



Islamic Republic of Iran
Iranian Cultural Heritage, Handicrafts & Tourism
Organization-ICHTO
Deputy of Cultural Heritage

Cultural Heritage, Handicrafts
& Tourism Organization,
Azadi Ave. Tehran, Iran.
P.O. BOX: 13445- 719
Tel. # +98-21 66084577
Fax # +98-21 66027418

Reference No.:

Date:

In the name of God

Subject: Submission of requested reports regarding the "State of Conservation of Masjed Jame Isfahan", "HIA report of Masjed Jame Isfahan", "Management Plan of Masjed Jame Isfahan", "Management Plan of Shahr-i Sokhta" and "Updated Management Strategies for the Persian Qanat" World Heritage Sites

Dear Ms. Dr. Rössler,
Director
World Heritage Center

I would like to express my appreciation for the continued efforts of the World Heritage Center for the Promotion and Preservation of human values.

Here I write to respond the enquiries regarding "State of Conservation of Masjed Jame Isfahan", "HIA report of Masjed Jame Isfahan", "Management Plan of Masjed Jame Isfahan", "Management Plan of Shahr-i Sokhta" and "Updated Management Strategies for the Persian Qanat" World Heritage Sites, the details of which is provided in individual reports.

Please accept, your Excellency, the assurance of my highest consideration.

Yours sincerely,

Mohammad Hassan Talebian

Deputy of Cultural Heritage & Secretary for the Iranian World Heritage Sites
Iranian Cultural Heritage, Handicrafts and Tourism Organization

Islamic Republic of Iran
Iranian Cultural Heritage, Handicrafts & Tourism Organization
Deputy of Cultural Heritage

Islamic Republic of Iran
Iranian Cultural Heritage, Handicrafts & Tourism Organization
ICHHTO



State of Conservation report of Masjed-e Jame Isfahan
World Heritage Site

UNESCO
World Heritage Convention
Tehran 2017

In the name of God

Introduction

Masjed-e Jame Isfahan, also known as Atiq Mosque, has inscribed on the World Heritage List on 2012 with the Ref. Number of 1397 due to its outstanding architectural values for generations.

The mosque has experienced varieties of developments since its very first construction date during historic eras. It is mostly known for the best architectural exercises by the prominent architects of several periods. Thus, is entitled as the museum of Iranian Islamic Architecture.

Masjed-e Jame, locating on the north-eastern side of Isfahan city, was situated by a square cited as Atiq square at time of Seljuq dynasty, operating together with the square and surrounding bazaar as the city center and the main hub for religious and political movements for centuries, therefore is undergone major alterations by religious, political and social shifts during its existence.

Later, in Safavid era, with the transformation of Isfahan city as the capital city of Iran, a new square (Meidan Emam) constructed with the royal palace, a new jame mosque and a set of bazaars adjoined to the further extremes of the bazaar within the surrounding of Masjed-e Jame and became the center of focus for the next city developments. Subsequently, the Atiq square lost its urban role as the main public center for the social interactions, encountered a raid of economic growth inward and gradually disappeared from the face of its environment, filled with poor quality sales, eventually misplaced as an urban slum area.

Considering the very significant values of Masjed-e Jame Isfahan, revival of its glorious time necessitated a resolution to face the challenges. Following abundant number of investigations, analysis and evaluations the revival of the square became the priority in the urban conservation projects within the area. The reconstruction and state of which has reported regularly after the inscription of Masjed-e Jame Isfahan on the World Heritage List.

Following report delineates the state of conservation within the boundaries of Masjed-e Jame since 2015 according to the decision 40 COM 7B.37.

Decision: 40 COM 7B.37

- 4. Strongly encourages the State Party to take into account the Outstanding Universal Value (OUV) of the property when evaluating the suitability of new projects in the vicinity of the Masjed-e Jame, especially with regard to their correlation to the property's historic environment;**
- 5. Reiterates its recommendation that Heritage Impact Assessments (HIAs), with a specific section focusing on the potential impact of the project on the OUV, be carried out for any future development in the buffer zone, in particular if these are intended to be directly attached to the mosque complex or would be located in its immediate vicinity; and requests that before making any decisions that would be difficult to reverse, the State Party inform the Committee, through the World Heritage Centre, of any project which may affect the OUV of the property, in accordance with Paragraph 172 of the Operational Guidelines;**
- 6. Also requests the State Party to submit to the World Heritage Centre detailed information on potential atmosphere and noise pollution generated by the urban revitalization projects around the property, as well as on the potential impacts of vibrations from the underground road on the static behavior of the Masjed-e Jame structures, for review by the Advisory Bodies;**
- 7. Reiterates its request to the State Party to finalize, as a matter of urgency, an Integrated Conservation and Management Plan, and submit it to the World Heritage Centre and the Advisory Bodies for review, before proceeding with its adoption;**

The Masjed-e Jame World Heritage Base, which is responsible for the comprehensive integrated management of the World Heritage Site has carried out several studies, according to the decision of the World Heritage Committee, Masjed-e Jame's Technical Committee and distinguished supervisors, through developing an integrated management and conservation plan in case of Masjed-e Jame outstanding universal values, factors possibly affecting them and strategies to prevent emersion of any future negative by taking account the international frameworks, field surveys, monitoring results and questionnaires from stakeholders to be benefited from within the current or future projects taking place in the vicinity of Masjed-e Jame boundaries.

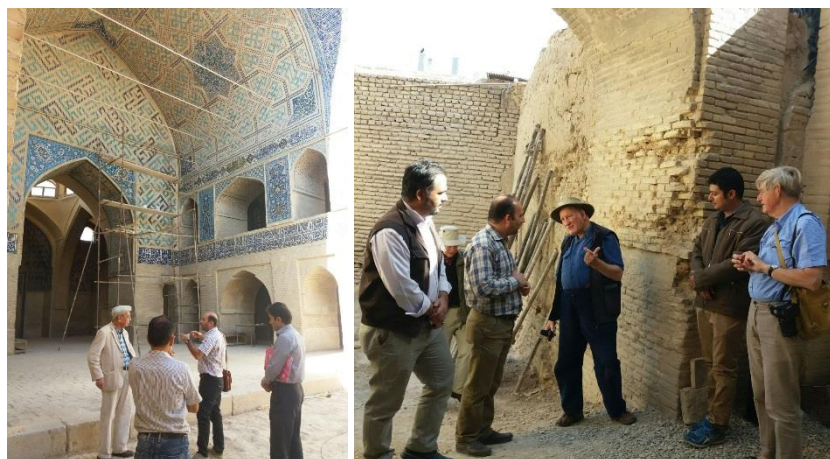


Figure 1. distinguished supervisors and professionals site-visit, consulting Masjed-e Jame World Heritage Base

As it is mentioned, the management and conservation plan supported by several studies, one of which is an HIA report to assist the strategies and plans with scientific and attainable outcomes. However, a detailed information on potential atmosphere and noise pollution generated by urban revitalization projects, as well as vibration impacts of the underground road is also foreseen within the HIA report which along with the draft management and conservation plan will be attached to this report.



Figure 2. Tests carried out for the related analysis on the HIA report

Additionally, Iranian cultural heritage, handicraft and tourism organization on behalf of Islamic republic of Iran, hereby, declares that, in case of any major development that affects the Outstanding Universal Values of Masjed-e Jame Isfahan, the World Heritage Committee will be eagerly informed and updated on the state of the World Heritage Site, its setting and the challenges that may have imposed to the site for further consultations.

- 8. Further requests the State Party to submit to the World Heritage Centre, by 1 December 2017, an updated report on the state of conservation of the property and the implementation of the above, for review by the Advisory Bodies.**

State of Conservation of Masjed-e Jame Isfahan

Developing an HIA report

In order to attain a clear consideration on the impact rate of developments, whether direct or indirect, and in accordance with the World Heritage Committee decision, plenty of enquiries made by ICHHTO to the municipality of Isfahan and the Urban renewal organization of Isfahan, as the institutions in charge of urban development and the revitalization project of Imam Ali square in the vicinity of Masjed-e Jame. Also, several meetings took place with the representatives to engage these public stakeholders in the process of developing the HIA report since 2015.



Figure 3. Mutual meetings with the representatives of Urban renewal organization of Isfahan regarding development of an HIA report for Masjed-e Jame Isfahan

Developing an integrated management plan

Masjed-e Jame Isfahan has had an initial management plan at time of nomination on the World Heritage List. Yet, after the inscription, variety of monitoring processes and investigations commenced to check the strategies and plans devised on the management plan to be in fact in place according to the current needs and requirements of the World Heritage Site and its stakeholders. Therefore, a more comprehensive management plan initiated by engaging several consultants, distinguished supervisors of the World Heritage Base, other World Heritage site managers in Isfahan and ICHHTO experts. As the result a more integrated management plan with consideration on conservation plans and risk management developed to gain the confirmation of the Technical Committee and World Heritage Committee to be implemented. The final draft of which is attached to this report to be reviewed by the committee on its 42nd session.

Conservation measures in Masjed-e Jame World Heritage Site

Technical Committee Sessions

Alike every other Iranian World Heritage Base, Masjed-e Jame, also benefits from several advisory bodies to support with the decision-making process for the plans to be implemented or identifying solutions for the challenges, the specific World Heritage Site faces. The implementation of any

plan or project is stipulated to the final approval of the technical committee. The sessions take place by the request of the site manager on each case. Following are some of the measures approved by the technical committee and recognized as the priority measures:



Figure 4. Technical Committee Session on the assessment of restoration projects

Restoration of the roof

According to the monitoring survey, a humidity track found on the tiles of southern Iwan in Mozafari Madrassah. Thus, a prompt investigation carried out on the structure and the brick materials, unveiling partial erosion of the lime mortars which has had led the brick materials to be loosen, specifically on the eastern side of the Iwan. The water leakage source, has then found on the roof, therefore, the brick layers on the roof lifted temporarily to clear the eroded pointing and restore the materials. The final finish of the roof, subsequently embedded.



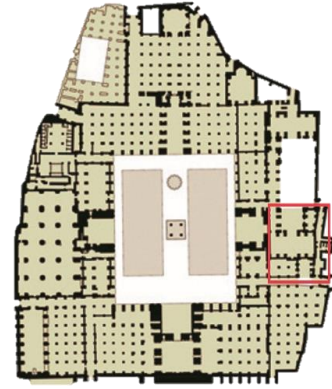


Figure 5. Southern Iwan of Mazafari Madrasah and the roof restoration

On the same investigations, humidity found within the Muqarnases in the eastern Iwan (Iwan-e Shagerd) which has had trapped between the decorative Muqarnas sets and the structure of the Iwan. The same procedure, however, carried out in this section of the roof, after fixing the slope.

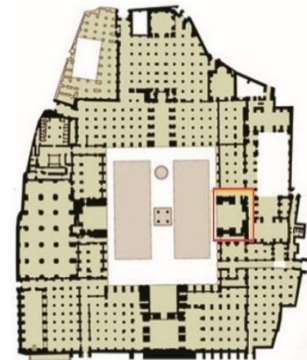
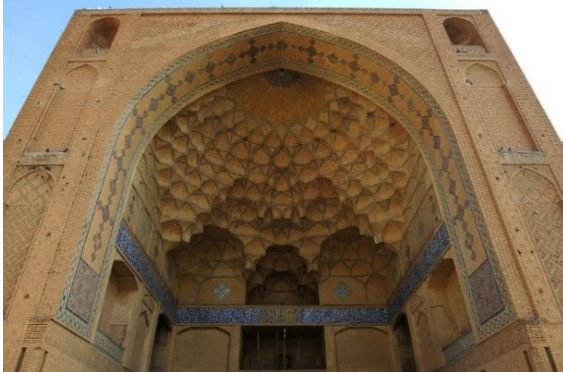
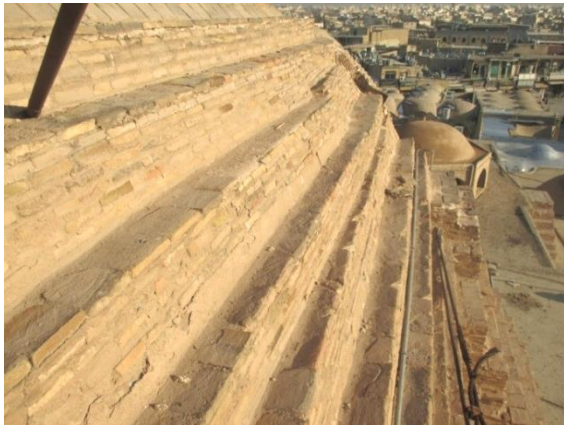


Figure 6. Iwan-e Shagerd and the roof restoration

In addition, to avoid developing any further water leakage spot, a finish by two layers of Kah-gel (mud and straw), traditional coat of roofs in the central arid areas of Iran, added on the parts without brick finishes.



Figure 7. re-applying Kah-gel (mud and straw) finishes to the roof surface



Figure 8. Roof restoration of Sofe Ostad (southern platform)

Furthermore, the gutters are reorganized and substituted by galvanized pipes on the entire roof of the mosque with colors compatible to the surface of the roof to prevent any visual distortion.



Figure 9. Reorganization of gutters on the roof of the mosque

Restoration of tiles

Restoration of tiles implemented on several facades of the mosque, as well as on the minarets in order to reduce the erosion rate due to the environmental factors. To achieve this goal, the tiles were partially removed, restored and reassembled.



Figure 10. Restoration measure on the minarets' tiles



Figure 11. Restoring the façade tiles

The decorative tiles on the galleries of Mozafari Madrassah has also been Cleared, restored and stabilized.



Figure 12. restoration and stabilization of decorative tiles on the facades of Mozafari Madrassah

- Reorganization of pavements

Due to the need to correct the slope and prevent water accumulation on the west and north sides of the court, the pavements reorganization project started which has currently proceeded 70% of the area.



Figure 13. Slope correction of the inner-courtyard and reorganization of pavements

Restoration of water donation stall

The water donation stall on the south-eastern side of the site was partially damaged by environmental factors, thus required a conservation measure to assure the mitigation of negative factors effecting its stability.



Figure 14. Restoration of the Water donation stall on the north-eastern side of the mosque

Monitoring

As it is mentioned, the monitoring procedures are carrying out by the Masjed-e Jame base on regular basis. A team of technical experts inspect the boundaries of the World Heritage Site and analyze the data obtained from modern and traditional equipment such as crack-meters, cameras, etc., prepare a report to be presented in the technical committee sessions for further decision making and planning exercises.



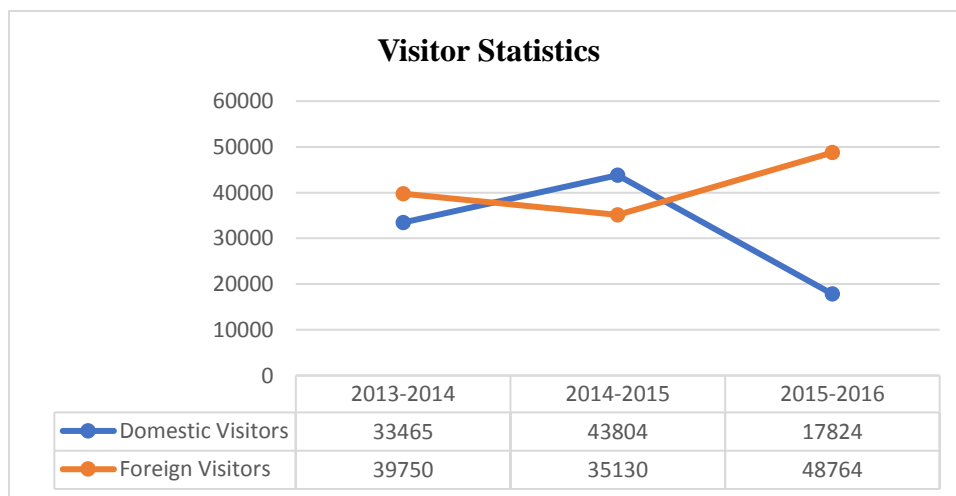
Figure 15. Regular assessments and monitoring processes

Of other assessments regularly meets is the evaluation of tourism pressure and visitors' behavior. The following table and charts show initial data collection and analysis to be employed in the tourism strategies within the management plan.

VISITOR STATISTICS

YEAR	Domestic Visitors		Foreign Visitors		Sum of Visitors
	Number	Percentage	Number	Percentage	
2013-2014	33465	45.7	39750	54.3	73215
2014-2015	43804	55.5	35130	44.5	78934
2015-2016	17824	26.8	48764	73.2	66588
SUM	95093	43.5	123644	56.5	218737

Table 1. Visitor Statistic analysis to be employed within the management plan



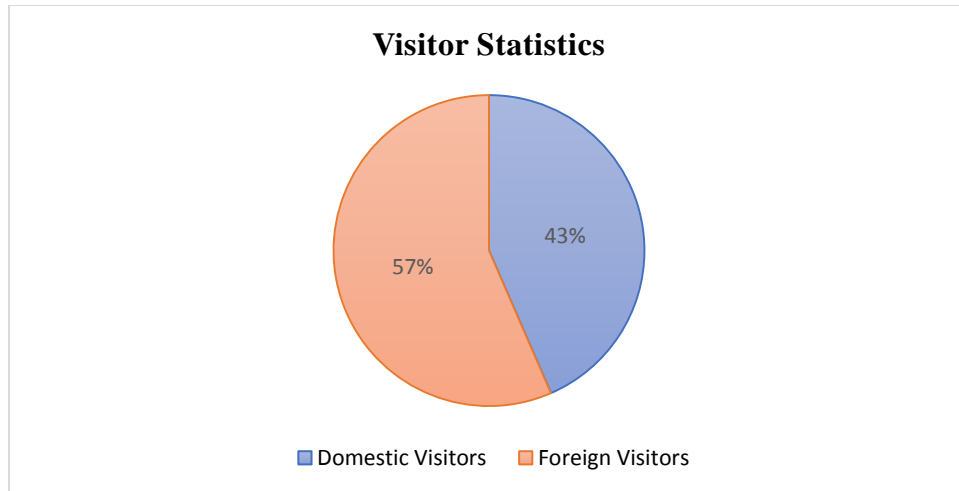


Chart 1. Visitor Statistic analysis to be employed within the management plan

Educational Workshops and scientific meetings

- Professional session on the geometry and structural analysis of the brick columns of Masjed-e Jame;



- A review on the archaeological and restoration works done in Masjed-e Jame for the technical experts and supervisors of Isfahan CHHTO;



- Awareness raising and capacity building workshop with the focus on the OUVs of Masjed-e Jame, for the students of Isfahan universities;



- Launching session of *Masjed-e Jame Atiq* book, to be published for visitors on OUVs of the World Heritage Site.



- Assessment of current lighting and the condition of its improvement in cooperation with the municipality of Isfahan



Islamic Republic of Iran
Iranian Cultural Heritage, Handicrafts & Tourism Organization
ICHHTO



Management Plan of Masjed-e Jame Isfahan
World Heritage Site

UNESCO
World Heritage Convention
Tehran 2017

In the name of God

Introduction

Masjed-e Jame Isfahan, also known as Atiq Mosque, has inscribed on the World Heritage List on 2012 with the Ref. Number of 1397 due to its outstanding architectural values for generations.

The mosque has experienced varieties of developments since its very first construction date during historic eras. It is mostly known for the best architectural exercises by the prominent architects of several periods. Thus, is entitled as the museum of Iranian Islamic Architecture.

Masjed-e Jame, locating on the north-eastern side of Isfahan city, was situated by a square cited as Atiq square at time of Seljuq dynasty, operating together with the square and surrounding bazaar as the city center and the main hub for religious and political movements for centuries, therefore is undergone major alterations by religious, political and social shifts during its existence.

Later, in Safavid era, with the transformation of Isfahan city as the capital city of Iran, a new square (Meidan Emam) constructed with the royal palace, a new jame mosque and a set of bazaars adjoined to the further extremes of the bazaar within the surrounding of Masjed-e Jame and became the center of focus for the next city developments. Subsequently, the Atiq square lost its urban role as the main public center for the social interactions, encountered a raid of economic growth inward and gradually disappeared from the face of its environment, filled with poor quality sales, eventually misplaced as an urban slum area.

Considering the very significant values of Masjed-e Jame Isfahan, the maintenance of these OUVs, its authenticity and integrity considers to be of the first priority. Following is plan consideration the very first requirements to approach these goals.

