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Point 7 de l'Ordre du jour provisoire: Etat de conservation de biens inscrits sur la Liste du patrimoine mondial et/ou sur la Liste du patrimoine mondial en péril

MISSION REPORT / RAPPORT DE MISSION

Meidan Emam, Esfahan (Islamic Republic of Iran) (C 115)
Meidan Emam, Ispahan (République islamique d'Iran) (C 115)

6 - 8 May 2013 / 6 - 8 mai 2013

This mission report should be read in conjunction with Document:
Ce rapport de mission doit être lu conjointement avec le document suivant:

WHC-13/37 COM/7B.Add

**REPORT ON THE JOINT WORLD HERITAGE
CENTRE/ICOMOS
REACTIVE MONITORING MISSION TO THE WORLD
HERITAGE PROPERTY**

**MEIDAN EMAM, ESFAHAN
(ISLAMIC REPUBLIC OF IRAN)**

(6-8 May 2013)



**Feng JING, UNESCO World Heritage Centre (WHC)
Pedro A. Calderon, ICOMOS International**

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The mission wishes to thank particularly Mr Mohsen Moslehi, Director-General of ICHHTO Esfahan, Mr Hassan Ravanfar, Deputy of Administration of ICHHTO/Esfahan, Director ICHHTO Meidan Emam Base, Dr Mr Abdoljavad Zafarani, Managing Director of Esfahan Urban Railway Organization (EURO) Esfahan Municipality, Dr Javad Sadeghi, Professor of Railway Engineering, Iran University of Science and Technology and many other colleagues who actively supported this mission by providing it with valuable information during numerous meetings and site visits.

The mission would also like to acknowledge the efforts of the different stakeholders such as the Esfahan Urban Railway Organization and other representatives from universities who provided invaluable information and so readily shared their knowledge and experience with the mission.

EXECUTIVE SUMMARY AND LIST OF RECOMMENDATIONS

The Meidan Emam, also known as Naghsh-e Jahan, is a public urban square in the centre of Esfahan, a city located on the main north-south and east-west routes crossing central Iran. It is one of the largest city squares in the world and an outstanding example of Iranian and Islamic architecture. Built by the Safavid Shah Abbas I in the early 17th century, the square is bordered by two-storey arcades and anchored on each side by four magnificent buildings: to the east, the Sheikh Lotfollah Mosque; to the west, the pavilion of Ali Qapu; to the north, the portico of Qeyssariyeh; and to the south, the celebrated Royal Mosque (see figures 1 to 4). A homogenous urban ensemble built according to a unique, coherent, and harmonious plan, the Meidan Emam was the heart of the Safavid capital and is an exceptional urban realisation. The Meidan Emam was inscribed on the World Heritage List in 1979 under **cultural criteria (i), (v) and (vi)**.

In the previous World Heritage Committee decisions, the conservation issues identified for the property included: a) uncoordinated urban development, in particular construction of a large scale commercial complex; b) subway route through the historical axis of Esfahan. Following Decision **36 COM 7B.62** of the Committee adopted at its 36th session (St Petersburg, 2012), the State Party invited a joint World Heritage Centre/ICOMOS reactive monitoring mission to the World Heritage property from 6 to 8 May 2013.

The mission team concluded its technical review of the situation of the World Heritage property – giving particular attention to the potential impact of the current metro constructions on the property and its wider setting – based on discussions with relevant authorities and stakeholders, on-site visits and brief information/documentation provided by the State Party on the proposed Metro Line 2 project before and throughout their two days and half stay in Isfahan. This report is to be submitted for consideration by the State Party authorities and the World Heritage Committee at its 37th session in June 2013.

The mission was also informed by the previous joint World Heritage Centre/ICOMOS reactive monitoring mission carried out in March 2010, which will be referred to and cross referenced in this report.

The joint World Heritage Centre/ICOMOS mission was received by the Site Management of Meidan Emam, Iranian Cultural Heritage, Handicrafts and Tourism Organization (ICHHTO/Tehran) and ICHHTO/Esfahan.

The May 2013 mission came to the following findings, conclusions and recommendations:

Metro Line 1 and 2 projects

In order to assess the potential impact of Metro Line 2 (23km) on the property, the mission team held meetings with the Esfahan Urban Railways Organization (EURO) and Mr. Javad Sadeghi, Professor of Railway Engineering and EURO consultant. Work on Metro Line 2 is not expected to begin before 2016. The route is currently under investigation and there is a possibility the Metro Line 2 could pass underneath Meidan Emam. However, it is acknowledged by EURO officials that the planning of the route and appropriate studies will be submitted first to ICHHTO, and then to UNESCO for review and consideration before commencing construction.

Metro Line 1 (20.12km) has almost been completed and is divided into two phases. The first (11km) is outside the buffer zone and expected to start operating during 2013. The second phase, between the Shohada and the Azadi squares (see figures 5 and 6) consist of two parallel tunnels, which come close to heritage structures. Although the tunnels are completed for this phase, the stations and slab tracks of the railway lines are not.

A small yet concentrated monitoring study on the impact of Metro Line 1 on the built environment reliably concluded that vertical settlements at the surface during the Tunnel Boring Machines operation during construction were small, and fully admissible. Horizontal ground movements were not included in the reports. However, the mission was told that they were hardly noticed by the instruments and therefore ignored. Potential vibrations due to Metro operations have been estimated to be at a level acceptable to the neighbouring monumental structures provided a proper floating slab-track system is adopted. This has not been applied to phase 1 but will be for phase 2. The study recommends a continuous monitoring system for the adjacent monumental buildings.

The mission reached the following conclusions:

1. Concerning the World Heritage Committee's request to assess the potential impact of the Metro Line 2 constructions on the property and its wider setting, the mission was informed by Esfahan Urban Railway Organization (EURO) that, due to the economic situation, it is not expected that the works for Metro Line 2 will start before 2016. Currently, Metro Line 2 is a second priority for EURO. The route of Metro Line 2 is currently under investigation. SYSTRA, a Consulting Company from France, had the assignment of finding the optimum routing for the Metro Line. However, the works have stopped at this moment due to the lack of budget. It is possible that Metro Line 2 will pass underneath Meidan Emam (as it did in the previous design). However, it is acknowledged by EURO officials that the planning of the route and the appropriate studies will be submitted to ICHHTO and, once approved, to the World Heritage Centre and ICOMOS for their review and consideration, before construction work starts.
2. The mission therefore concluded that although "*reports in the public media suggest that the construction of metro line 2 has continued*" this could not be confirmed by field visits. The mission team considers it essential that the proposals for routing, constructions, especially underground drillings, are preceded by an appropriate Cultural Heritage Impact Assessment, in conformity with the ICOMOS Guidelines on Heritage Impact Assessments for World Heritage cultural properties. Any construction considered appropriate following these assessments should be communicated to the World Heritage Centre, according to paragraph 172 of the *Operational Guidelines*, before making any decisions or taking any action that may be difficult to reverse. The mission team has observed that the officials and stakeholders are aware of and acknowledge this requisite.
3. In general terms, the State Party has made significant and effective efforts to strengthen the state of conservation of the World Heritage property. The present state of conservation is adequate in most parts of Meidan Emam Square. Regarding the Jahan Nama building complex, following the commitment made in 2010, the demolition of the 11th storey (last floor by Committee Decision **30 COM 7B.57**) of the Jahan-Nama Building has been almost completed. The 11th storey is completely removed, the walls have been demolished but work continues in the removal of the remaining structures. Although the initially foreseen timeframe has been considerably expanded, the mission has been informed that a possible completion of demolition could be achieved by the end of June 2013.
4. The authorities followed previous decisions of the World Heritage Committee and the recommendations of the reactive monitoring mission, and there appears to be a conservation strategy in place for the Meidan Emam square property as well as for the Esfahan historic centre. With the inscription of Chehel Sotun (forty columns) Garden as one component part of the Persian Garden World Heritage property (2011) and the Masjed-e-Jame Mosque of Isfahan (2012), focus now lies in strengthening the protection of the buffer zone and wider setting and expanding the monitoring mechanisms related to urban development such as the transport system, in particular through integration of the buffer zone in the Isfahan Master Plan and municipal by-laws.

5. ICHHTO is aware of the need for the preservation of the World Heritage property. The mission noted the highly recognized political commitment of Esfahan Provincial Government, the Esfahan Municipality and other concerned authorities.
6. Regarding the conservation activities at the property, the tile workshop and other conservation workshop visited showed that these activities are based on traditional craftsmanship, techniques and good supervision. There is a permanent ICHHTO technical team to supervise and perform the restoration works. The conservation measures have been effective in enhancing the condition of the property.
7. The awareness of the authorities on the protection and management of the property impressed the mission. It may appear that the Jahan Nama building demolition has been a painful process but lessons have been learned from this case. The final completion of the demolition work also shows the increased awareness of the authorities for the preservation of the cultural values of the World Heritage property in a wider setting.
8. The mission noted and welcomed the development of the Conservation Management Plan (CMP) as requested by the World Heritage Committee. The mission encouraged the authorities to take into account the finalization of the property boundary and demarcation of the buffer zone as well as the finalization of the statement of Outstanding Universal Value for the property.
9. The mission also noted that while good progress has been made by the State Party in responding to the conservation issues/threats raised by the World Heritage Committee during its 36th session, as well as during previous sessions, and the recommendations of the previous reactive monitoring mission, not all requirements/recommendations put forward in the past had been met at the time of the mission.
 - As a draft Statement of Outstanding Universal Value developed with the assistance of the World Heritage Centre and ICOMOS has not been provided to the World Heritage Committee, the mission reminded the State Party to confirm some missing information (precision on the buffer zone demarcation) and finalize the process.
 - The State Party presented the draft and concept of the Conservation Management Plan (CMP) during the mission. While containing very valuable detailed analysis and prescriptive projections concerning all structures, spaces and features of the property, this document has not yet been discussed extensively within ICHHTO, or with stakeholders who would be impacted by its many proposals, and at present lacks a Committee approved statement of Outstanding Universal Value and boundary and buffer zone demarcation which can provide a full context for its adoption and implementation.
 - There is a lack of assessment study on the vulnerability of the property against disasters such as fire and earthquakes, and no systematic risk-preparedness strategy seems to have been developed while preparing and finalizing the integrated Conservation and Management Plan.
 - At this time, with the CMP essentially a provisional document which is awaiting detailed review, a Statement of Outstanding Universal Value not yet approved and awaiting the approval of the boundary and buffer zone of the property, the CMP cannot be regarded as fully complete, and as such cannot yet be formally approved by the State Party. ICHHTO committed itself during the mission to developing a strategy to achieve such integration and finalization/adoption, with a specific section on risk preparedness, which may provide a more effective approach to site management.

- Finally, there is a need for enhanced public information dissemination regarding development projects in Isfahan such as the Metro Line constructions. In fact, the mission team noted with concern that much misinformation has been disseminated as a result of insufficient transparency and untimely information dissemination. To avoid unnecessary misunderstanding between the Iranian people, the Iranian authorities and the international community, the mission recognized the need for timely dissemination of information on the proposed development projects. The mission team noted the responsible authorities' desire for international outreach by organizing conferences and international events in Isfahan.

