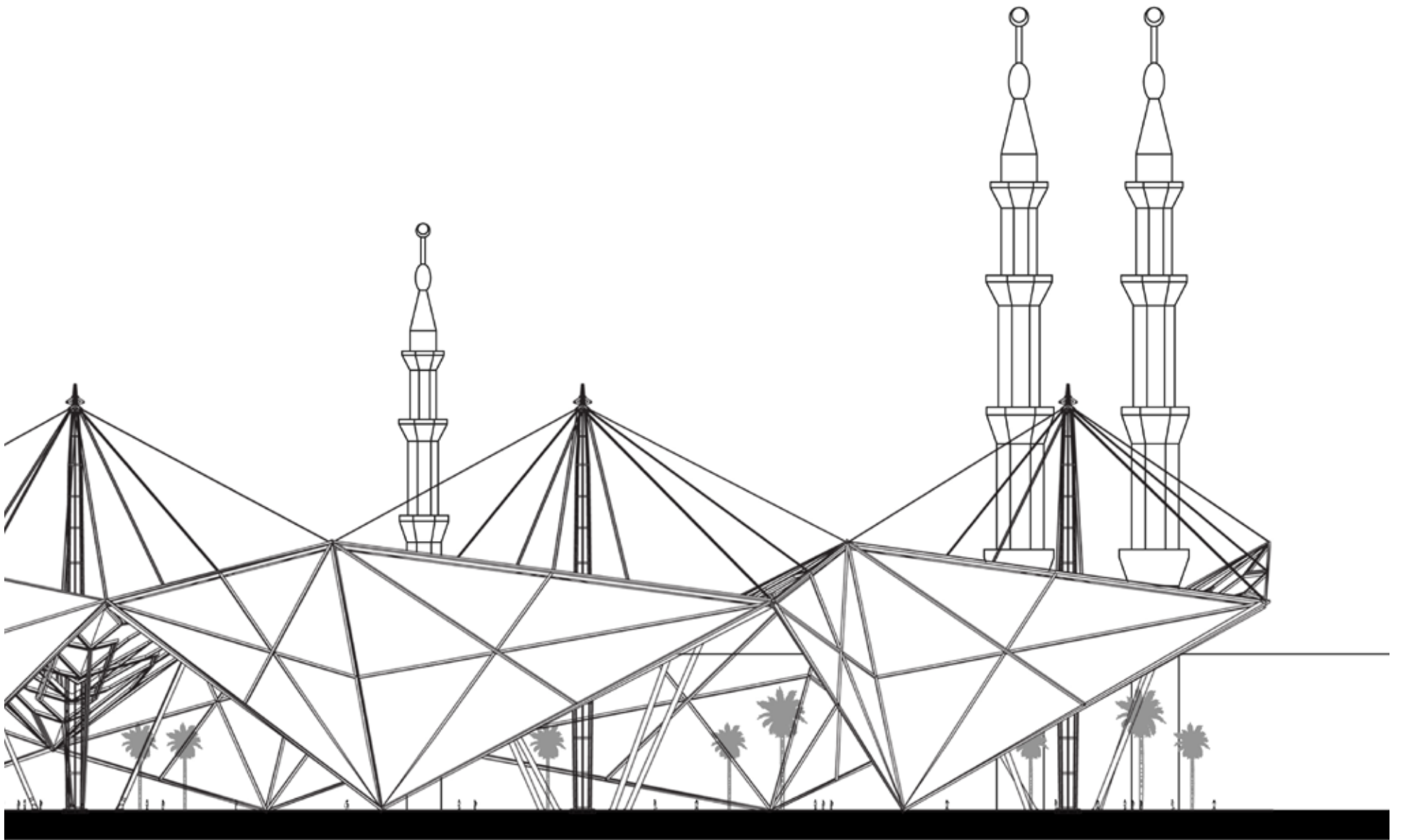
**Figure 4.29 (opposite)**

*Landscape diagram; showing the use of local species in the intervention which have the sense of local identity*

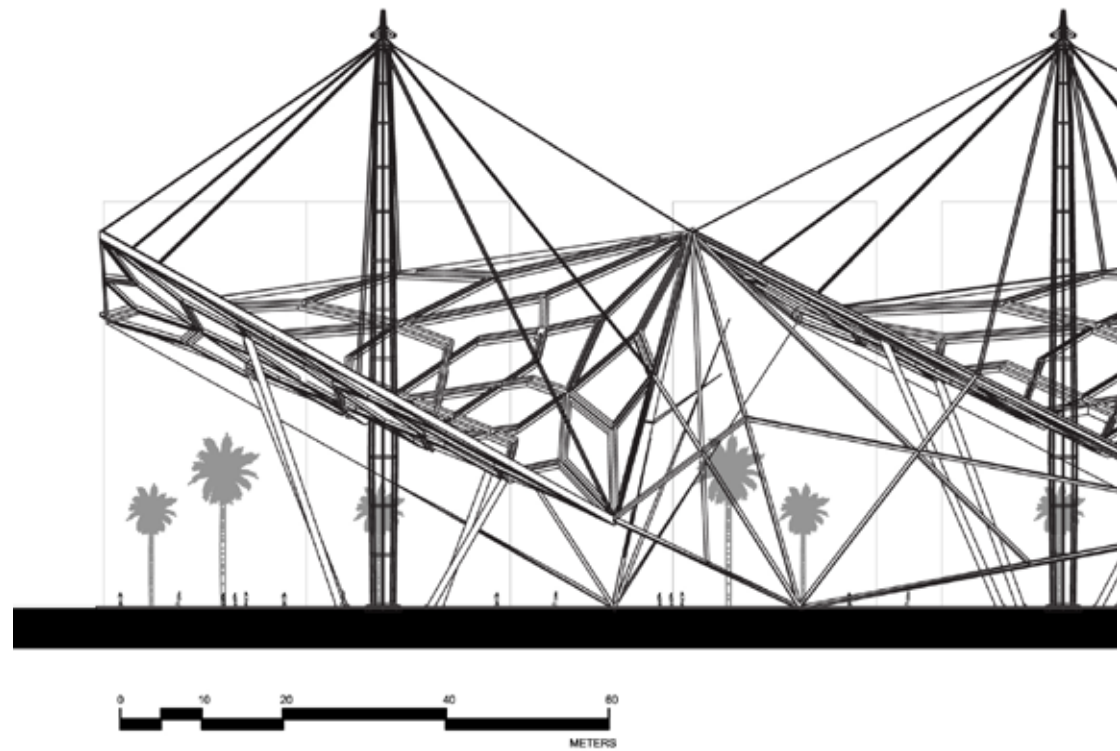


**Figure 4.30** *West Elevation; an orthographic drawing showing the design intervention and the Prophet's Mosque at the back. The design acknowledges the height of the minarets and the height of the surrounding buildings.*

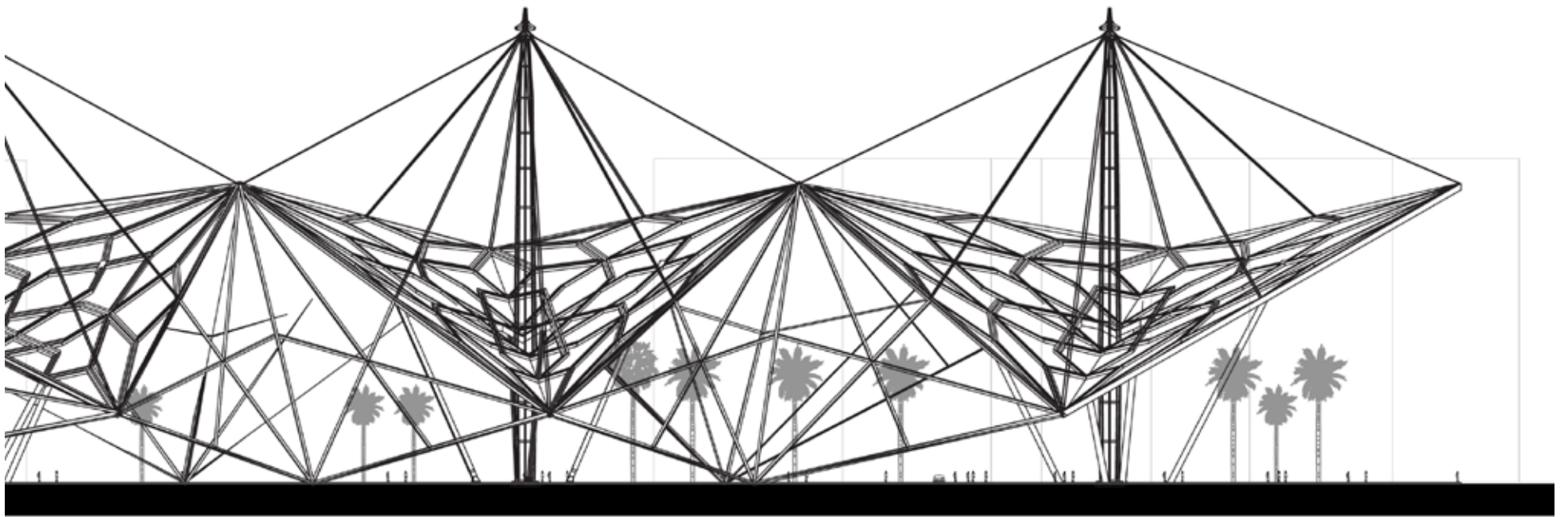




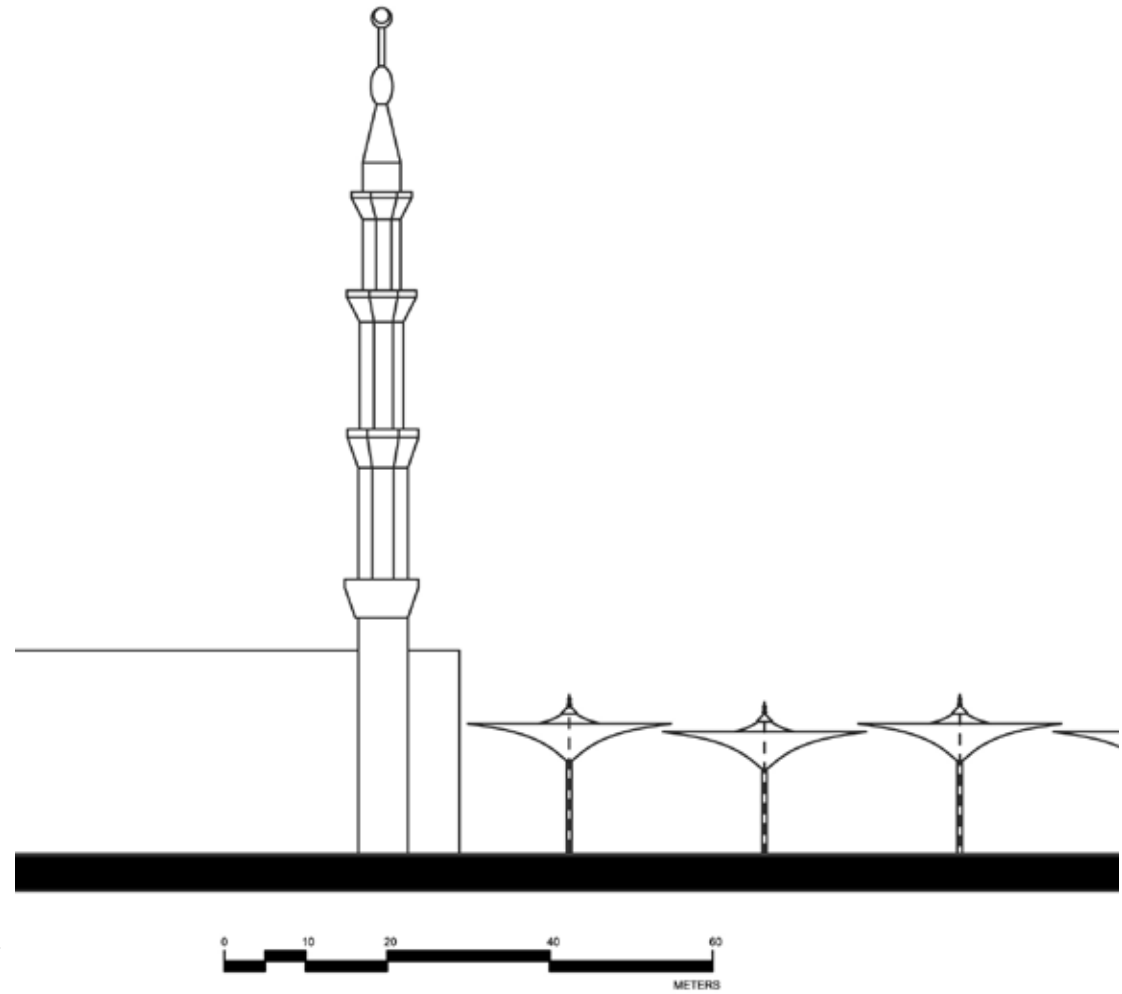
*Figure 4.31 East Elevation; since the canopy is tilted toward the East, the geometric pattern can be seen from the East side.*