Description

General features and introduction of Masjed-e Jāmé complex

Masjed-e Jāmé of Isfahan is located on north east of Isfahan. According to geographic coordinate system the latitude of the mosque center is $32^{\circ},40'$ and the longitude is $51^{\circ},41'$.

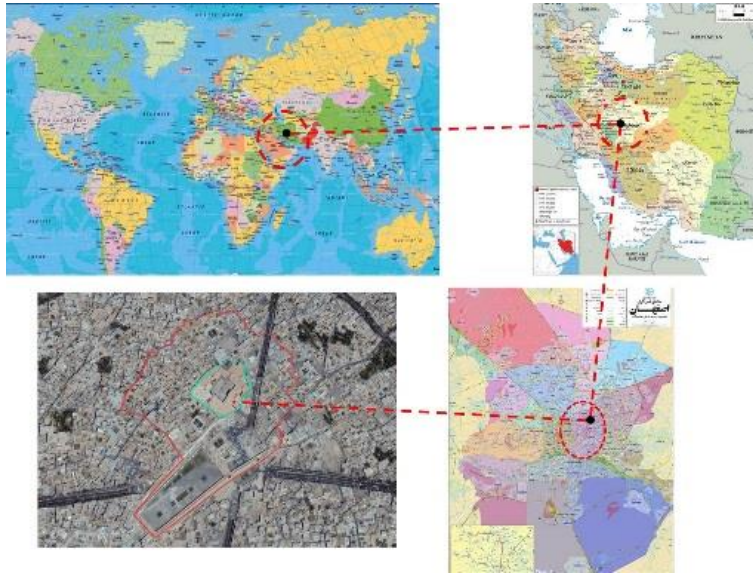


Figure 1. Location of Masjed-e Jāmé of Isfahan

Due to the central location and its adjacency to governmental, economic (Bazar) and social (Seljuk plaza) centers, the mosque played a dominant role in the public life. Therefore, main component of the city like the Madaris (Mozafai, Kasegaran etc.) and Hammams (Sheikh Hammam) are connected to the mentioned ensemble. Although, construction of Naqsh-e Jahan Square, Bazar axis and new Masjed-e Jāmé transferred the center of the city to the south –west direction the ancient Masjed-e Jāmé has an outstanding position in the historic fabric of Isfahan.



Figure 2. Location of Masjed-e Jāmé of Isfahan on historic axis of the city- Resource: Mapping agency of Isfahan province

As indicated in the above image, Masjed-e Jāmé of Isfahan is the most prominent north element on historic- cultural axis of Isfahan which is connect to Naqsh-e Jahan ensemble via a strong spine like Bazar. Thus, this remarkable monument was not an independent component and connected and cooperated with its surrounding spaces. Generally, the skeleton of Isfahan is based on two axis perpendicular to each other, one of them is natural axis of Zayandehrud and the other is central axis of the city. The central axis of the city is formed gradually and evolved. The said axis is started from Masjed-e Jāmé in the north and continues to the south west through Bazar and has reached Naqsh-e Jahan Square.

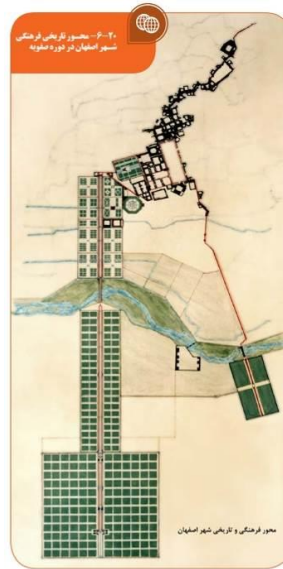
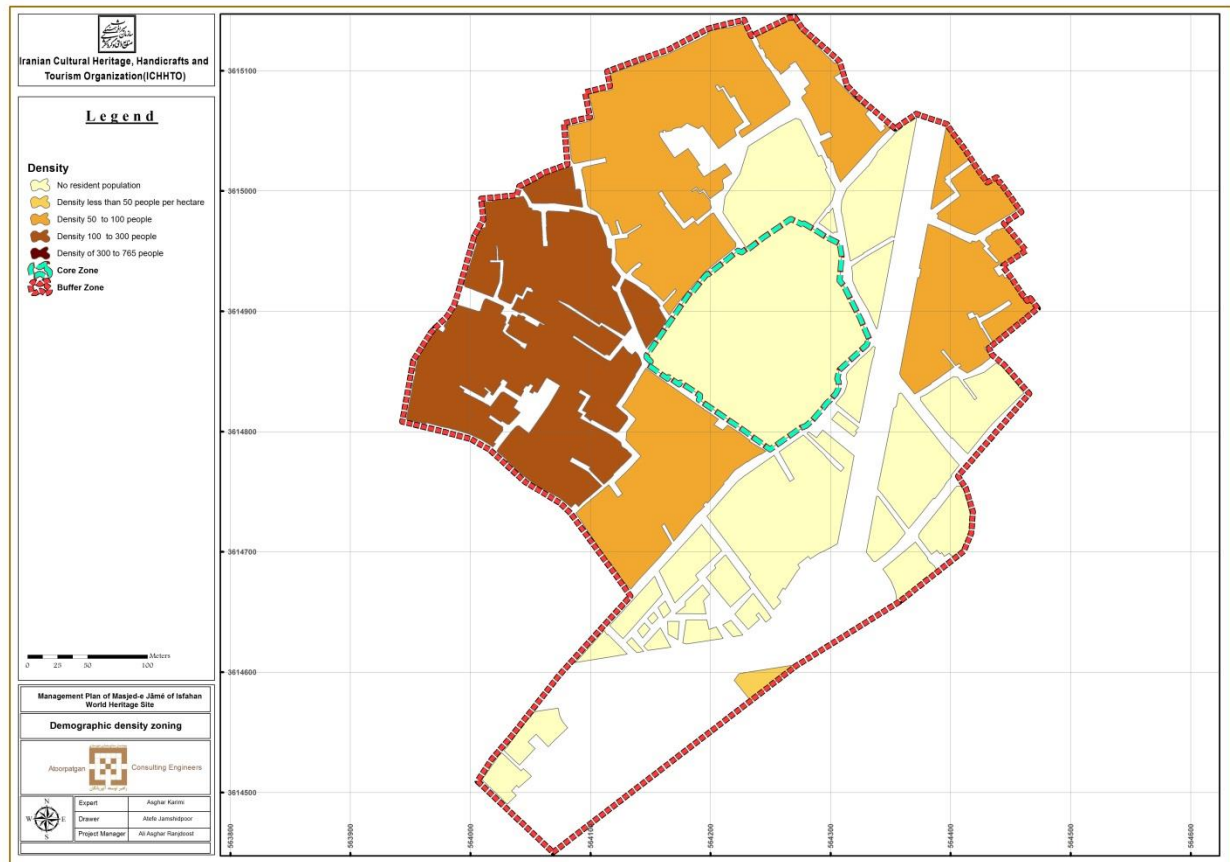


Figure 3. The image of skeleton and structure of Isfahan during Safavid dynasty- Recourse: Atlas of Metropolitan of Isfahan

Masjed-e Jāmé ensemble consist of 2 hectares. In addition, the buffer zone of the complex covers more than 20 hectares. According to the data collected by statistical center of Iran, some 1000 people live across the buffer zone (statistical center of Iran, Census 2011),

The fallowing map indicates the status of population density in buffer zone of Masjed-e Jāmé of Isfahan, the world heritage. The gross demographic breakdown in the entire privacy zone is 37 people per hectare. The southern parts owing to commercial and administrative activities are approximately abandoned while across the south west parts population density is approximate high.



Map 1. Map6: Demographic density zoning

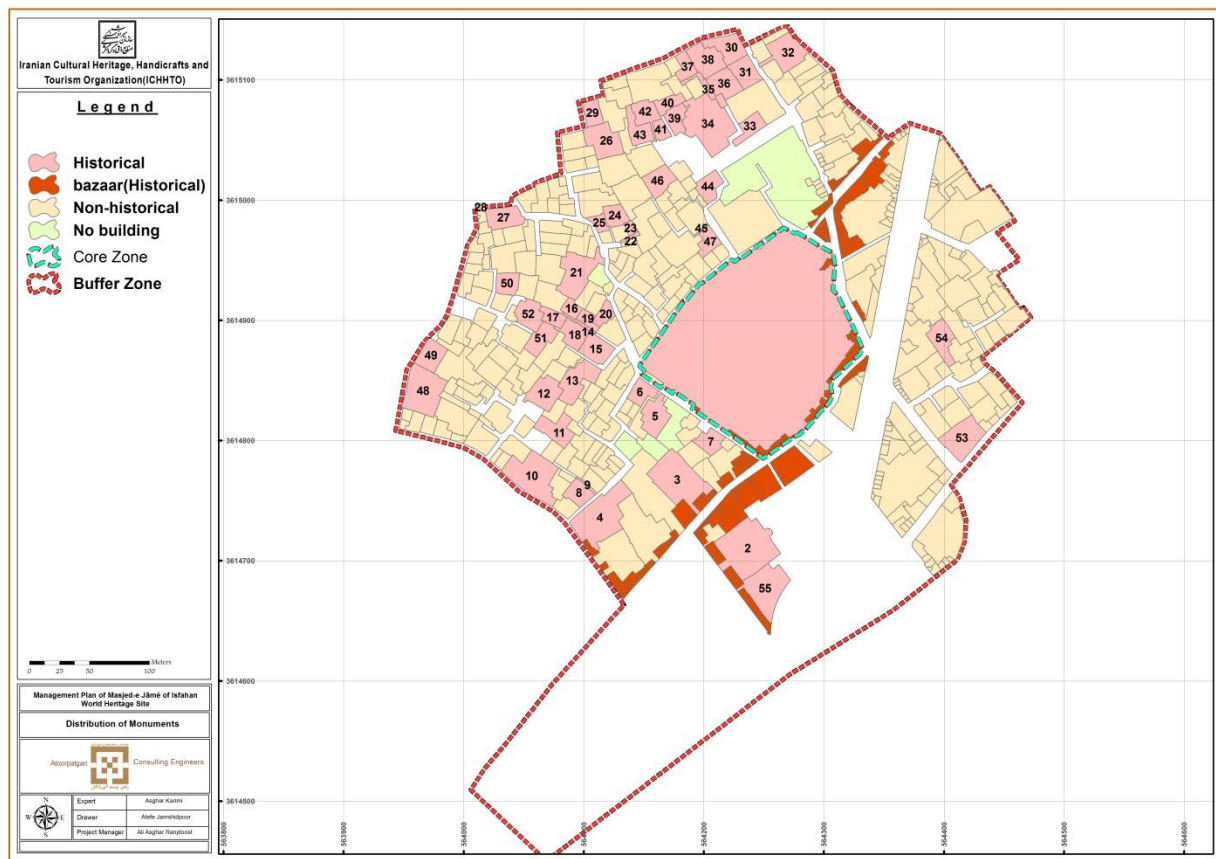
The mosque is surrounded by numerous historic monuments including Hammam-e Sheikh, commercial properties on east side of sheikh Bahai alley, some other buildings and several historic mansions such as Javaheri, Iravani etc. Furthermore, the registered madrasa of Kasegaran and a part of the great Bazar of Isfahan are located inside the buffer zone.



Figure 4. Satellite Photo of the boundaries (World heritage buffer zone in the satellite photo)

Recognition of valuable monuments within the world buffer zone of Masjed-e Jāmé

Inside the world buffer zone of Masjed-e Jāmé of Isfahan, there are 600 monuments with residential, commercial, religious, educational functions and also abandoned areas. Among them 55 precious historic monuments are identifies. We can mention Sheik Bahai Hammam, mills of Sheikh, several historic mansions, Kasegaran madrasa and so on as he most dominant buildings Inside the world buffer zone of Masjed-e Jāmé of Isfahan. (Map No.2)



Map 2. The position and distribution of valuable monuments in the world buffer zone

History of the property:

1- The primary monument or construction of the mosque (Second century HQ /8th century AD)¹

Masjed-e Jāmé of Isfahan was constructed on its current location on northwest corner of central square of the city in 156 HQ (772AD). The expanse was commensurate with the population of the city. The mentioned phase was destroyed later and its signs are discovered during archeological excavations.

2- Development of new Mosque (Third century HQ/ 9th Century AD)

¹ - According to the article inscribe by Dr. Abdollah Jabal Ameli and Ms. Leila Pahlavan Zade under the title of: Introduction of Masjed-e Jāmé of Isfahan and its outstanding universal values,2012.

The expansion of Isfahan during the Third century HQ (Nine Century AD) called a greater mosque. Therefore, in 229 HQ (840 AD), during the power of Al-Motasem Abbasi t Masjed-e Jāmé entered to the second phase of its fundamental evaluation. The primary mosque with its restricted dimensions was destroyed and a huge mosque with a size several times more than the original mosque (some 1 hectare) was erected and the direction of Qibla was corrected in the new mosque. Architecture of the mosque was similar to the common style used in the other Islamic cities specially Al-Mutawakkil mosque in Samarra. As the vast central court yard are surrounded by wooden covered colonnades. The covered space of colonnades around the yard has six spans on the south façade toward the Qibla direction and 4 spans on north elevation while the east and west sides have two ones. A high and thick masonry wall surrounded the mosque while the exterior façade was ornamented with spans and reddish clay. Some parts of the mentioned wall are remained nowadays.



Figure 5. Second and Third century developments

3- The Buyid dynasty (fourth century HQ/ tenth century AD)

The development of the mosque during fourth century HQ (tenth century AD) coincided with the power of Iranian dynasties of the north region; the Buyid dynasty or Deylamian dynasty. The said government chose the city of Isfahan as their capital and eventually Masjed-e Jāmé was not far from the evolutions. Indeed, an extensional span to the current courtyard exceeded the covered space. Implementation of added span was done in harmony with the existed spans while the adjoining building was erected by a type of composed columns with baked bricks and geometric patterns as it created a gorgeous interior faces inside the mosque. Although this part was covered later but exactions and structural studies of the mosque indicate that columns related to Buyid period were precious and harmonized.

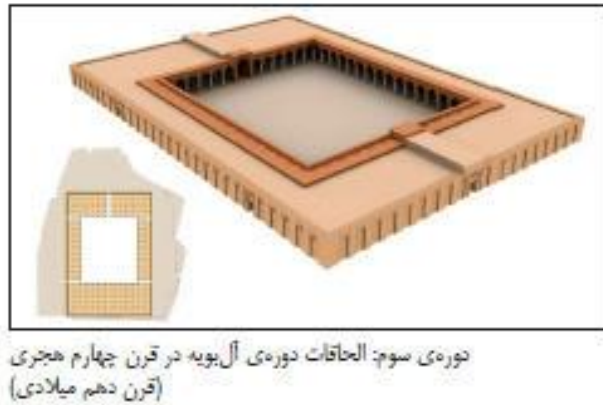


Figure 6. Forth century developments

4- The Seljuk period (fifth and sixth centuries HQ/ eleventh and twelfth centuries AD)

Masjed-e Jāmé of Isfahan witnessed the greatest structural conversion including interior and exterior spaces during the Seljuk period in fifth and sixth centuries HQ (eleventh and twelfth centuries AD). The design conversion of colonnade mosques in to four portal mosques during the Seljuk dynasty was launched from Masjed-e Jāmé of Isfahan. Construction of Nezam al-Molk domed chamber on south elevation of the mosque as an independent space with three free faces on north, east and west in 473HQ/1080AD and also Taj al-Molk domed chamber on the north of the mosque and erecting four portals on the main axes of the courtyard altered the simple colonnade architecture of the previous mosque into a four portal one.

It should be mentioned that the dome of Taj al-Molk in north side of the mosque was exactly constructed on the axis of the southern dome a little far from the north façade. At the time of the construction the domed chamber was out of the mosque enclosure but with no doubt it was not a separated and independent building. Indeed, it was a part of extended governmental complex which connected to it on south and west.

The other activities in this period are construction of north portal – Sofe Dervish- on the longitudinal axis of the mosque, erecting the south portal –Sofe Saheb- to connect the courtyard of the mosque to the dome of Nezam al-Molk as a precious entrance in front of the dome to enter the domed chamber, building the east portal –Ivan e Shagerd- in the middle of the east façade of the courtyard, Creation of the west portal – Ivan e Ostad – in the wetern façade of courtyard on the latitudinal axis and also construction of a Seljuk library on south east corner of the mosque.



Figure 7. Fifth and sixth century development

5- The Ilkhanid Period (eighth century HQ/fourteenth century AD)

The well know alter of Oljeitu is constructed within a space on west façade of the courtyard; on a northern wall of the west portal. The space in front of the alter (Minrab) was designed by the third centuries columns while the columns on the courtyard edge dated back to Deylamian period while during a half of a century the colonnade space in front of the altered is ruined and a vast integrated space without the restriction of columns was constructed. The cover of this desirable space in front of the precious Oljeitu alter is implemented with the technique of arches and ribs. Such a brave implementation, creating a space with spans which were twice wider than the common arches converted the architecture of the adjacent courtyard edge. The walls on the yard edge were thickened to provide a reliable structure prevent the structural drift of the new ribs while double stored arch provided the needed strength. Therefore, the courtyard facades were obviously converted, the previous arcade changed to the two-story arcade and the current statutes of the mosque dates back to these alterations. According to the recent change in one fourth of the yard, architectures were motivated to construct extensional double stored arcades on the previous elevations to provide a more harmonized space.



Figure 8.8th century developments

6- Mozafari Period (eighth century HQ/fourteenth century AD)

At the end of the Ilkhan period and during Mahmoud Shah Mozafari, the ruler of Isfahan, extensive measures were taken in the mosque, especially outside the fence of the third century mosque, and alongside of the Seljuk monuments, such as:

- 1- On the east side of the mosque, out of the third century masonry wall a religious madrasa titled Mosafari madrasa was constructed. The mentioned madrasa has a central courtyard enclosed with double stored cells on east and west. On south side a domed chamber with a portico and an alter was built which has a bi functional role of study room and worship place. On the opposite site on north façade of the central yard there was another sublime and ornamented portal like the north portico in front of the domed chamber of the madrasa. The remnants of north elevation and interior façade of south portal indicated the use of mosaic works.
- 2- Construction of a vast open space for public prayers (Mosala) behind the west wall of third century was one of the other activities in Mozafari period. Currently, the mentioned place is converted to a winter nave covered with special arches. However, in primary form of the yard the Mosala was enclosed with brick walls and sublime arcades and an alter was built on the south façade.

7-Timurid Period (ninth century HQ/fifteenth century AD)

During the Timurid power in Isfahan, Masjed-e Jāmé has preserved its historic and social importance. The rulers of this dynasty have extended some praying spaces and adorned the elevations of the mosque. A nave was built on south-west direction outside of the west third century clay wall which was mainly a continuation of a nave parallel with Qibla direction. The Timurid nave is simple and unembellished even the alter follows the simplicity of pillars and vaults. The courtyard facades were restored during the Timur defenders and covered with interlaced bricks and tiles. The said ornaments are remained and conserved their authenticity.

8-Safavid Period (tenth, eleventh and twelfth centuries HQ/sixteen, seventeen, eighteenth centuries AD)

In this era a wide spanned space without pillars was constructed on a part of Timurid nave for religious activities. Actually, some spans and columns of Timurid nave were removed to construct the new place. It was covered with vaults and ribs and the access is by means of a corridor on the north side.

Moreover, interior facades of south, west and east portals are all lavishly ornamented with mosaic works. Numerous inscriptions in Tuluth, Nastaliq and rigid geometric scripts adorned the interior space of the mosque. In east portal the Safavid Muqarnas (stalactite works) was installed into the structure instead of the Seljuk cover.

Early in the Safavid era a winter nave was erected in location of Mozafari Mosala in west side of the mosque. The entrance to the nave is by means of a corridor on south side of west portal. However, later another access probably for females was constructed visa Oljeitu praying chamber.



Figure 9. tenth to thirteenth century developments

9- The Qajar Period (thirteenth century HQ /eighteen century AD)

Owing to the inappropriate economic and political conditions of Qajar dynasty, in comparison to the previous eras we have less considerable public monuments. In Masjed-e Jāme' of Isfahan we have only slight restoration activities in the mosque and its surroundings. Renovation implementation of Fath ali Shah Qajar were done in one of the east entrances (the current main entrance) where an inscription indicates the chronogram of 1218 HQ (1803 AD). The other Qajar activity is constructing a half a meter-high brick platform on the paved ground to perform Maqhrīb and Isha prayers in the middle of the court yard during the summer season.