The mission would therefore recommend that the State Party address the issues identified by the previous and current mission and also requested by the Committee during its 36th session, not yet fully addressed, including:

Recommendation 1 related to Metro Line 2 under discussion which may pass beneath the World Heritage property: The mission recommends that it is essential that the proposals for routing, constructions, especially underground drillings, should the Metro Line 2 project go ahead, are preceded by an appropriate Cultural Heritage Impact Assessment, in conformity with the ICOMOS Guidelines on Heritage Impact Assessments for World Heritage cultural properties. Any construction considered appropriate following these assessments, should be communicated to the World Heritage Centre, according to paragraph 172 of the Operational Guidelines for the Implementation of the World Heritage Convention, before making any decisions or taking any action that may be difficult to reverse. The State Party of Iran should submit to UNESCO World Heritage Centre, the plan and routing of Subway Line 2 in advance of its approval, in order to mitigate any negative impacts, which might affect the World Heritage property.

Recommendation 2: The mission also recommends that following the availability of a project proposal for Metro Line 2, any planning or design must include a comprehensive Heritage Impact Assessment (HIA) as well as an extensive monitoring plan in order to ensure that the proposed routing, constructions and underground drillings do not cause any negative impact on the World Heritage sites and their wider settings in Isfahan.

Recommendation 3 concerning the Jahan Nama building: The State Party should immediately complete the remaining demolition works and send an official letter to the World Heritage Centre to inform the World Heritage Committee that the demolition work has been completed. To prevent future projects such as the Jahan Nama building creating negative impacts on the property, it is essential to strengthen the protection and broaden monitoring procedures for the buffer zone protection. Also, developments in the buffer zone as well as in the wider setting of the historic and cultural axis of Isfahan need to be designed and implemented with full respect for the Outstanding Universal Value of the World Heritage properties in Isfahan in order to avoid cases such as Jahan Nama building.

Recommendation 4: The mission recommends that, recalling the recommendations of the March 2010 reactive monitoring mission, an evaluation of the buffer zone be carried out, taking into account the zoning regulations of the property, the State Party should submit the proposed boundary changes to the buffer zone for approval by the World Heritage Committee, as a matter of urgency.

Recommendation 5: The mission notes that the full statement of Outstanding Universal Value, including authenticity and integrity, remains to be adopted at a future session of the World Heritage Committee, prior to the official approval of the property boundary and buffer zone. It therefore recommends that the State Party confirm the SoOUV, with information on the approved property buffer zone and submit it to the World Heritage Centre for approval by the World Heritage Committee.

Recommendation 6: The mission further recommends that the draft Conservation and Management Plan should be submitted to the World Heritage Centre for comments by ICOMOS. The Plan should be finalized, in conjunction with the approval of the property boundary and buffer zone as well as the Statement of Outstanding Universal Value and shared with all stakeholders and made available to them in hard copy, electronic version and web pages.

Recommendation 7: Within the framework of the review process for the Conservation and Management plan, an assessment study of the vulnerability of the property against disasters such as earthquake or fire should be carried out. A systematic strategy on risk preparedness should be developed as a specific section while preparing and finalizing the integrated Conservation and Management Plan.

Recommendation 8: The State Party should continue with the completion and review of the Conservation Management Plan and integrate this within the Esfahan Master Plan and municipal by-laws.

Recommendation 9: With three World Heritage properties (Meidan Emam, Chehel Sotun Park and Masjed-e Jame Mosque) in Isfahan, the mission further recommends that the State Party to ensure it continues efforts to strengthen the institutional co-ordination framework requested by the World Heritage Committee which appear to provide the necessary consultative mechanisms to strengthen collaboration amongst different stakeholders.

Recommendation 10 for public communication and outreach: the mission recommends that the State Party enhance, particularly at the municipal level in Isfahan, timely information dissemination and sharing to the general public on the conservation programmes/activities and development projects near the World Heritage properties, buffer zones, and the wider setting of the historic and cultural axis of Isfahan. For international outreach, it is suggested that UNESCO may provide assistance to the Iranian authorities.

1. BACKGROUND TO THE MISSION

1.1. Inscription history

The World Heritage Committee inscribed the property on the World Heritage List in 1979 under cultural criterion (i), (v) and (vi).

Since its inscription, the World Heritage property has well maintained its authenticity. There has been continuous maintenance in the historic structure, and a certain amount of restoration and construction work has taken place, respecting the character and significance of the property. However, some threats to the property, particularly within its protective buffer zones, have been identified in recent years. These include: the construction of a new commercial complex with high towers (Jana Nama building) planned by the Municipality of Esfahan and other inappropriate urban development within the city, including the metro line project which has been implemented since early 2007 through the historic axis of Esfahan.

1.2. Inscription criteria and World Heritage values

The property was inscribed on the World Heritage List on the basis of *criterion (i), (v) and (vi)*.

In its evaluation report dated 09/05/1979, ICOMOS emphasized that:

Criterion i): the Meidan constituted a homogenous urban complex, built over a short time span, and following a unique, coherent and harmonious plan. Of particular interest is the Royal Mosque, which is literally grafted on the south side of the square by means of deep and immense sectioned porch. ...the Royal Mosque remains the most celebrated example of the colourful architecture that, in Iran, reached its height under the Safawid dynasty;

Criterion (v): the Meidan of Esfahan is an urban phenomenon, which is an exception in Iran, where cities were ordinarily tightly, parcelled, without spatial fluidity, the exception being the interior courts of the caravanserais. It is an example or the form of naturally vulnerable urban architecture.

Criterion vi): the Meidan was the heart of the Safavid capital. Its vast, sandy esplanade was used for promenades, assembling troops, playing polo, celebrations and for public executions etc. In short, it is the monument of Persian socio-cultural life during that period (until 1722).

In the framework of second cycle Periodic Reporting for Asia and the Pacific region, the statement of Outstanding Universal Value for Meidan Emam is under review by ICOMOS and the Iranian authorities, pending formal approval by the World Heritage Committee in its future session.

1.3. Authenticity issues raised in the ICOMOS evaluation report at time of inscription

The ICOMOS evaluation report (1979) notes that the restoration efforts, some which were still in progress, undertaken with the technical assistance of the ICHHTO, have assured the consolidation and the conservation of this complex, which has come down to nearly intact. So it can still be considered to meet the test of authenticity.

1.4. Examination of the State of Conservation by the World Heritage Committee and its Bureau

Following a UNESCO mission to Esfahan in January 2002, which revealed that a new commercial complex within the "Conservation Protective Zone of Esfahan Historic City" had been constructed, the World Heritage Committee at its 26th session (**Decision 26COM 21B.53**, Budapest, 2002) expressed its concern over the new commercial complex (Jahan Nama

building) being constructed which replaced a historic caravanserai and negatively impacted upon the skyline of the historic city. The Committee further requested the authorities to redesign the commercial complex to ensure that height restrictions and regulations established by the Iranian Cultural Heritage Organization are followed and that a Joint mission be undertaken to the property.

Between 2004 and 2009, the World Heritage Committee examined the state of conservation of Meidan Emam at its various sessions. A detailed summary was provided in the joint World Heritage Centre/ICOMOS reactive monitoring mission of March 2010. The mission report and its recommendations are available online: <http://whc.unesco.org/en/list/115/documents/>.

The main factors affecting the property identified in previous reports included:

- a) Uncoordinated urban development - construction of a large scale commercial complex;
- b) Subway route through the historical axis of Esfahan.

The Committee, during its 33rd session (**Decision 33COM 7B. 75**, Seville, July 2009), reiterated its requests regarding the reduction of the height of the Jahan Nama building and the establishment of mechanisms for undertaking systematic impact assessments for any large scale development projects and nominate the extension of the property to include the historic axis of James Mosque, the Bazaars, the ancient bridges, the Zayanderoud River, and the south Chahar Bagh Avenue. Noting the slow progress made in this regard, the Committee urged the authorities to carry out the Environment Impact Assessment of the metro line project as a matter of priority and requested the State Party to invite a joint WHC/ICOMOS reactive monitoring mission to the property, to advise on the issue of metro line once the EIA report had been completed.

The joint World Heritage Centre/ICOMOS reactive monitoring mission (28 February - 7 March 2010) observed that the 12th floor had been demolished and that demolition of the 11th floor was under way. The mission also reported that the official communication promised by the Iranian authorities to be addressed to the World Heritage Centre before 15 April 2010 with information on and evidence of the completed demolition of two additional floors (12th and 11th) of the Jahan-Nama building complex has not been received. The mission also found that large-scale, ad hoc construction and development projects continue to be planned (for instance, the Atiq Square development project close to the Jama'a Mosque), without prior impact assessments, adequate consultation with concerned stakeholders, or public participation.

The State Party of Iran provided the "Report on Environmental Measures taken for Protection of the Chahar-Bagh Historical Boulevard Properties" prepared by consulting engineers ZAFSA.

This report concluded that settlement along the Chahar-Bagh historical boulevard would be negligible, as would the impact of the subway construction on the groundwater regime in the project area. It also concluded that other environmental disturbances such as creation of noise, dust, vibration, air pollution, surface and underground utilities breakdown and traffic jam creation along the proposed metro line could be mitigated by the use of a specific tunneling method - the Earth Pressure Balance (EPB) Shield TBM (Tunnel Boring Machine). The disturbances would be restricted to the station sites and to the shaft needed to launch the shield.

The March 2010 joint World Heritage Centre/ICOMOS monitoring mission found that 90% of the construction work had been completed at the time of the mission. The mission was informed that during the excavation, ground settlements were observed at five sites. Unfortunately, no monitoring was performed on the ground and on the foundation of the Chahar-Bagh School and the Si-o-se Pol Bridge. The team made a visual inspection of specific ground locations adjacent to the School and the Bridge, and found no cracks or physical deformations. Some cracking was noted in the exterior recessed panels of the front wall of the School but it was not clear

when these occurred. The mission, recognizing that this area falls outside of the inscribed property but within an area which has been considered for possible extension by the World Heritage Committee, made recommendations for ongoing monitoring. It also indicated that further development of the metro line system (Metro Line 2) was envisaged.

The March 2010 World Heritage Centre/ICOMOS joint reactive monitoring mission noted that there is a lack of vision for the management of Esfahan as a whole and its surrounding historic fabric. Decisions appear to be made in reaction to development applications, and there is some discord amongst various stakeholder groups. As the mission concluded, there needs to be a carefully considered and managed balance between urban development and heritage protection. In view of the proposed extension of the property to include the Historic Axis of Esfahan, a strategically coordinated long term vision for the protection and management of Esfahan as a historic city needs to be developed to ensure, in turn, a values-based approach to the protection and management of the World Heritage property. Because the overall development pressure on the property is so strong, regional cooperation between all government and religious bodies with an interest in the World Heritage property is essential.

The World Heritage Committee therefore requested the Iranian authorities to develop a Conservation Management Plan for the current World Heritage property including its proposed extension buffer zone. This should be developed in consultation with all stakeholders, and should define a strategic vision and establish the needed coordinating processes. The Conservation Management Plan should also consider the transport needs of the city, traffic management and parking provision, tourism management, housing and other infrastructure needs as well as the conservation of the historic fabric. It should set height limits in defined areas, and indicate areas where infill development is desired. A precursor should be a view line study to identify where height restriction is absolutely necessary. The Conservation Management Plan should include a process for sound heritage impact assessment and adequate consultation to control major development projects. The World Heritage Committee also encouraged the Iran authorities to include ongoing monitoring of the historic buildings around the Meidan and along Chahar-Bagh in the context of the Metro Line developments.

In July 2012, the World Heritage Committee noted that while the demolition of the Jahan-Nama Building has continued and seems to be completed soon, other progress was made for the extension nomination dossier and its related Conservation Management Plan. In particular, new inscriptions of Chehel Sotun Palace and Garden (2011) and Majid-e James Mosque (2012) were included on the World Heritage List.