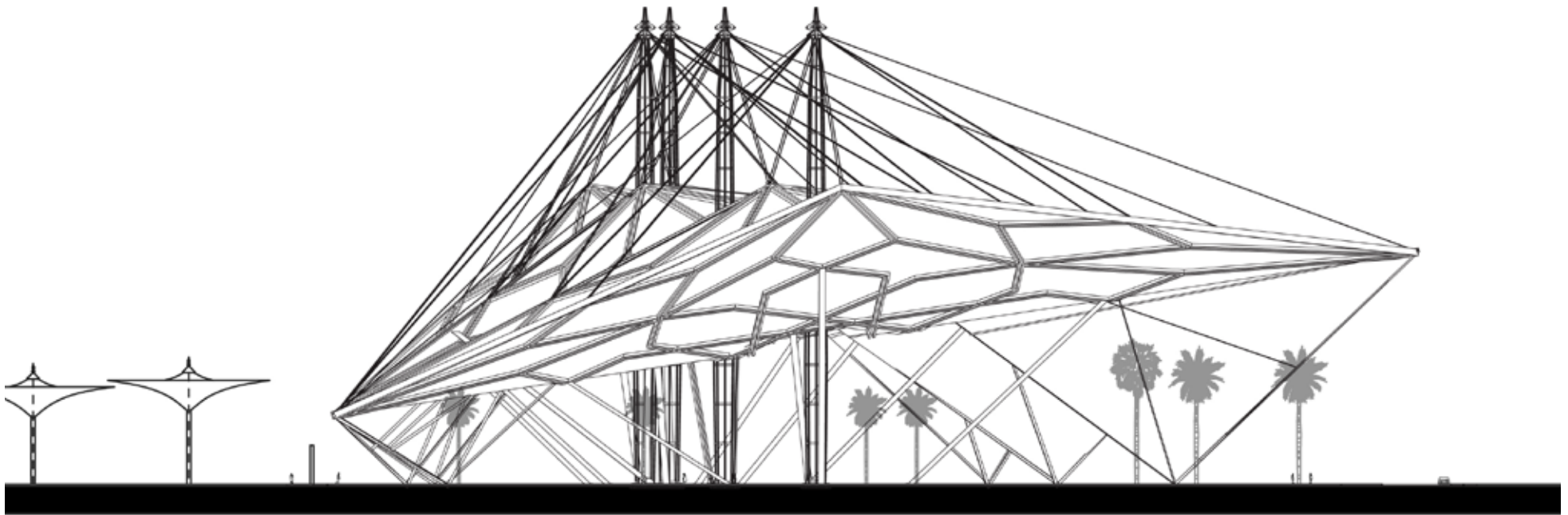


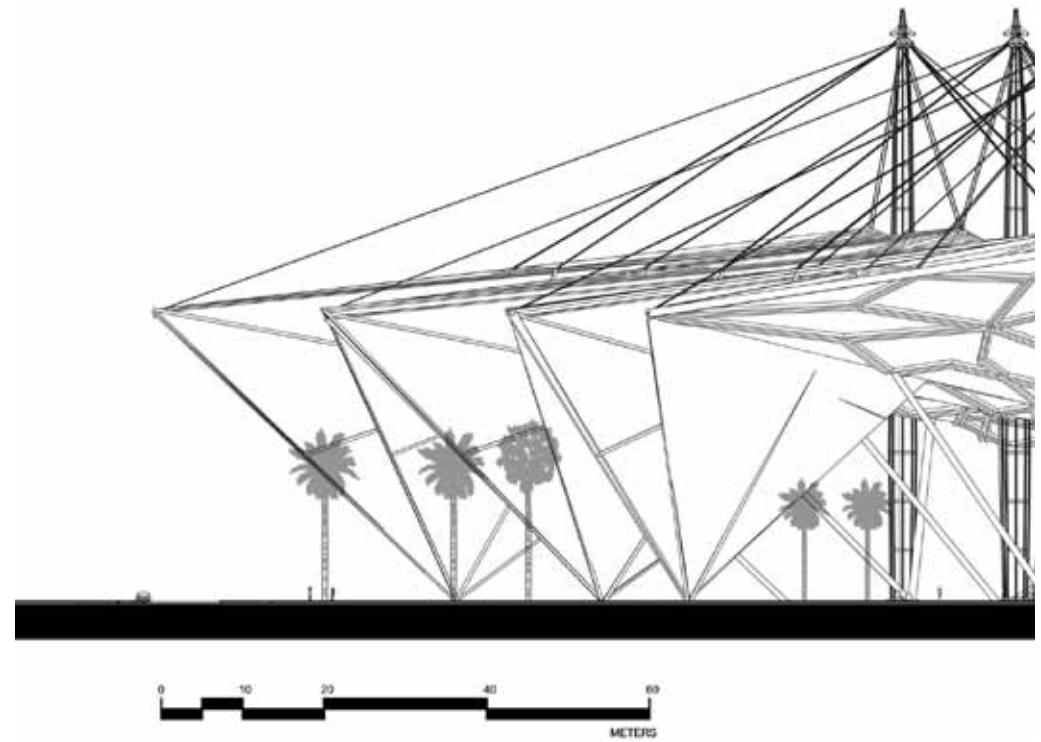




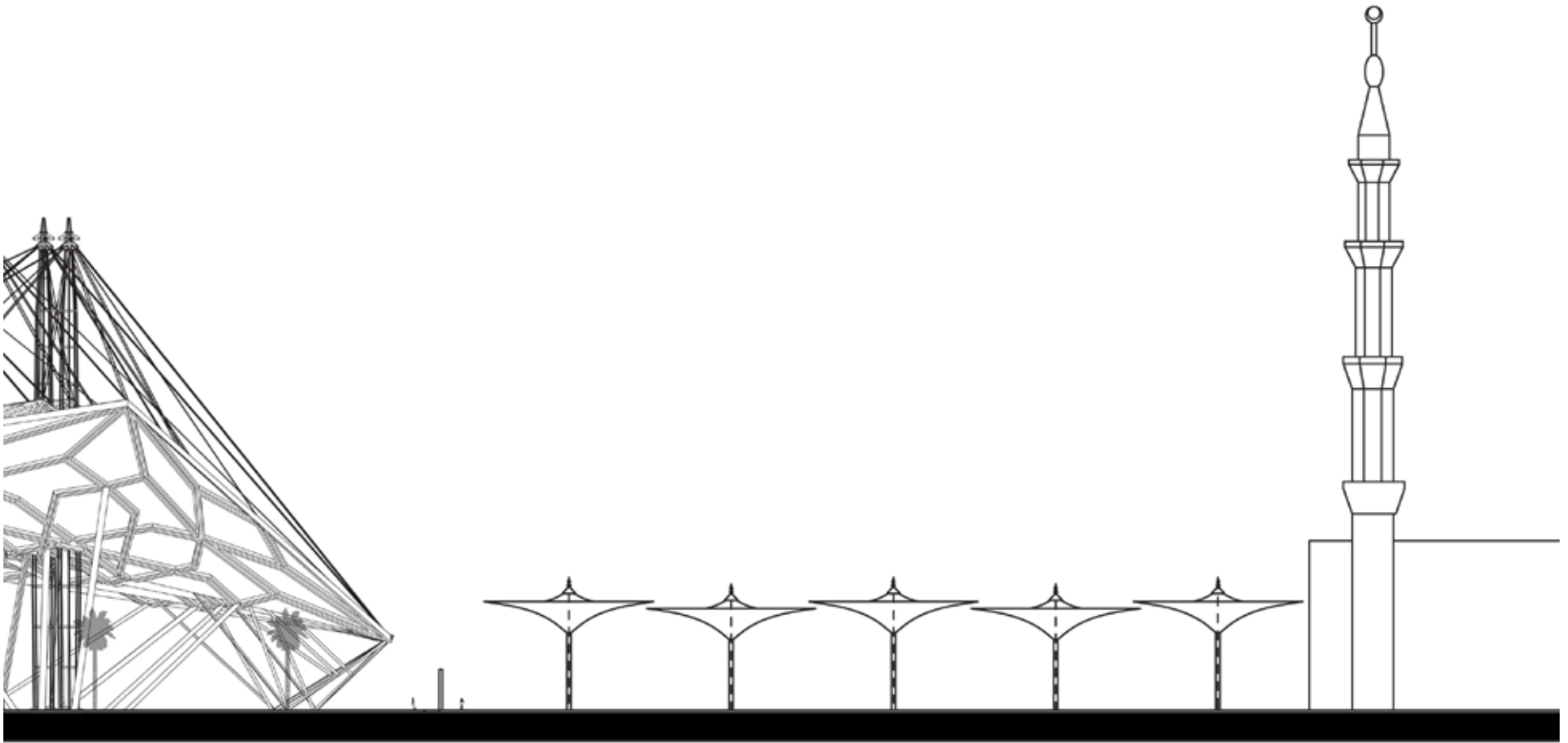
**Figure 4.32** North Elevation; the height of the lower surface of the canopy starts at the height of the umbrellas and ends at the height of the surrounding buildings.

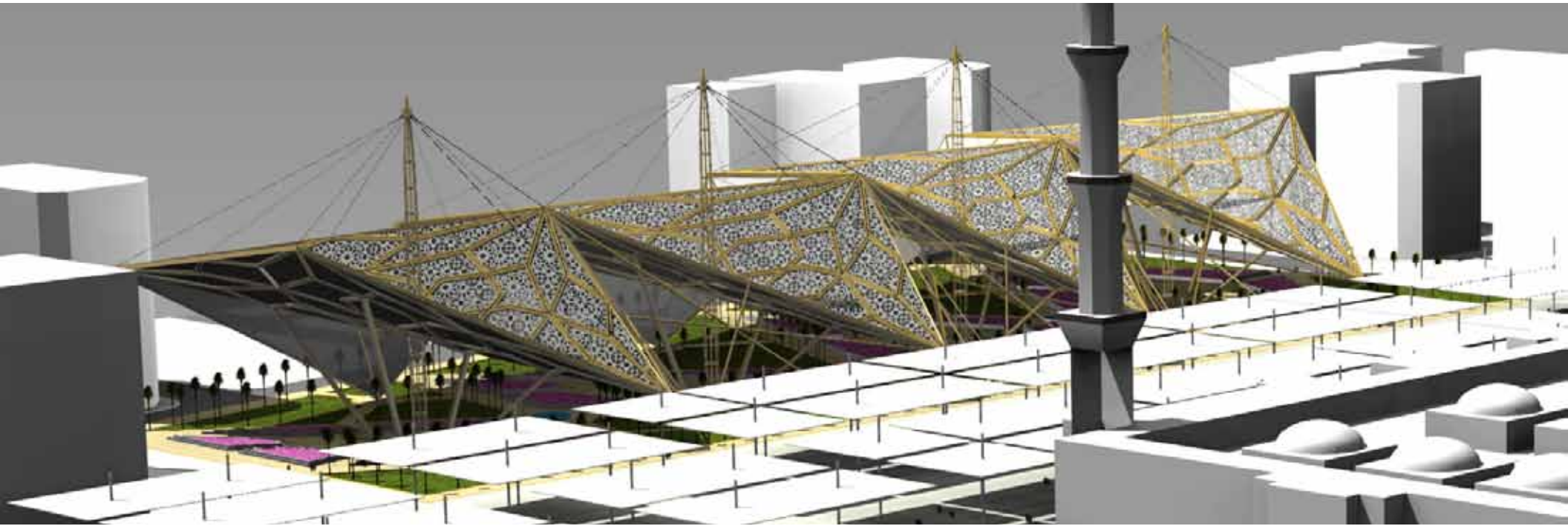






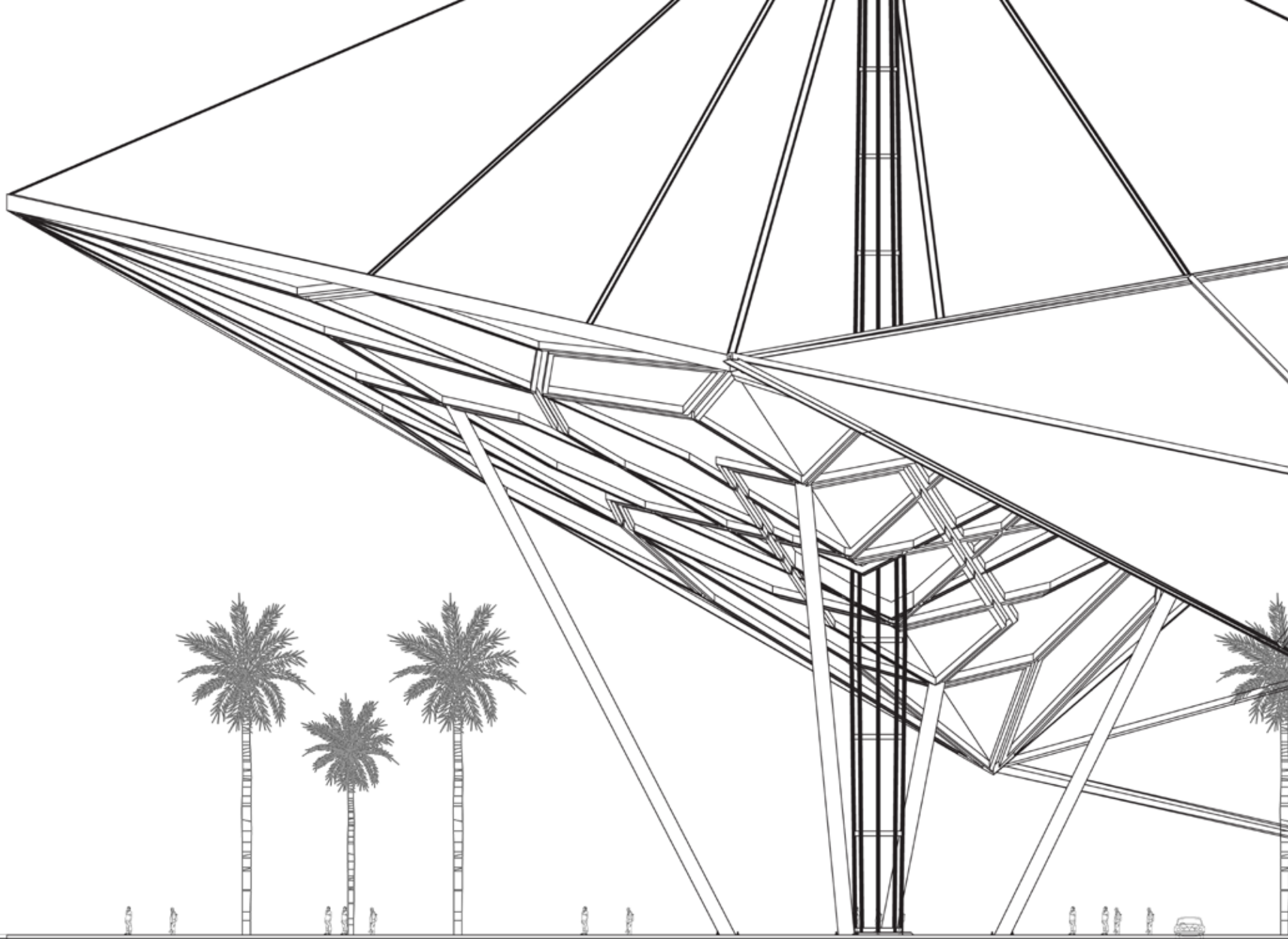
*Figure 4.33* South elevation





*Figure 4.34* Bird's eye view; the intervention introduced a new geometry to the site, but generated from the site.

*Figure 4.35 (opposite)* Part of the West elevation showing the scale of the canopy with respect to a human's scale and to palm trees' scale..