Statement of the Outstanding Universal values

The architecture and the layout of the Jāme' Mosque of Isfahan exhibit an important interchange of human values and influences originating from palace architecture as early as the Achaemenids and Sassanids periods in pre-Islamic Persia. Furthermore, its integration into the urban fabric through its many gates and entrances that weave it with the city's activities has been instrumental in subsequent town-planning of the ancient city of Isfahan.

The architectural and artistic concepts and solutions of the Jāme' Mosque became a major reference for the later development of mosque architecture, indeed, from the early Islam to the Qajar reign. This was particularly the case of the four-Ayvān ground plan from the Seljuqs period. Indeed, the Jāme' Mosque of Isfahan can be considered the most significant and influential witness to history of monumental art, architecture and technology of Jāme' Mosques in the Islamic world. As the architectural prototype of domed mosques with Ayvāns in the Iranian style, Masjed-e Jāme' of Isfahan has served as a model for mosques not only within the Iranian plateau but also beyond, such as Central Asia. Moreover, the technology of constructing (*Tarkin*) ribbed domes, representing unique engineering skills, was here used for the first time and the Jāme' Mosque is still regarded as the most perfect domed brick structure of its type.

Integrity and Authenticity

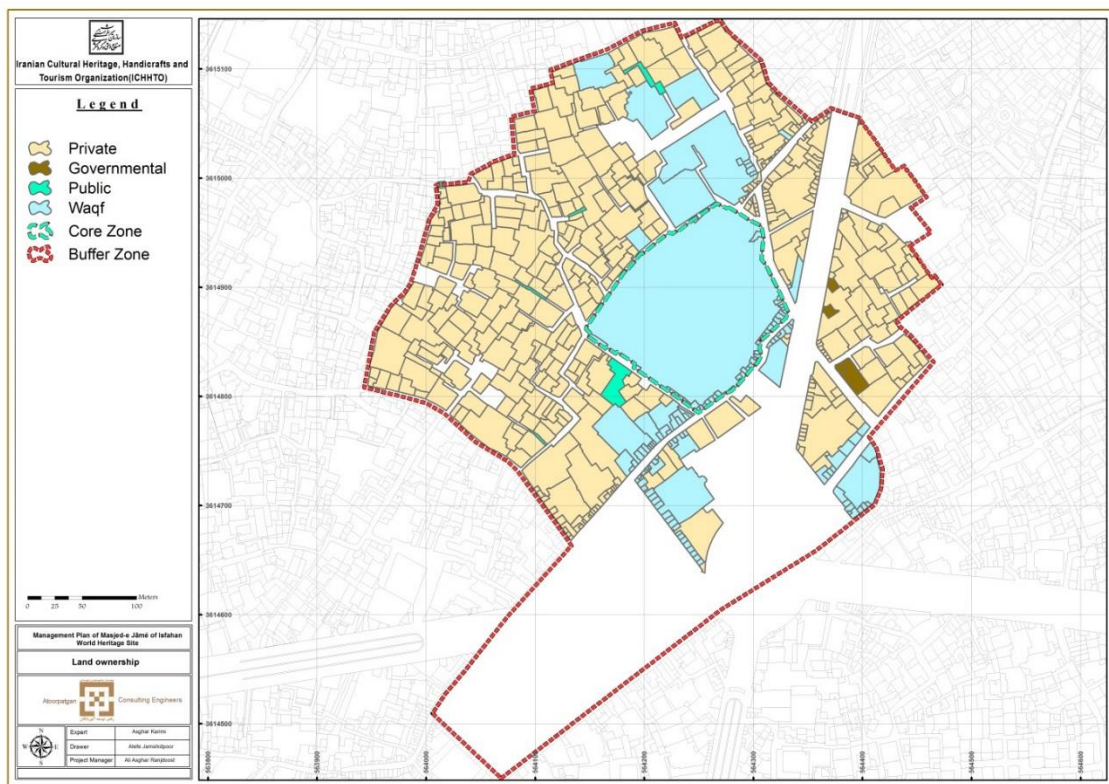
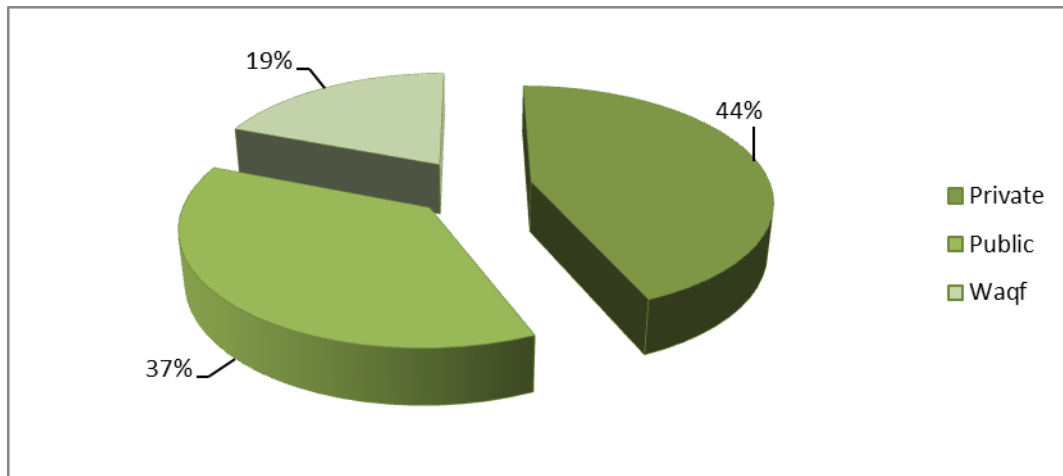
The Integrity and authenticity of the mosque, regarding all aspects of the mosque and its setting is maintained its original qualities and is controlled on regular basis, under the supervision of ICHHTO and Masjed-e Jame World Heritage Base.

Land Ownership

According to field studies and GIS data analysis, in the 20.7 hectares of world buffer zone of the mosque, 43.5 percent of the studied area is private property and 37.1 percent is public ownership. It should be noted that in connection with public ownership, the level allocated to passages with 76264 square meters accounted for 99.2 percent of the total ownership. The Waqf portion in percentage world privet zone of Masjed-e Jāmé is 19.1 percent.

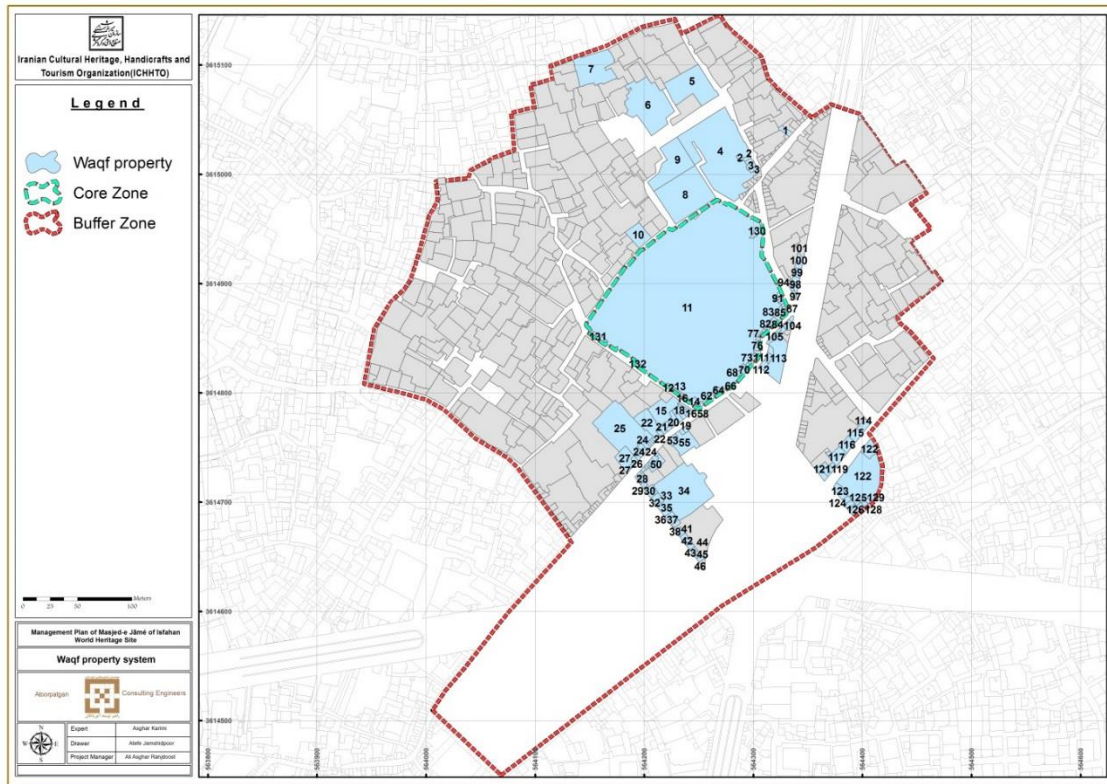
Table 1. No.: Land ownership within the boundaries of Masjed-e Jame

World Heritage Sites' Boundaries landuse		
Usage	Area	Percent
Private	90172	43.5
Governmental	685	0.3
Public	76864	37.1
Waqf	39641	19.1



Map 3. Land ownership within the boundaries of Masjed-e Jame

Indeed, most of the endowed properties are related to commercial activities and more than 85% of endowed properties in of world privet zone of the mosque are shops.



Map 4. Waqf Properties

Many sections of the mosque site are managed by the stakeholders.

Land use features and built areas

Based on field studies and GIS data analysis, in 20.7 hectares of the world buffer zone of the mosque passageways and open spaces has the highest share of 36.8 percent. In this area, residential usage has the second rank with 26.2% and commercial usage has third place with 19.6%. In addition, the religious usage with the presence of Masjed-e Jāme and Kamar Zarin mosque with a total area of 2.2 hectares, includes 10.7 percent of the global buffer zone.

The below table and chart show the area and usage percentage.

Usage	Area	Percent
Residential	54233	26.2
Shops	19544	9.4
Commercial – service sectors	21078	10.2
Educational	5567	2.7
Cultural	1854	0.9
Religious	22137	10.7
Public Health	1430	0.7
Green space	600	0.3
Arid lands	814	0.4
Parking	3840	1.9
Passages	76264	36.8

Table 2. Land-use details in the world buffer zone of the mosque

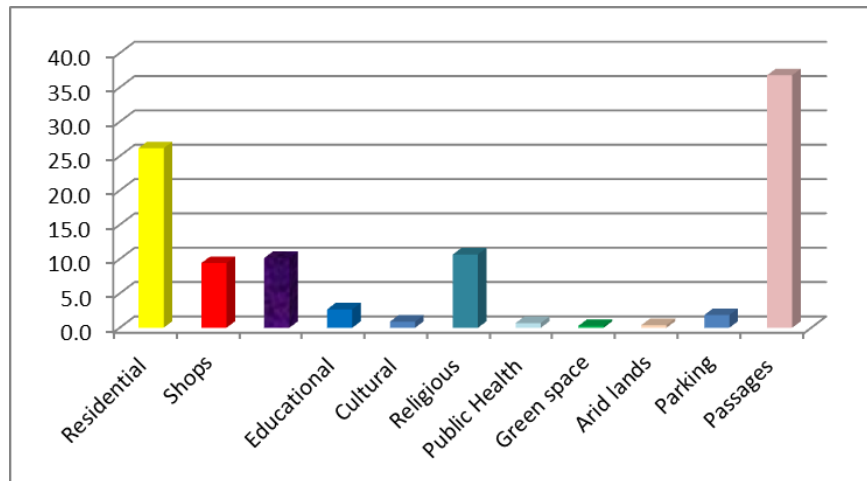
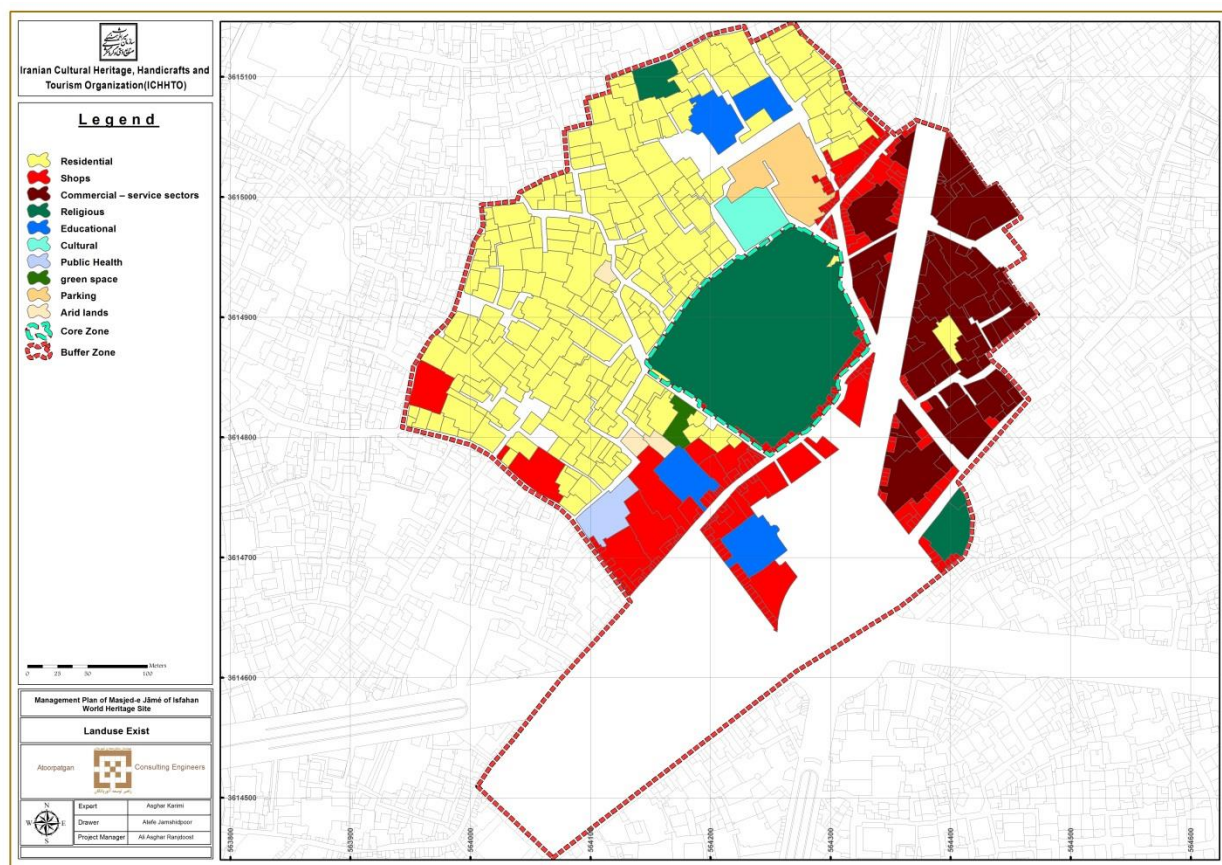


Figure 10. Current status of the land usages in the world buffer zone of the mosque



Map 5. Land usage of the present building in the buffer zone

Conservation

The aims of conservation

- Strengthen the identity and national and local cultural diversity
- Revitalization of spiritual, social and cultural values of Masjed-e Jāmé and its surrounding fabric in the direction of resuscitation and continuation of its residence.
- Maintaining and protecting the legacy of the ancestors as artistic and architectural values, preserving and transferring experience to the future.
- Creating opportunities for research, education and introduction of Stakeholders to achieve a common understanding of the world heritage site.
- Create appropriate opportunities for economic development and sustainable tourism development in the region.

Tools of conservation

- One of the most important protection tools is to use the existing rules, regulations and instructions. Also, a site protection unit (physical protection in the area with the priority of personnel, mechanical and electronic protection), is to be used for the protection of mosque and its buffer zone and capacities, as participation of local community in the area, should be considered as means of protection.

State of Conservation of Masjed-e Jame Isfahan

Developing an HIA report

In order to attain a clear consideration on the impact rate of developments, whether direct or indirect, and in accordance with the World Heritage Committee decision, plenty of enquiries made by ICHHTO to the municipality of Isfahan and the Urban renewal organization of Isfahan, as the institutions in charge of urban development and the revitalization project of Imam Ali square in the vicinity of Masjed-e Jame. Also, several meetings took place with the representatives to engage these public stakeholders in the process of developing the HIA report since 2015.



Figure 11. Mutual meetings with the representatives of Urban renewal organization of Isfahan regarding development of an HIA report for Masjed-e Jame Isfahan

Developing an integrated management plan

Masjed-e Jame Isfahan has had an initial management plan at time of nomination on the World Heritage List. Yet, after the inscription, variety of monitoring processes and investigations commenced to check the strategies and plans devised on the management plan to be in fact in place according to the current needs and requirements of the World Heritage Site and its stakeholders. Therefore, a more comprehensive management plan initiated by engaging several consultants, distinguished supervisors of the World Heritage Base, other World Heritage site managers in Isfahan and ICHHTO experts. As the result a more integrated management plan with consideration on conservation plans and risk management developed to gain the confirmation of the Technical Committee and World Heritage Committee to be implemented. The final draft of which is attached to this report to be reviewed by the committee on its 42nd session.

Conservation measures in Masjed-e Jame World Heritage Site

Technical Committee Sessions

Alike every other Iranian World Heritage Base, Masjed-e Jame, also benefits from several advisory bodies to support with the decision-making process for the plans to be implemented or identifying solutions for the challenges, the specific World Heritage Site faces. The implementation of any plan or project is stipulated to the final approval of the technical committee. The sessions take place by the request of the site manager on each case. Following are some of the measures approved by the technical committee and recognized as the priority measures:



Figure 12. Technical Committee Session on the assessment of restoration projects

Restoration of the roof

According to the monitoring survey, a humidity track found on the tiles of southern Iwan in Mozafari Madrassah. Thus, a prompt investigation carried out on the structure and the brick materials, unveiling partial erosion of the lime mortars which has had led the brick materials to be loosen, specifically on the eastern side of the Iwan. The water leakage source, has then found on

the roof, therefore, the brick layers on the roof lifted temporarily to clear the eroded pointing and restore the materials. The final finish of the roof, subsequently embedded.



Figure 13. Southern Iwan of Mazafari Madrasah and the roof restoration

On the same investigations, humidity found within the Muqarnases in the eastern Iwan (Iwan-e Shagerd) which has had trapped between the decorative Muqarnas sets and the structure of the Iwan. The same procedure, however, carried out in this section of the roof, after fixing the slope.

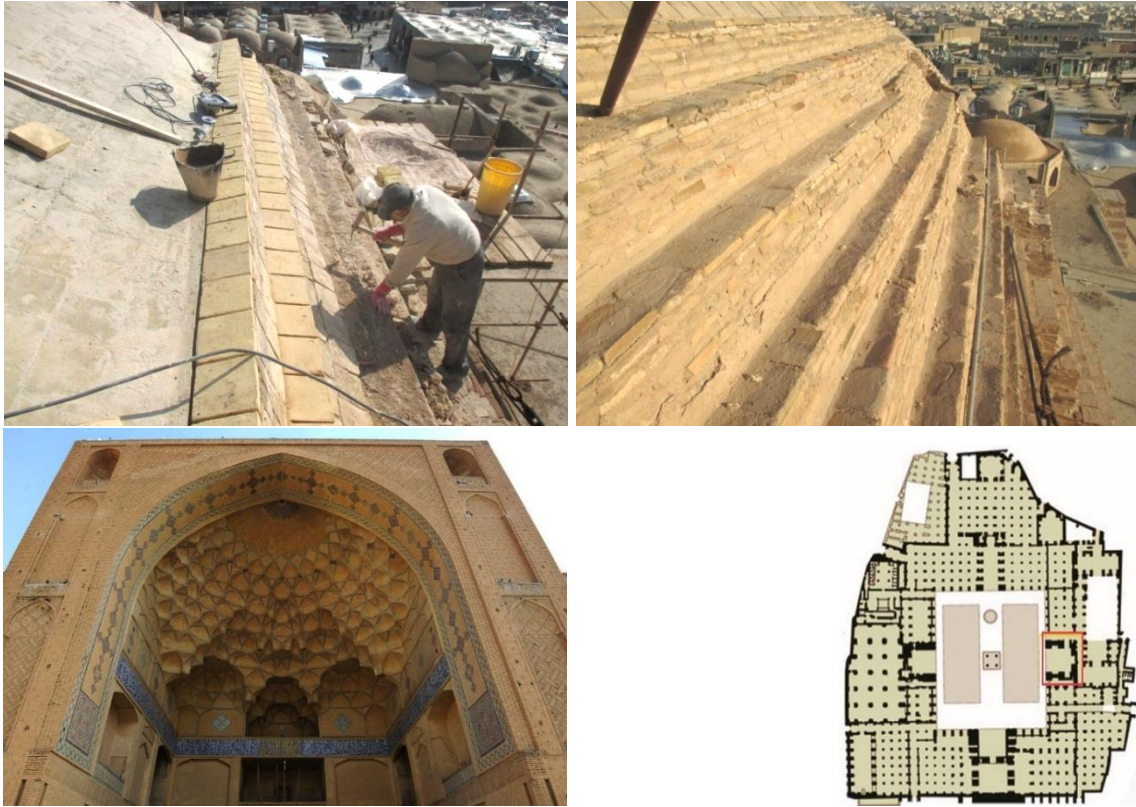


Figure 14. Iwan-e Shagerd and the roof restoration

In addition, to avoid developing any further water leakage spot, a finish by two layers of Kah-gel (mud and straw), traditional coat of roofs in the central arid areas of Iran, added on the parts without brick finishes.

