World Heritage Scanned Nomination

File Name: 946rev.pdf **UNESCO Region:** EUROPE AND NORTH AMERICA

SITE NAME: **The Old Bridge area of the Old City of Mostar**

DATE OF INSCRIPTION: 15th July 2005

STATE PARTY: BOSNIA AND HERZEGOVINA

CRITERIA: C (vi)

DECISION OF THE WORLD HERITAGE COMMITTEE:
Excerpt from the Decisions of the 29th Session of the World Heritage Committee

Criterion (vi): With the "renaissance" of the Old Bridge and its surroundings, the symbolic power and meaning of the City of Mostar - as an exceptional and universal symbol of coexistence of communities from diverse cultural, ethnic and religious backgrounds - has been reinforced and strengthened, underlining the unlimited efforts of human solidarity for peace and powerful co-operation in the face of overwhelming catastrophes.

BRIEF DESCRIPTIONS

The historic town of Mostar, spanning a deep valley of the Neretva River, developed in the 15th and 16th century as an Ottoman frontier town and during the Austro-Hungarian period in the 19th and 20th centuries. Mostar has long been known for its old Turkish houses and Old Bridge, Stari Most, after which it is named. In the 1990 conflict, however, most of the historic town and the Old Bridge, designed by the renowned architect, Sinan, were destroyed. The Old Bridge was recently rebuilt and many of the edifices in the Old Town have been restored or rebuilt with the contribution of an international scientific committee established by UNESCO. The Old Bridge area, with its pre-Ottoman, eastern Ottoman, Mediterranean and western European architectural features is an outstanding example of a multicultural urban settlement. The reconstructed Old Bridge and Old City of Mostar are a symbol of reconciliation, international cooperation and of the coexistence of diverse cultural, ethnic and religious communities.

1.b State, Province or Region: Herzegovina-Neretva Canton

1.d Exact location: N43 20 53.2 E17 48 39.3

Nomination for Inscription on the World Heritage List

Bosnia and Herzegovina

Nomination Dossier
“The Old City of Mostar”

January 2005

Nomination for Inscription on the World Heritage List

Nomination Dossier
"The Old City of Mostar"

Main contents

Part One: Main Text

Part Two: Appendices

1. e. Maps

3. a. Descriptions of Property

3. b. History and Development

3. d. Present State of Conservation

7. a. Selected Photographs

Nomination for Inscription on the World Heritage List

Nomination Dossier
“The Old City of Mostar”

Part One

Main Text

1. Identification of the Property

1. a. Country:

Bosnia and Herzegovina

1. b. State, Province, City:

Bosnia and Herzegovina, Federation of Bosnia and Herzegovina, Herzegovina-Neretva Canton, City of Mostar (Maps 4, 5, 13)

1. c. Name of Property:

The Old City of Mostar

1. d. Exact location on map:

Geographic coordinates: 43° 20'13.70" N 17° 49'11.96" E (the Old Bridge). Its altitude is approximately 60 meters above the sea level.

1. e. Maps attached:

The area proposed for the inscription with buffer zone is shown at the following maps:

1. Map with borders of the area proposed for the inscription with buffer zone
2. Borders of the area proposed for inscription with buffer zone presented by the satellite photo
3. The area proposed for the inscription on the map from the "Urban Heritage map of Mostar and rehabilitation of Stari grad", UNESCO 1997.

Other supporting maps:

4. Bosnia and Herzegovina in Europe in 2005
5. Map of Bosnia and Herzegovina in 2005 (original scale of 1/1.750.000)
6. Historical map of Mediaeval Bosnia
7. Mostar - fortification in 1716 (Map is in the War Archive Vienna)
8. Mostar - the structure of the city in 1878
9. Mostar - map of the city in 1881
10. Historical map of Bosnia and Herzegovina in 1914 (original scale of 1/1.000.000)
11. Mostar - map of the city in 1918
12. Map of Herzegovina-Neretva Canton in 2004 (original scale 1/320.000)
13. Map of the city of Mostar in 2004

1. f. Area of property:

The boundaries of the area proposed for the inscription (7.6 ha.) is defined due to the following:

- area proposed for the inscription is a vibrant and coherent historical core accentuated by the powerful image of the Old Bridge;
- the boundaries outline the medieval fortification system and Ottoman City Walls that were formed in regard to the natural topography;
- it is the zone of architectural ensembles and buildings of particularly high integrity and authenticity.