Reports in the public media suggest that the construction of metro line 2 has continued, but these reports could not be validated. The World Heritage Centre and ICOMOS consider that it is essential that information and documentation on this project be provided as a matter of urgency in order to clarify whether or not the metro line has been rerouted and whether work has commenced. The World Heritage Committee hence requested a joint reactive monitoring mission to the property to consider the impact of the current metro constructions on the property and its wider setting.

1.5 Justification of the mission

The joint WHC/ICOMOS reactive monitoring mission was carried out to Meidan Emam, Esfahan at the request of the World Heritage committee (Decision **36 COM 7B. 62**, see **Annex 2**). The World Heritage Committee identified three main issues for assessment. These were:

1. Assess the state of conservation of the property and factors affecting its Outstanding Universal Value (OUV), authenticity and integrity, with particular attention to the potential impact of the Metro Line 2 constructions on the property and its wider setting;

2. Analyze the current situation in regard to the reduction of the height of the Jahan-Nama commercial complex (11th and 12th storey of the Jahan Nama Building) and to the possible extension of the property to include the Historical Axis of Esfahan, consisting of the Masjed-e Jāmé (Friday Mosque), the Bazaars, the ancient bridges, the Zayanderoud River, and the South Chahar Bagh Avenue, and define recommendations to further strengthen the protection of the World Heritage property;
3. Review the status on the development and implementation of the management plan and other relevant research as part of a larger strategic vision for integrated urban development and conservation.

The UNESCO World Heritage Centre was represented by Mr Feng Jing, Chief of Asia and the Pacific Unit. ICOMOS International was represented by Professor Pedro A Calderon, Civil Engineer of the Universitat Politècnica de València (Spain). The terms of reference of this mission is can be found in Annex 1 of the Report.

2. NATIONAL POLICY FOR THE PRESERVATION AND MANAGEMENT OF THE WORLD HERITAGE PROPERTY

2.1. Heritage legislation

In accordance with the National Heritage Protection Act of November 1930, the protection of monuments inscribed on the National Heritage List falls within the purview of ICHHTO.

The 1930 Law has been updated, and the new Law on the status of ICHHTO was approved in 1998. The new law establishes the function of the ICHO, provides a new definition for cultural heritage, and lists the principles for its protection.

The property and its buffer zone also come under a series of Iran's general laws. It also falls under texts specifically dealing with the protection of cultural heritage (to mention but a few):

- Law on the statute of Iranian Cultural Heritage Organization (ICHO)
- Principle 83 of the Islamic Republic of Iran constitution
- Legal bill on preventing clandestine diggings and illegal excavations intended to obtain antiquities and historical relics which are, according to international regulations, 100 years in age or more; May 1980
- Articles from Municipality Law
- National Heritage Registration Act
- Law of accession of Iran to the Convention concerning the Protection of the World Cultural and Natural Heritage (December 1974)

The process for legal protection for a monument or a group of historic buildings consists of a needs request presented by the local authority to the ICHHTO's central office in Tehran. Such requests should include historic documentation on the site, graphic records, measured drawings and a scientific justification, as well as a description of the artistic features of the monument or site. Any damage, demolition, or theft is punished according to the estimated amount of damage, and can include imprisonment.

At present, the legislative and administrative system in place seems to be adequate to ensure protection of the property. However, further improvement is required in particular in terms of setting a broader vision for the protection of urban heritage values of Esfahan and coordinating the enforcement of different rules and regulations governing urban planning, development and heritage conservation in the city as a whole.

2.2. Institutional framework

The ICHHTO, the authority with management control for Iran's World Heritage properties, has to a large extent tackled the diverse problems affecting the property. It enlists the services of a network of conservation experts. Broad opportunities exist for regional/local offices of the ICHHTO to become involved in implementing planning and zoning laws affecting particular sites, with support from the ICHHTO Teheran.

Meidan square and most of the main monuments specifically listed are owned by the State. Other buildings surrounding the square are privately owned, or owned by other government agencies. The ICHHTO has the overall management authority over the property, exercised at provincial level, with tasks including research activities, conservation and rehabilitation, and presentational educational activities. In the case of Meidan Imam, the Director-General of ICHHTO/Esfahan Office is responsible for the supervision and management planning in the complex. He also heads the technical and monitoring departments. His office ensures overall management of the property in consultation with the Municipality and other Endowments Offices. Coordinated programmes with the architecture faculties at national universities provide expertise and training in conservation and management techniques.

Also, a clearance and assessment system for any construction plans in the buffer zones seem to exist. Any project planning and formulation within World Heritage buffer zone shall be entrusted to an entity with national planning qualifications, be assessed and monitored by experts of ICHHTO and the exercise shall be conducted in compliance with relevant national rules and regulations for project's examination and approval.

It seems that there is also a no formal monitoring system in place and routine monitoring is viewed as the responsibility of the police and security personnel. Further, monitoring activities are dealt with on a day-to-day basis.

2.3 Management structure and co-ordination mechanisms

The governance system responsible for the protection, conservation and promotion of cultural heritage in Iran is characterized by an accentuated role of the Iranian Cultural Heritage, Handicrafts and Tourism Organization [ICHHTO] under the Fourth Vice-President of the Islamic Republic of Iran. The Iranian Parliament has designated ICHHTO as the Central Government Body responsible for submitting new World Heritage nominations.

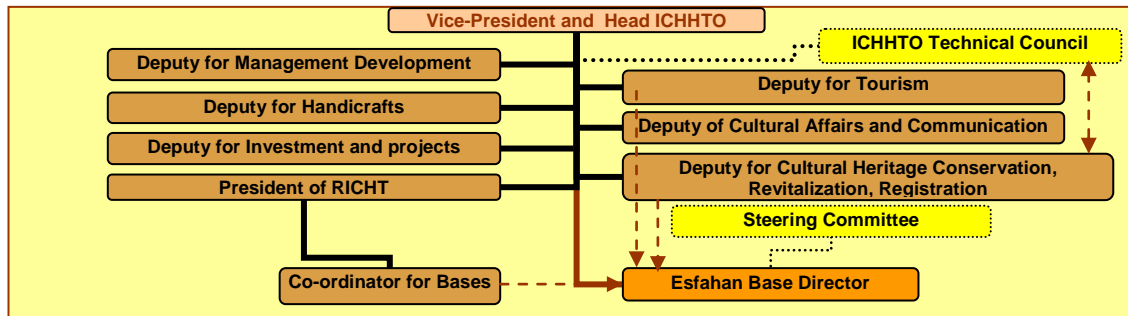
ICHHTO has policy-making headquarters in Tehran, and provincial, and local offices around the country. The provincial and local offices are responsible for the protection, conservation and promotion of cultural heritage, handicrafts and tourism activities. To increase its efficiency of special operations demanding dedicated professional teams, ICHHTO has established Research Bases for specific cultural heritage properties demanding special attention.

Each Base has a Steering Committee composed of Iranian experts who advises and adopts overall policies specific for the heritage property concerned. The Steering Committee approves the technical decisions for conservation interventions at the property. The Bases co-ordinate with the respective deputies of ICHHTO for technical matters, in particular, with the office of the Deputy for Conservation. The Deputy for Conservation is also Secretary to the ICHHTO's Technical Council, which decides on all major conservation interventions in heritage properties as well the allocation of financial resources for the Bases from the budget of the Deputy for Conservation.

Meidan Emam World Heritage Property has an established Base headed by an ICHHTO expert, which receives a special operational budget from the Deputy for Conservation. As a World Heritage property, the Parliament allocates special World Heritage financial allocations for

Meidan Emam property. Additionally, the ICHHTO Provincial Office of Esfahan's Deputy for Conservation also pays attention to the World Heritage property.

Diagram 1: The organizational chart of ICHHTO in relation to Esfahan



Aside from ICHHTO, other public agencies and elected bodies play key roles in the practical management and development of cultural property, especially those within large territories. At the Provincial level, governors nominated by the Minister of Interior and appointed by the Board of Ministers represent the Government. Each of the 30 provinces has representatives from each Ministry. While ICHHTO is the designated central government authority with responsibility for the conservation, management and presentation of Iran's World Heritage properties, ICHHTO is not the sole player in the conservation of Meidan Emam property and the historic city, which is affected by decisions taken at various levels within the existing management structure of the central and local governmental agencies.

3. IDENTIFICATION AND ASSESSMENT OF ISSUES / THREATS (including positive or negative developments in the conservation of the property since the last report to the World Heritage Committee)

3.1 Mission findings and observations

a) Metro Lines 1 and 2

Metro Line 2

The World Heritage Centre and the Advisory Bodies note that in 2010 the State Party had assured that the metro line 2, initially planned to be routed underneath Meidan Esfahan, would be rerouted. They note that public media reports claim that despite requests by UNESCO and the Isfahan Cultural Heritage, Tourism and Handicrafts Organization, the drilling of tunnels for metro line 2 has commenced along its original routing.

The issue of whether construction works of Metro Line 2 had started was brought up at the meetings that the mission team held with EURO and one of their consultants. At these meetings the mission team was informed that the route of Metro Line 2 is currently under investigation and that SYSTRA, a French Consulting Company had the assignment of finding the optimum routing for the Metro Line. However, these works had stopped due to lack of budget. It is not expected that works for Metro Line 2 can restart before 2016.

It is possible that Metro Line 2 passes underneath Meidan Emam (as it was in the previous design). However, it is acknowledged by EURO officials, that the planning of the route and the appropriate studies will be submitted to ICHHTO and to the WHC for its review and consideration, before construction works start.

Metro Line 1

Metro Line 1 is outside the boundaries of the inscribed property, but runs along the main historical axis of Esfahan, that should be included in the buffer zone. Moreover, its progress may serve as a basis for the guidance and improvement of the development of future Metro Lines in Esfahan. Therefore it is important to study the way these works have been addressed.

Tunneling works for Metro Line 1 have been completed, though construction works still continue. The Line is divided into two phases:

- The first phase begins at Kaveh Station and is almost completed. It is outside the buffer zone and was constructed by a cut and cover method (see figure 7). It is expected that it will start operating during year 2013.
- The second phase goes under Chahar Bagh Avenue. It consists in two parallel tunnels that were built using two Earth Pressure Balance (EPB) TBM's (Tunnel Boring Machines). The tunnels run close to some important heritage structures, like Si-O-Se-Pol Bridge or Chahar Bagh Islamic School. Even though the tunnels are completed, the stations of this phase are not and neither are the slab tracks of the railway lines. Due to budget cuts, it is expected that full completion of Metro Line 1 will last at least between 1 and 2 years.

The impact of Metro Line 1 on the built environment has been assessed by theoretical studies and field monitoring. Two different studies have been carried out:

- ***“Report on Environmental Measures taken for protection of the Chahar-Bagh historical boulevard properties”***, written by ZAFSA Consulting Engineers, dated June 2009 (even though it was not sent to UNESCO until February 2010). This report studied the potential variation of ground water regimes and the ground settlements due to tunnel construction. The study included the results of numerical analysis that were checked by the monitoring results of only five sections (see figures 8 and 9). Even though it is a small number of sections for the length of the line, they were carried out with state of the art methods and their conclusions can be considered representative and relevant (though it is desirable that in future studies more sections are more closely monitored). The studies concluded that:
 - Ground vertical settlements at the surface in the proximity of the TBM during construction were small, and fully admissible. No data were included in the reports of horizontal ground movements, but the mission was verbally informed that they were hardly noticed by the instruments and therefore they were considered negligible.
 - The impact of the subway construction on the groundwater regime in the project area was found as negligible. This finding was confirmed by the groundwater level measurements taken in the observation holes during and after construction of the structures
- ***Report on the “Investigation of possible damages of Construction and operation of Isfahan Metro to Adjacent monumental structures”*** prepared by the Iran University of Science and Technology for the ICHHTO, dated January 2012. The study estimates the potential vibrations in the neighboring monumental structures due to Metro operations by a combination of experimental and theoretical methods. It concludes that the level of vibrations will be acceptable to the neighboring monumental structures if a proper floating slab-track system is adopted. The study evaluates three different Floating

Slab Tracks (see figure 10) During our visit the mission could observe that the floating slab-track of phase 1 is different to the one proposed. However, it is intended that the new design of the floating slab-track will be adopted for phase 2. Also, the study strongly recommends the implementation of a continuous monitoring system for the adjacent monumental buildings.