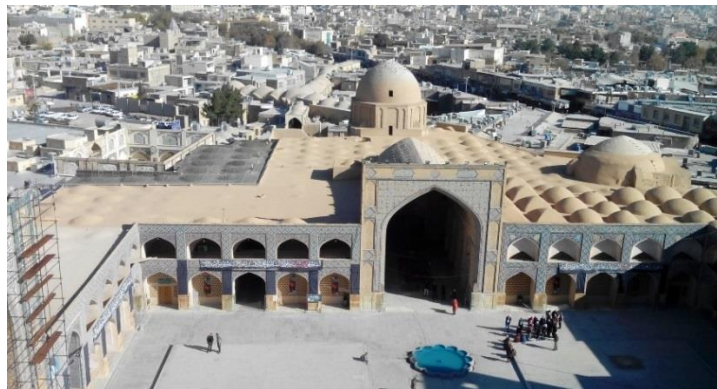


Figure 15. re-applying Kah-gel (mud and straw) finishes to the roof surface

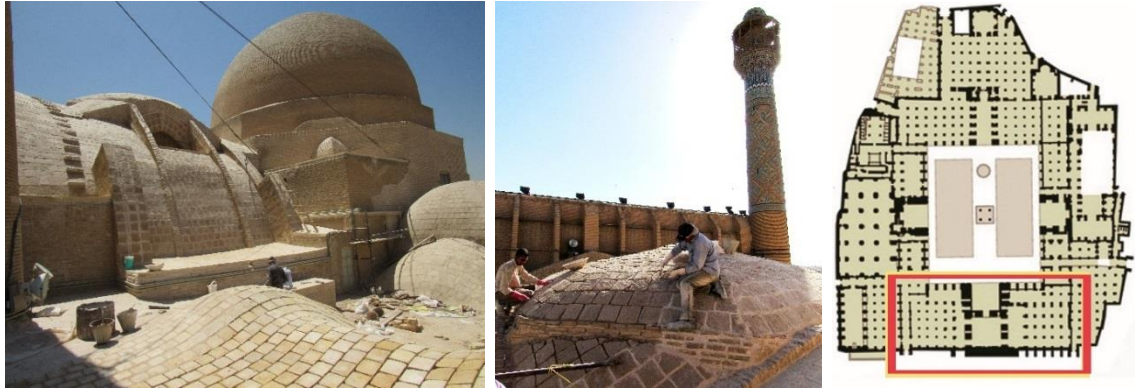


Figure 16. Roof restoration of Sofe Ostad (southern platform)

Furthermore, the gutters are reorganized and substituted by galvanized pipes on the entire roof of the mosque with colors compatible to the surface of the roof to prevent any visual distortion.



Figure 17. Reorganization of gutters on the roof of the mosque

Restoration of tiles

Restoration of tiles implemented on several facades of the mosque, as well as on the minarets in order to reduce the erosion rate due to the environmental factors. To achieve this goal, the tiles were partially removed, restored and reassembled.



Figure 18. Restoration measure on the minarets' tiles

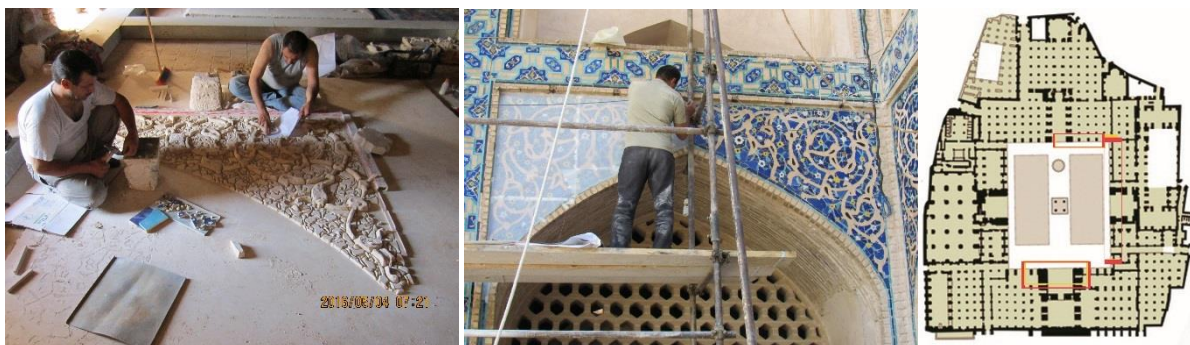


Figure 19. Restoring the façade tiles

The decorative tiles on the galleries of Mozafari Madrassah has also been Cleared, restored and stabilized.



Figure 20. restoration and stabilization of decorative tiles on the facades of Mozafari Madrassah

- Reorganization of pavements

Due to the need to correct the slope and prevent water accumulation on the west and north sides of the court, the pavements reorganization project started which has currently proceeded 70% of the area.



Figure 21. Slope correction of the inner-court and reorganization of pavements

Restoration of water donation stall

The water donation stall on the south-eastern side of the site was partially damaged by environmental factors, thus required a conservation measure to assure the mitigation of negative factors effecting its stability.



Figure 22. Restoration of the Water donation stall on the north-eastern side of the mosque

Monitoring

As it is mentioned, the monitoring procedures are carrying out by the Masjed-e Jame base on regular basis. A team of technical experts inspect the boundaries of the World Heritage Site and analyze the data obtained from modern and traditional equipment such as crack-meters, cameras, etc., prepare a report to be presented in the technical committee sessions for further decision making and planning exercises.



Figure 23. Regular assessments and monitoring processes

Of other assessments regularly meets is the evaluation of tourism pressure and visitors' behavior. The following table and charts show initial data collection and analysis to be employed in the tourism strategies within the management plan.

VISITOR STATISTICS

YEAR	Domestic Visitors	Foreign Visitors	Sum of Visitors
------	-------------------	------------------	-----------------

	Number	Percentage	Number	Percentage	
2013-2014	33465	45.7	39750	54.3	73215
2014-2015	43804	55.5	35130	44.5	78934
2015-2016	17824	26.8	48764	73.2	66588
SUM	95093	43.5	123644	56.5	218737

Table 3. Visitor Statistic analysis to be employed within the management plan

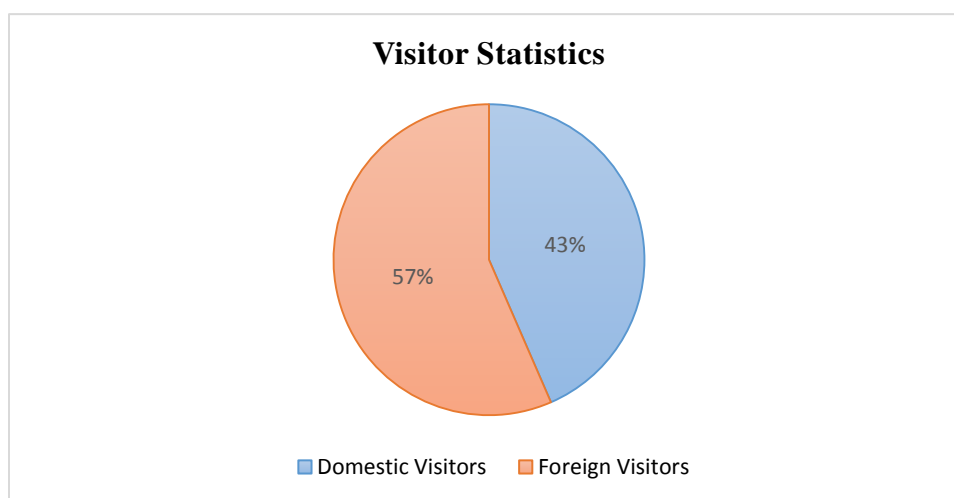
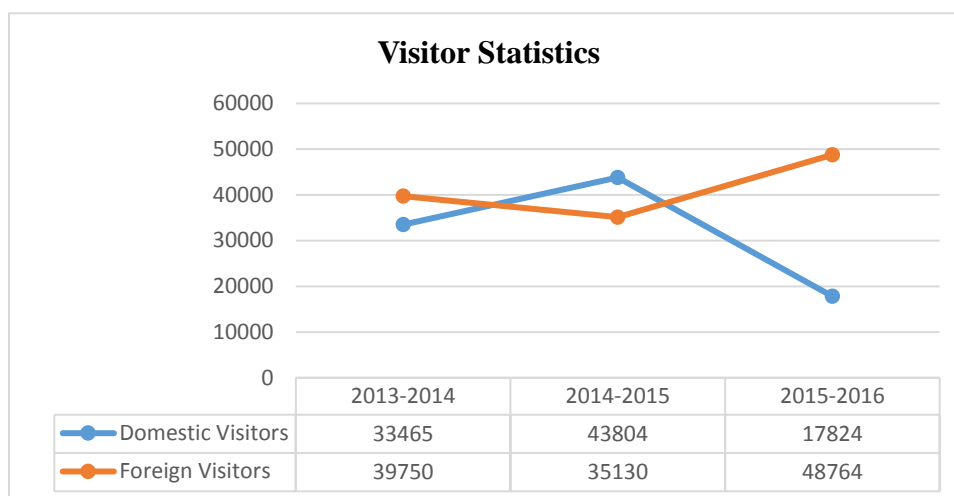


Chart 1. Visitor Statistic analysis to be employed within the management plan

Educational Workshops and scientific meetings

- Professional session on the geometry and structural analysis of the brick columns of Masjed-e Jame;



- A review on the archaeological and restoration works done in Masjed-e Jame for the technical experts and supervisors of Isfahan CHHTO;



- Awareness raising and capacity building workshop with the focus on the OUVs of Masjed-e Jame, for the students of Isfahan universities;



- Launching session of *Masjed-e Jame Atiq* book, to be published for visitors on OUVs of the World Heritage Site.



- Assessment of current lighting and the condition of its improvement in cooperation with the municipality of Isfahan



Management

Management structure

The World Heritage Site of the Masjed-e Jame, like other cultural heritage sites, is a management organization created to fulfill the organization's goals for a theme that has unique national and global values. On the basis of Clause D of Article 114 of the Law of the Fourth Plan of Economic, Social and Cultural Development of the country, "the establishment and equipping of cultural heritage sites in the country's major historical monuments and themes related to cultural heritage" has become law.

Technical Committee

The Reference technical committee of the site is responsible for decision making and monitoring of scientific, technical, managerial and specialized issues at the site. These decisions are in line with the general policies of the site determined by the Board of Trustees.

Tasks of the Technical Committee:

- Reviewing, commenting on and approval of Comprehensive Site Management Programs (long-term, middle-term and short-term programs);
- Reviewing, commenting on and approval of the site annual plan;
- Reviewing, commenting on and approval of the counselors and performers' qualifications;
- Reviewing, commenting on and approval of the descriptions of services in consultants and site-associated administrators' contracts;
- Reviewing, commenting on and approval of all executive activities and those performed at the site;

Name	Surname	Expertise	organizational position
Fereydoon	ALlahyari	PhD in History	Director of Isfahan Cultural Heritage
Hossein	Jafari	Civil Engineer	Director of Reconstruction and rehabilitation organization of Isfahan province
Hossein	Yazdanmehr	Restoration of historic monument	Director of Masjed-e Jāmé of Isfahan
Fariba	Khata Bakhsh	PhD. In restoration	Director of Meydan – e Imam site
Reza	Abuiee	PhD. In restoration	University professor

Hossein	Raee	PhD. In restoration	Director of Bisotun and Tagh e- Bostan site
Fariba	Saeedi Anaraki	PhD. In archeology	Expert in studies office
Nasar	Mashhadizade	Urban designer Engineer	Managing Director of Ivan e- Naghshe Jahan Consulting Engineers
Naser	Taheri	Master of Restoration of historic objects	Deputy of cultural heritage

Table 4. List of members of Masjed-e Jāmē of Isfahan technical committee

Tasks of Masjed-e Jame World Heritage Base

- Providing facilities and infrastructure needed for visitors and tourists
- Conducting case-studies and preparing grounds for the improvement, the protection, the conservation and restoration, and the landscaping projects and the introduction of historical and natural cultural works
- Organizing the World Heritage Site, including the designation of the visitation path, designing the outdoor furniture, the lighting of the works to make it possible to visit and operate at night, and ...
- Making constant interaction with members of the Technical Committee
- Permanent monitoring of works located within the site and preparation and submission of the technical, protection and other necessary reports.
- Providing the necessary grounds for conducting research and study activities by the Site and participation of experts, NGOs and local community, including the identification and collection of all available information on the [geographical] scope of the work, the creation and equipping of the Documentation Center, laboratory and ...
- Preparation and implementation of programs and research projects-both library and field studies- in the fields of archeology, anthropology, language and dialect, inscriptions, traditional arts, architecture and urban planning, historical as well as cultural, tourism and natural heritage objects and works located in the area of the site.
- Setting and proposing a comprehensive site management program (long-term, medium-term and short-term program)
- Formulating and proposing a yearly-base plan and carrying out the necessary steps to approve it
- Compilation of research, cultural, technical and executive reports related to the field of responsibility of the site and submitting it to the Provincial Director and the Site Affairs Management.
- Reviewing, identifying and carrying out the necessary measures for documentation of historical movable and immovable works located in the area of the site; providing a record file for the work, and proposing its inscription in the list of national works

- Studying, planning and following up of the approval and notification of the works boundaries within the site's [geographical] scope, as well as its protection.
- Training of staff in scientific and executive fields related to projects and providing the necessary conditions for training effective staffing; transferring of experience and recruitment of specialized staff required by the site in agreement with the Site Affairs Management and the Provincial Director; performing the necessary trainings for the local community on world-leading values as well as establishing continuous communication with educational units (schools) of the region to introduce [monumental] works to students and families in order to identify the values of the works and to create and strengthen the motivation of cultural heritage conservation.
- Establishing the necessary grounds for connecting the site with the people and managers in view of the participation of human resources and strengthening the local status in agreement with the provincial Director, and their participation in the site's affairs.
- Strengthening administrative and scientific communication with all the institutions, organizations/bodies and scientific and local centers to take care of a special historical, cultural and natural place.
- Establishment of continuous scientific and technical communication with other provincial, national and international sites.
- Establishment of constant scientific, technical and cultural contacts with universities, scientific centers, associations and NGOs, especially those located in the province.
- Participation in the preparation and approval of development plans in different sizes of regional, provincial, district, town, city, etc., or of effective civil projects within the [geographical] scope of the site; monitoring of all under-planning activities, civil plans and activities of various executive agencies, reviewing of them and sending comments to the Provincial Director and the Site Affairs Manager in order to establish the necessary coordination and lead development projects in the path of preserving cultural, historical and natural values.
- Providing encouragement and motivation for investment in cultural heritage, tourism and artistic sectors by NGOs, co-operations and private institutions in agreement with the Provincial Director.
- Implementation of information programs especially in the region and province to raise public awareness of indigenous heritage, especially among younger generations

Analysis of the Current Status of the World Heritage Site (swot)

Exterior Factors		Interior Factors	
Treats	Opportunities	Weaknesses	Strengths
<ul style="list-style-type: none"> - Decrease of residents across the buffer zone of world heritage site of Masjed-e Jame' - difference in day and night population - Economic oriented approach of the Stakeholders toward the different structural elements in the buffer zone of world heritage site of Masjed-e Jame' - traffic jams in the buffer zone of world heritage site of Masjed-e Jame' - Shortage of urban and tourism infrastructures 	<ul style="list-style-type: none"> -The historic buffer zone of Masjed-e Jame' was inscribed on the World Heritage List - The internationally known cultural and historic identity of Isfahan city as the cultural capital of Islamic countries in general terms and Masjed-e Jame' as specific one - Visit of approximate one hundred thousand foreign and Iranian visitors of Masjed-e Jame' complex and its buffer zone. -Growth rate of %38/8 of foreign visitors in 2015-2016 whom visited the buffer zone of world heritage site of Masjed-e Jame' Isfahan -Presence of 55 known and registered historic monuments in thebuffer zone of world heritage site of Masjed-e Jame' of Isfahan 	<ul style="list-style-type: none"> - Environmental factors affecting the structure of the mosque - Development rate of the city center -lack of informing and advertisement in tourism development 	<ul style="list-style-type: none"> - Presence of historic-cultural complex of Masjed-e Jame' of Isfahan with almost 2 hectares core zone as the dominant identifying factor in the historic fabric of central area of Isfahan - Existence of numerous and various elements with peculiar architectural patterns belong to Deyamian, Seljuk, AqQuyunlu, Ilkhanid to Safavid and Qjar periods like four portal courtyards, naves, Mozafari madrasa, small platforms of Deylamian era, Nezam al-Mulk dome, Taj al-Mulk dome, Oljeito alter, four famous portals of Saheb, Ostad, Shagerd and Dervish, Sheikh Bahai Hammam etc. - Integrated spatial structure of Masjed-e Jame' with the other surrounding historic and remarkable components like Sheikh Bahai Hammam, Madaris of Hakimiye, Nuriye, Elmiye, Ferdosi and the historic Bazar

<ul style="list-style-type: none"> - Earning approximately 283 thousand dollars each year by entrance of foreign visitors to the buffer zone of the world heritage site of Masjed-e Jame' - Presence of Bazar as a cultural, economic and historic element in collaboration with Masjed-e Jame' - A golden opportunity that the state pays special attention to conservation of national historic values and attributes required budgets in this field - Presence of Art University of Isfahan as a scientific hub in the majors of restoration, architecture and urban design - Executive design of Imam square in the fields of paving, conversion, modification and organization of some parts of the buffer zone (In case of a correct execution according to the regulation of ICHHTO and UNESCO it could be presented as an opportunity) - Masjed-e Jame' is located in the vicinity of valuable cultural and historic complexes like Bazar, Cultural – historic axis of Isfahan, Imam square etc. 	<ul style="list-style-type: none"> - Connection of Masjed-e Jame' with Naqsh-e Jahan square via cultural-historic axis of Bazar - Strategic location of Masjed-e Jame' in center of the city and its easy access to different public and tourism services such as Hotel, Petrol station, Lavatory, Police station, public transports and so on - Structural connection of Masjed-e Jame' with Bazar of Isfahan and Imam square S4- Presence of unique and precious embellishments of Masjed-e Jame' provide a huge capacity for research - An easy access to the cultural-historic complex of Masjed-e Jame' by public transports from different spots of the city - Development of social networks and an opportunity to introduce the various tourist attraction of Isfahan with a focus on the cultural-historic complex of Masjed-e Jame' - Presence of Masjed-e Jame' in residential district of Isfahan provides opportunities to benefit the capacities of local community in conservation, restoration, optimal operation and introduction of the site.
--	--

Research, introduction and training

Strategy

Prioritizing physical maintenance and physical values by focusing on maintaining outstanding values

Plan

- Conducting training courses to raise the level of knowledge of base staff, professionals, local community and other Stakeholders in order to promote the outstanding universal values and create mutual understanding in various fields related to the world site.
- Continued archaeological and architectural studies to identify the main foundations of the mosque and the entrance and protect the found foundations.
- Identification of water wells and sewage of existing buildings in the buffer zone for designing to reduce the underwater humidity of the area.
- Assessment and analysis of the mosque structure dynamically and statically in the current situation
- Dynamic analysis of the movement of vehicles around the mosque
- Preparation of the plan for the entire facilities inside the mosque complex, such as electrical installations, projectors, loudspeakers, water facilities, telephone facilities etc.
- Completing Document Center and Database of World Heritage Site of Masjed-e Jāmé to support researchers and empower them.
- Identification of probable canals (Qanats) that pass under the monument or peripheral environment
- The publication of studies conducted by the World Heritage Site of Masjed-e Jāmé
- Holding various exhibitions in the area of the mosque
- Preparation of short films and documentary programs in order to introduce the characteristic features and highlights of the mosque in different languages.
- Prints collections of photos, brochures, journals and postcards in several live languages of the world
- Train local community to publicize participation in conservation, restoration, monitoring and introduction of the world heritage site.