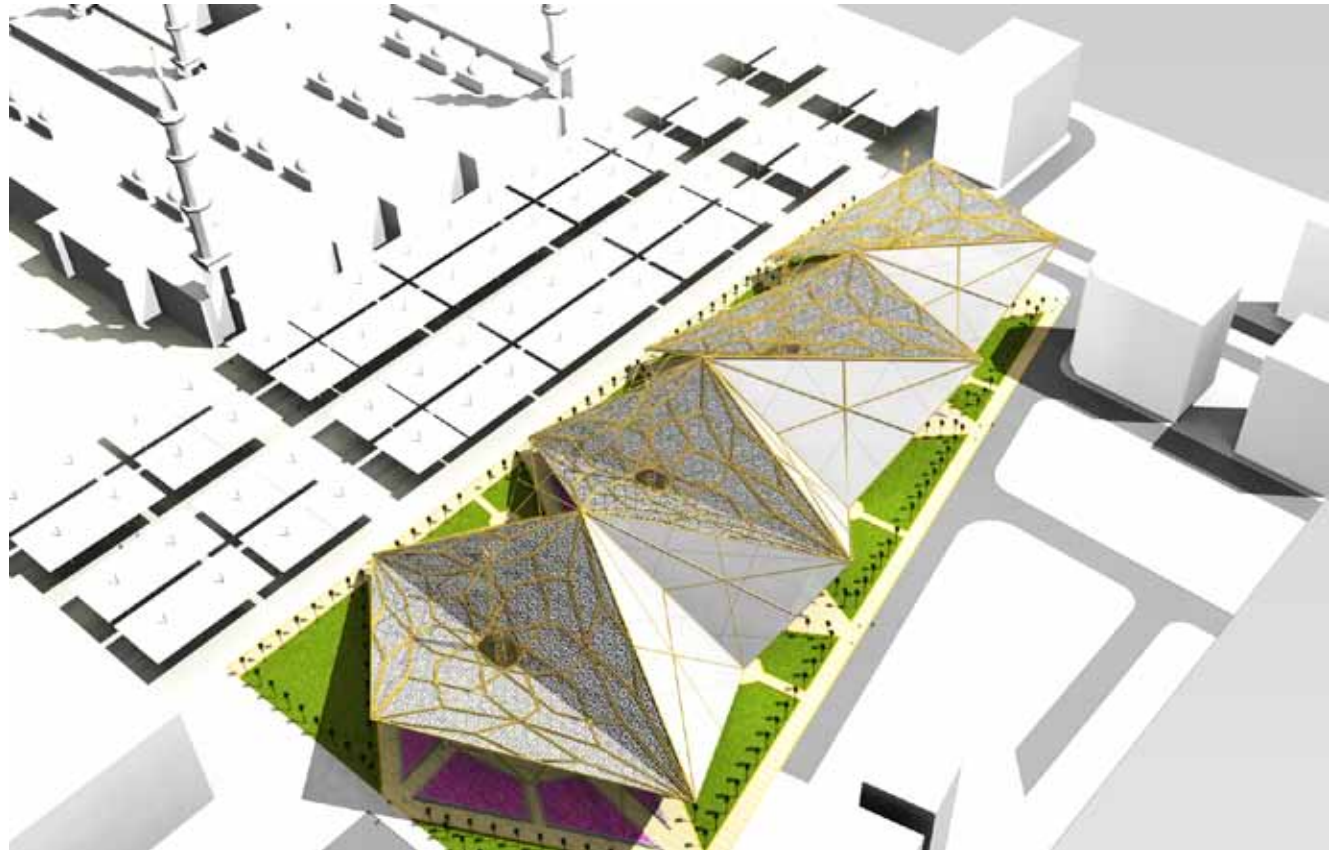




*Figure 4.36* Roof top's view

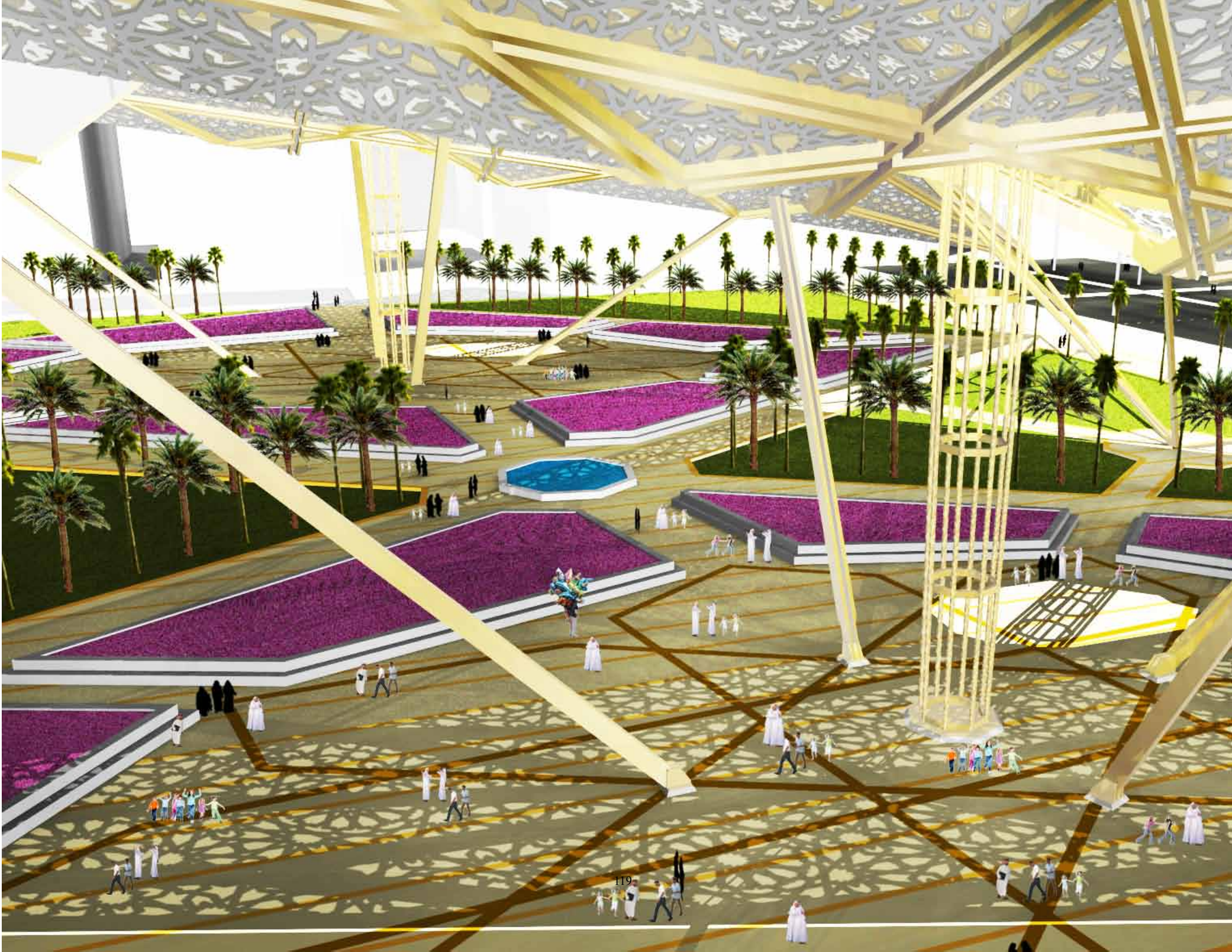






*Figure 4.37* Top's view showing the shading canopy with respect to the site context.

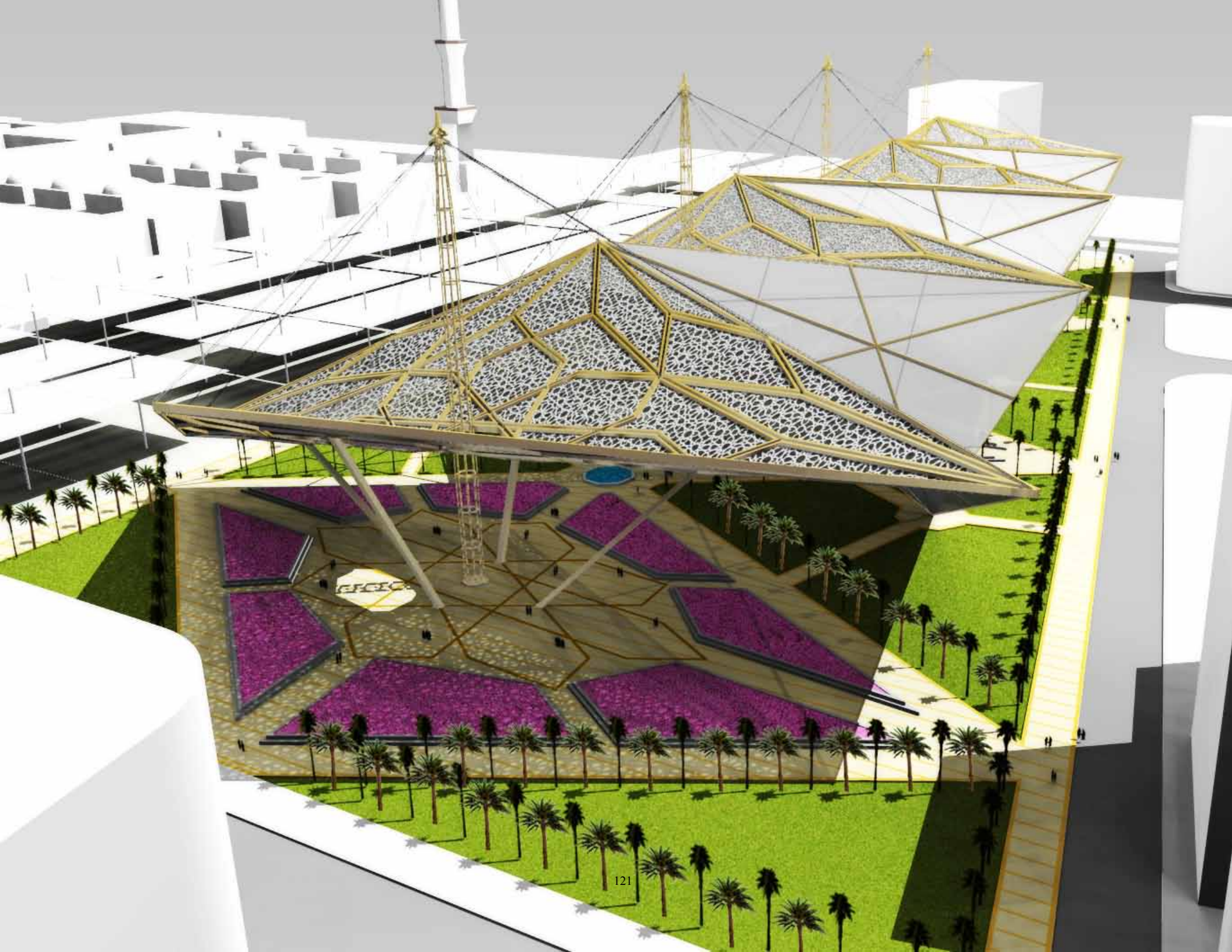
*Figure 4.38* (opposite) One of the plazas under the canopy. The image showing the integration of pattern, structure, and shadows in the space.





**Figure 4.39** Human's eye view. The space is reflecting the local identity through geometry and geometrical pattern

**Figure 4.40** (opposite) shaded areas. One of the design goals is to provide shading structure that will enhance the user's experience. Thus, the canopy offers variant types of shades for users. The membrane will offer fully shaded areas while the perforated metal sheets provide partial shaded areas. Again, the canopy has four holes at the centre of each rhomboid shape where the structural masts intersect.





**Figure 4.41** *The flowers planters are designed to offer seating furniture for users of the park.*

**Figure 4.42** *(opposite) The space can be utilized by local vendors and merchants to sell their local products in mobile kiosks which enhance social interaction.*

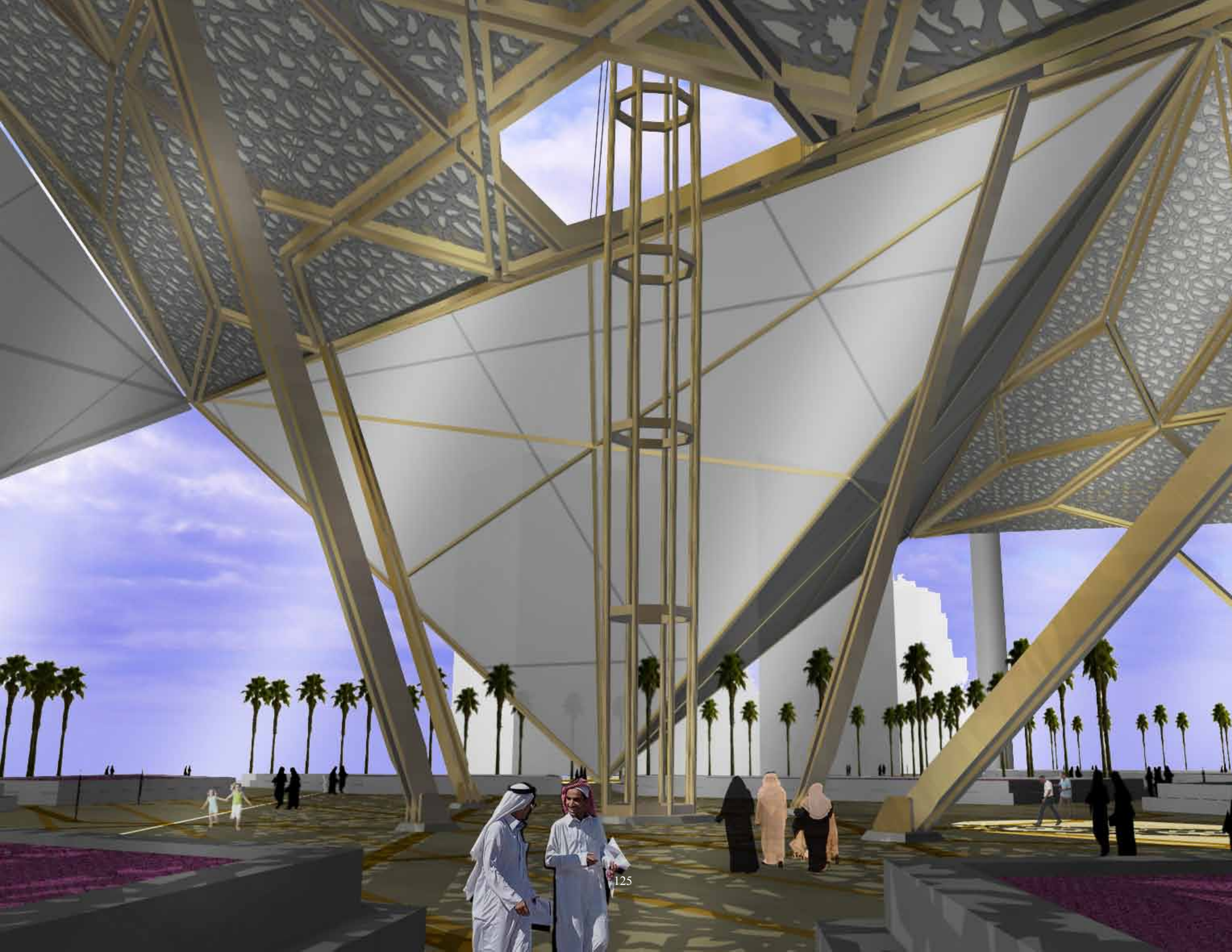




**Figure 4.43** *The East side walkway that connects North and South side of the site*

**Figure 4.44** *(opposite) 3D rendering showing the seating areas and plazas under the canopy. Also, the canopy is covered by membrane on the West side to provide shade*