Comments on the reports:

The reports on the Environmental Impacts Assessment of Metro Line 1 have been made using state-of-the-art techniques and procedures. However, it has to be noted that:

- This reports have been presented to the WHC for its review and consideration only after they have been requested and, seemingly, as a reaction for the request and not as a part of a control and monitoring plan of the works.
- The number of monitored sections is scarce for a Metro Line that runs close to important heritage constructions.
- On the “Report on Environmental Measures taken for protection of the Chahar-Bagh historical boulevard properties”:
 - Horizontal movements are not included in the reports. Even though they may be deemed negligible, they have to be measured by inclinometer and conventional survey readings. It is known that they are important near excavations of shallow tunnels (see, for instance ¹).
 - Even though the observed settlements are small, the report does not state what are the limits for ground movement.
- On the report on the “Investigation of possible damages of Construction and operation of Isfahan Metro to Adjacent monumental structures”:
 - The report proposes a Floating Slab Track system for the reduction of vibration and noise. It is acknowledged that this is the best possible solution for this problem (see ², ³).
 - However, it is also acknowledged that this systems do not cover the whole range of frequencies and therefore it is important to monitor the vibrations induced in neighboring structures. Also, the choice of the proper material for the cushion pads is crucial in order to guarantee its performance and durability.
 - It can be seen in figure 11 that EURO is not placing the recommended Floating Slab Track. It is expected however that they will be used in phase 2, in the vicinity of the historic constructions.
- Construction of the stations along Chahar-Bagh will involve new excavation activities. ICHHTO should review and acknowledge their final location, design and construction methods.

b) Jahan-Nama Building

Following the commitment made in 2006 by the State Party, the demolition of the 11th and 12th storey of the Jahan-Nama Building has been pursued. The 12th storey is completely removed, in the 11th storey the walls have been demolished but work continues in the removal of the internal structures due to technical difficulties. Although the initially foreseen timeframe has been considerably expanded, it can nevertheless be said that a possible completion of demolition could be achieved by the end of June 2013. The State Party was requested to send an official communication to the World Heritage Centre

As stated in **Section 1.4**, a UNESCO mission in January 2002 found that a commercial complex had (Jahan Nama building) been constructed within the property’s buffer zone. The construction

¹ Boscarding, M.D. and Cording, E.J. (1989) “Building response to Excavation Induced Settlement” ASCE Journal of Geotechnical Engineering, vol. 115, no.1

² Bonnett, C.F. (2005) “Practical Railway Engineering”, 2nd Ed. Imperial College Press, England

³ Esveld, C. (2001) “Modern Railway Track”. 2nd Ed. TU Delft Editions. The Netherlands

was not authorized by the Central Government, exceeded height limitations and had visual impacts on the property. The World Heritage Committee requested the redesign of the complex to ensure that the height restrictions and regulations established by the ICHHTO are followed (**Decision 26 COM 21B.53**). The Committee subsequently urged the State Party to reduce the height of the Jahan-Nama building (**Decisions 28 COM 15B.63; 29 COM 7B.54, 30 COM 7B.57, 32 COM 7B. 72 , 33COM 7B.75 and 34 COM 7B. 71 and 36 COM 7B. 62**).

The March 2010 reactive monitoring mission was informed that, with a compensation of some US\$3 million from the Central Government in February 2010, the demolition of the remaining parts (12th and 11th floors) once again started and that the work could be completed very soon. During its field inspections (twice), the mission witnessed the demolition work on the 11th floor of the tower building on the western side and assured that an official communication would be addressed to the World Heritage Centre on the completion of the demolition work as requested by the World Heritage Committee.

The May 2013 mission visited the Jahan Nama building and witnessed the demolition work on the 11th floor, which requires some further work to remove the internal structures (see figures 12 to 16). The mission reiterated the request for an official communication to the World Heritage Centre on the completion of the demolition work. At the time of finalizing this report, the World Heritage Centre has received no official information on this point.

It may appear that the Jahan Nama building demolition has been a painful process but the State Party authorities have learned lessons from this case. The final completion of the demolition work also shows the increased awareness of the authorities for the preservation of the cultural values of the World Heritage property in a wider setting. In the view of the mission, large-scale construction and development projects continue to be planned in Esfahan, without prior heritage impact assessments or adequate consultation with concerned stakeholders, not to mention public participation. How to address the issue of uncoordinated urban development will still be a serious challenge for the protection of the historic urban heritage of Esfahan.

c) Integrated Conservation Management Plan

The State Party did not submit a state of conservation of the property where efforts or progress in the development of an integrated Conservation Management Plan for the property and possible extension of the historic axis of Esfahan could be described. However, the mission was debriefed on the progress made for the development of the Conservation Management Plan for Meidan Emam.

The State Party presented the draft and concept of the Conservation Management Plan (CMP) during the mission. While containing very valuable detailed analysis and prescriptive projections concerning all structures, spaces and features of the property, this document has not yet been discussed extensively within ICHHTO, or with stakeholders who would be impacted by its many proposals, and at present lacks a Committee approved statement of Outstanding Universal Value and boundary and buffer zone demarcation which can provide a full context for its adoption and implementation.

The authorities followed previous decisions of the World Heritage Committee and the recommendations of the reactive monitoring mission, and there appears to be a conservation strategy in place for the Meidan Emam square property as well as for the Esfahan historic centre. With the inscription of Chehel Sotun (forty columns) Garden as one component part of the Persian Garden World Heritage property (2011) and the Masjed-e-Jame Mosque of Isfahan (2012), focus now lies in strengthening the protection of the buffer zone and wider setting and expanding the monitoring mechanisms related to urban development such as the transport system, in particular through integration of the buffer zone in the Esfahan Master Plan and municipal by-laws.

At this time, with the Conservation Management Plan (CMP) essentially a provisional document which is awaiting detailed review, a Statement of Outstanding Universal Value not yet approved and awaiting the approval of the boundary and buffer zone of the property, the CMP cannot be regarded as fully complete, and as such cannot yet be formally approved by the State Party. Further, it appears that specific sections on visit management and risk preparedness can be integrated into the CMP, which may provide a more effective approach to site management.

The completion of the Conservation Management Plan, and its review and integration within the Esfahan Master Plan and municipal by-laws, is likely to take several months at minimum.

d) Retrospective Statement of Outstanding Universal Value and property boundaries

As a very early nomination inscribed in 1979, the Meidan Emam, Esfahan has not been inscribed with clearly defined buffer zone boundaries or a Statement of Outstanding Universal Value. Within the framework of the second cycle of Periodic Reporting for the Asia Pacific region, in February 2011, the State Party had provided the World Heritage Centre with a retrospective Statement of Outstanding Universal Value for review. The text is being checked by the State Party to further provide precise information on the property buffer zone, which requires approval by the World Heritage Committee. As the basis of the requested Conservation Management Plan, the retrospective Statement of Outstanding Universal Value should be adopted and clearly defined property and buffer zone boundaries need to be provided.

The mission encouraged the State Party to complete these efforts in co-operation with the World Heritage Centre and ICOMOS at the earliest opportunity to complete the adoption of the statement of Outstanding Universal Value for the property, as requested by the Committee in its 33rd session (**Decision 33 COM 7B.75**).

e) World Heritage property boundary and extension of buffer zone

The property was inscribed on the WH List in 1979 with a sketch plan showing the Meidan Emam Square as the boundary. The proposed extended buffer zone of the property is under preparation by the State Party. Relevant information, including paper maps were shown to the mission team. The authorities are conscious of the need to extend the property buffer to better represent the OUV of the historic centre. The buffer zone proposal is under national review and approval process.

f) Conservation of the monuments

Regarding the conservation activities at the property, the tile workshop and other conservation workshop visited showed that these activities are based on traditional craftsmanship, techniques and good supervision (see figures 17 to 19). There is a permanent ICHHTO technical team to supervise and perform the restoration works. The conservation measures have been effective in enhancing the condition of the property.

The mission is of the view that specific monitoring systems need to be established for major monuments within the Meidan Emam Square.

g) Risk preparedness in Esfahan

During the discussions at the field visits, the mission team learned that there is no assessment study on the vulnerability of the property against disasters such as fire and earthquakes, and no systematic risk-preparedness strategy seems to have been developed while preparing and finalizing the integrated Conservation and Management Plan. The mission is therefore of the view that earthquake problems in Esfahan need to be studied to avoid the possible disaster risk like Bam in December 2003.

Such a study would require the involvement of structural and geotechnical engineers that could address the evaluation of the actual state of the foundations and structures and that could assess their behavior under extraordinary events like earthquake or fire. By the use of this methodology, the restoration works could also help for the improvement of behavior under extraordinary events (see examples in ^{4, 5, 6, 7, 8, 9})

ICHHTO committed itself during the mission to developing a strategy to achieve an integration and finalization/adoption, with a specific section on risk preparedness into the Conservation Management Plan.

3.2. Information on any threat or damage to or loss of outstanding universal value, authenticity and/or integrity for which the property was inscribed

The previous reactive monitoring reports and the World Heritage Committee identified the following main threats for the property:

- a) Uncoordinated urban development - construction of a large scale commercial complex;
- b) Subway route through the historical axis of Esfahan.

The mission is of the view that in general, the State Party has addressed the above concerns, and that no new concerns have arisen. The mission would note however that while these concerns have been addressed in tangible ways that their full implementation (as with the Development of the Conservation Management Plan) is still underway.

4. ASSESSMENT OF THE STATE OF CONSERVATION

4.1 Review of whether the values, on the basis of which the property was inscribed on the World Heritage List, and the conditions of authenticity and integrity are being maintained

In general terms, the State Party has made significant and effective efforts to strengthen the state of conservation of the World Heritage property. The present state of conservation is adequate in most parts of Meidan Emam Square. Regarding the Jahan Nama building complex, following the commitment made in 2010, the demolition of the 11th storey (last floor by Committee Decision **30 COM 7B.57**) of the Jahan-Nama Building has been almost completed. The 11th storey is completely removed, the walls have been demolished but work continues in the removal of the remaining structures. Although the initially foreseen timeframe has been considerably expanded, the mission has been informed that a possible completion of demolition could be achieved by the end of June 2013.