Protection and maintenance

Strategy

- The management of continuous and appropriate conservation measures in the face of environmental damage in the area and the world buffer zone of Masjed-e Jāmé of Isfahan;

Plan

- Rehabilitation of water basin insulations periodically

- Implementation of roof restoration and Bazar walls
- Organizing openings, furniture, signs and lightings of the Bazar according to preservation of authenticity and integrity of the world heritage site
- Organizing a suitable place to establish a restoration lab and the mosque museum
- Continuous monitoring of the activities of other organs and the private sector within the core zone and buffer zone of the world heritage site to prevent the large-scale developments or changes in the authenticity and integrity of the perimeter of the mosque
- Renewal and renovation of the roof surface periodically
- Prevent the entry of motor vehicles into the mosque complex in order to prevent damage to the body and the spirit of the building and its Outstanding Universal Values.
- Implementing a regular maintenance plan for wooden elements such as windows
- Replacement of indoor facilities with modern facilities according to the criteria
- Organizing Sewage system and its proper access to outside of the site
- Paving the passages around the mosque in order to define the visit pass ways
- Organizing installations and speakers in the mosque

Security and safeguarding

Strategy

- Providing the safe conditions for the world heritage site and its visitors

Plan

- Equipping the control room in order to allow continuous inspection of CCTV cameras
- Improve the security unit and increase the number of forces, proportional to the volume of activity in the mosque

Risk Management

Natural and human hazards

Strategy

Preventing incidental accidents and providing conditions for reducing the risks during the Risk Plan

Study of the factors of Risk creation and development

The introduction of the buffer zone of the world heritage site in different forms in order to prevent the invasion

Reduce the expansion of the Risk in the complex

Investigating the damaging factors and creating a Risk for the mosque, in terms of furniture, space and landscape, insecure urban spaces, facilities, vehicular traffic, pedestrian traffic, cultural-social patrimony

- Reorganization of business activities within the core and buffer zone of the mosque to be focused on authentic uses such as handicrafts and local productions
- Provide facilities and equipment for Risk management in zone of the site, such as fire faucets, at appropriate distances and define the route of arrival of emergency vehicles (ambulance, fire fighters, police, etc.) to the zone of the world heritage site
- Provide training courses for market players to prepare for Risk situations such as: fire, earthquake etc.

Tourism Management

Strategy

Identification and development of tourism capacity and optimal management of tourists

Plan

- Design, implementation and installation of bilingual introduction boards for valuable historic elements around the site
- Definition of tourism packages with participation of public and private sectors active in tourism and define the mosque as one of the main destinations of the city of Isfahan
- Development of national and international information and awareness campaigns (such as international universities) to raise awareness of the high values of the mosque
- Installation of appropriate boards in the area of the mosque and its interior in order to train visitors to preserve the site and prevent their destruction with the participation of the municipality.
- The establishment of tourist guides fluent in foreign languages in the mosque enclosure
- Introduction of the World Heritage Site of Masjed-e Jāmé of Isfahan through modern technology including applications, videos, websites and other virtual tourism destinations.
- Encouraging the local people and native inhabitants around the mosque to conduct indigenous ceremonies, reconstructing customs and intangible heritage at certain times of the year, with the participation of the World Heritage Site of Masjed-e Jāmé of Isfahan.
- Providing educational and training classes for authorities in the tourism sector with a focus on respect for tourists.
- Improvement of World Heritage site and its environment for disables and children visit by modern temporary equipment
 - Setting up the bike route from Hatef and Hafez streets to the square of Naghshe Jahan with the aim of expanding and promoting national heritage and capitals with the motto of friendship of historic monuments, the environment and sustainable energies.
- Negotiation with the municipality to facilitate the accessibility of disabled visitors at the entrance to the mosque
 - Providing an agreement with urban transportation companies in Isfahan regarding the establishment of special tourism services in defined routs of historic context and world heritage sites.
- Touch to organize the tourism infrastructure, including urban furniture across the buffer zone of the mosque and organizing urban furniture such as guide boards, towers, kiosks, couches, drinkers, according to the OUV of the World Heritage Site of Masjed-e Jāmé
- Cooperation with government and private organizations in charge of tourism to promote tourism services to visitors in the core zone and buffer zone of the mosque of Isfahan.
- Monitoring the behavior of visitors within the buffer zone of the World Heritage Site to improve the status of services to tourists while protecting and maintaining the World Heritage Site effectively.
- Participation in the public and private sector in order to set up the Museum of History, the Museum of Anthropology and the Museum of the Bazar using historic monuments located in the buffer zone mosque.

- Participation in the preparation and development of tourism development projects with Stakeholders.
- Establish a system for recording tourist information
- Establishing an electronic system for the supply and sale of tourism services for the mosque complex

Strategy

Providing a balance in the pressure of tourists and density of visitors in order to prevent damage to the building.

Plan

- Coordination with agencies and tour managers to determine the specific times for visiting to reduce tourism pressure (tourist time distribution)

Development Management

Strategy

Guiding the existing development towards sustainable development and reducing the impacts of development on the zone of the World Heritage Site of the mosque to the minimum possible extent.

Plan

- Continuous monitoring on construction; traffic statues and urban landscape in world buffer zone of the mosque with the participation of relevant organizations
- Participation of the Base in the process of preparation and approval of the main projects in the buffer zone and core zone of the World Heritage site
- Participation of the base representative in the Provincial Planning Council to involve in compilation and passing of the drafts and also having supervision on them
- Participation with other world heritage sites in the historic context of Isfahan city to enhance the attraction of tourists, exchange of experiences, introduction of the OUV of the world heritage sites and to definition social, cultural, economic role of these site in urban life

Participatory management

Strategy

Collaborative and interactive management of the world heritage site and the establishment of an appropriate mechanism for cooperation between the base and other Stakeholders

Plan

- Creating a sense of belonging to a mosque across the community, especially in children, adolescents and young people

Organizing interactive meetings for cooperation with travel agencies, transportation agencies, terminals and ... In order to have an agreement for cooperation in attracting tourists and sustainable tourism-oriented economic development

- Holding a continuous scientific research relationship with other international and national bases of Iran, as well as examples of similar world heritage sites to exchange experiences and local knowledge.

- Cooperation with the Ministry of Education in compiling educational content on Masjed-e Jāmé in order to add it to the school curriculum.

- Agreement on cooperation to optimize the systematic collection of waste around the mosque complex to prevent the accumulation of waste within the boundaries of site zone

- Organizing interactive meetings to engage with educational, research, scientific and cultural centers and institutions to enhance the level of knowledge among Stakeholders, tourists and enthusiasts.

- Support the presence of associations, institutions and campaigns with the active participation of the local community in management affairs

- Negotiate for construction and development of public parking outside the buffer zone of Masjed-e Jāmé in order to prevent the congestion of vehicles inside the zone to ease the communication of people with mosque, Bazar and historic fabric.

- The memorandum of understanding for the organization of water, gas, electricity, and telecommunications installations in accordance with the rules of the Cultural Heritage, Handicrafts and Tourism Organization

- The memorandum of understanding to organize infrastructures like water, gas, electricity, and telecommunications installations in accordance with the rules of ICHHTO.

- Announcement of general information on the design of urban buildings in the core zone and buffer zone of the mosque to various organizations and the private sector.

- Participation in restoration and conversion of a number of historic houses and granting them functions in accordance with the aims of the inscribed site on the world heritage list.

- Introduction of the universal rules of the mosque and the necessity of obtaining an inquiry from the base in all activities and implementation in the buffer zone of the world heritage site of Masjed-e Jāmé.

- The formation of a working groups consisting of representatives of Stakeholders (Waqf, board of trustees, representative of the businessmen, director office of Heritage, the representative of local Islamic assembly, the representative of the municipality, the representative of the Road and Urban Development Administration) to hold monthly meetings to examine the problems in the core and buffer zone of the world heritage site. And getting their point of view for solving problems, as well as explaining the rules and limits of interventions in the buffer zone of the world heritage site. Submitting the approvals and results of these discussions to the office of Bases affairs in ICHHTO

and the general director of cultural heritage and handicrafts of Isfahan Province in order to implement possible plans.

- Continuous interaction with Stakeholders to hold periodic meetings especially with business men in Bazar in order to persuade them to solve the challenges of the core zone and buffer zone of the site
- Encouraging active private sectors, including NGOs, to participate in various fields of tourism, restoration, research and so on and also develop their fields of activity.

Monitoring

Monitoring goals

- Achieving the optimum level of undertaken and ongoing research, conservation and management activities
- Standardization of measures and conditions for the protection of the complex in order to empower the management and manpower of the base as management structure of the site
- Quality improvement of tourist service
- Monitoring of the World Heritage Site of Masjed-e Jāmé which is carried out by the director and personnel of the base. As mentioned, in future Plans, participation of Stakeholders in monitoring is also one of the priority actions that require related trainings

Strategy

Improving the quality of the world heritage status by analyzing existing conditions and explaining ways to improve the initial outcomes

Plans

- Continuous monitoring of the skeleton of the world heritage site in following fields:(structure, coatings, decorations, peripheral development (in terms of height, originality of the used materials lighting, etc.) and also influential factors in the process of erosion, such as moisture, animal and biologic factors, air pollution, noise pollution, peripheral vibrations in the core zone and buffer zone of the site by experts using the necessary equipment, such as a photographic camera, scale , air pollution measuring instruments etc. And reports Documents to the database manager
- Monitoring restoration of the ceiling, walls of the market and the other perimeter spaces of the mosque
- Monitoring modern and historic infrastructures related to the building, including water wells, sewage systems, Qanats, etc. In order to investigate the need for periodic investigations or prevention of damage to the skeleton of the site
- Continuous monitoring of the security unit to monitor unauthorized activities and prevent illegal development and changes with the participation of the other Stakeholders and provide a documented report to the database manager.
- Complete and upgrade the format of monitoring and analysis of data by acquired experiences after world heritage registration of the site.
- Periodic assessment of environmental and human threats such as rainfall, temperature difference, tourist pressure and development pressure and ...
- Encouraging tourists to participate in sustainable tourism development projects through surveys, questionnaires, holding periodic meetings etc.

- Conduct regular training sessions on monitoring with base staff and Stakeholders
- Conducting specialized meetings to analyze the extracted data from the monitoring process in the seven management domains
- Periodic monitoring of personnel performance
- Monitor the status of historic movable objects obtained in the mosque
- Monitor the security systems and related human resources
- Monitoring the status of tourist services
- Monitor changes in the functions of various buildings, including endowments (Waqf) in the buffer zone of the world heritage site.
- Monitoring the status of native population and their related statistics in the buffer zone of the site to update the database on the GIS system, analyzing information and addressing the affecting factors on residential conditions

Implementation plan

Short-term

- Conducting training courses to raise the level of knowledge of base staff, professionals, local community and other Stakeholders in order to promote the outstanding universal values and create mutual understanding in various fields related to the world site.
- Preparation of the plan for the entire facilities inside the mosque complex, such as electrical installations, projectors, loudspeakers, water facilities, telephone facilities etc.
- Completing Document Center and Database of World Heritage Site of Masjed-e Jāmē to
- Holding various exhibitions in the area of the mosque
- Preparation of short films and documentary programs in order to introduce the characteristic features and highlights of the mosque in different languages.
- Prints collections of photos, brochures, journals and postcards in several live languages of the world
- Train local community to publicize participation in conservation, restoration, monitoring
- Rehabilitation of water basin insulations periodically
- Implementation of roof restoration and Bazar walls
- Continuous monitoring of the activities of other organs and the private sector within the core zone and buffer zone of the world heritage site to prevent the large-scale developments or changes in the authenticity and integrity of the perimeter of the mosque
- Renewal and renovation of the roof surface periodically
- Prevent the entry of motor vehicles into the mosque complex in order to prevent damage to the body and the spirit of the building and its Outstanding Universal Values.
- Paving the passages around the mosque in order to define the visit pass ways
- Organizing installations and speakers in the mosque
- Equipping the control room in order to allow continuous inspection of CCTV cameras
- Improve the security unit and increase the number of forces, proportional to the volume of activity in the mosque
- Study of the factors of Risk creation and development
- The introduction of the buffer zone of the world heritage site in different forms in order to prevent the invasion
- Reduce the expansion of the Risk in the complex
- Design, implementation and installation of bilingual introduction boards for valuable historic elements around the site
- Definition of tourism packages with participation of public and private sectors active in tourism and define the mosque as one of the main destinations of the city of Isfahan
- Installation of appropriate boards in the area of the mosque and its interior in order to train visitors to preserve the site and prevent their destruction with the participation of the municipality.
- The establishment of tourist guides fluent in foreign languages in the mosque enclosure
- Introduction of the World Heritage Site of Masjed-e Jāmē of Isfahan through modern technology including applications, videos, websites and other virtual tourism destinations.

- Encouraging the local people and native inhabitants around the mosque to conduct indigenous ceremonies, reconstructing customs and intangible heritage at certain times of the year, with the participation of the World Heritage Site of Masjed-e Jāmé of Isfahan.
- Providing educational and training classes for authorities in the tourism sector with a focus on respect for tourists.
- Providing an agreement with urban transportation companies in Isfahan regarding the establishment of special tourism services in defined routs of historic context and world heritage sites.
- Establish a system for recording tourist information
- Establishing an electronic system for the supply and sale of tourism services for the mosque complex
- Agreement on cooperation to optimize the systematic collection of waste around the mosque complex to prevent the accumulation of waste within the boundaries of site zone
- Organizing interactive meetings to engage with educational, research, scientific and cultural centers and institutions to enhance the level of knowledge among Stakeholders, tourists and enthusiasts.
- The memorandum of understanding for the organization of water, gas, electricity, and telecommunications installations in accordance with the rules of the Cultural Heritage, Handicrafts and Tourism Organization
- Introduction of the universal rules of the mosque and the necessity of obtaining an inquiry from the base in all activities and implementation in the buffer zone of the world heritage site of Masjed-e Jāmé.
- The formation of a working groups consisting of representatives of Stakeholders (Waqf, board of trustees, representative of the businessmen, director office of Heritage, the representative of local Islamic assembly, the representative of the municipality, the representative of the Road and Urban Development Administration) to hold monthly meetings to examine the problems in the core and buffer zone of the world heritage site. And getting their point of view for solving problems, as well as explaining the rules and limits of interventions in the buffer zone of the world heritage site. Submitting the approvals and results of these discussions to the office of Bases affairs in ICHHTO and the general director of cultural heritage and handicrafts of Isfahan Province in order to implement possible plans.
Continuous interaction with Stakeholders to hold periodic meetings especially with business men in Bazar in order to persuade them to solve the challenges of the core zone and buffer zone of the site
- Encouraging active private sectors, including NGOs, to participate in various fields of tourism, restoration, research and so on and also develop their fields of activity.

Medium-term

- Continued archaeological and architectural studies to identify the main foundations of the mosque and the entrance and protect the found foundations.

- Identification of water wells and sewage of existing buildings in the buffer zone for designing to reduce the underwater humidity of the area.
- Assessment and analysis of the mosque structure dynamically and statically in the current situation
- Dynamic analysis of the movement of vehicles around the mosque
- Identification of probable canyons (Qanats) that pass under the monument or peripheral environment
- The publication of studies conducted by the World Heritage Site of Masjed-e Jāmé
- Organizing openings, furniture, signs and lightings of the Bazar according to preservation of authenticity and integrity of the world heritage site
- Organizing a suitable place to establish a restoration lab and the mosque museum
- Organizing Sewage system and its proper access to outside of the site
- Investigating the damaging factors and creating a Risk for the mosque, in terms of furniture, space and landscape, insecure urban spaces, facilities, vehicular traffic, pedestrian traffic, cultural-social patrimony
- Provide facilities and equipment for Risk management in zone of the site, such as fire faucets, at appropriate distances and define the route of arrival of emergency vehicles (ambulance, fire fighters, police, etc.) to the zone of the world heritage site
- Provide training courses for market players to prepare for Risk situations such as: fire, earthquake etc.
- Development of national and international information and awareness campaigns (such as international universities) to raise awareness of the high values of the mosque
- Improvement of World Heritage site and its environment for disabled and children visit by modern temporary equipment
- Setting up the bike route from Hatef and Hafez streets to the square of Naghshe Jahan with the aim of expanding and promoting national heritage and capitals with the motto of friendship of historic monuments, the environment and sustainable energies.
- Negotiation with the municipality to facilitate the accessibility of disabled visitors at the entrance to the mosque
- Touch to organize the tourism infrastructure, including urban furniture across the buffer zone of the mosque and organizing urban furniture such as guide boards, towers, kiosks, couches, drinkers, according to the OUV of the World Heritage Site of Masjed-e Jāmé
- Monitoring the behavior of visitors within the buffer zone of the World Heritage Site to improve the status of services to tourists while protecting and maintaining the World Heritage Site effectively.
- Participation in the public and private sector in order to set up the Museum of History, the Museum of Anthropology and the Museum of the Bazar using historic monuments located in the buffer zone mosque.
- Coordination with agencies and tour managers to determine the specific times for visiting to reduce tourism pressure (tourist time distribution)
- Continuous monitoring on construction; traffic statues and urban landscape in world buffer zone of the mosque with the participation of relevant organizations

- Participation of the Base in the process of preparation and approval of the main projects in the buffer zone and core zone of the World Heritage site
- Participation of the base representative in the Provincial Planning Council to involve in compilation and passing of the drafts and also having supervision on them
- Organizing interactive meetings for cooperation with travel agencies, transportation agencies, terminals and ... In order to have an agreement for cooperation in attracting tourists and sustainable tourism-oriented economic development
- Support the presence of associations, institutions and campaigns with the active participation of the local community in management affairs
- Negotiate for construction and development of public parking outside the buffer zone of Masjed-e Jāmé in order to prevent the congestion of vehicles inside the zone to ease the communication of people with mosque, Bazar and historic fabric.
- The memorandum of understanding to organize infrastructures like water, gas, electricity, and telecommunications installations in accordance with the rules of ICHHTO.
- Announcement of general information on the design of urban buildings in the core zone and buffer zone of the mosque to various organizations and the private sector.

Long-term

- Implementing a regular maintenance plan for wooden elements such as windows
- Replacement of indoor facilities with modern facilities according to the criteria
- Abandoning the business activities of the market and directing them to core functions such as handicrafts and local productions
- Cooperation with government and private organizations in charge of tourism to promote tourism services to visitors in the core zone and buffer zone of the mosque of Isfahan.
- Participation in the preparation and development of tourism development projects with Stakeholders.
- Participation with other world heritage sites in the historic context of Isfahan city to enhance the attraction of tourists, exchange of experiences, introduction of the OUV of the world heritage sites and to definition social, cultural, economic role of these site in urban life
- Creating a sense of belonging to a mosque across the community, especially in children, adolescents and young people
Holding a continuous scientific research relationship with other international and national bases of Iran, as well as examples of similar world heritage sites to exchange experiences and local knowledge.
- Cooperation with the Ministry of Education in compiling educational content on Masjed-e Jāmé in order to add it to the school curriculum.
- Participation in restoration and conversion of a number of historic houses and granting them functions in accordance with the aims of the inscribed site on the world heritage list.

Conclusion

Masjed-e Jāmé is one of the most precious historic collections in the city of Isfahan, which has placed itself in the process of architectural evolution as a museum. This precious ensemble illustrates the various historical architectural types besides enthusiasm and talent of artist in fields of mosaic work, stalactite work, plaster molding etc. Masjed-e Jāmé is the most ancient mosque of Iran and presents the first four portal mosque pattern. In addition, it represents all the Iranian architectural aspects; a mirror of twelve centuries of Isfahan so it is known as an encyclopedia of architecture. Moreover, the spiritual values of this site are brilliant due to its connection with the religious beliefs of the people and the important personalities of the history of science and religion of the city.