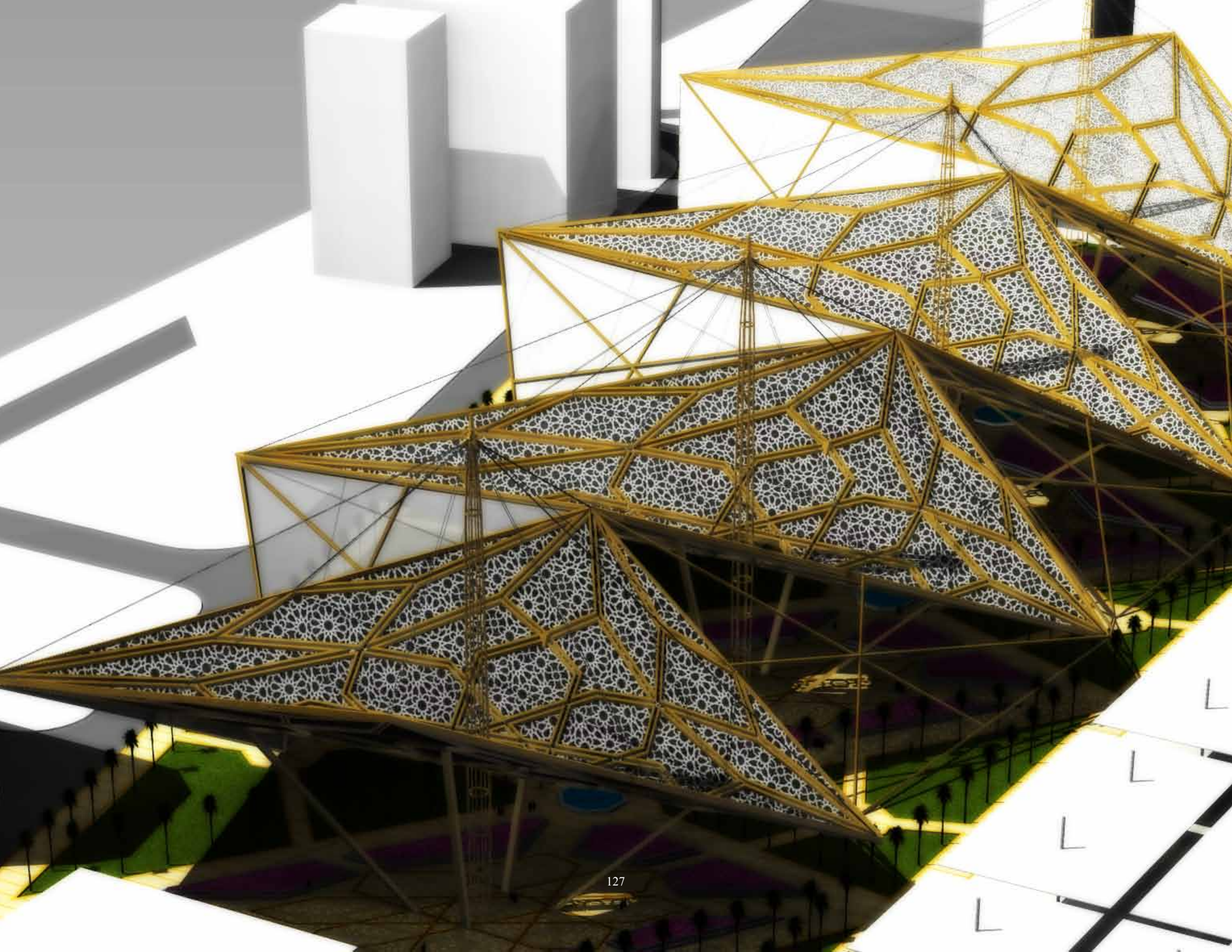






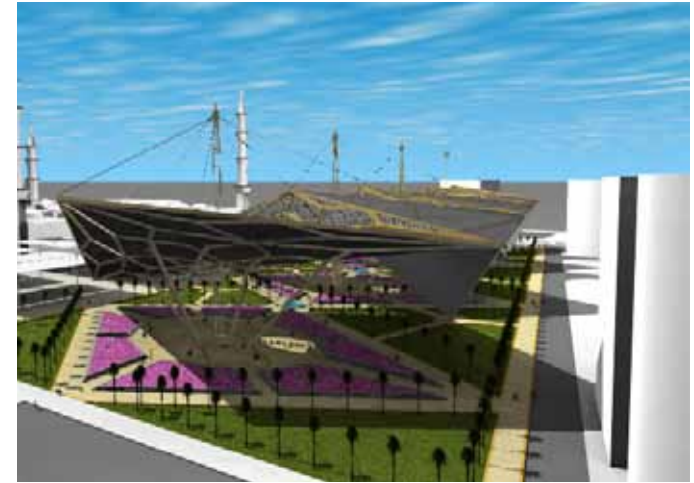
**Figure 4.45** *The pavement pattern of the plaza incorporated prayer lines (3m apart) that allow worshippers to pray under the canopy in the time of prayer. Also, the area can be utilized as an extension space to the Prophet's Mosque.*

**Figure 4.46** *(opposite) Bird's eye view showing how different components are connected together.*

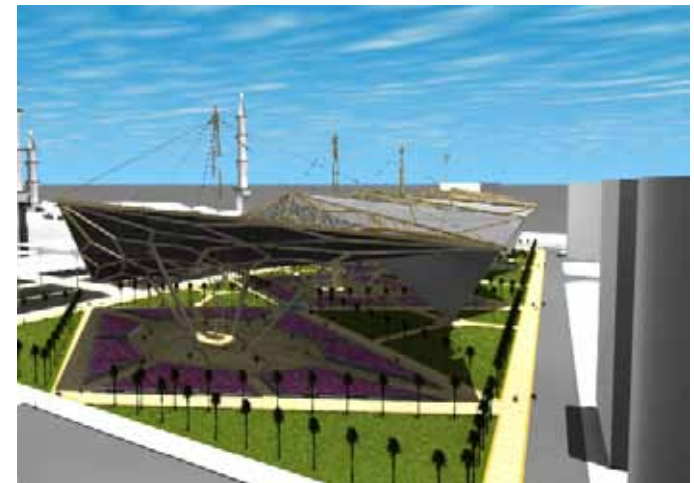


**Figure 4.47**

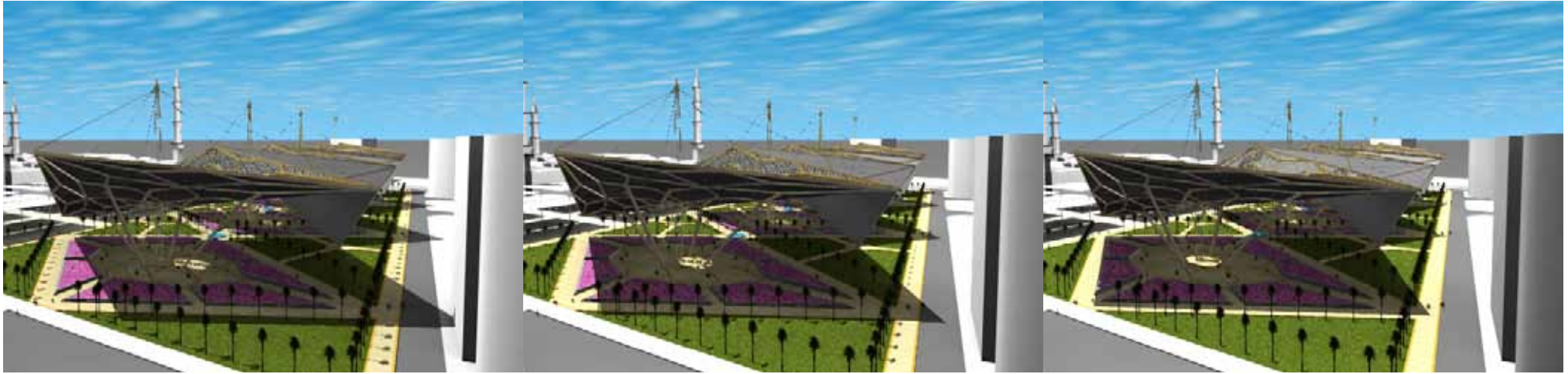
*Digital shadow simulation showing the shaded area during the hottest time of the day (9:00 am – 4:00 pm) at the Summer Solstice at the exact location. As a result the perforated surfaces are not enough to provide the desired shaded areas. Thus, additional shading membranes were added to the west side openings which provide the needed shading and enhance the microclimate. The east side of the canopy instead left open to allow visual connection with the mosque.*