Proposed buffer zone (47.6 ha.) (Maps 1, 2, 3) is defined due to the following:

- proposed buffer zone consists of the natural landscape and eclectic architectural features with several national monuments;
- the boundaries encompass the urban tissue with traditional residential housing areas, main pedestrian streets aligned by important monuments such as Karadjozbeg Mosque, Landbank, Konak building and hillside with an ottoman Clock Tower and Orthodox Church;
- this is a potential protection and development zone that will supplement and enhance the functions of the Historic core.

2. Justification for the Inscription

2. a. Statement of significance:

- The Historic part of Mostar is a result of interaction between the natural phenomena and human creativity throughout a long historical period. The cultural and historical value of the Old Mostar represents the urban agglomeration that had been formed in 16th century around the Old Bridge - the technological wonder of its own age - in complete harmony with the natural agglomeration of the Neretva River.

- The essence of century's long cultural continuity is represented by the universal synthesis of life phenomena: the bridge and its fortresses – with the rich archeological layers from pre-Ottoman period, religious edifices, residential zones - mahalas, arable lands, houses, bazaar, its public life in the streets and water. Architecture here presented a symbol of tolerance: a common life of Muslims, Christians and Jews. Mosques, churches, and synagogues existed side-by-side indicating that in Bosnia, the Roman Catholic Croats with their Western European culture, the eastern Orthodox Serbs with their elements of Byzantine culture, and the Sephardic Jews continued to live together with the Bosniaks-Muslims for more than four centuries. A specific regional architecture was thus created, left behind a series of unique architectural achievements, mostly modest by physical dimensions, but of considerable importance for the cultural history of its people. The creative process produced a constant flow of various cultural influences that, like streams merge into a single river, became more than a mere sum of the individual contributing elements.

- The Old Bridge is an architectural masterpiece, destroyed in 1993, and became famous once again for its unique restoration and a symbol of post-war reconciliation.

2. b. Comparative analysis:

The mid of 16th century, a peak of the Ottoman Empire and the time of the Old Bridge construction, presents the most significant period for development of historic city core of Mostar. Later, the Austro-Hungarian occupation (1978-1918) played the most important role in the transformation of the city and its historic core. These two historical periods with different cultural features gave significance to the Old City in Mostar, but it's most significant structure has always been the Old Bridge built in 1566, destroyed in 1993, and reconstructed in 2004.

When we compare Mostar with the main centers of Ottoman architecture, the differences are very clear. To a certain extent Mostar can be regarded as the city, which is typical in its size and development for the Ottoman Empire, with a unique location on the banks of the river Neretva representing a meeting point for the civilization circles: Byzantine and Islamic on one side, and Roman Catholic, Romanesque, Gothic and Renaissance on the other. Despite the fact that different political systems, ideologies, cultures and civilizations clash and interweave, the balanced relationship among populations, established in 18th century, still functions.

Mostar differs from urban and architectural appearances on other sites inscribed on the WHL, while it preserves a very harmonious bond of nature - canyon of the Neretva River, hill slopes, and irrigated gardens with architecture formed using the local materials (stone for wall and roofing) and building technology applied by the domestic masters.

Presence of the Middle European urban and architectural concepts, from the end of the 19th century, made the historic center of Mostar more valuable.