The mosque of Isfahan has historically been preserved and protected by the people with participation of the trustee board of the mosque, due to its religious significance and the role that it played in religious beliefs of indigenous people. In the past decade, before registration of Masjed-e Jāmé in the world heritage list, due to the importance of this site in the history of Islamic architecture of Iran, a base for integrating participatory management and focusing on the implementation of measures according to standards and regulations of ICHHTO was established, which is now responsible for the management with participation of other organs and the local community in the region. As a result, all protective, monitoring and management measures since the site has been inscribed on the world heritage list have been continuously underway, and these measures have been reflected in the World Heritage Center in periodic conservation reports over the years.

In compiling the management plan of the world heritage sites of the Masjed-e Jāmé of Isfahan as a great potential for sustainable economic development of the local community is considered in order to stabilize the present situation and transfer it to future generations, along with development of sustainable tourism, cultural development social development besides paying special attention to the local community through employment based on tourism and handicrafts related to the mosque. Therefore, in all strategies, solutions and compiled Plans an integrated participatory management based on interaction with Stakeholders including landlords, local community, related organizations, authorities and decision makers is considered. As Masjed-e Jāmé has been constructed in this local and national system, developed and transferred to the board of management. Therefore, the mention approach is obviously seen in the attached reports including SOC and HIA reports.

Among the other important points in the present dossier are holding negotiations and meetings to prepare for crises and providing required infrastructures to ease the accessibility of emergency forces to the complex at the time a Risk.

It should be mentioned that the draft of present management plan is compiled to achieve the final improvement for short term (5 years), middle term (10 years) and long terms (15 years) Plans. These Plans are evaluated during the studies and during and after implementation in accordance with the process presented in the monitoring section, and will be updated annually according to the results and needs of the day.

Formulate the process of Plans and formulate the principles and the most important expected actions

The mosque is an endless book of history, a dynamic museum of human history in different periods of Iranian history. The research should be the inseparable part of this collection, the following principles are fundamental approaches of the World Heritage Site of Masjed-e Jāmé toward the research affairs:

- Establishing a necessary and strong background for research development in various fields and their promotion
- - Organizing carried out studies by creating a database, compiling and storing them on computer servers, library development
- Supporting researchers
- Proper and constructive interaction with scientific and research institutions
- Conducting scientific conferences and specialized seminars
- And ...

Preservation, maintenance and physical conservation

- Preserving the monuments of the mosque is one of the most basic tasks of the existing management collections this purpose is achieved by participation of indigenous people, tourists and all Stakeholders. The most important actions that have been taken by the protection plan are:
- Permanent protection and maintenance of the core zone with the participation of other Stakeholders.
- Assess and monitor continuously in order to prevent threat and damage to the outstanding universal values of Masjed-e Jāmé
 - Continuous monitoring by security forces of the Base Protection Unit to assess changes in accordance with the rules to prevent any violations in the world heritage zone.
 - Applying the capacities of local residents, institutions and scientific – training centers for conservation visa education

Risk management

Heavy falls, sudden destruction of some decoration parts, earthquake risk, decrease of underlying water level and probable land subsidence, and also land subsidence due to the presence of drains and sewage wells in the perimeter and in the courtyard of the mosque can be considered as the most important natural hazards and natural disasters Regarding structural and managerial , cultural and religious status of the mosque human risks do not play such a role in probable destruction of this collection. However, the risk of probable inadvertent fire, breaks in water and gas pipes and problems of electricity system and the following cashiering exists.

Isfahan city like the other cities of Iran has some common features in the process of urban design and urban planning that can make the Risk status more problematic. The process of Risk

management and administration hierarchy play a dominant role in this area. Therefore, the following approaches are considered to compile the plans of Risk management:

- Training the concept of Risk management (Before Risk, at the time of Risk and after it) to personal, local people and Stakeholders.
- Organizing existing facilities and upgrading the infrastructure necessary to face potential crises in the complex and reducing their potential impacts.
- Applying the capacities of local community, scientific centers, organizations and related organizations to enhance the performance in this field

Tourism management

Masjed-e Jāmé is one of the most outstanding historic ensembles in Isfahan that attracts numerous national and international visitors each year. Owing to the location of Masjed-e Jāmé on the end of cultural – historic axis of Isfahan and presence of remarkable historic monuments along this vibrant commercial axis (presence of Bazar), visitors could benefit the large diversity of monuments. The mosque has attracted more than two hundred thousand visitors in two years ago. The total amount relates to 57% foreigners and 43% Iranian visitors. One of the tourism goals in Isfahan, especially Masjed-e Jāmé and its enclosure is providing local capacities to conserve the mosque as a national and international treasure and simultaneously achieve economic benefits by presence of visitors in the region.

Therefore, improvement of tourism infrastructures should be combined with conservational approach toward the site and its zone. The prior suggested implementations are based on the following aims:

- Development of sustainable tourism besides the conservation of the site
- Applying the capacities of tourism development and local community to improve other active areas of the base and introduce the values and importance of Masjed-e Jāmé in national and international level

Development management

Development generally refers to implementation of urban and regional designs in the zone of a historic site that besides its negative effects could improve management of the complex. As Masjed-e Jāmé is located in the heart of Isfahan to expose such developments at the first phase local community, authorities and Stakeholders should be aware of its outstanding universal values and its importance in the urban scale and also be familiar with regulations and defined zone of this world heritage site. Subsequently, announcement of the development constraints surrounding the world heritage site and the HIA assessments in this regard are on the agenda.

In this regard, the following Plans have been introduced as a series of actions:

- The presence of the representative of the base in meetings for preparation and approve the large scaled plans of Isfahan city.
- Use interactive capacities of the planning Council and the Infrastructure working group of the Province to make decisions related to the world heritage site on the urban scale.

- Interaction with urban development counselors and informing to create Mutual and Common Understanding in large-scale decisions
- Use Isfahan city management capacities to improve the management of Masjed-e Jāmé in the 7 areas of management, including organization of facilities, urban furniture, security and Risk management, traffic and transportation, and ...

Participatory Management;

Participation is a two-dimensional issue in which profit connects two sides. Regarding the management of Masjed-e Jāmé complex, the participatory approach for awareness raising, capacity building and empowerment of Stakeholders is the priority of the management board of the site. Activating the hidden capacities in each sector can be an effective step in improving the management and protection of the mosque as a world heritage site and national capital of each beneficiary. Therefore, the collaborative management in this management plan, despite the numerous shared aspects with other areas of database management, has an independent headline. In the Plans of this chapter, achieving the following items is set as the goal:

- Use the capacity of scientific and research institutions to support fundamental researches and accompany in different stages of empowerment of Stakeholders
- Use the capacity of indigenous people to maintain the historic complex and use their capacities to contribute to sustainable regional economic development
- Use the capacity of Stakeholders to participate in solving the challenges, promoting infrastructures and services to the local community and tourists
- Participation with NGOs in order to encourage Stakeholders to engage in various aspects of the mosque, especially the youth

Islamic Republic of Iran
Iranian Cultural Heritage, Handicrafts & Tourism Organization
ICHHTO



HIA report of Masjed-e Jame Isfahan
World Heritage Site

UNESCO
World Heritage Convention
Tehran 2017

In the name of God

State Party

Islamic Republic of Iran



Figure 1. Iran (ICHHTO archive)

State, Province or Region

Isfahan Province



Figure 2. Location of the Isfahan province (ICHHTO archive)



Figure 3. Location of Masjed Jame in Isfahan Province (ICHHTO archive)

Name of Property

Masjed-e Jāmé of Isfahan World Heritage Site

Date of Inscription on the World Heritage List: 2012

Ref No.: 1397

Criteria: [\(ii\)](#)



Figure 4. Masjed-e Jame of Isfahan World Heritage Site

Geographical coordinates: N32 40 11 E51 41 7

Area of the Property: 2.0756 ha

Area of the Buffer zone: 18.6351 ha

Introduction

Masjed-e Jame World Heritage Base, is the local representative of ICHHTO, established for providing comprehensive and integrated management of the World Heritage Site and ensuring the relevant maintenance and preservation of its OUV, authenticity and integrity. Considering the location of the mosque inside the city center were supports an abundant scale of urban activities in different varieties, it faces plenty of development proposals in minor and major scales, one of which was the revival of Atiq square at the buffer zone of the mosque. As it is reported in previous SOC reports and missions carried out in previous years, an immense effort made to provide both the foremost levels of preservation for the OUV of the mosque, its authenticity and integrity and the safety of its structure, as well as, a safe and secure area with proper living conditions for the residents and the local community as the most significant stakeholders, according to the World Heritage and National rules and regulations, benefitting from the World Heritage missions, professional consultation and etc. Yet to identify the best strategies and plans after revival of the Atiq square, an impact assessment was necessary, as the World Heritage Committee decided on its 40th session. Therefore, a set of comprehensive monitoring sessions initiated by taking account the international frameworks, field surveys, monitoring results and questionnaires from stakeholders to be benefited from within the current condition of Masjed-e Jame and its boundaries, which are still running. In order to achieve this goal, plenty of enquiries made by ICHHTO to the municipality of Isfahan and the Urban renewal organization of Isfahan, as the institutions in charge of urban development and the revitalization project of Imam Ali square in the vicinity of Masjed-e Jame. Also, several meetings took place with the representatives to engage these public stakeholders in the process of developing the HIA report since 2015.

However, the following report is the current outcome of the upper mentioned cooperation and studies:

Description

Masjed-e Jāmé of Isfahan has inscribed on the World Heritage Site on 2012 for its significant qualities to exhibit an important interchange of human values, over ages within cultural area of Iran, on developments in architecture, technology, monumental arts and its role in influencing the town-planning of Isfahan as a major city in Iran.

As the history and qualities of Masjed-e Jame has thoroughly explicated in its World Heritage Nomination Dossier and is reviewed within its updated management plan which is attached to this report, a sole glimpse on the Statement of Outstanding Universal Values, on which this report is based will be given:

The architecture and the layout of Jāme' Mosque of Isfahan, as the main quality qualified the monument to be inscribed on the World Heritage list, exhibit an important interchange of human values and influences, originated from palace architecture as early as the Achaemenids and Sassanids periods in pre-Islamic Persia and lead to an outstanding prototype of Islamic Architecture specially in Jame Mosques. Furthermore, its integration into the urban fabric through its many gates and entrances that weave it with the city's activities has been instrumental in subsequent town-planning of the ancient city of Isfahan due to its role in the life of local community as the main political, social and economic hub of the city for centuries.



Figure 5. Structural Stability and associated proportion

The architectural and artistic concepts and solutions of the Jāme' Mosque became a major reference for the later development of mosque architecture, indeed, from the early Islam to the Qajar reign. This was particularly the case of the four-Iwans ground plan from the Seljuqs period. Indeed, the Jāme' Mosque of Isfahan can be considered the most significant and influential witness to history

of monumental art, architecture and technology of Jāme' Mosques in the Islamic world. As the architectural prototype of domed mosques with Iwans in the Iranian style, Masjed-e Jāme' of Isfahan has served as a model for mosques not only within the Iranian plateau but also beyond, such as Central Asia. Moreover, the technology of constructing (Tarkin) ribbed domes, representing unique engineering skills, was here used for the first time and the Jāme' Mosque is still regarded as the most perfect domed brick structure of its type.



Figure 6. Inner Courtyard of Masjed-e Jame and two of the Iwans

The whole property and its components are located on one portion of land providing its structural and functional integrity. Masjed-e Jāme' of Isfahan is directly linked to the very old, long Bazaar of Isfahan which starts from the mosque itself snakes through a number of historic places and terminating within the bazaar and terminates in the World Heritage Site of Meydan-e Imam. Since it has continuously been in use, maintained and regarded as a highly respected mosque by the ordinary people as well as the authorities, regionally and nationally, who consider its protection and conservation a religious duty, it has fully retained its integrity and authenticity throughout the centuries and until today.

Thus Masjed-e jame and its setting were a focal point for Isfahan city and its residents where plenty of social services and activities were offered for centuries. Later with the construction of Emam square (Naghsh-e jahan) in safavid era, this district gradually secluded, yet retained its cultural and spiritual centrality in Iranian cultural life until today. Thus, from qajar period the functional and physical qualities of Atiq square altered. In Pahlavi era, Atiq Square as the historic setting of Masjed-e jame was confounded by a new road network. All these alterations led to a drop in the quality of life and welfare in the setting of Masjed-e jame while keeping a detracting process. These circumstances have had a negative impact not only on the life of residents but also on the status of Masjed-e jame as the focal point of the district.



Figure 7. A sample of decorative masterpieces

Revival Atiq Square

The very first concepts of the square's revival, date back to almost 40 years ago, yet it appeared initially on the approved master plan of Isfahan city on 1988. Since the critical location of the project, regarding its importance in the local communities believes, social life, its situation within the city and specific national and international rules and regulations restricting construction in material types, height, color, etc. in the vicinity of one of the prominent national heritages (of that time), a wide range of studies started by the municipality of Isfahan, as the public organization in charge of urban reorganization plans and projects. It took 25 years for the plans to be proposed and three years for gaining the approvals needed from different organizations such as ICHHTO, as the 32-ha area of the project overlapped partially with the buffer zone of Masjed-e Jame World Heritage Site. Eventually, after plenty of meetings, consultations, plan and design examination sessions and a great extent of revision, and in favor of improving the living quality of the region, returning the locals to their authentic residentials and providing a least standard to the boundaries of the World Heritage Site, the plans got the final approval in 2016.

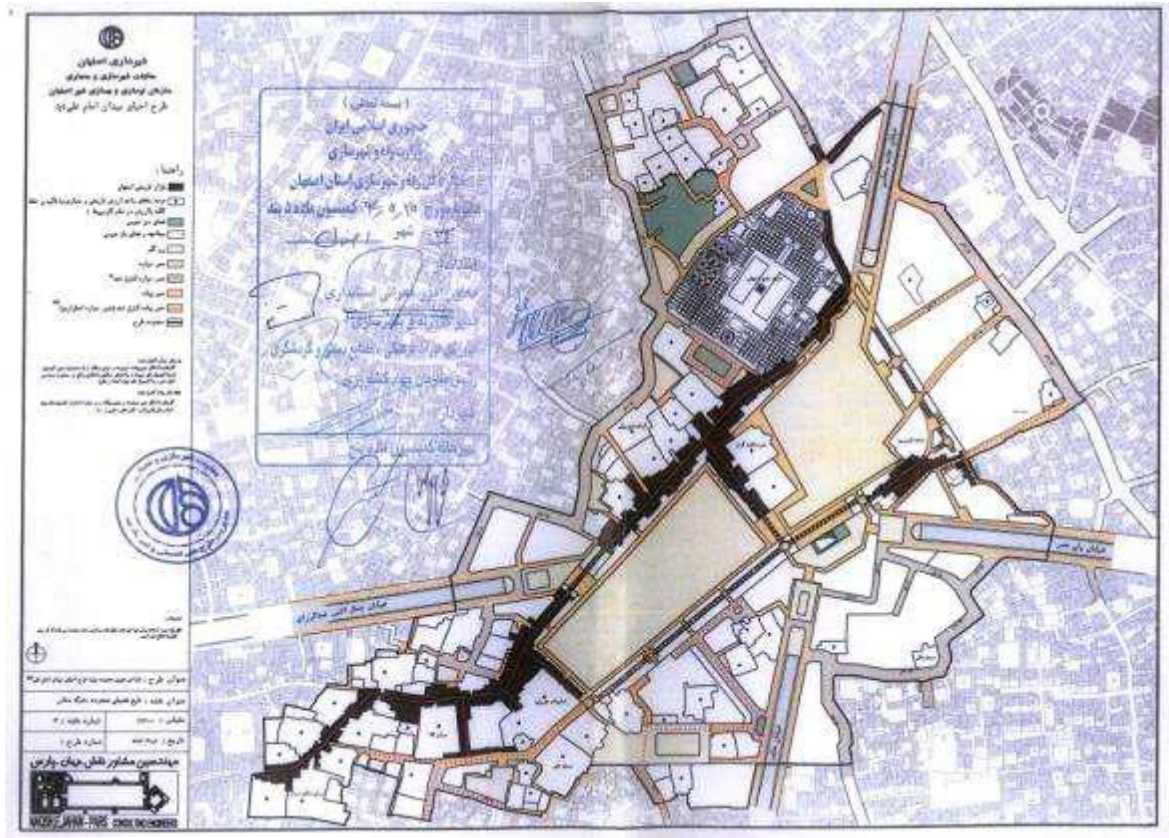


Figure 8. The Approved Plan of the project

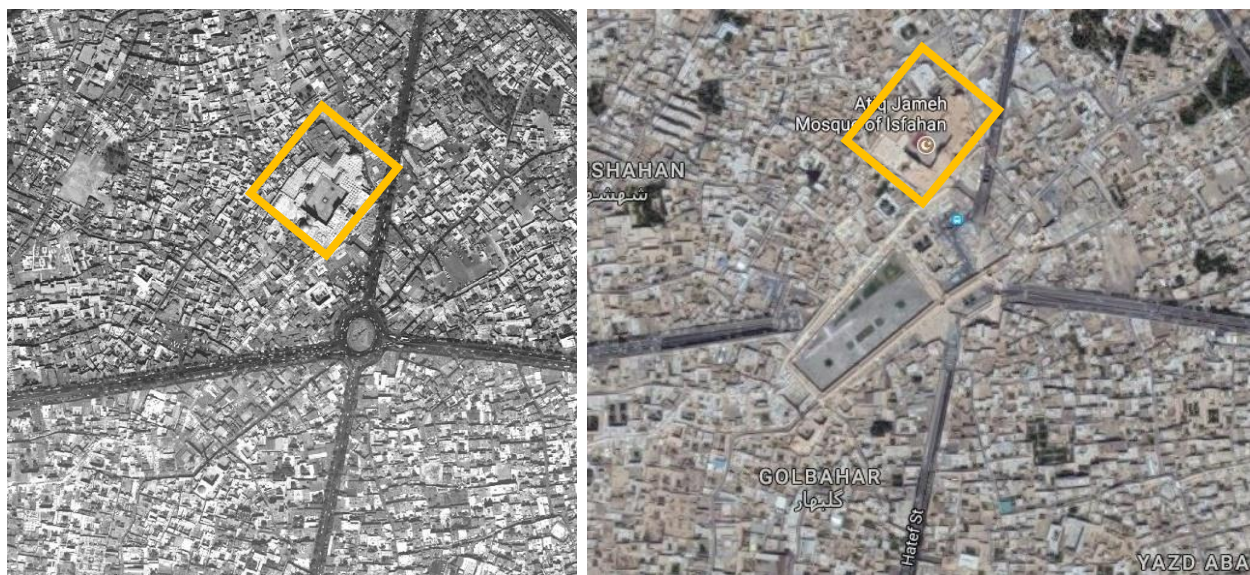


Figure 9. Masjed-e Jame and its vicinity, left at 2009- right at 2017



Figure 10. Atiq square before and after implementation of the rehabilitation plan

Tests

In order to attain a clear idea on the negative impacts imposed to Masjed-e Jame World Heritage Site, a detailed information on potential atmosphere and noise pollution generated by urban revitalization projects, as well as vibration impacts of the underground road is generated.

Sound Test-

Introduction

Sound waves, are actually longitudinal mechanical waves. They can spread through solids, liquids and gases. The materials which transfer the sound waves vibrate parallel to the wave direction. Sound waves can be created with a wide range of frequencies, of which some of them can be heard with human. Sound waves can be created by surrounding resources such as vehicles, construction workshops, manufactories and natural incidents. These waves can create vibration at the structures if their amplitudes are high enough, which in the long term can cause damages on sensitive structures.

Sound measurement test

This test was carried out at the Jame mosque of Isfahan on a working day and repeated four times at different hours of the day. In each test, data was collected for 10 minutes using TES1358 measurement device (Fig 13). The maximum sound vibration along with vibration data on time domain are presented at the end of each test.



Figure 11. Location of sound and air pollution test



Figure 12. A view of sound test location



Figure 13. Sound testing instrument

Data of 6 tests are presented in Fig 14, as the diagram of sound amplitude versus time.