9:00 AM



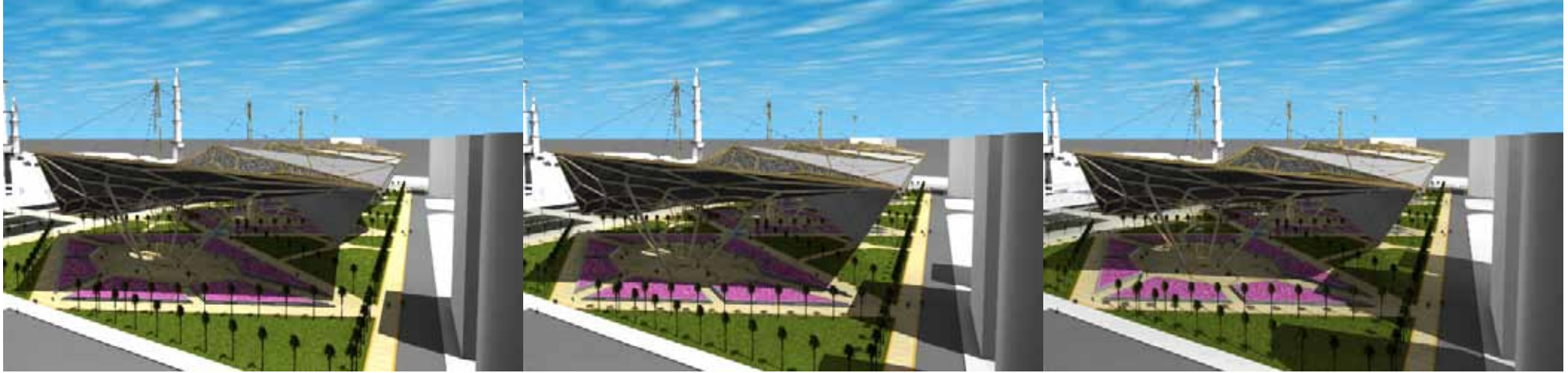
1:00 PM



10:00 AM

11:00 AM

12:00 PM

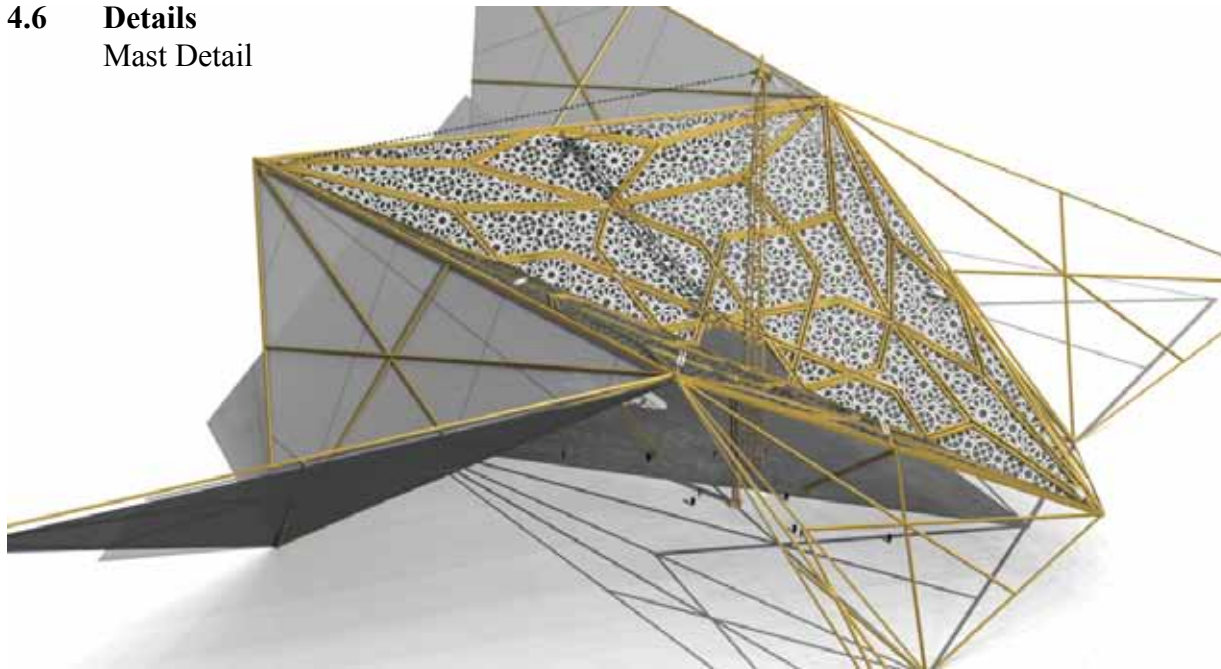


2:00 PM

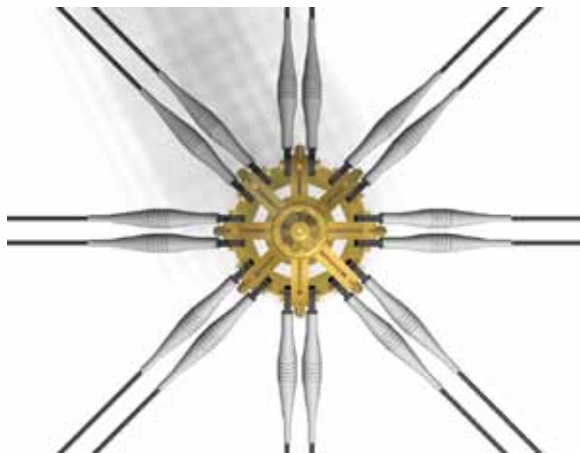
3:00 PM

4:00 PM

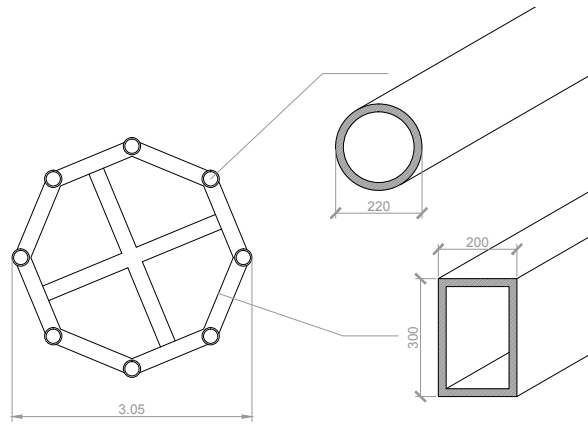
**4.6 Details**  
**Mast Detail**



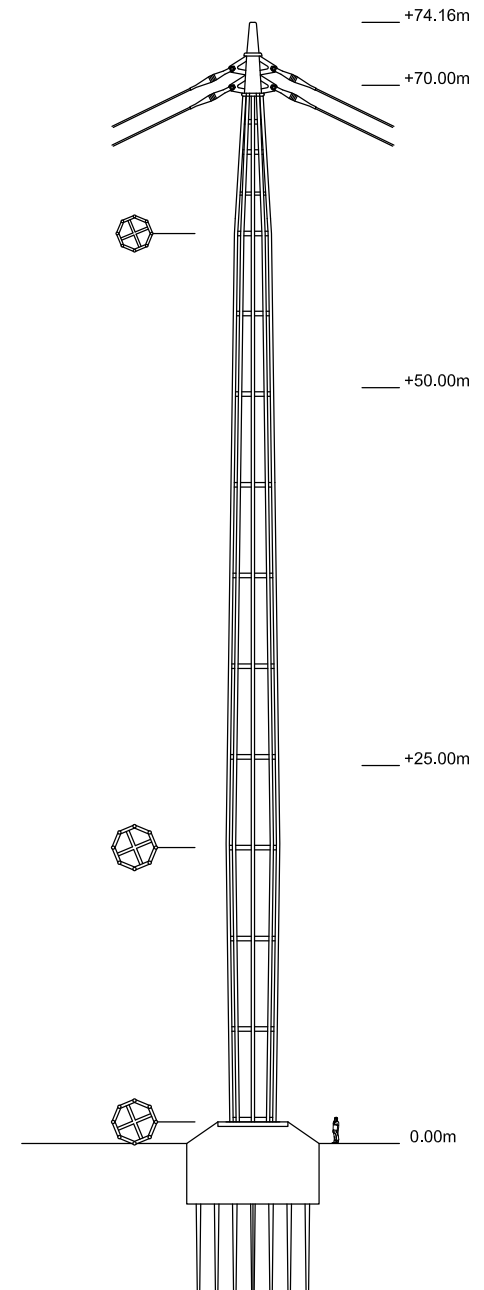
*Figure 4.48 Canopy components*



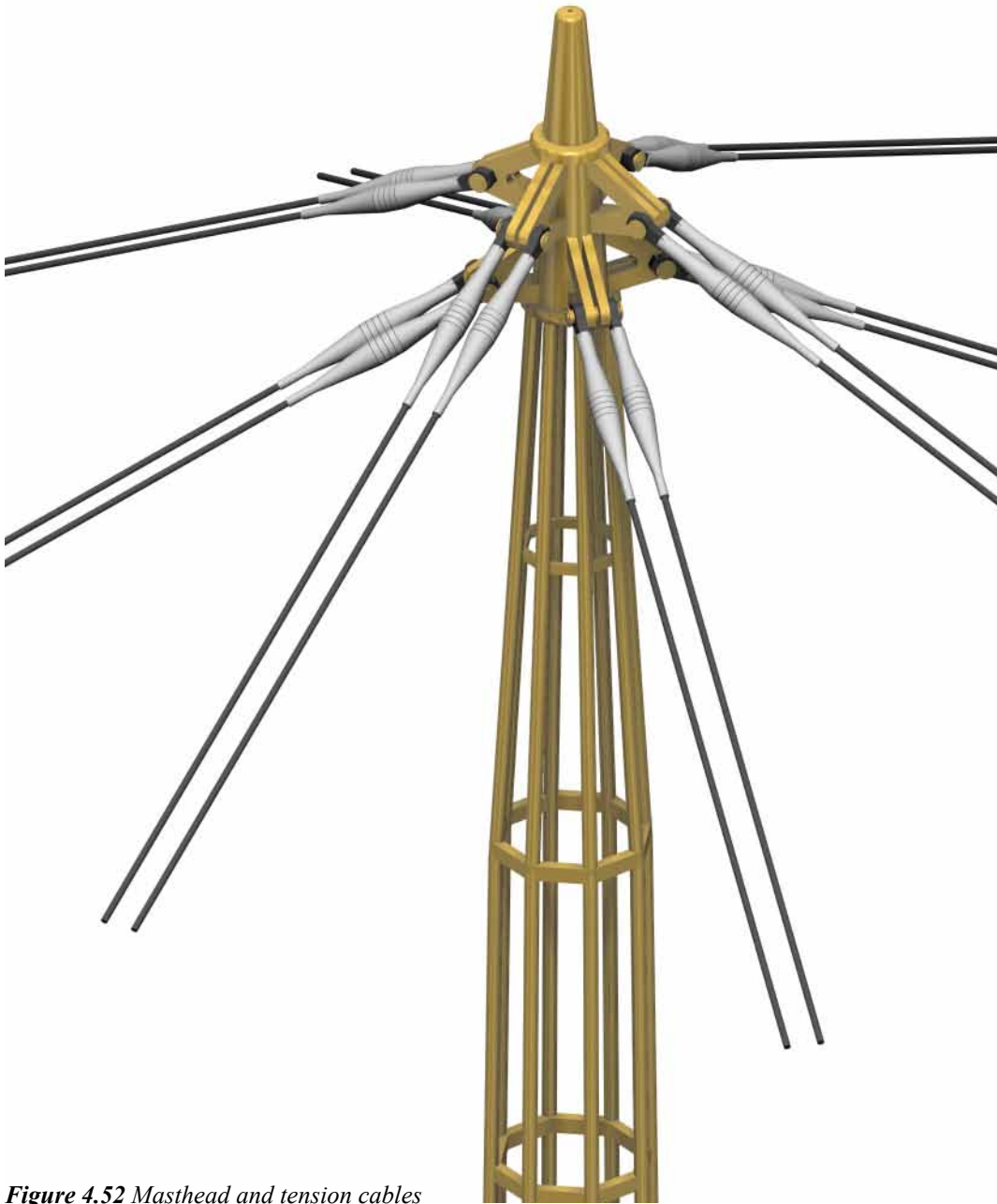
*Figure 4.49 Mast top view*



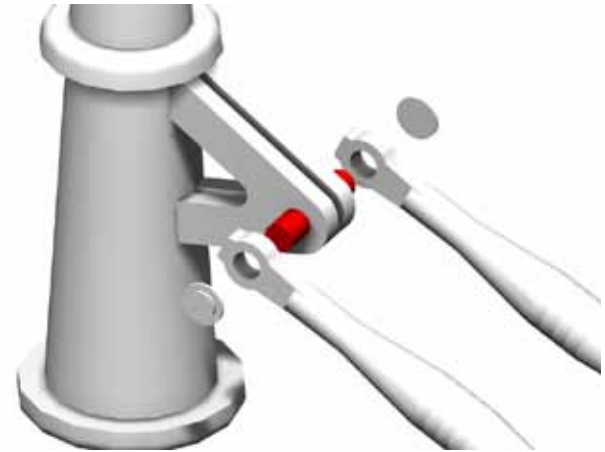
*Figure 4.50 Mast cross section*



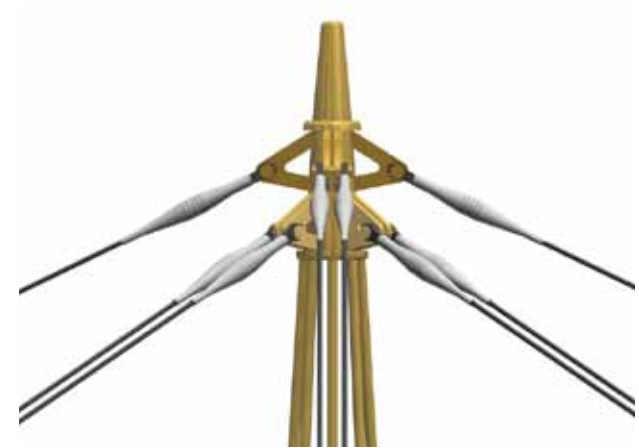
*Figure 4.51 Mast elevation*



*Figure 4.52 Masthead and tension cables*

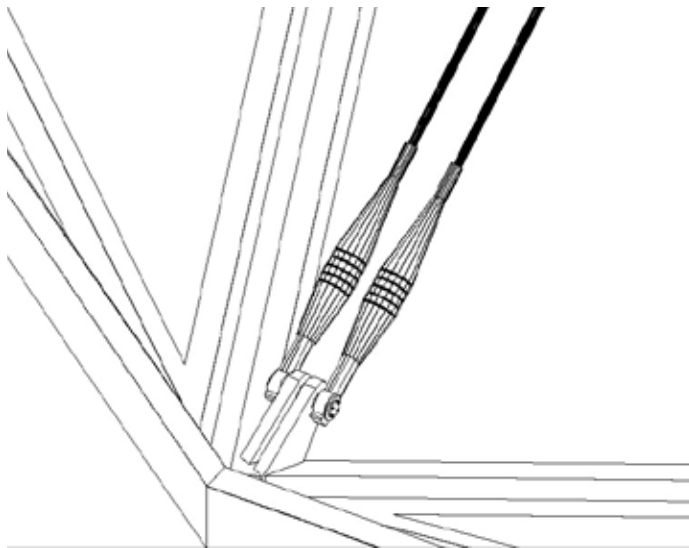


*Figure 4.53 Masthead, connection details*

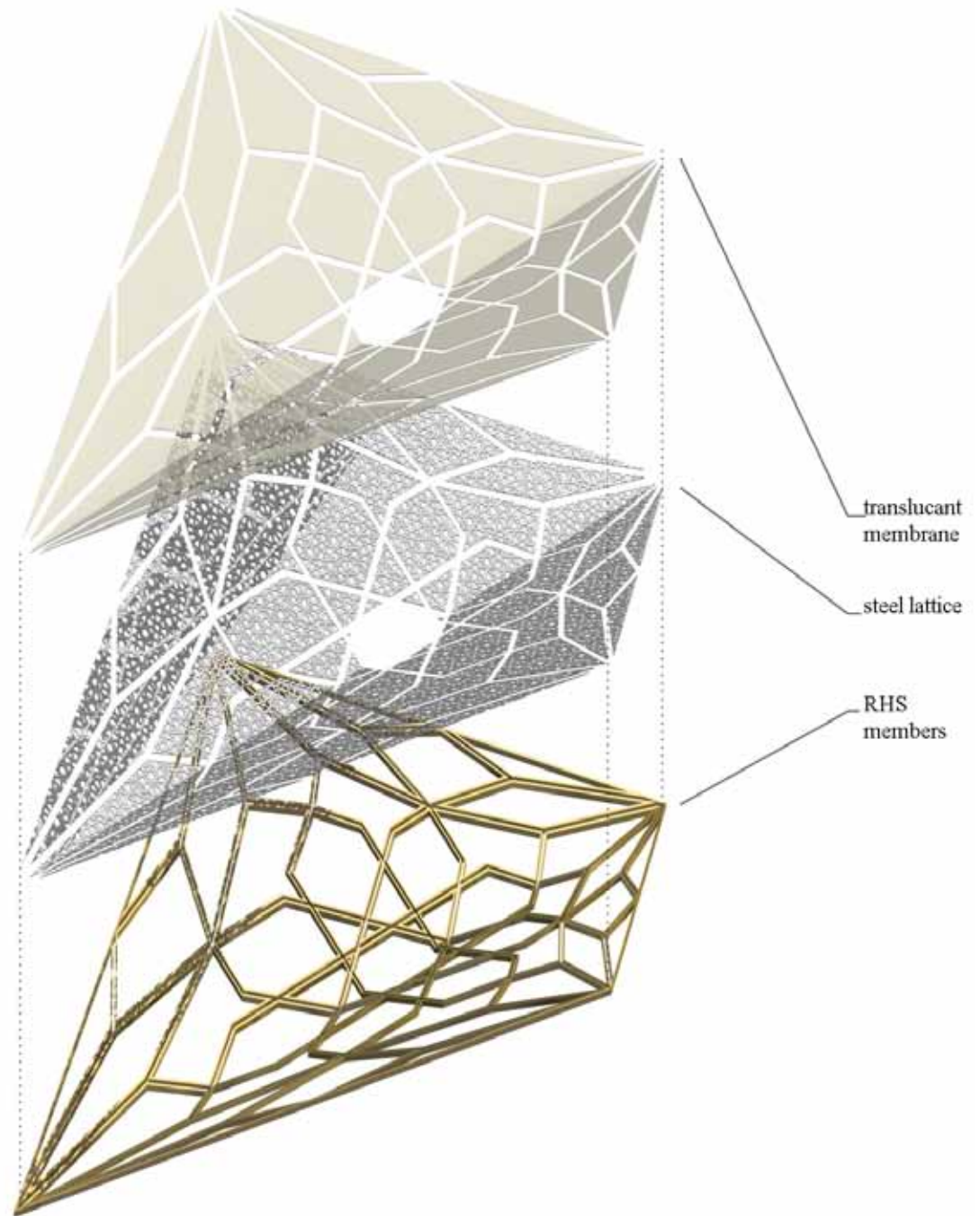


*Figure 4.54 Masthead elevation*

**4.6 Details**  
Canopy Detail

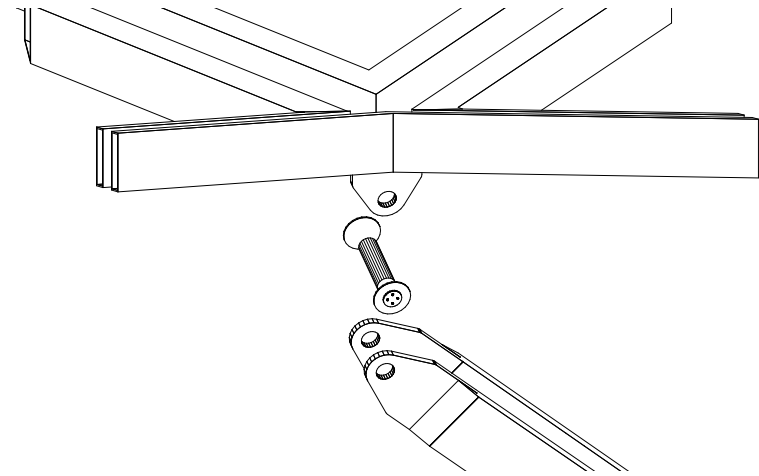


*Figure 4.55 Cable-canopy connection*



*Figure 4.56 (right) Canopy layers*





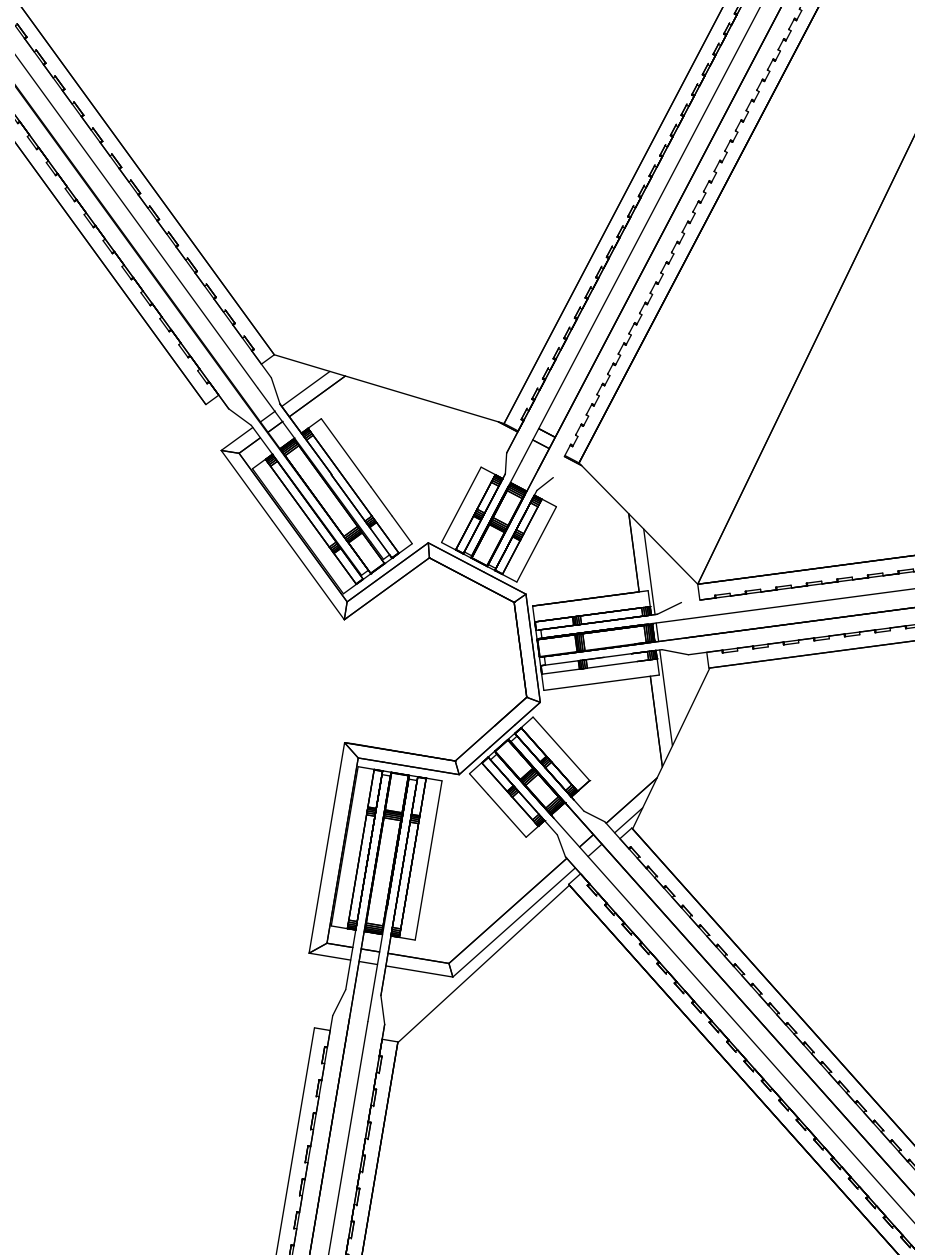
*Figure 4.57 Column top connection (pinned)*



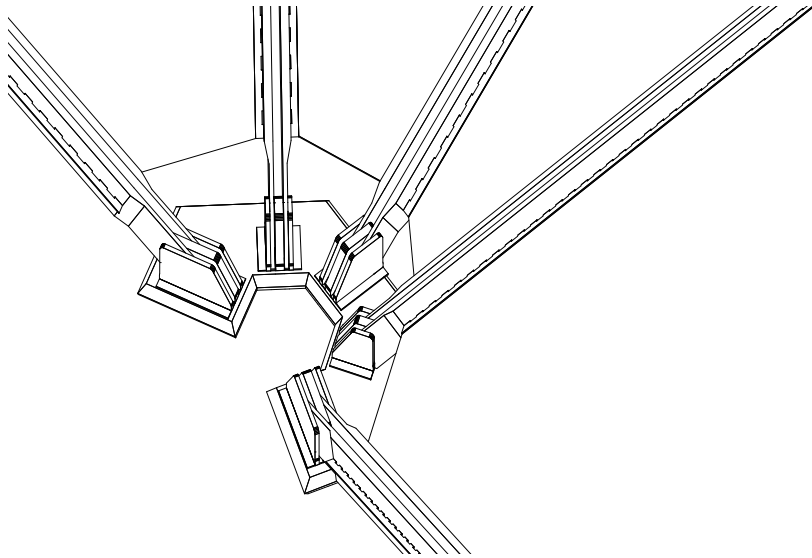
*Figure 4.58 Column base connection (fixed)*

*Figure 4.59 (left) Overall column scale*

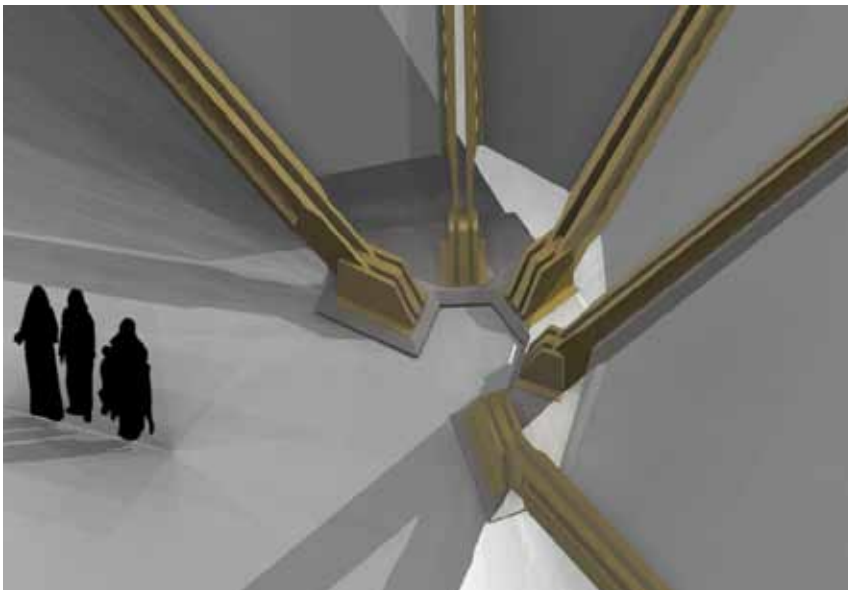
**Details**  
Side Columns Detail



*Figure 4.60* Side columns top view



*Figure 4.61 Side columns isometric view*



*Figure 4.62 Side column scale*





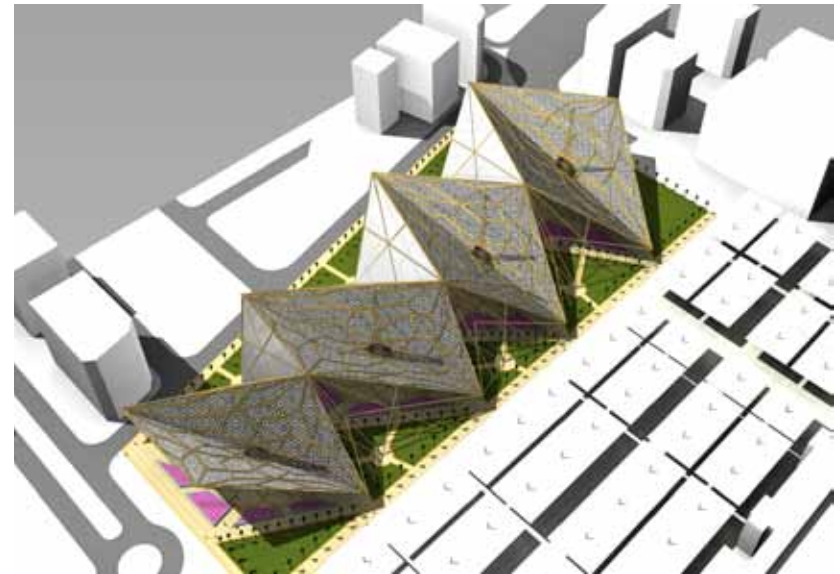
# C O N C L U S I O N

## CONCLUSION

The design intervention gives the site a sense of local identity through the use of geometry and an abstraction of traditional pattern that integrate with the landscape design. The goal is to create an alternative development strategy for the central zone that can help conserve some of the place's identity and, at the same time, enhance the urban experience. The intervention offers a green public space that is adjacent to the Prophet's Mosque which can accommodate extended prayer lines. Moreover, the space can be utilized by local vendors and merchants to sell their local products in mobile kiosks. The large scale shading structure will define the definite boundary between public life and private life in the hotels. It is a threshold between the inside and outside of the religious site. In essence, the intervention will stand up for public rights and will claim this area for public use. The area is neither a religious nor a corporate site; instead it is a public space.