The authorities followed previous decisions of the World Heritage Committee and the recommendations of the reactive monitoring mission, and there appears to be a conservation strategy in place for the Meidan Emam square property as well as for the Esfahan historic

⁴ Anzani, A.; Binda, L.; Carpinteri, A. Invernizzi, S., Lacidogna, G. (2010) "A multilevel approach for the damage assessment of Historic masonry towers" Journal of cultural Heritage 11.459-470,

⁵ Betti, M.Vignoli, A. (2007) "Modelling and analysis of a Romanesque church under earthquake loading: Assessment of seismic resistance" Engineering Structures 30, 352-367

⁶ Casolo, S.; Milani, G.; Uva, G.; Alessandri, C. (2013) "Comparative seismic vulnerability analysis on ten masonry towers in the coastal Po Valley in Italy" Engineering Structures 49, 465-490

⁷ Dolce, M.; Kappos, A.; Masia, A.; Penelis, G.; Vona, M. (2006) "Vulnerability assessment and earthquake damage scenarios of the building stock of Potenza (Southern Italy) using Italian and Greek methodologies" Engineering Structures 28, 357-371

⁸ Lourenco, P. Krakowiak, K.J.; Fernandes, F.M.; Ramos, L.F. (2007) "Failure analysis of Monastery of Jerónimos, Lisbon: How to learn from sophisticated numerical models" Engineering Failure Analysis 14, 280-300

⁹ Ramos, L.F. and ⁹ Lourenco, P "Modeling and vulnerability of historical city centers in seismic areas: a case study in Lisbon" Engineering Structures 26, 1295-1310

centre. With the inscription of Chehel Sotun (forty columns) Garden (see figure 20) as one component part of the Persian Garden World Heritage property (2011) and the Masjed-e-Jame Mosque of Isfahan (2012), focus now lies in strengthening the protection of the buffer zone and wider setting and expanding the monitoring mechanisms related to urban development such as the transport system, in particular through integration of the buffer zone in the Isfahan Master Plan and municipal by-laws.

Though the unsympathetic new constructions of the decade prior to 2006 have visual impact on the World Heritage property; the Outstanding Universal Value of the property is still maintained. With the demolition work almost completed, the concern of the World Heritage Committee has been addressed.

4.2 Review of any follow-up measures to previous decisions of the World Heritage Committee on the state of conservation of the property and measures which the State Party plans to take to protect the outstanding universal value of the property

The State Party in the last three years has undertaken considerable measures to ensure better protection of the World Heritage property, and its Outstanding Universal Value. The efforts of the State Party have very much turned around a situation in which the heritage values, authenticity and integrity of the World Heritage property were very much at risk, and created a positive climate for improvement. This has been demonstrated with the news inscriptions of Chehel Sotun Garden (2011) and Majid-e James Mosque (2012). However, measures in place need to be pursued, and fully implemented and followed up to ensure long-term sustainability of current positive impacts. The mission wished to stress that it was satisfied that the necessary conditions to maintain this positive momentum were in place, and hope that this could be sustained in the project realization of Metro Line 2. In order to achieve this goal, it is important that the lessons learned during the development of Metro Line 1 are applied to Metro Line 2, not only in what refers to construction techniques and calculation methods, but also in what refers to monitoring and control of processes, and to communication with stakeholders, the World Heritage Centre and the population of Esfahan.

The development that previously threatened the visual connections of the property has mostly been removed with reduction of the tower building to 10th floor, as of 7 May 2013. In the view of the mission, large-scale construction and development projects continue to be planned in isolation, without prior heritage impact assessments or adequate consultation with stakeholders and public participation. The mission concurred with the conclusions of the March 2010 World Heritage Centre/ICOMOS joint reactive monitoring mission as regards to the lack of vision for the management of Esfahan as a whole and its surrounding historic fabric. Decisions appear to be made in reaction to development proposals, and there is some disagreement amongst various stakeholder groups. It is therefore important to ensure a carefully considered and managed balance between urban development and heritage protection, coordinated decision making within the framework of the Conservation Management Plan in terms of approval processes for new construction and development projects.

The mission has reminded the State Party to proceed the planning of Metro Line 2 project proposal in line with requirement of the Operational Guidelines for the Implementation of the World Heritage Convention and with appropriate heritage impact assessment in conformation with the ICOMOS Guidelines on Heritage Impact Assessments for World Heritage cultural properties.

Finally, there is a need for enhanced public information dissemination regarding development projects in Isfahan such as the Metro Line constructions. In fact, the mission team noted with concern that much misinformation has been disseminated as a result of insufficient transparency and untimely information dissemination. To avoid unnecessary misunderstanding between the Iranian people, the Iranian authorities and the international community, the mission

recognized the need for timely dissemination of information on the proposed development projects. The mission team noted the responsible authorities' desire for international outreach by organizing conferences and international events in Esfahan.

5. CONCLUSIONS AND RECOMMENDATIONS

5.1. Introduction

Having examined the situation in the Meidan Emam and having discussed the conservation issues with the authorities, the mission consider that the State Party has made good progress to respond to the requests made by the World Heritage Committee in its 36th session. The mission however notes that a number of linked issues remain to be fully addressed in order to sustain the long term conservation and management of the World Heritage property and its buffer zone.

The mission has prepared accordingly the following conclusions and recommendations. These are based on both an assessment of the degree to which the State Party has addressed the conservation issues identified by the World Heritage Committee, as well as the recommendations of the previous reactive monitoring mission of March 2010.

5.2. Conclusions and recommendations

The May 2013 mission came to the following findings, conclusions and recommendations:

Metro Line 1 and 2 projects

In order to assess the potential impact of Metro Line 2 (23km) on the property, the mission team held meetings with the Esfahan Urban Railways Organization (EURO) and Mr. Javad Sadeghi, Professor of Railway Engineering and EURO consultant. Work on Metro Line 2 is not expected to begin before 2016. The route is currently under investigation and there is a possibility the Metro Line 2 could pass underneath Meidan Emam. However, it is acknowledged by EURO officials that the planning of the route and appropriate studies will be submitted first to ICHHTO, and then to UNESCO for review and consideration before commencing construction.

Metro Line 1 (20.12km) has almost been completed and is divided into two phases. The first (11km) is out of the buffer zone and expected to start operating during 2013. The second phase consists of two parallel tunnels, which come close to heritage structures. Although the tunnels are completed for this phase, the stations and slab tracks of the railway lines are not.

A small yet concentrated monitoring study on the impact of Metro Line 1 on the built environment reliably concluded that vertical settlements at the surface of the Tunnel Boring Machines during construction were small, and fully admissible. Horizontal ground movements were not reported, and the mission were informed verbally that they were hardly noticed by the instruments and were therefore ignored. Potential vibrations due to Metro operations have been estimated to be at a level acceptable to the neighbouring monumental structures provided a proper floating slab-track system is adopted. This has not been applied to phase 1 but will be for phase 2. The study recommends a continuous monitoring system for the adjacent monumental buildings.

The mission reached the following conclusions:

1. Concerning the Committee's request to assess the potential impact of the Metro Line 2 constructions on the property and its wider setting, the Esfahan Urban Railway Organization (EURO) informed the mission that, due to the economic situation, it is not expected that the works for Metro Line 2 will start before 2016. Currently, Metro Line 2 is a second priority for EURO. The route of Metro Line 2 is currently under investigation. SYSTRA, a Consulting Company from France, had the assignment of finding the optimum routing for the Metro Line. However, the works have stopped at this moment due to the lack of budget. It is possible that Metro Line 2 will pass underneath Meidan Emam (as it did in the previous design). However, it is acknowledged by EURO officials that the planning of the route and the appropriate studies will be submitted to ICHHTO

and, once approved, to the World Heritage Centre and ICOMOS for their review and consideration, before construction work starts.

2. The mission therefore concluded that although “*reports in the public media suggest that the construction of metro line 2 has continued*” this could not be confirmed by field visits. The mission team considers it essential that the proposals for routing, constructions, especially underground drillings, are preceded by an appropriate Cultural Heritage Impact Assessment, in conformity with the ICOMOS Guidelines on Heritage Impact Assessments for World Heritage cultural properties. Any construction considered appropriate following these assessments should be communicated to the World Heritage Centre, according to paragraph 172 of the *Operational Guidelines*, before making any decisions or taking any action that may be difficult to reverse. The mission team has observed that the officials and stakeholders are aware of and acknowledge this requisite.
3. In general terms, the State Party has made significant and effective efforts to strengthen the state of conservation of the World Heritage property. The present state of conservation is adequate in most parts of Meidan Emam Square. Regarding the Jahan Nama building complex, following the commitment made in 2010, the demolition of the 11th storey (last floor by Committee Decision **30 COM 7B.57**) of the Jahan Nama Building has been almost completed. The 11th storey is completely removed, the walls have been demolished but work continues in the removal of the remaining structures. Although the initially foreseen timeframe has been considerably expanded, the mission has been informed that a possible completion of demolition could be achieved by the end of June 2013.
4. The authorities followed previous decisions of the World Heritage Committee and the recommendations of the reactive monitoring mission, and there appears to be a conservation strategy in place for the Meidan Emam square property as well as for the Esfahan historic centre. With the inscription of Chehel Sotun (forty columns) Garden as one component part of the Persian Garden World Heritage property (2011) and the Masjed-e-Jame Mosque of Isfahan (2012), focus now lies in strengthening the protection of the buffer zone and wider setting and expanding the monitoring mechanisms related to urban development such as the transport system, in particular through integration of the buffer zone in the Isfahan Master Plan and municipal by-laws.
5. ICHHTO is aware of the need for the preservation of the World Heritage property. The mission noted the highly recognized political commitment of Esfahan Provincial Government, the Esfahan Municipality and other concerned authorities.
6. Regarding the conservation activities at the property, the tile workshop and other conservation workshop visited showed that these activities are based on traditional craftsmanship, techniques and good supervision. There is a permanent ICHHTO technical team to supervise and perform the restoration works. The conservation measures have been effective in enhancing the condition of the property.
7. The awareness of the authorities on the protection and management of the property impressed the mission. It may appear that the Jahan Nama building demolition has been a painful process but they have learned the lessons from this case. The final completion of the demolition work also shows the increased awareness of the authorities for the preservation of the cultural values of the World Heritage property in a wider setting.
8. The mission noted and welcomed the development of the Conservation Management Plan (CMP) as requested by the World Heritage Committee. The mission encouraged the authorities to take into account the finalization of the property boundary and

demarcation of the buffer zone as well as the finalization of the statement of Outstanding Universal Value for the property.

9. The mission also noted that while good progress has been made by the State Party in responding to the conservation issues/threats raised by the Committee during the 36th session and previous sessions and recommendations of the previous reactive monitoring mission, not all requirements/recommendations put forward in the past had been met at the time of the mission.
 - As a draft Statement of Outstanding Universal Value developed with the assistance of the World Heritage Centre and ICOMOS has not been provided to the World Heritage Committee, the mission reminded the State Party to confirm some missing information (precision on the buffer zone demarcation) and finalize the process.
 - The State Party presented the draft and concept of the Conservation Management Plan (CMP) during the mission. While containing very valuable detailed analysis and prescriptive projections concerning all structures, spaces and features of the property, this document has not yet been discussed extensively within ICHHTO, or with stakeholders who would be impacted by its many proposals, and at present lacks a Committee approved statement of Outstanding Universal Value and boundary and buffer zone demarcation which can provide a full context for its adoption and implementation.
 - There is a lack of assessment study on the vulnerability of the property against disasters such as fire and earthquakes, and no systematic risk-preparedness strategy seems to have been developed while preparing and finalizing the integrated Conservation and Management Plan.
 - At this time, with the CMP essentially a provisional document which is awaiting detailed review, a Statement of Outstanding Universal Value not yet approved and awaiting the approval of the boundary and buffer zone of the property, the CMP cannot be regarded as fully complete, and as such cannot yet be formally approved by the State Party. ICHHTO committed itself during the mission to developing a strategy to achieve such integration and finalization/adoption, with a specific section on risk preparedness, which may provide a more effective approach to site management.
 - Finally, there is a need for enhanced public information dissemination regarding development projects in Isfahan such as the Metro Line constructions. In fact, the mission team noted with concern that much misinformation has been disseminated as a result of insufficient transparency and untimely information dissemination. To avoid unnecessary misunderstanding between the Iranian people, the Iranian authorities and the international community, the mission recognized the need for timely dissemination of information on the proposed development projects. The mission team noted the responsible authorities' desire for international outreach by organizing conferences and international events in Isfahan.