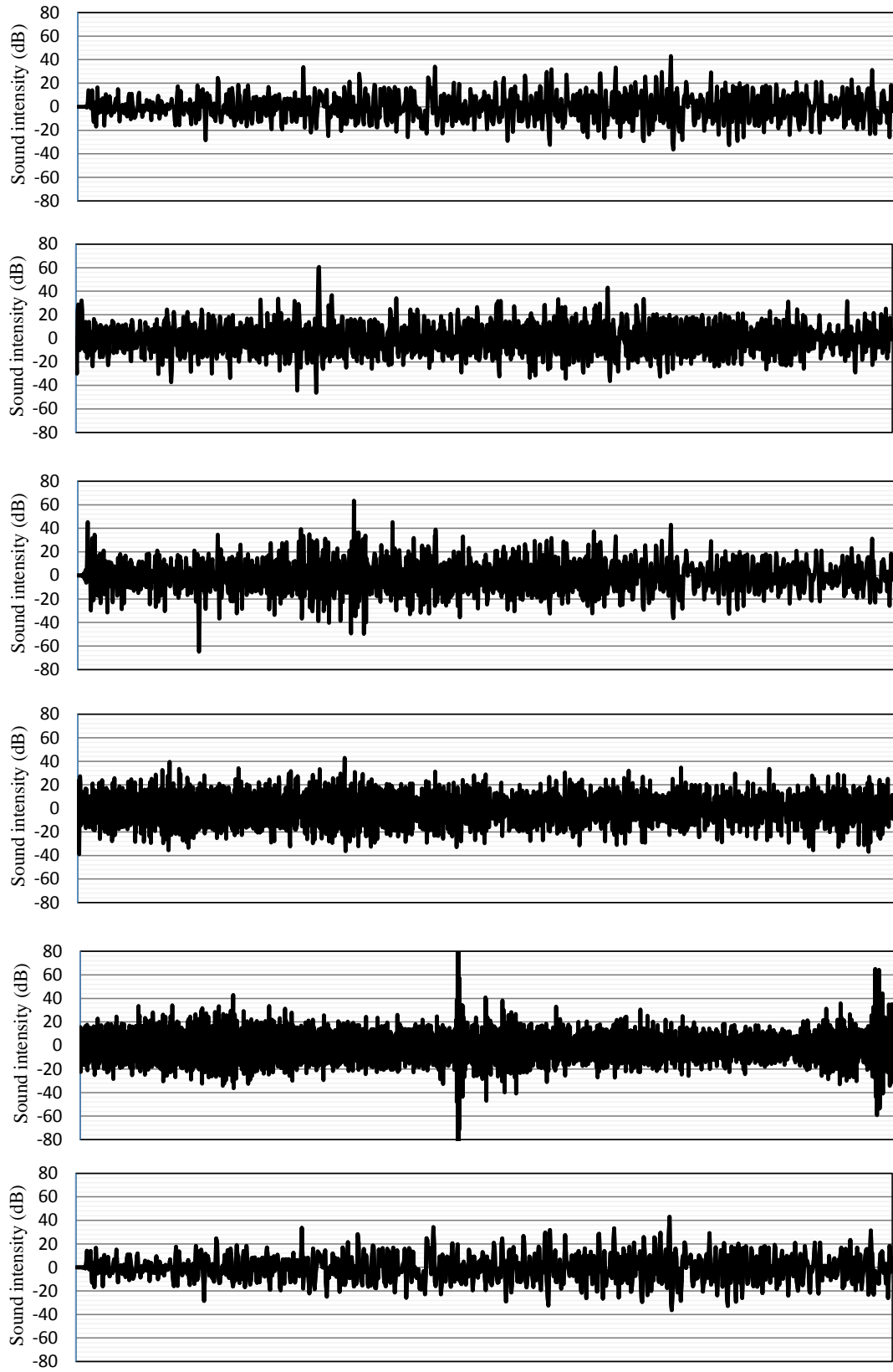


Figure 14. Sound amplitude in time domain at Jame mosque

To differentiate sound waves' frequencies by Fourier Transform, the sound amplitude-frequency is presented (Fig 15). It should be noted that tests at 11:45 and 17:30 have been conducted during the broadcast of the Azan from speakers inside the mosque.

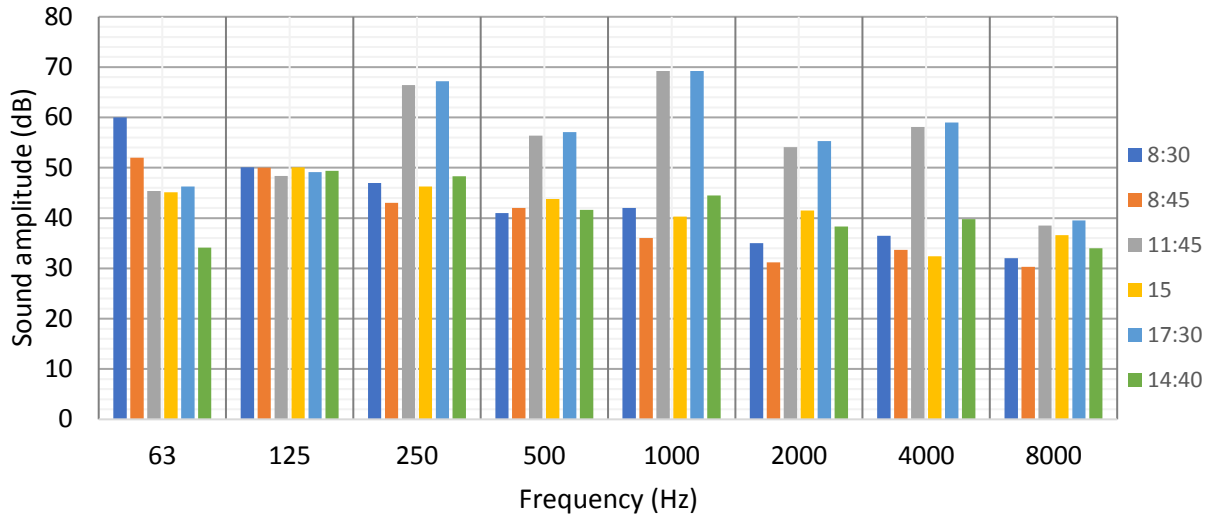


Figure 15. Sound amplitude in Frequency domain at Jame mosque

Frequency Analysis (dB)								Sound Pressure Level) SPL(Time	No.
								dB(C)	dB(A)	dB	dB		
8000	4000	2000	1000	500	250	125	63	Read	Read	min	max		
32	36.5	35	42	41	47	50.1	60	58	51	41	66.4	08:30	1
30.3	33.7	31.2	36	42	43	50	52	64	48.5	58	40	08:45	2
38.5	58.1	54.1	69.2	56.4	66.4	48.4	45.4	86.7	83.6	49.2	82.6	11:45	3
36.6	32.4	41.5	40.3	43.8	46.3	50.1	45.1	69.5	61.2	50.7	84.2	15	4
39.5	59	55.3	69.2	57.1	67.2	49.1	46.3	87.2	84.6	45	88.5	17:30	5
34	39.8	38.3	44.5	41.6	48.3	49.4	34.1	55.6	53.2	45	70	14:40	6

Table 1. Sound pressure level and frequency analysis

Conclusion

According to sound measurement test at Jameh mosque of Isfahan, the maximum sound amplitude among 6 tests is 88.5 dB. This amplitude is recorded during azan playing. However, according to the standards within the average limit for the mixed commercial- residential areas are 65-70 dB (A) which is normal within the test results, except for the praying times, which accompanies, however, with the authentic function of the mosque. Thus, no concerns focus on the noise pollution within the World Heritage Property imposed by the new development project.

Air Pollution Test-

Introduction

Air pollution is defined as alteration in the natural characteristics of atmosphere due to chemical materials, dust and debris or biological factors.

Atmosphere is a complicated natural system which our lives are depended on it. Changes on the quantity of atmosphere gas components has recently been recognized as a danger for the human and environment.

Air pollution can be natural or artificial. The artificial pollutions are mainly due to vehicles and manufacturers activities. According to the recent studies, the main portion of air pollution is created by vehicles' traffic in large cities.

One of the consequences of air pollution is acid precipitation is caused by the chemical reaction between sulfur dioxide (which is one of the waste gases of vehicles and manufacturers activates) and air humidity. These reactions produce sulfuric acid and nitric acid. In addition, some of gas pollutions can directly cause gradual destruction of historical buildings.

To investigate the effect of air pollution on the Jame Mosque of Isfahan, the pollutants measurement test was performed.

Test procedure

The air pollution measurement test was carried out on a working day at the mosque and repeated 4 times at different hours of the day. The aim of this test was to measure the quantity of destructive pollutions such as nitrogen dioxide (NO₂) and sulfur dioxide (SO₂).

For this purpose, AEROQUAL-2000 measurement device was used (Fig 16). Figures 16 and 17 show the air pollution measurement device and how to perform this test.

The location of pollutant measurement test was the south part of interior area in the Isfahan Jame mosque with the coordinates $32^{\circ}40'09''\text{N}$, $51^{\circ}41'06''\text{E}$. The reason of choosing this point was the neighborhood with Imam Ali square and placement in an environment with high potential of pollutants presence. The electrochemical sensor was used to measure each pollutant. The duration of each test is 20 minutes. The results of this experiment are shown in Table 2 and Fig. 18.



Figure 16. Air pollution measurement instrument



Figure 17. A view of air pollution test location

Conclusion

the data of air pollution measurement test are presented in table 2 and Fig ///. According to the data, the most important pollutant is CO. Also, the highest amount of pollution occurred at 15:00. Comparing the outcomes with the pollutants standards, the only concern focuses on the amount of Carbon Monoxide in the evening. For proposing the mitigation measures a session with the departments of environment (Isfahan branch), department of transportation in Isfahan Municipality, ICHHTO (Isfahan branch) and Masjed-e Jame World Heritage Base is provided and the measures adopted will be added to the management plan subsequently.

Test method	SO ₂	CO	NO ₂	Unit	Time	No.
Electrochemical sensor	0.13	0.68	0.118	PPM	08:40	1
Electrochemical sensor	0.1	0.7	0.128	PPM	11:45	2
Electrochemical sensor	0.11	1.28	0.042	PPM	15:00	3
Electrochemical sensor	0.09	1.17	0.069	PPM	17:30	4

Table 2. The amount of measured pollutants

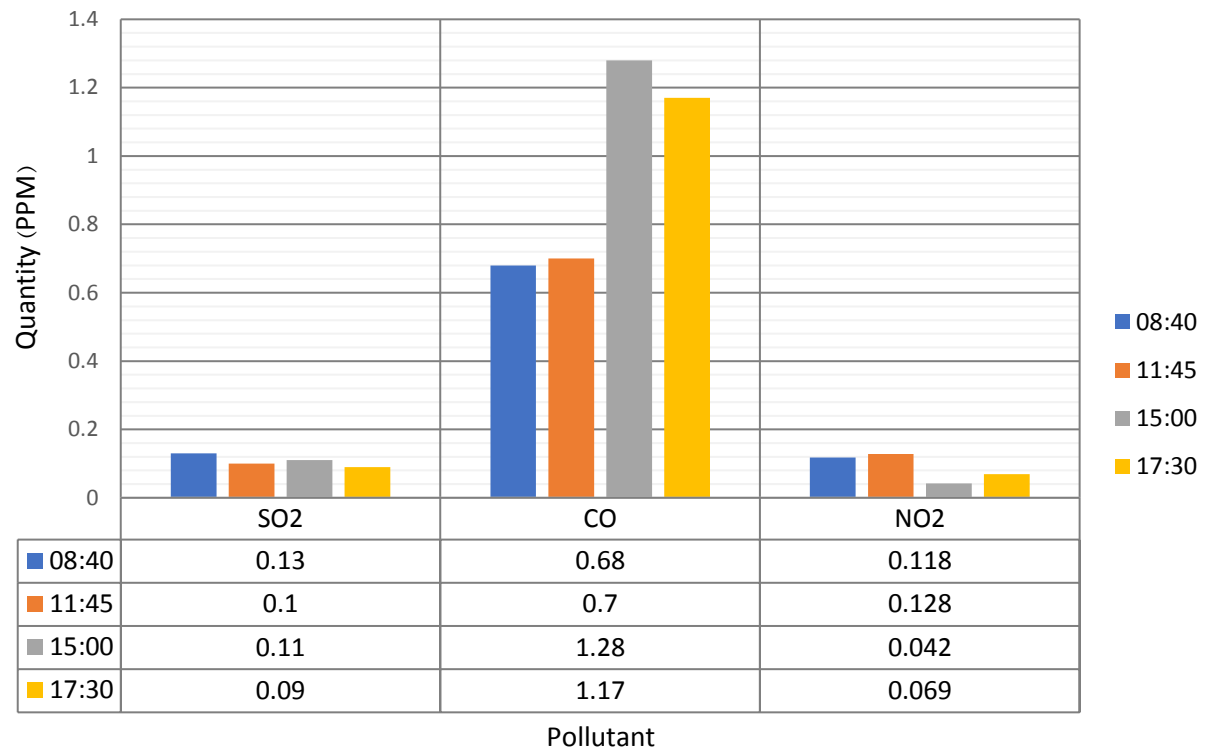


Figure 18. Comparison of air pollutant

Vibration Test

Introduction

The increase in the urban traffic directly depends on population growth. Nowadays, in the large cities, a considerable portion of public transportation is carried out with public vehicles such as bus and subway. The vibrations produced by the vehicles cause vibration in the nearby structures. These vibrations may cause considerable damage on sensitive urban structures including historical buildings, if they exceed the standard amount. Therefore, vibration assessment is an important factor for health study and monitoring important structures such as historical buildings.

The process of creation, transition, reception and studying the effects of vibrations due to vehicles traffic on structures is one of complicated engineering concepts. These vibrations can have large amplitudes; therefore, they can spread for large distances in the soil environment. The amplitude and transition speed of vibrations in the soil is related to the speed and weight of passing vehicles, the soil type and properties of surrounding structures.

Considering the aforementioned items, to measure the vibration created at Imam Ali underpass and also to measure the probable transmitted vibration to the foundation and structure of Jameh Mosque of Isfahan, which is located near Imam Ali underpass, Vibration measurement tests were carried out at these places.

Test Procedure

Vibration measurement tests were carried out at two different places. The first point is located at a certain place in the Imam Ali underpass; the second one is located at Jameh Mosque of Isfahan. To have a better imagination from mosque's response to vibration, experiments were carried out in 3 points of mosque including yard, shrine and roof.

Each measurement was carried out for 45 minutes at 4 different times of the day. To consider different traffic loads, tests were repeated in three different working days. To collect test data, PDER accelerometer was used. Also Geosig AC-63 force balance accelerometer sensor with the scale of $\pm 2g$ and bandwidth of 100 Hz was used to measure vibrations. Fig. 1 shows the accelerometer and sensor used for the tests.



Figure 19. Accelerometer and the applied sensor

Performing the experiment at the Imam Ali underpass

The first point of performing vibration measurement test is at the Imam Ali underpass. Figure 2 shows the experiment location and the sensor installation method. In the underpass experiment the test was done in two points. The first point for this experiment was chosen on the pavement and the second one was considered on the base plate of traffic sign. The results of first point are shown in figure 3 and 4. Figure 3 shows three second duration of the test in which the maximum amount of 0.039g was recorded. Figure 4 shows the amounts of acceleration in frequency domain during the test time by Fourier Transform method. According to this figure the maximum amount of acceleration is recorded about 0.05g.

Figure 5 and 6 illustrate the data for the second point. Three second duration is shown in figure 5 and the figure 6 shows the whole experiment in frequency domain. According to figure 6 the maximum amount of acceleration is about 0.09g.



(a)



(b)

Figure 20. The accelerometer installation: (a) the location of instrument in Imam Ali underpass, and (b) the sensor installation point

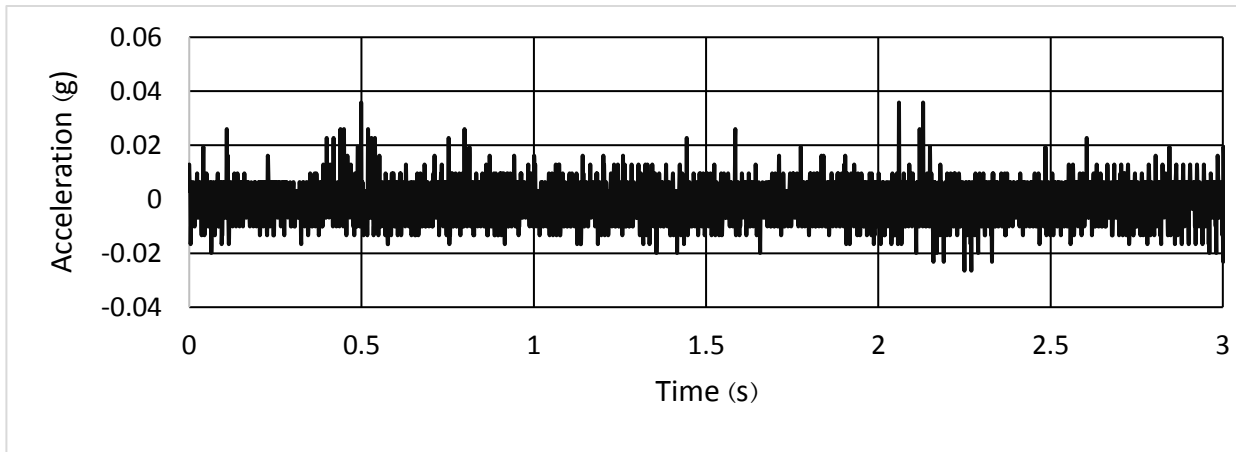


Figure 21. Acceleration-Time diagram for point 1 at underpass (time domain)

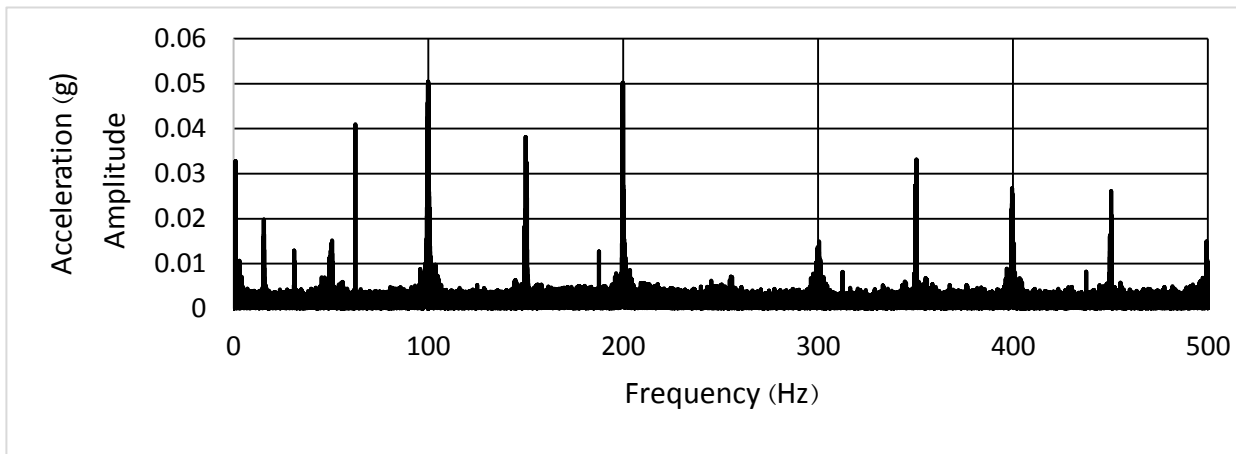


Figure 22. Acceleration amplitude-frequency diagram for point 1 at underpass (frequency domain)

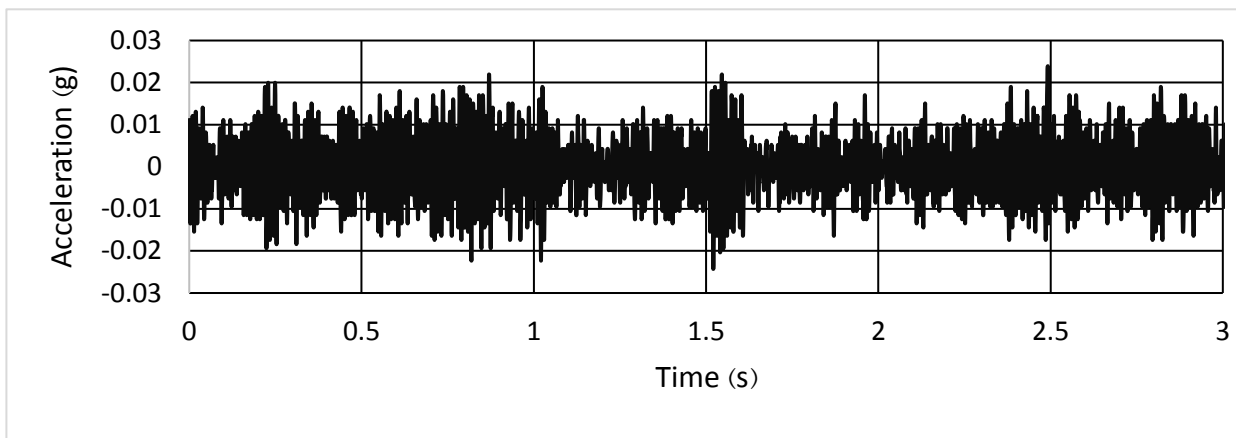


Figure 23. Acceleration-Time diagram for point 2 at underpass (time domain)