In addition, we can identify the two most dominant limitations for the design intervention application. The first limitation is the ignorance of the importance of conserving the traditional heritage of the place and the desire to modernize it at the expense of its identity. The second limitation is the religious tourism industry which attracts investors to invest around significant historical sites despite conserving traditional or historical values of the place. As previously discussed in Chapter 1, the religious tourism industry is one of the strongest fields of the Saudi economy after the oil industry, since major religious sites are located within the Saudi territory.

To summarize, reviving place identity is a challenging goal in today's globalizing world, since it is more practical to follow the global

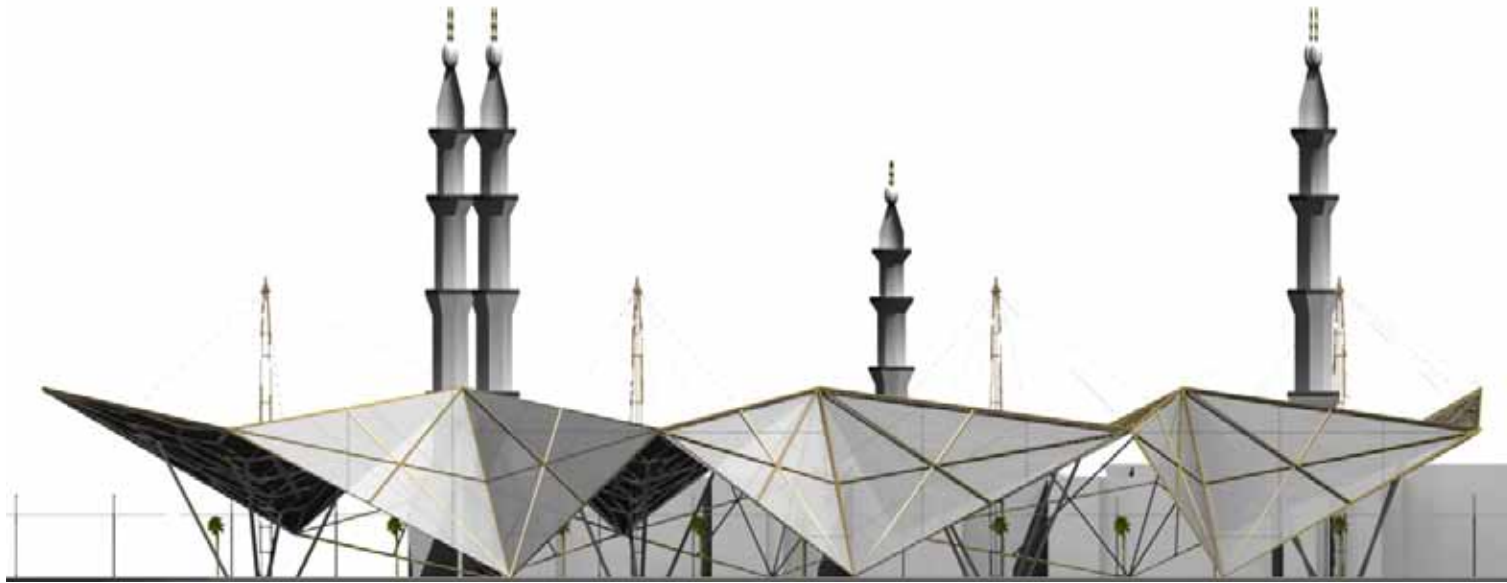


**Figure 5.1**

*Bird's eye view of the design intervention*

**Figure 5.2 (cover)**

*Aerial view of a traditional neighbor in Taif, Saudi Arabia*



**Figure 5.3**  
*West Elevation showing the canopy and the Prophet's Mosque at the background*

trends than to stimulate local traditional practice. However, for any intervention, especially in a historically significant area, the built environment should reflect the local identity. Development is necessary, and no one can deny the advantages for recent developments upon visitors and worshippers, but it should be done carefully after considering all aspects of the site's heritage and values. Unfortunately, demolishing traditional physical environment alters the memories of the place and affects the social life quality. Globalization and commercialization affect the spirituality of the place negatively. On the other hand, natural built environments and green spaces can hold great memories and encourage the reviving of the place identity. After all, the central zone was taken from local residents of Medina and should be returned by involving them in the development.