The mission would therefore recommend that the State Party address the issues identified by the previous and current mission and also requested by the Committee during its 36th session, not yet fully addressed, including:

Recommendation 1 related to Metro Line 2 under discussion which may pass beneath the World Heritage property: The mission recommends that it is essential that the proposals for routing, constructions, especially underground drillings, should the Metro Line 2 project go ahead, are preceded by an appropriate Cultural Heritage Impact Assessment, in conformity with the ICOMOS Guidelines on Heritage Impact Assessments for World Heritage cultural

properties. Any construction considered appropriate following these assessments, should be communicated to the World Heritage Centre, according to paragraph 172 of the Operational Guidelines for the Implementation of the World Heritage Convention, before making any decisions or taking any action that may be difficult to reverse. The State Party of Iran should submit to UNESCO World Heritage Centre, the plan and routing of Subway Line 2 in advance of its approval, in order to mitigate any negative impacts, which might affect the World Heritage property.

Recommendation 2: The mission also recommends that following the availability of a project proposal for Metro Line 2, any planning or design must include a comprehensive Heritage Impact Assessment (HIA) as well as an extensive monitoring plan in order to ensure that the proposed routing, constructions and underground drillings do not cause any negative impact on the World Heritage sites and their wider settings in Isfahan.

Recommendation 3 concerning the Jahan Nama building: The State Party should immediately complete the remaining demolition works and send an official letter to the World Heritage Centre to inform the World Heritage Committee that the demolition work has been completed. To prevent future projects such as the Jahan Nama building creating negative impacts on the property, it is essential to strengthen the protection and broaden monitoring procedures for the buffer zone. Also, developments in the buffer zone as well as the wider setting of the historic and cultural axis of Isfahan need to be designed and implemented with full respect for the Outstanding Universal Value of the World Heritage properties in Isfahan in order to avoid cases such as Jahan Nama building.

Recommendation 4: The mission recommends that, recalling the recommendations of the March 2010 reactive monitoring mission, an evaluation of the buffer zone be carried out, taking into account the zoning regulations of the property, the State Party should submit the proposed boundary changes to the buffer zone for approval by the World Heritage Committee, as a matter of urgency.

Recommendation 5: The mission notes that the full statement of Outstanding Universal Value, including authenticity and integrity, remains to be adopted at a future session of the World Heritage Committee, prior to the official approval of the property boundary and buffer zone. It therefore recommends that the State Party confirm the SoOUV, with information on the approved property buffer zone and submit it to the World Heritage Centre for approval by the World Heritage Committee.

Recommendation 6: The mission further recommends that the draft Conservation and Management Plan should be submitted to the World Heritage Centre for comments by ICOMOS. The Plan should be finalized, in conjunction with the approval of the property boundary and buffer zone as well as the Statement of Outstanding Universal Value and shared with all stakeholders and made available to them in hard copy, electronic version and web pages.

Recommendation 7: Within the framework of the review process for the Conservation and Management plan, an assessment study of the vulnerability of the property against disasters such as earthquake or fire should be carried out. A systematic strategy on risk preparedness should be developed as a specific section while preparing and finalizing the integrated Conservation and Management Plan. Such a study would require the involvement of structural and geotechnical engineers that could address the evaluation of the actual state of the foundations and structures and that could assess their behaviour under extraordinary events like earthquake or fire. By the use of this methodology, the restoration works could be directed in order to help for the improvement of behaviour under extraordinary events.

Recommendation 8: The State Party should continue with the completion and review of the Conservation Management Plan and integrate this within the Esfahan Master Plan and municipal by-laws.

Recommendation 9: With three World Heritage properties (Meidan Emam, Chehel Sotun Park and Masjed-e Jame Mosque) in Isfahan, the mission further recommends that the State Party to ensure it continues efforts to strengthen the institutional co-ordination framework requested by the World Heritage Committee which appear to provide the necessary consultative mechanisms to strengthen collaboration amongst different stakeholders.

Recommendation 10 for public communication and outreach: the mission recommends that the State Party enhance, particularly at the municipal level in Isfahan, timely information dissemination and sharing to the general public on the conservation programmes/activities and development projects near the World Heritage properties, buffer zones, and the wider setting of the historic and cultural axis of Esfahan. For international outreach, it is suggested that UNESCO may provide assistance to the Iranian authorities.

6. Annexes:

1. Terms of Reference
2. Decision of the World Heritage Committee (**36 COM 7B.62**)
3. Itinerary and programme
4. List of persons met
5. Photographs and other graphical material

ANNEX 1

**Terms of Reference
Joint World Heritage Centre/ICOMOS
Reactive Monitoring Mission to Meidan Emam, Esfahan
(Islamic Republic of Iran)**

5 – 9 May 2013

In accordance to the Decision **36 COM 7B.62** of the World Heritage Committee adopted at its 36th session (St Petersburg, 2012), and in light of the detailed information and documentation on the proposed route of Metro Line 2 within the property and the State of Conservation report, the reactive monitoring mission shall:

4. Assess the state of conservation of the property and factors affecting its Outstanding Universal Value (OUV), authenticity and integrity, with particular attention to the potential impact of the Metro Line 2 constructions on the property and its wider setting;
5. Analyze the current situation in regard to the reduction of the height of the Jahan-Nama commercial complex (11th and 12th storey of the Jahan Nama Building) and to the possible extension of the property to include the Historical Axis of Esfahan, consisting of the Masjed-e Jāmé (Friday Mosque), the Bazaars, the ancient bridges, the Zayanderoud River, and the South Chahar Bagh Avenue, and define recommendations to further strengthen the protection of the World Heritage property;
6. Review the status on the development and implementation of the management plan and other relevant research as part of a larger strategic vision for integrated urban development and conservation;
7. Assess the adequacy of the most current maps precisely indicating the property boundary and buffer zone and provide recommendations, if needed, for their review;
8. Hold consultations with the Iranian national and local authorities and relevant stakeholders to review the progress made in addressing the concerns expressed by the World Heritage Committee in its previous Decisions, as well as in the implementation of its recommendations and those made by previous monitoring missions;
9. On the basis of the foregoing findings, prepare practical recommendations and identify measures to improve the conservation and management of the property, to be presented to the Government of Iran and to the World Heritage Committee;

Prepare a joint Mission Report (in English) for review by the World Heritage Committee at its 37th session (Phnom Penh, June 2013).

ANNEX 2

Decision 36COM 7B.62

Meidan Emam, Esfahan (Islamic Republic of Iran) (C 115)

The World Heritage Committee,

1. Having examined Document WHC-12/36.COM/7B,
2. Recalling Decision **34 COM 7B.71**, adopted at its 34th session (Brasilia, 2010),
3. Takes note of the further reduction in height of the Jahan-Nama Building and reiterates its request to the State Party to confirm as soon as possible, in writing, to the World Heritage Centre, that the demolition has been completed;
4. Requests the State Party to submit, as a matter of urgency, to the World Heritage Centre, for review by the Advisory Bodies, detailed information and documentation on the proposed route of metro line 2;
5. Also reiterates its request to the State Party to develop a Management Plan for the property, in consultation with all stakeholders, and to ensure that this Management Plan becomes part of a larger strategic vision for integrated urban development and conservation;
6. Also requests the State Party to invite a joint World Heritage Centre/ICOMOS reactive monitoring mission to the property to consider the impact of the current metro constructions on the property and its wider setting;
7. Further requests the State Party to submit maps precisely indicating the property boundaries and buffer zone;
8. Requests furthermore the State Party to submit to the World Heritage Centre, by **1 February 2013**, an updated report on the state of conservation of the property and the implementation of the above, for examination by the World Heritage Committee at its 37th session in 2013.

ANNEX 3: Programme of the Mission

Monday, 6 May 2013

03:50 am Arrival of Mr Jing and Mr Calderon from Paris/Istanbul to Isfahan Airport, check-in at Abbasi Hotel

15:00 Field visit to Naghshe Jahan Square (Meidan Emam World Heritage property etc) & Bazaar

20:00 Return to Hotel and dinner

Tuesday, 7 May 2013

09:00-10:30 Meeting at Esfahan Urban Railway Organization (EURO) on Subway issue with Managing Director and experts from EURO

10:30-11:45 Field visit to Metro Line 1 to see on-site construction and tunneling works
Visit to Visit Chehel Sotun Garden

12:30 Meeting with the Deputy Governor-General of Esfahan Province, Head of ICHHTO/Esfahan and other stakeholders at the Hotel

15:30-16:30 Field visit to Jahan Nama building complex

17:00-18:00 Visit and meeting at Isfahan Municipality Renovation & Restoration Organization

18:15 Field visit to historical bridges over Zayandeh Rood River: Sio-se-Pol and Khajou bridges

Wednesday, 8 May 2013

09:00-11:30 Meeting at ICHHTO Meidan Emam Base on Investigation of Possible Damages of Construction and Operation of Isfahan Metro to Adjacent Monumental Structures by Dr Javad Sadeghi, Professor of Railway Engineering, Iran University of Science and Technology, and Dr Talebayan, ICHHTO Advisor on the progress with Management Planning for the property

13:00-14:00 Lunch at the Hotel

14:00-16:00 Report writing by the mission team

16:30 Meeting at Esfahan Municipality with Esfahan Mayor and Director of International Relations, Municipality of Esfahan

Friday, 9 May 2013

02:00 am, Departure to Isfahan International Airport.

ANNEX 4. List of persons met

National Authorities:

Provincial Government of Esfahan

- Mr Mehdi Jamalnejad, Deputy Governor-General for Development

ICHHTO (Iranian Cultural Heritage, Handicraft and Tourism Organization)

- Mr Mohammad Hassan Talebian, Expert of ICHHTO/Tehran
- Mr Mohsen Moslehi, Director-General for Esfahan Provincial Bureau
- Mr Hassan Ravanfar, Deputy of ICHHTO/Esfahan;
- Dr Jablamli, Advisor of ICHHTO/Esfahan;
- Mr Hariba Saeidi Anaraki, Manager of ICHHTO Meidan Emam Base, Department for Registration of Cultural Heritage
- Ms Jamadi and other experts of ICHHTO Esfahan and Meidan Emam Base.