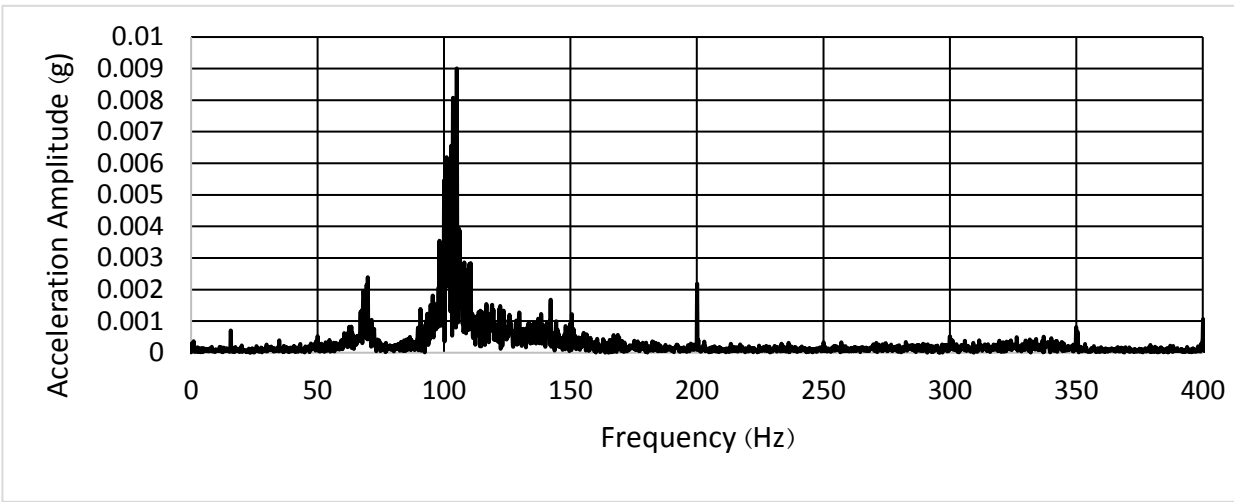


Figure 24. Acceleration amplitude-frequency diagram for point 2 at underpass (frequency domain)

Performing the experiment inside the Jame mosque

The second area of performing test was inside the Jame mosque. Three points were chosen in the second area, including yard (Fig. 7), roof (Fig. 8) and shrine (Fig 9). In this test, after placing the data gathering instrument inside the Jame mosque area and installation of sensors in that place (Fig 7), the experiment was performed and the acceleration data were saved.

Figure 10 and 11 shows the data for the yard. In figure 10 the acceleration magnitudes in 100 seconds of test are shown. Also in figure 11 acceleration amplitudes in frequency domain are shown. According to these two figures the maximum amount of acceleration is about 0.025g. This figure shows about 50 percent of acceleration magnitude recorded for underpass. It is important to consider that a large amount of electromagnetic noise is available in the yard.



(a)



(b)

Figure 25. Accelerometer installation: Location of (a) instrument in the yard, (b) accelerometer sensor



(a)



(b)

Figure 26. Accelerometer installation: Location of (a) instrument on the roof, (b) accelerometer sensor



Figure 27. Accelerometer installation in the shrine

The data for roof was gathered in two time periods, before azan and while playing it. Figure 12 and 13 shows the results in time and frequency domain before azan playing. Also the time and frequency domain while azan playing is shown in figure 14 and 15. Based on these figures azan playing led to an increase at least 0.005g in acceleration magnitude. In fact, the maximum amount before azan playing was 0.04 g, but during azan it reached 0.06g.

Figure 16 and 17 illustrate the recorded acceleration magnitudes in shrine. Similar to the other points, figure 16 shows the acceleration magnitude in specific time period (600 seconds) and figure 17 displays the maximum amount of acceleration in frequency domain. Based on the results of these two figures, the recorded acceleration magnitudes for shrine is more than yard. considering the neighborhood of shrine to bazar, it seems that this increment is due to motorcycle traffic in this area.

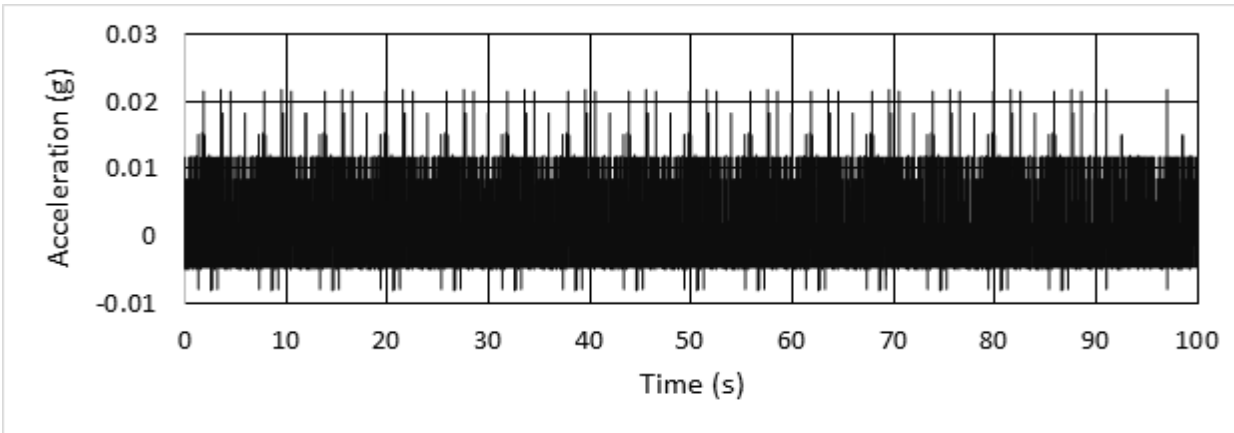


Figure 28. Acceleration-Time diagram for yard (time domain)

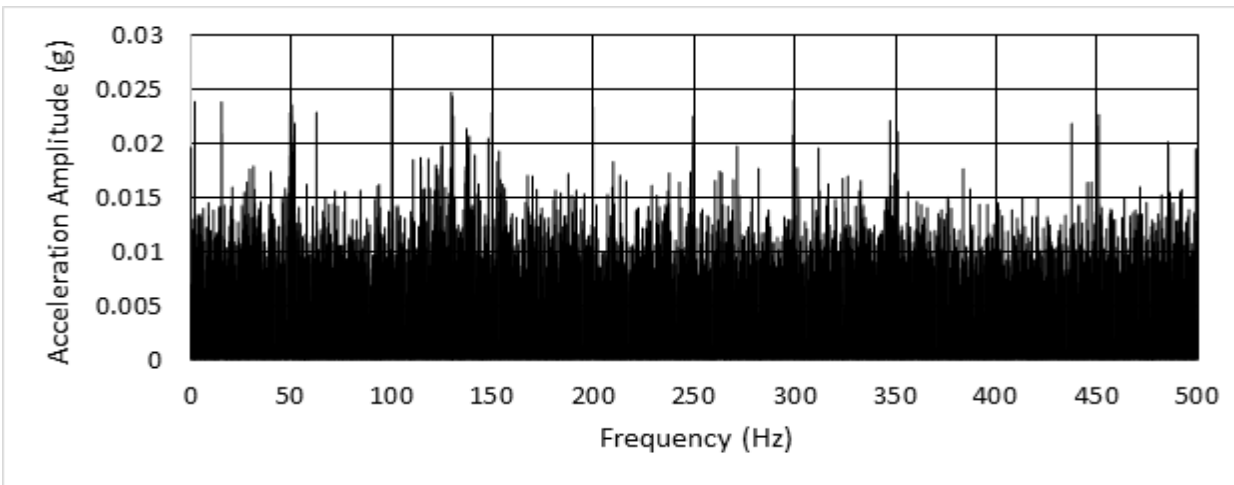


Figure 29. Acceleration amplitude-frequency diagram for yard (frequency domain)

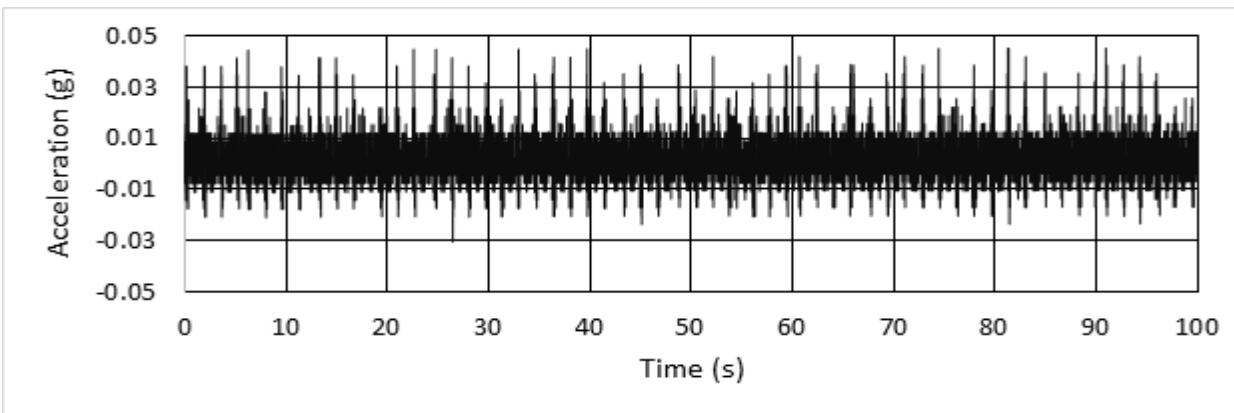


Figure 30. Acceleration-Time diagram for roof before azan (time domain)

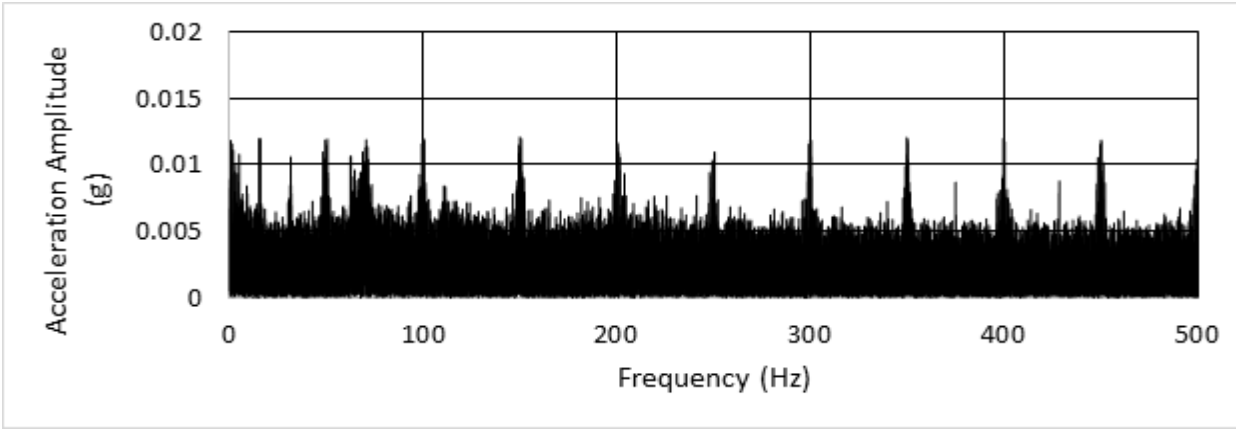


Figure 31. Acceleration amplitude-frequency diagram for roof before azan (frequency domain)

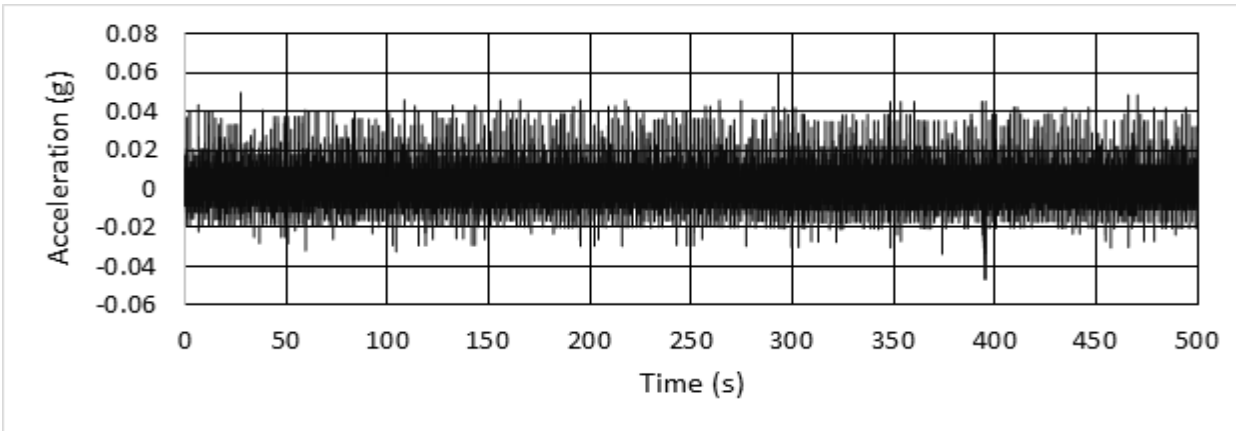


Figure 32. Acceleration-Time diagram for roof during azan playing (time domain)

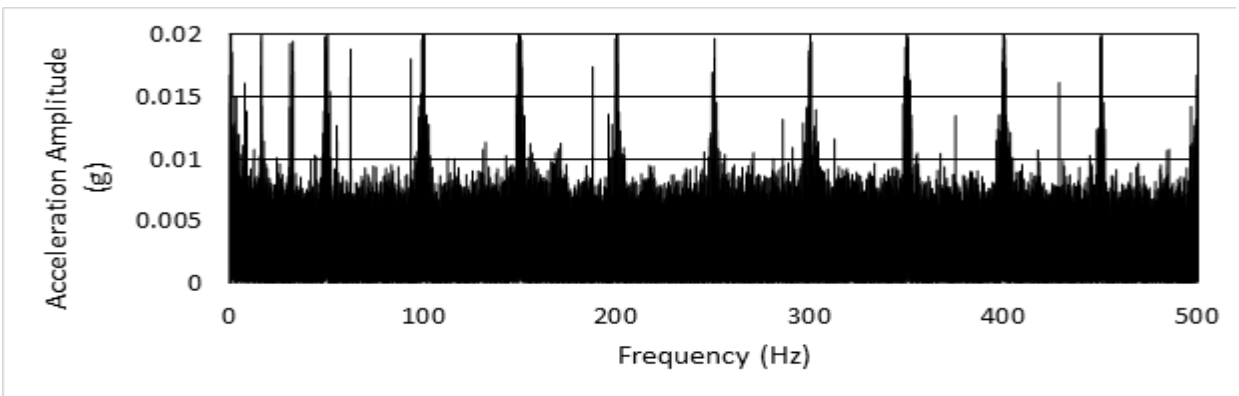


Figure 32. Acceleration amplitude-frequency diagram for roof during azan playing (frequency domain)

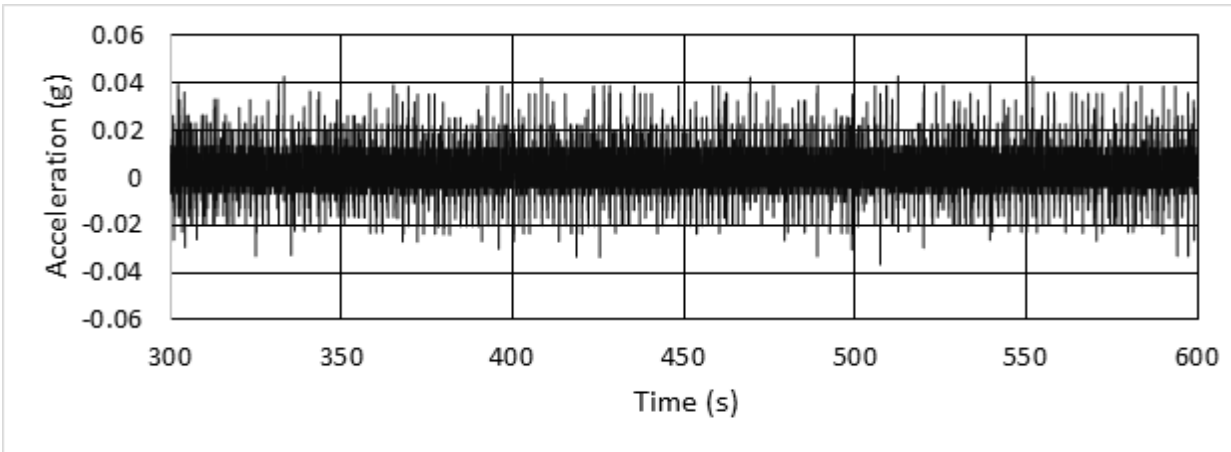


Figure 34. Acceleration-Time diagram for roof during azan playing (time domain)

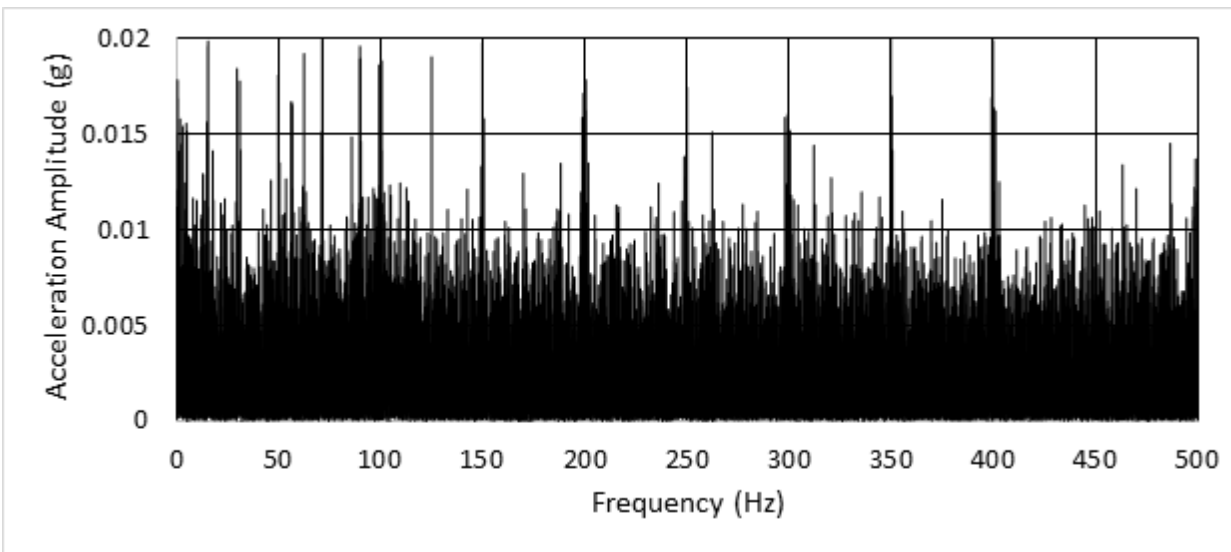


Figure 33. Acceleration amplitude-frequency diagram for roof during azan playing (frequency domain)

Conclusion

Considering the experimental data, the following results can be concluded:

- 1- Maximum recorded acceleration in the yard of mosque was about 0.025g.
- 2- The magnitude of acceleration in shrine is more than yard and it can be caused by motorcycle traffic in neighbor area.
- 3- The amount of acceleration for roof while azan playing is more than other times.

The word heritage base of Masjed-e Jame has invited the associated organizations to several meetings to debate and develop mitigation measures. The mention measure will then be adopted by the technical committee and applied within the management plan.