## AFTERWORD

“Authorities are building a mosque so big it will hold 1.6m people – but are demolishing irreplaceable monuments to do it.”<sup>1</sup>

In September 25, 2012 the largest expansion in the history of the Prophet’s Mosque was announced by the authority. The mosque building will sprawl over an area of 614,800 square meters while the combined space of the mosque and plazas will be 1,020,500 square meters, which can accommodate 1 million worshippers inside the mosque and 800,000 worshippers in the plaza by 2040. When completed, the Central Zone surrounding the mosque will triple in size compared to present area with greater room for residences, shopping areas, utility and security and will be surrounded a new ring road. The project will remove 23 hotels from the Central Zone.<sup>2</sup>

In essence, the proposal includes expanding the mosque from the East and the Southeastern side of the mosque. This plan has two main issues that can be identified. The first issue is shifting the role of the old mosque to the new addition, because prayers will be lead from the new Mihrab (prayer niche) located at the most southern wall (*qibla* wall) of the complex. It will turn the original area of Prophet’s Mosque into annex to the expansion project. That is to say the new expansion will turn the mosque into a new mosque that is different from the Prophet’s original site. The second issue will be the destruction of historical monuments that are located at the western part of the central zone. The expansion will extend across an area presently occupied by three historical mosques: the mosques Abu Bakr and Umar, as well as Al Ghamama mosque. Al Gamama mosque is where the Prophet used to perform Eid prayer and is one of the few archeological sites in Madinah.<sup>3</sup>



**Figure 5.4**  
*Site plan showing the first expansion’s alternative and the required area*



**Figure 5.5**  
*The rejected expansion’s alternative of the Prophet’s mosque*





**Figure 5.6**  
*The approved expansion's alternative of the Prophet's Mosque.*

Once the new proposal has been announced, the public complained against the possibility of vandalism against the three historical mosques and demanded an urgent revision to the proposal. As a result, the higher authority ordered to form a committee to revise the expansion plan. The revision committee agreed on rejecting the proposal and recommend future expansion to be to a northerly direction. As can be seen, the public awareness of the importance of preserving the traditional heritage of a city can be an effective support for a conservation intervention.

After all, the development approaches continue to destroy the historical and traditional heritage of the city. Whereas, the thesis's approach offers a more comprehensive strategy that enhance the place experience, conserve the place identity, and offer a public space.

## ENDNOTES

1. Central Department for Statistics and Information, "Census Madinah 1425," [http://www.cdsi.gov.sa/english/index.php?option=com\\_docman&task=cat\\_view&gid=45&Itemid=113](http://www.cdsi.gov.sa/english/index.php?option=com_docman&task=cat_view&gid=45&Itemid=113) (accessed November 6, 2012)
2. Sunnah.com, <http://sunnah.com/bukhari/20/3> (accessed November 3, 2012).
3. Reza Amin Eita, "Development Project of the Central Zone of Medina and its Impact on Public Life," (*in Arabic*) Creativity and Excellence Seminar in Urban Planning, <http://www.urar.org.sa/ibda/mahawer1-2.html> (accessed November 4, 2012).
4. Michael Dumper, Bruce E. Stanley, *Cities of the Middle East and North Africa; a historical encyclopedia* (Santa Barbara, Calif.: ABC-CLIO, 2007), 237.
5. Ibid., 237.
6. Ibid., 237.
7. William Montgomery Watt, *Muhammad at Medina* (Oxford: Clarendon Press, 1956), 240.
8. Frederick M. Denny, "Ummah in the Constitution of Medina," *Journal of Near Eastern Studies* 36, no. 1 (1977): 42, <http://www.jstor.org/stable/1061854> (accessed November 3, 2012).
9. Dumper, *Cities*, 238.
10. Al Madinah Regional Municipality, "Historical Background," <http://www.amana-md.gov.sa/sites/en/AboutAlmadinah/HistoricalGlance/Pages/Home.aspx> (accessed November 3, 2012).
11. Aga Khan Trust for Culture, "Description of Medina," ArchNet, [http://archnet.org/library/places/one-place.jsp?place\\_id=1884&order\\_by=title&showdescription=1](http://archnet.org/library/places/one-place.jsp?place_id=1884&order_by=title&showdescription=1) (accessed November 3, 2012).
12. Ibid.
13. Dumper, *Cities*, 238.
14. Ibid., 238.
15. Al Madinah Regional Municipality, "Historical Background," <http://www.amana-md.gov.sa/sites/en/AboutAlmadinah/HistoricalGlance/Pages/Home.aspx> (accessed November 3, 2012).
16. Ibid.
17. Aga Khan Trust for Culture, "Description of Medina," ArchNet, [http://archnet.org/library/places/one-place.jsp?place\\_id=1884&order\\_by=title&showdescription=1](http://archnet.org/library/places/one-place.jsp?place_id=1884&order_by=title&showdescription=1) (accessed November 3, 2012).
18. Sunnah.com, <http://sunnah.com/bukhari/20/2> (accessed November 3, 2012).
19. Al Madinah Regional Municipality, "Religious Tourism," <http://www.amana-md.gov.sa/sites/en/AboutAlmadinah/ReligiousTourism/Pages/Home.aspx> (accessed November 3, 2012).
20. Raizat Butt, "Mecca makeover: how the hajj has become big business for Saudi Arabia," *The Guardian*, November 14, 2010, <http://www.guardian.co.uk/world/2010/nov/14/mecca-hajj-saudi-arabia> (accessed November 3, 2012).
21. Deena Kamel Yousef, "Project to boost religious tourism," *zawya.com*, [http://www.zawya.com/story/Investing\\_in\\_religious\\_tourism-GN\\_29042012\\_300421/](http://www.zawya.com/story/Investing_in_religious_tourism-GN_29042012_300421/) (accessed November 3, 2012).
22. Raizat Butt, "Mecca makeover: how the hajj has become big business for Saudi Arabia," *The Guardian*, November 14, 2010, <http://www.guardian.co.uk/world/2010/nov/14/mecca-hajj-saudi-arabia> (accessed November 3, 2012).
23. Ibid.
24. Al Madinah Regional Municipality, "Historical Background," <http://www.amana-md.gov.sa/sites/en/AboutAlmadinah/HistoricalGlance/Pages/Home.aspx> (accessed November 3, 2012).
25. Al Madinah Regional Municipality, "Religious Tourism," <http://www.amana-md.gov.sa/sites/en/AboutAlmadinah/ReligiousTourism/Pages/Home.aspx> (accessed November 3, 2012).

[www.amana-md.gov.sa/sites/en/AboutAlmadinah/ReligiousTourism/Pages/Home.aspx](http://www.amana-md.gov.sa/sites/en/AboutAlmadinah/ReligiousTourism/Pages/Home.aspx) (accessed November 3, 2012).

26. Ibid.

27. Ibid.

28. Ibid.

29. Reza Amin Eita, "Development Project of the Central Zone of Medina and its Impact on Public Life," (*in Arabic*) Creativity and Excellence Seminar in Urban Planning, <http://www.urar.org.sa/ibda/mahawer1-2.html> (accessed November 4, 2012).

30. Ibid.

31. Ibid.

32. Ibid.

33. Taiyo Kogyo Corporation, "Large scale umbrellas (250 units) completed, covering the pilgrims worldwide with membrane architecture," MakMax, <http://www.makmax.com/news/2012/nw0214.html> (accessed November 4, 2012).

34. Premier Composite Technologies L.L.C., "Medina Haram Piazza Shading Umbrellas," Premier Composite Technologies, [http://www.pct.ae/composites\\_projects.php?project=5](http://www.pct.ae/composites_projects.php?project=5) (accessed November 4, 2012).

35. Darul Ihsan Islamic Services Centre, "Prophet's Mosque Get's New Umbrellas," <http://www.darulihsan.com/index.php/news/news/news-archives/2694-prophets-mosque-gets-new-umbrellas> (accessed November 4, 2012).

36. Premier Composite Technologies L.L.C., "Medina Haram Piazza Shading Umbrellas," Premier Composite Technologies, [http://www.pct.ae/composites\\_projects.php?project=5](http://www.pct.ae/composites_projects.php?project=5) (accessed November 4, 2012).

37. Taiyo Kogyo Corporation, "Large scale umbrellas (250 units) completed, covering the pilgrims worldwide with membrane archi-

ture," MakMax, <http://www.makmax.com/news/2012/nw0214.html> (accessed November 4, 2012).

38. Ibid.

39. Suhaila Hammad, "Medina: the Capital of Islamic Culture of 2013," *Al-Madina Newspaper*, June 12, 2012, <http://www.al-madina.com/node/383901> (accessed November 5, 2012)

40. Ibid.

41. Reza Amin Eita, "Development Project of the Central Zone of Medina and its Impact on Public Life," (*in Arabic*) Creativity and Excellence Seminar in Urban Planning, <http://www.urar.org.sa/ibda/mahawer1-2.html> (accessed November 4, 2012).

42. "Hotels' Revenues Rise to Billion Riyals in Central Medina," *Al-Eqtisadiyah Newspaper*, February 7, 2007, [http://www.aleqt.com/2007/02/07/article\\_77273.html](http://www.aleqt.com/2007/02/07/article_77273.html) (accessed November 5, 2012).

43. Ali Makki, "I Saw the Old Medina Fade and Turn Into 'Manhattan'," *Alsharq News*, June 22, 2012, <http://www.alsharq.net.sa/2012/06/22/356151> (accessed November 5, 2012).

44. Mohammed Al-Hussayen, "Al-Manakhah Urban Centre: Vivid Memory of the Heritage of Medina," *Journal of Medina Research and Studies Centre*, no. 7 (2011): 9.

45. Mohammad Makki, "The Impact of Urban Development on the City of Medina," *Journal of Medina Research and Studies Centre*, no. 1 (2000): 32-42.

46. Ibid.

47. Ibid.

48. Ibid.

49. Jerome Taylor, "Medina: Saudis take a bulldozer to Islam's history," *The Independent*, October 26, 2012, <http://www.independent.co.uk/news/world/middle-east/medina-saudis-take-a-bulldozer-to-islams-history-8228795.html> (accessed November 4, 2012).

50. Reza Amin Eita, "Development Project of the Central Zone of Medina and its Impact on Public Life," (*in Arabic*) Creativity and Excellence Seminar in Urban Planning, <http://www.urar.org.sa/ibda/mahawer1-2.html> (accessed November 4, 2012).
51. Ibid.
52. Ali Makki, "I Saw the Old Medina Fade and Turn Into 'Manhattan'," *Alsharq News*, June 22, 2012, <http://www.alsharq.net.sa/2012/06/22/356151> (accessed November 5, 2012).
53. Ibid.
54. Syed Jan Abas and Amer Shaker Salman. *Symmetries of Islamic geometrical patterns*. (Singapore: World Scientific, 1995), 6.
55. Oleg Grabar. *The Formation of Islamic Art*. (New Haven : Yale Univ. Press, 1987), 2.
56. Abas, *Symmetries*, 9.
57. Ibid., 4.
58. Ibid., 6.
59. Sebastian Jordana, "Ehrlich Architects Wins International Design Competition for the Federal National Council's New Parliament Building Complex" 27 Jan 2011, *ArchDaily*, <http://www.archdaily.com/107307> (accessed August 19, 2012).
60. Ahmed Al-Badawy, "Al.Mualla Cemetery Mural - A matter of Life and Death / FIRST Prize at The First Islamic Competition for Ornamenting Makkah Al.Mukarramah 2010," Ahmed Al-Badawy, <http://ahmedalbadawy.blogspot.ca/2011/09/almualla-cemetery-mural-matter-of-life.html> (August 18, 2012).
61. Mecca is holy city for Muslims where they performed pilgrimage and should facing during their daily prayers.
62. Girih tiles are a set of five tiles that were used in the creation of tiling patterns for decoration of buildings in Islamic architecture. (en. [wikipedia.org/wiki/Girih](http://wikipedia.org/wiki/Girih))
63. Geoff Ricks, "Native and Introduced Species for Naturalistic Landscape in Saudi Arabia," *JKAU: Eng. Sci.*, vol. 4. pp. 21-46 (1412 A.H./1992 A.D): 21.
64. Ibid., 21.
65. Ibid., 21.
66. Ibid., 22.
67. Ibid., 22.
68. Richard Bodeker, "Gardens in the Desert: a Landscape Architect in Saudi Arabia," in *Sustainable Landscape Design in Arid Climates*, ed. William O'Reilly (Geneva, Switzerland: Aga Khan Trust for Culture, 1996), 89.
69. Omar Abu-Rizaiza, "Ablution Water: Prospects for Reuse in Flushing of Toilets at Mosques, Schools, and Offices in Saudi Arabia," in *Engineering Sciences Journal* 14,no. 2 (2002): 10.
70. Ibid., 17
71. Ibid., 21
72. Arab Forum for Environment and Development, *Arab Environment Water: Sustainable Management of a Scarce Resource*, (Beirut, Lebanon: Technical Publications and Environment & Development magazine, 2010), 117, <http://www.afedonline.org/Report2010/main.asp> (accessed August 14, 2012)
73. Halim Abdelhalim, "Diplomatic Quarter Landscaping, Riyadh, Saudi Arabia," *Technical Review Summary by Aga Khan Trust for Culture*, June 16, 1989, 1.
74. Ibid., 2.
75. Ibid., 5.
76. Ibid., 7.
77. John Feeney, "The Magic of The Mashrabiya," *Saudi Aramco World*, July/August 1974, 32-36.