Local Authorities:

Municipality of Esfahan

- Dr Seyed Morteza Saghaeian Nejad, Mayor
- Mr Ezzatollah Roustazadeh, Director for International Affairs

Esfahan Urban Railway Organization (EURO, Part of the Municipality of Esfahan)

- Mr Abdoljavad Zafarani, Managing-Director
- Teams of experts engaged in the Subway Projects

Dr Javad Sadeghi, Professor of Railway Engineering, Iran University of Science and Technology

Esfahan Municipal Renovation and Restoration Organization

Mr Hossein Jafari, Managing-Director and Advisor to the Mayor

ANNEX 5. Photographs and other graphical material



Figure 1. Meidan Emam. Sheikh Lotfallah Mosque



Figure 2. Meidan Emam. Pavilion of Ali Qapu



Figure 3. Meidan Emam. Portico of Qeyssariyeh



Figure 4. Meidan Emam. The Royal Mosque

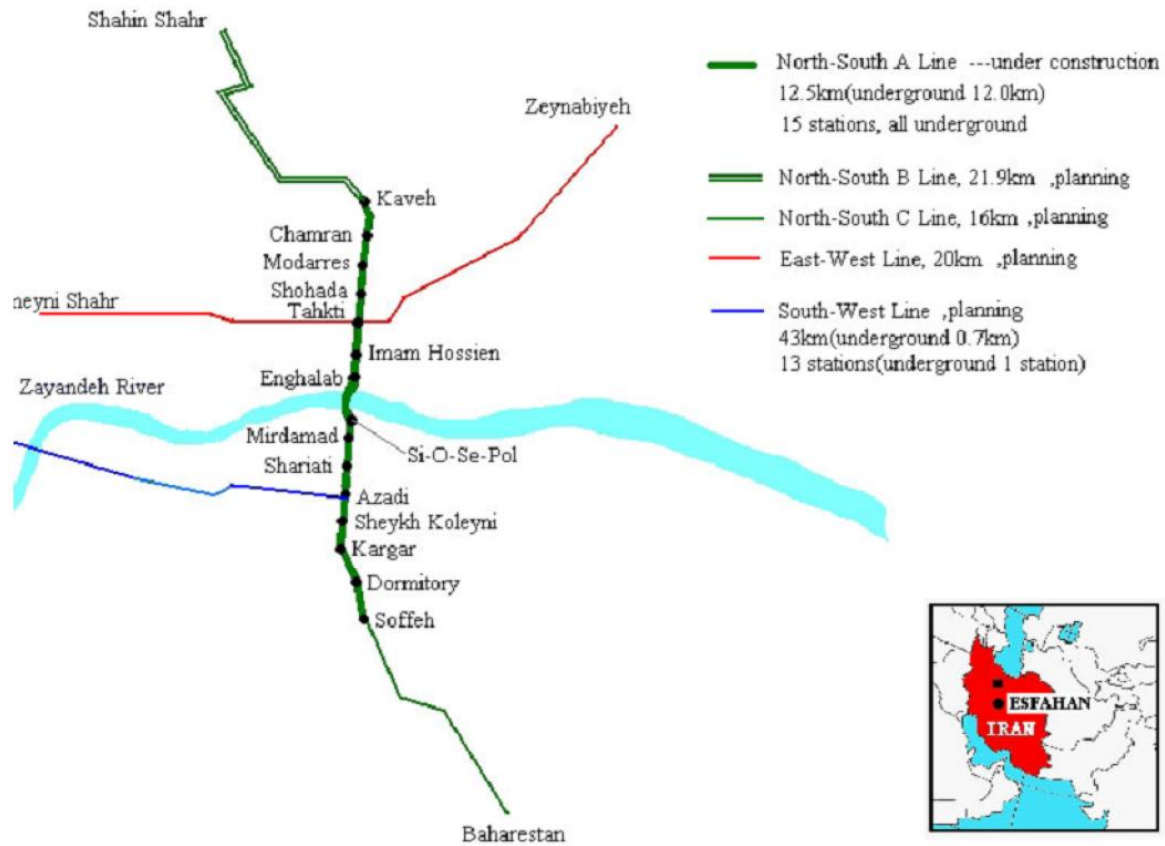


Figure 5. Map of the planned Esfahan Metro system

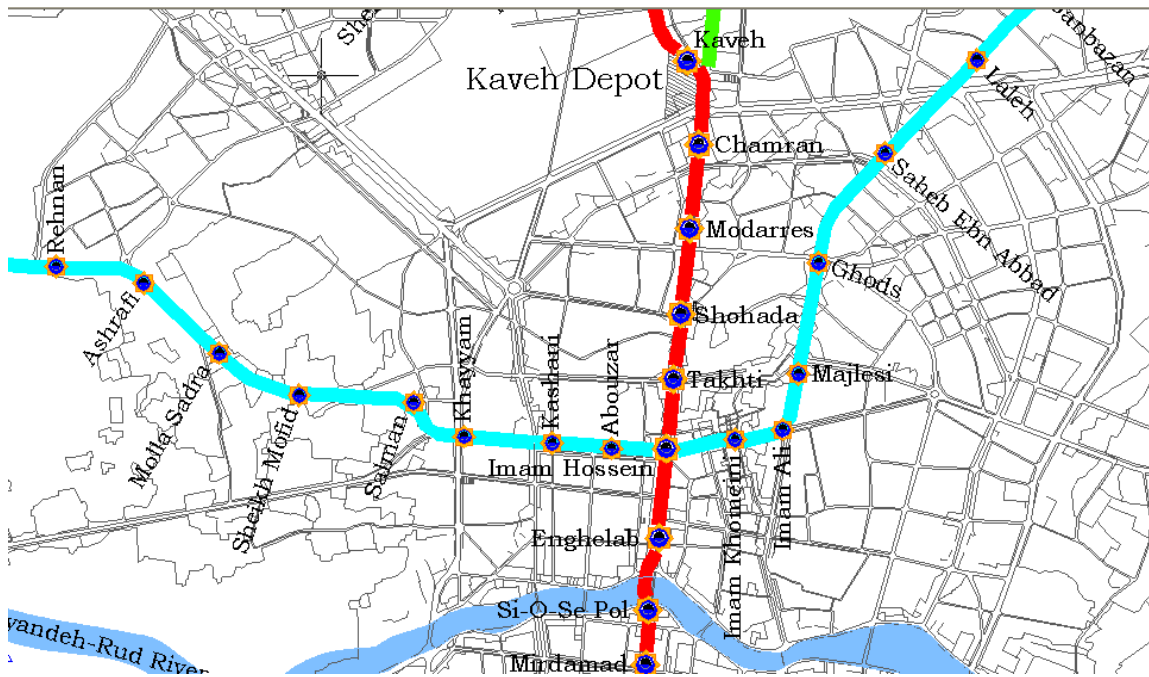


Figure 6. Close-up of the Map of the planned Esfahan Metro system in the area of interest



Figure 7. Transition of cut and cover section (Metro line 1, phase 1) to two Tunnels section (phase 2)

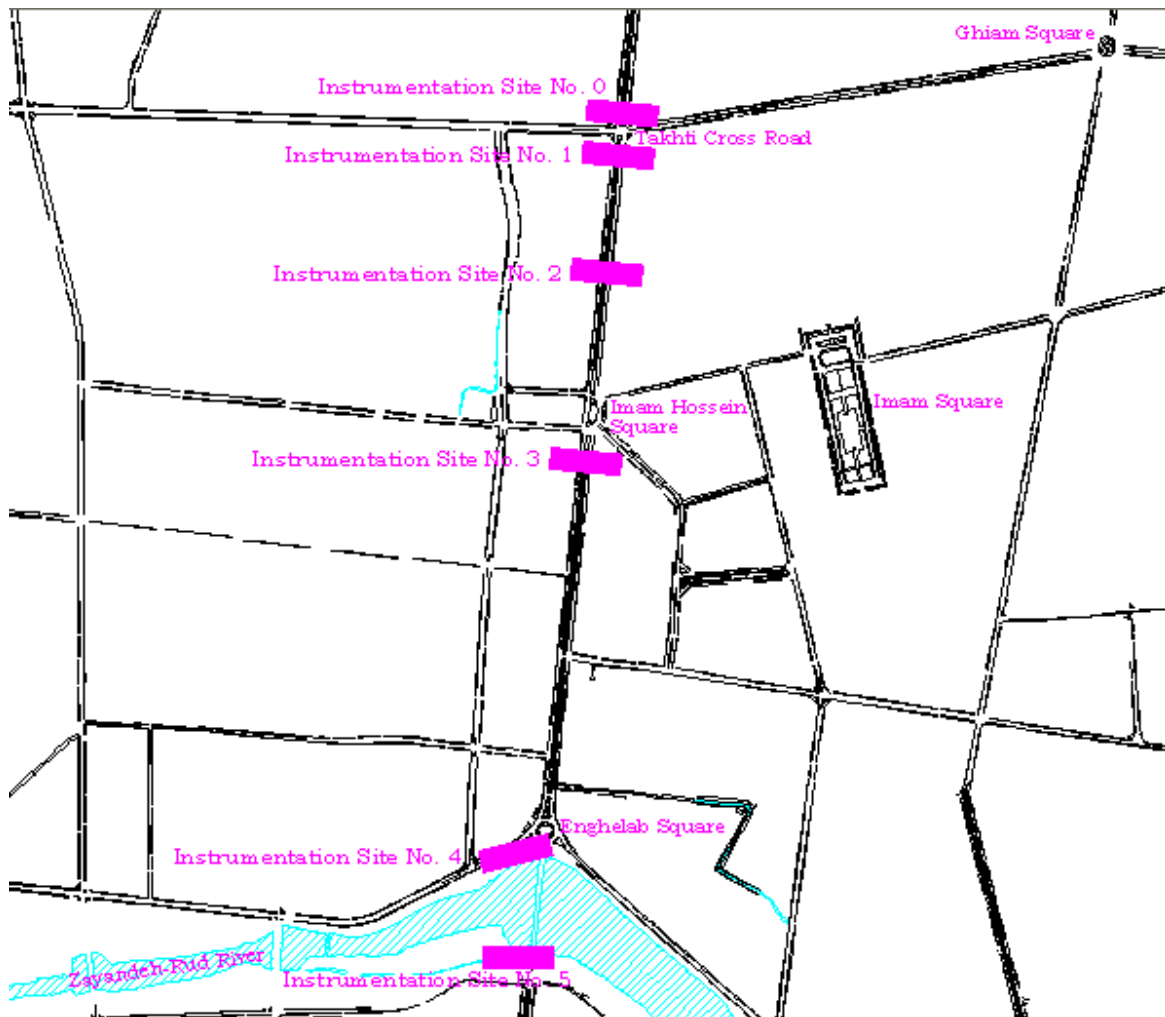


Figure 8. Location of monitored sections for the measurement of ground settlements and ground water levels.

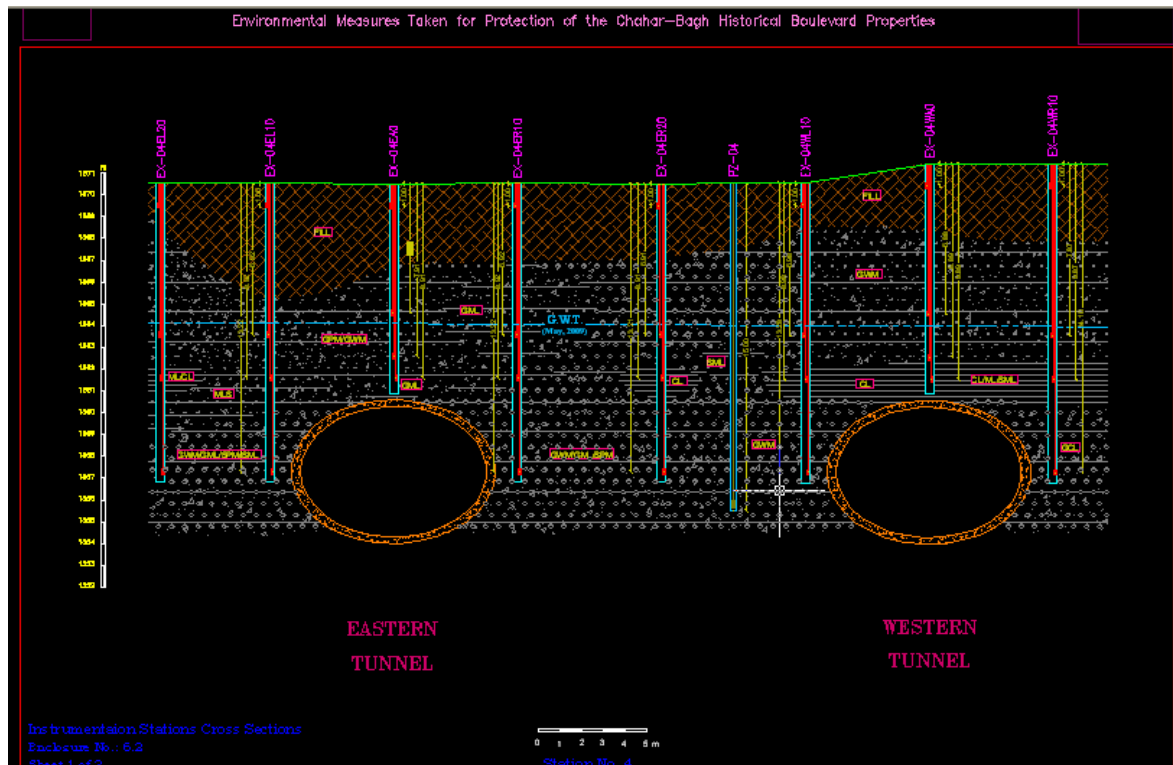


Figure 9. Example. Monitorization at Section no. 4.

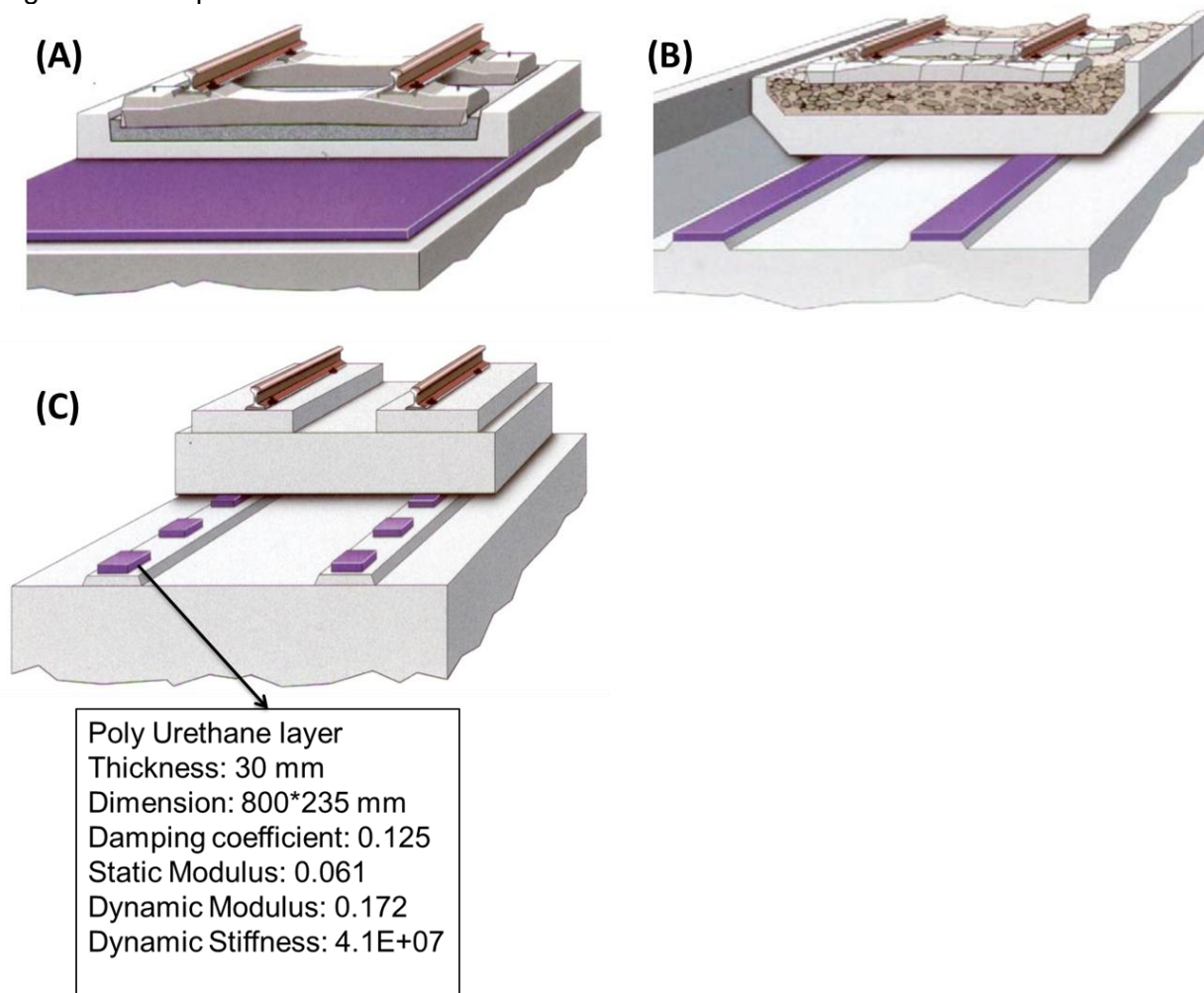


Figure 10. Types of Floating Slab Tracks studied in the IUST report on the “Investigation of possible damages of Construction and operation of Isfahan Metro to Adjacent monumental structures” . A) Full surface support FST. Natural frequency: 14 to 25 Hz. B) Linear support FST. Natural Frequency: 8 to 15 Hz. C) Point like support FST. Natural Frequency: 5 to 12 Hz (Adopted design)



Figure 11. Full surface support Floating Slab Track under construction at Phase 1, Metro Line 1.

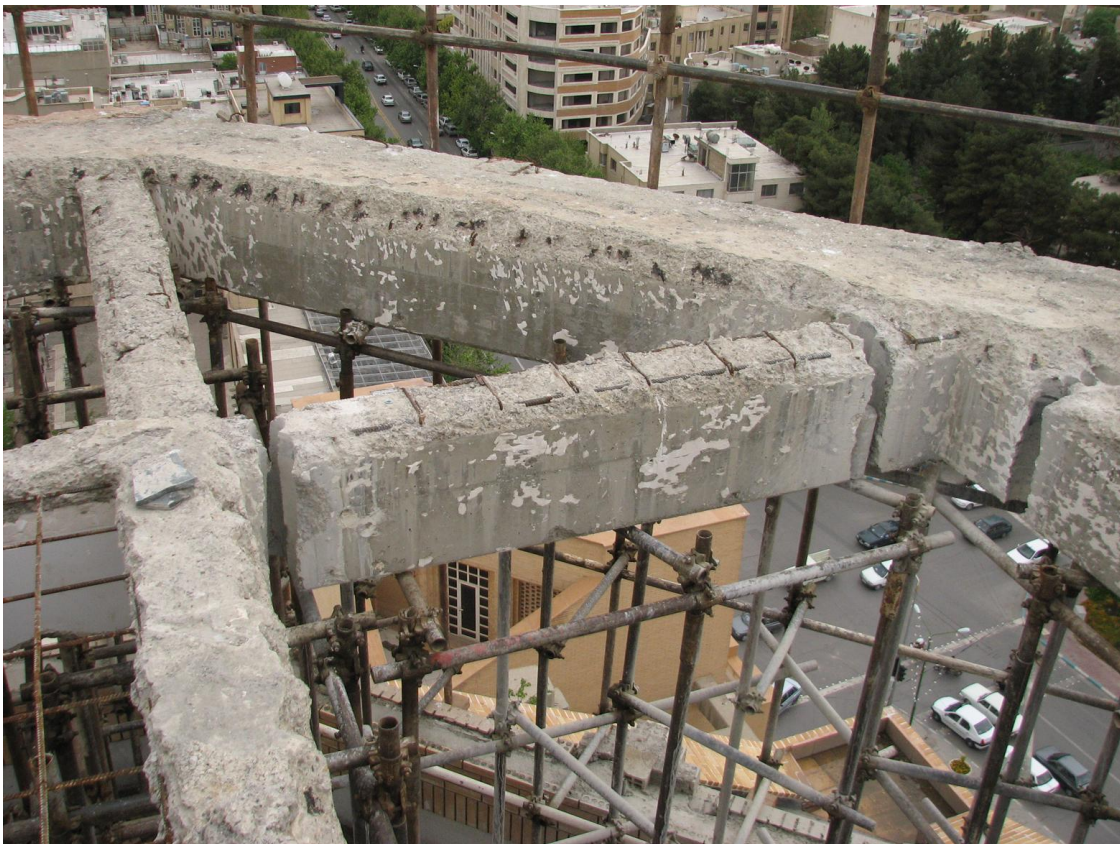


Figure 12. Demolition works of 11th floor at Jahan Nama building. State at January 17 (picture provided by ICHHTO)



Figure 13. Demolition works of 11th floor at Jahan Nama building. State at January 17 (picture provided by ICHHTO)



Figure 14. Demolition works of 11th floor at Jahan Nama building. State at May 7



Figure 15. Demolition works of 11th floor at Jahan Nama building. State at May 7



Figure 16. Demolition works of 11th floor at Jahan Nama building. State at May 7

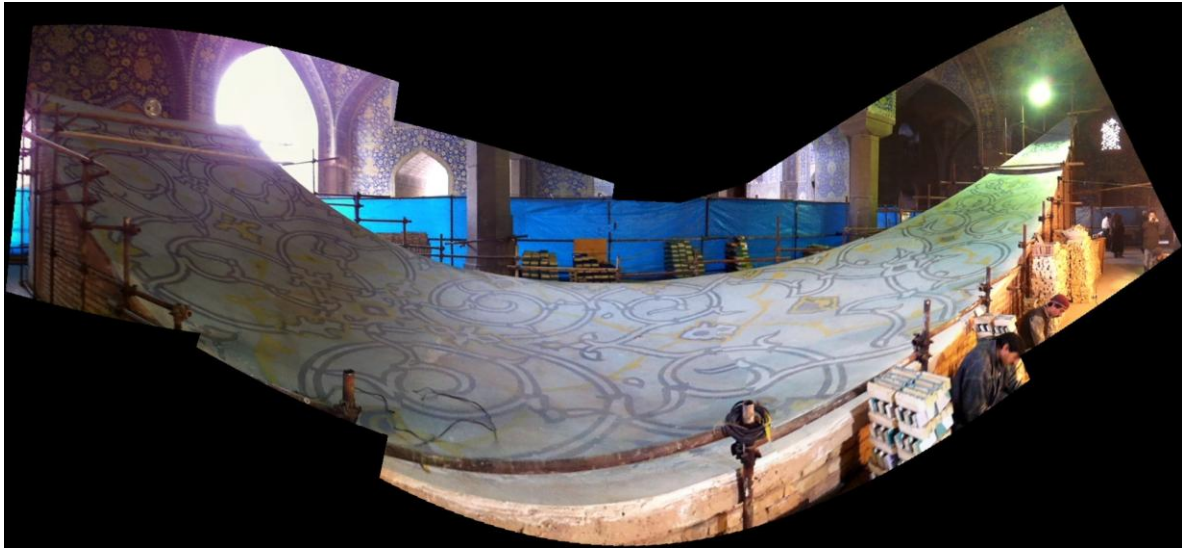


Figure 17. Royal Mosque Dome tile restoration workshop



Figure 18. Royal Mosque Dome tile restoration workshop



Figure 19. Royal Mosque Dome tile restoration workshop



Figure 20. Chehel Sotun (forty columns) Palace and Garden