78. Ibid.
79. Ibid.
80. Foster and Partners, "Official Opening of the Masdar Institute Campus, First Solar Powered Building at Masdar City," <http://www.fosterandpartners.com/News/428/Default.aspx>, (accessed August 29, 2012).
81. Ibid.
82. Stephan Luecke, "From a Poetic Vision Towards a Programmed Reality: Construction of a 6 meter large Light-Test Model of Jean Nouvel's Louvre Abu Dhabi," <http://desmena.com/?p=2768>, (accessed August 16, 2012).
83. Renée Otmar, ed., *Murphy/Jahn : Six Works*, (Mulgrave, Vic. : Images Pub. Group, 2001), 16.
84. Rogers Stirk Harbour and Partners LLP, "Millennium Experience," Rogers Stirk Harbour and Partners, [http://www.rsh-p.com/work/buildings/millennium\\_experience](http://www.rsh-p.com/work/buildings/millennium_experience) (accessed November 8, 2012).
85. Yan Xu, "Sense of Place and Identity," East St. Louis Action Research Project, <http://www.eslarp.uiuc.edu/la/la437-f95/reports/yards/main.html> (accessed August 28, 2012)
86. Esther M. Sternberg and Matthew A. Wilson, "Neuroscience and Architecture: Seeking Common Ground," *Cell* 127, no. 2 (2006): 239-242, doi: 10.1016/j.cell.2006.10.012 (accessed August 28, 2012).
87. Project for Public Spaces, "What is Placemaking?," [http://www.pps.org/reference/what\\_is\\_placemaking/](http://www.pps.org/reference/what_is_placemaking/) (August 28, 2012).
88. Xu, *Sense*.
89. Mohammad Al-Asad, "Samir Kassir Public Garden, Beirut, Lebanon," *Site Review Report by Aga Khan Trust for Culture*, April 2007, 1.
90. Sunan Ibn Majah. Book of al-Tijarah, al-Ahkam. (*in Arabic*)
91. Al Madinah Regional Municipality, "Historical Background," <http://www.amana-md.gov.sa/sites/en/AboutAlmadinah/HistoricalGlance/Pages/Home.aspx> (accessed November 3, 2012).
92. Cauty and Associates LLC, "MEDINA, SAUDI ARABIA," Weatherbase.com, <http://www.weatherbase.com/weather/weather.php3?s=3404&refer=&cityname=Medina-Saudi-Arabia> (accessed November 11, 2012).
93. Sunnah.com, <http://sunnah.com/bukhari/20/3> (accessed November 3, 2012).
94. Geoff Ricks, "Native and Introduced Species for Naturalistic Landscape in Saudi Arabia," *JKAU: Eng. Sci.*, vol. 4 (1992): 21-46.
95. Warren Jones and Charles Sacamano. *Landscape Plants for Dry Regions*. (Cambridge: Da Capo Press, 2000), 109.
96. Jerome Taylor, "Medina: Saudis take a bulldozer to Islam's history," *The Independent*, October 26, 2012, <http://www.independent.co.uk/news/world/middle-east/medina-saudis-take-a-bulldozer-to-islams-history-8228795.html> (accessed November 4, 2012).
97. Saudi Research & Publishing Company, "Prophet's Mosque to accommodate two million worshippers after expansion," *ArabNews*, September 26, 2012, <http://www.arabnews.com/prophet%E2%80%99s-mosque-accommodate-two-million-worshippers-after-expansion> (accessed November 27, 2012).
98. Muhammad Sayed Al-Jakni, "The expansion of the Prophet's Mosque (Part 3)," *Saudi Gazette*, November 21, 2012, <http://www.saudigazette.com.sa/index.cfm?method=home.region&contentid=20121121143526> (accessed December 18, 2012).

## Bibliography

Abas , Syed Jan, and Amer Shaker Salman. *Symmetries of Islamic geometrical patterns*. Singapore: World Scientific, 1995.

Abdelhalim, Halim. "Diplomatic Quarter Landscaping, Riyadh, Saudi Arabia." *Technical Review Summary by Aga Khan Trust for Culture*. June 16, 1989.

Abu-Rizaiza, Omar. "Ablution Water: Prospects for Reuse in Flushing of Toilets at Mosques, Schools, and Offices in Saudi Arabia." *Engineering Sciences Journal*. 14,no. 2 (2002).

Aga Khan Trust for Culture. "Description of Medina," *ArchNet*.

[http://archnet.org/library/places/one-place.jsp?place\\_id=1884&order\\_by=title&showdescription=1](http://archnet.org/library/places/one-place.jsp?place_id=1884&order_by=title&showdescription=1) (accessed November 20, 2012).

Al-Asad, Mohammad. "Samir Kassir Public Garden, Beirut, Lebanon." *Site Review Report by Aga Khan Trust for Culture*, 2007.

Al-Badawy, Ahmed. "Al.Mualla Cemetery Mural - A matter of Life and Death / FIRST Prize at The First Islamic Competition for Ornamenting Makkah Al.Mukarramah 2010." Ahmed Al-Badawy. <http://ahmedalbadawy.blogspot.ca/2011/09/almualla-cemetery-mural-matter-of-life.html> (accessed November 20, 2012).

Al Madinah Regional Municipality. "Historical Background."

<http://www.amana-md.gov.sa/sites/en/AboutAlmadinah/HistoricalGlance/Pages/Home.aspx> (accessed November 20, 2012).

Al Madinah Regional Municipality, "Religious Tourism,"

<http://www.amana-md.gov.sa/sites/en/AboutAlmadinah/ReligiousTourism/Pages/Home.aspx> (accessed November 20, 2012).

Al-Hussayen, Mohammed. "Al-Manakhah Urban Centre: Vivid Memory of the Heritage of Medina." *Journal of Medina Research and Studies Centre*, no. 7 (2011).

- Armijos, Samuel J.. *Fabric architecture: creative resources for shade, signage, and shelter*. New York: W.W. Norton, 2008.
- Bianca, Stefano. *Urban form in the Arab world: past and present*. London: Thames & Hudson, 2000.
- Bianca, Stefano, and Philip Jodidio. *Cairo: revitalising a historic metropolis*. Turin: U. Allemandi & Co. for the Aga Khan Trust for Culture, 2004.
- Boake, Terri Meyer, and Vincent Hui. *Understanding steel design: an architectural design manual*. Basel, Switzerland: Birkhäuser, 2012.
- Bodeker, Richard. "Gardens in the Desert: a Landscape Architect in Saudi Arabia," in *Sustainable Landscape Design in Arid Climates*, ed. William O'Reilly. Geneva, Switzerland: Aga Khan Trust for Culture, 1996.
- Burton, Richard Francis, and Isabel Burton. *Personal narrative of a pilgrimage to al-Madinah & Meccah*,. Memorial ed. New York: Dover Publications, 1964.
- Butt, Raizat. "Mecca makeover: how the hajj has become big business for Saudi Arabia." *The Guardian*. <http://www.guardian.co.uk/world/2010/nov/14/mecca-hajj-saudi-arabia> (accessed November 20, 2012).
- Central Department for Statistics and Information, "Census Madinah 1425," [http://www.cdsi.gov.sa/english/index.php?option=com\\_docman&task=cat\\_view&gid=45&Itemid=113](http://www.cdsi.gov.sa/english/index.php?option=com_docman&task=cat_view&gid=45&Itemid=113) (accessed November 20, 2012).
- Darul Ihsan Islamic Services Centre. "Prophet's Mosque Get's New Umbrellas." <http://www.darulihisan.com/index.php/news/news/news-archives/2694-prophets-mosque-gets-new-umbrellas> (accessed November 20, 2012).
- Denny, Frederick M. "Ummah in the Constitution of Medina," *Journal of Near Eastern Studies* 36, no. 1 1977.
- Dumper, Michael, and Bruce E. Stanley. *Cities of the Middle East and North Africa; a historical encyclopedia*. Santa Barbara, Calif.: ABC-CLIO, 2007.

Eita, Reza Amin. "Development Project of the Central Zone of Medina and its Impact on Public Life." (*in Arabic*) *Creativity and Excellence Seminar in Urban Planning*. <http://www.urar.org.sa/ibda/mahawer1-2.html> (accessed November 20, 2012).

Feeney, John. "The Magic of The Mashrabiya." *Saudi Aramco World*. July/August 1974, 32-36.

Flannery, John A., and Karen Smith. *Urban landscape design*. Kempen, Germany: TeNeues, 2008.

Foster and Partners. "Official Opening of the Masdar Institute Campus, First Solar Powered Building at Masdar City." <http://www.fosterandpartners.com/News/428/Default.aspx> (accessed November 20, 2012).

Grabar, Oleg. *The Formation of Islamic Art*. New Haven : Yale Univ. Press, 1987.

Hakim, Besim S.. *Arabic-Islamic cities: building and planning principles*. London: New York :, 1986.

Hammad, Suhaila. "Medina: the Capital of Islamic Culture of 2013." *Al-Madina Newspaper*. <http://www.al-madina.com/node/383901> (accessed November 20, 2012).

"Hotels' Revenues Rise to Billion Riyals in Central Medina." *Al-Eqtisadiyah Newspaper*. [http://www.aleqt.com/2007/02/07/article\\_77273.html](http://www.aleqt.com/2007/02/07/article_77273.html) (accessed November 20, 2012).

Jones, Warren D., and Charles M. Sacamano. *Landscape Plants for Dry Regions: More than 600 Species from around the World*. Tucson, AZ: Fisher, 2000.

Jordana, Sebastian. "Ehrlich Architects Wins International Design Competition for the Federal National Council's New Parliament Building Complex." 27 Jan 2011, *ArchDaily*. <http://www.archdaily.com/107307> (accessed November 20, 2012).

Luecke, Stephan. "From a Poetic Vision Towards a Programmed Reality: Construction of a 6 meter large Light-Test Model of Jean Nouvel's Louvre Abu Dhabi." <http://desmena.com/?p=2768> (accessed November 20, 2012).

Majah, Sunan Ibn. Book of al-Tijarah, al-Ahkam. (*in Arabic*)



- Makki, Ali. "I Saw the Old Medina Fade and Turn Into 'Manhattan'" Alsharq News. <http://www.alsharq.net.sa/2012/06/22/356151> (accessed November 20, 2012).
- Makki, M. S.. *Medina, Saudi Arabia: a geographic analysis of the city and region*. Amersham, Bucks: Avebury, 1982.
- Makki, Mohammad. "The Impact of Urban Development on the City of Medina." *Journal of Medina Research and Studies Centre*. no. 1 (2000): 32-42.
- Otmar, Renée. ed., *Murphy/Jahn : Six Work*. Mulgrave, Vic. : Images Pub. Group, 2001.
- Otto, Frei, Sabine Schanz, and Bodo Rasch. *Frei Otto, Bodo Rasch: finding form : towards an architecture of the minimal : the Werkbund show Frei Otto, Frei Otto shows Bodo Rasch : exhibition at the Villa Stuck, Munich, on the occasion of the award of the 1992 Deutscher Werkbund Bayern Prize to Fre*. Germany: Axel Menges, 1995.
- Otto, Frei, and Winfried Nerdinger. *Frei Otto: complete works : lightweight construction, natural design*. Basel: Birkhauser, 2005.
- Parkyn, Neil. *SuperStructures: the world's greatest modern structures*. London: Merrell, 2004.
- Premier Composite Technologies L.L.C. "Medina Haram Piazza Shading Umbrellas." *Premier Composite Technologies*. [http://www.pct.ae/composites\\_projects.php?project=5](http://www.pct.ae/composites_projects.php?project=5) (accessed November 20, 2012).
- Project for Public Spaces. "What is Placemaking?." [http://www.pps.org/reference/what\\_is\\_placemaking/](http://www.pps.org/reference/what_is_placemaking/) (accessed November 20, 2012).
- Ricks, Geoff. "Native and Introduced Species for Naturalistic Landscape in Saudi Arabia." *JKAU: Eng. Sci.*, vol. 4. pp. 21-46 (1412 A.H./1992 A.D): 21.
- Rogers Stirk Harbour and Partners LLP. "Millennium Experience." *Rogers Stirk Harbour and Partners*. [http://www.rsh-p.com/work/buildings/millennium\\_experience](http://www.rsh-p.com/work/buildings/millennium_experience) (accessed November 20, 2012).
- Scheuermann, Rudi, and Keith Boxer. *Tensile architecture in the urban context*. Oxford: Butterworth Architecture, 1996.

Sternberg, Esther M., and Matthew A. Wilson. "Neuroscience and Architecture: Seeking Common Ground." *Cell* 127, no. 2 (2006): 239-242, doi: 10.1016/j.cell.2006.10.012.

Sunnah.com. "Chapter: The superiority of offering As-Salat in the Mosque of Makkah and Al-Madina." Sunnah. <http://sunnah.com/bukhari/20/3> (accessed November 20, 2012).

Taiyo Kogyo Corporation. "Large scale umbrellas (250 units) completed, covering the pilgrims worldwide with membrane architecture." *MakMax*. <http://www.makmax.com/news/2012/nw0214.html> (accessed November 20, 2012).

Taylor, Jerome. "Medina: Saudis take a bulldozer to Islam's history." *The Independent*, October 26, 2012. <http://www.independent.co.uk/news/world/middle-east/medina-saudis-take-a-bulldozer-to-islams-history-8228795.html> (accessed November 20, 2012).

Watt, William M. *Muhammad at Medina*. Oxford: Clarendon Press, 1956. <http://www.jstor.org/stable/1061854> (accessed November 20, 2012).

Xu, Yan. "Sense of Place and Identity." East St. Louis Action Research Project. <http://www.eslarp.uiuc.edu/la/la437-f95/reports/yards/main.html> (accessed November 20, 2012).

Yousef, Deena Kamel. "Project to boost religious tourism," *zawya.com*. [http://www.zawya.com/story/Investing\\_in\\_religious\\_tourism-GN\\_29042012\\_300421/](http://www.zawya.com/story/Investing_in_religious_tourism-GN_29042012_300421/) (accessed November 20, 2012).