- Under certain extraordinary circumstances, ensued from sudden, violent and shocking events, the reconstruction may be the only possible answer to those events. Demolitions could be caused not only by wars, but also earthquakes, as in Friuli, Italy in 1976, when entire villages and small centers were completely destroyed, to be later reconstructed. Terrorist actions are also known to cause heritage destruction, as it happened with the dynamite attacks on the church of San Giorgio in Velabro in Rome, or in the Uffizi in Florence. In these cases, a careful replica reconstruction of the demolished parts of the monuments was carried out. Fires and arsons could be other factors, as in La Fenice Theatre in Venice, that produced an additional replica reconstruction. The three Italian cities involved in these reconstruction processes are all listed as WHS.
- Another significant example, showing how this trend continues, in other places in the world, is provided by Germany, in the city of Dresden, which was demolished in the bombing by the allied forces in the night between the 13th and 14th of February, 1945. The reconstruction policy in Dresden had started with the DDR, in the palace called Zwinger, and was completed in 1966, with the reopening of the most famous museums in the city, named Gemaeldegalerie that contains Rembrandt and Rubens, Tiziano and Veronese, Correggio and Raffaello. The will of citizens to reconstruct the memory of the "Florence of the North", started in 1964, and has continued until today, with the reconstruction of the large catholic cathedral, the Hofkirche, of the Opera Theatre where Wagner conducted his operas of the castle and of other relevant monuments, as the recently rebuilt and reopened Frauenkirche, after ten years of strenuous work of archaeologists, conservation architects and art historians.
- World War II took an especially harsh toll on Warsaw, home to a large Jewish population and scene of the Warsaw Ghetto. Polish officials made an early decision to reconstruct the Old City as a pre-war facsimile; in fact, many of their plans called for a return to the nineteenth century appearance of the historic core. Throughout the German siege, Warsaw's 'soldier-architects' protected historic documentation and designed plans for reconstruction even while the buildings were collapsing. The power and vitality of the city was proven after the war when thousands of residents returned from the countryside to an urban landscape that was literally reduced to rubble. Their collective efforts eventually restored the original appearance of inner Warsaw through a program of arduous research and reconstruction. The historic quarter was restored at the expense of the other sections of the city—dismissed by Warsaw's new Communist overseers as worthless monuments to bourgeois values.

The case of Mostar can be compared with the case of Warsaw. For decades after the WWII nobody believed that war with mass killing and large-scale destruction was possible in Europe. But, wars in Former Yugoslavia, with numerous mass killings and destruction of Dubrovnik, Vukovar, Sarajevo, Mostar and others proved that wars couldn't be excluded. In the Old City area of Mostar, during the 1992-94 war, citizens continued to live in the ruins without any infrastructure, but at the same time they took care of the famous monuments that for them symbolically signified the proof of their existence in history and the national pride. Using recovered technical documentation completed before 1992, the local institute for preservation was operational even before the destruction of The Old Bridge in 1993. After the establishment of the EU administration in Mostar in 1994, preservation activities constantly increased on the scale. The presence of UNESCO experts were evident in the city from 1996.

The reconstruction of the Old Bridge complex, monumental structures, infrastructure and majority of urban fabric was exceptionally successful, due to the presence of the leading international organizations with their experts, and the involvement of local experts and craftsmen who contributed greatly during preservation processes between 1996 and 2004. At the end of 20th century the demolished historical city core of Mostar, in the middle of Europe, and its re-establishment on the basis of reconstruction of structures and integral rehabilitation of the historic core could have a meaningful impact for the whole world. The reconstruction of Mostar is associated with events of considerable historical significance.

2. c. Authenticity/Integrity:

- Authenticity on the urban scale is preserved through an integrative rehabilitation of the historic core – renovation of physical structures and introducing adequate functions. The objects that were restored or reconstructed individually contribute to the urban mosaic of the Old City. The usage of the original volumes, sites and construction materials of each structure, preserved the typology and morphology of the historic fabric. The key features of the city, natural surroundings, and the urban matrix with the architectural landmarks remain genuine.

- Authenticity on the architectural scale is achieved by the application of the contemporary theories and practices, accompanied with extensive research and re-use of original elements found on the site. This was demonstrated on the Old Bridge complex and all monumental structures in the city.

- The Old Bridge Complex - philosophy of the reconstruction project. It was necessary to develop a new restoration strategy to implement the project. Thus, it was not a question of building a new structure or a carbon copy of the *bridge* that had been destroyed. The reconstruction remained faithful to the ideas and principles of the original structure but also allowed various historical stigmata and the *patina* formed in time, with regard to the older restoration work.The project aimed for the "re-appropriation" of the monument by encouraging the close contact of the citizens of Mostar to the reconstruction work, at all levels. The highly traditional stone cutting was chosen for its technical, aesthetic and ethical advantages. This avoids the rigid, dehumanized restoration with pseudo 'old-fashioned' dressing applied to the surface to cover cold mechanical work.

2. d. Criteria under which inscriptions are proposed:

The Historic City Core, inhabited since the beginning of 15th century with many historic layers, has been a subject of successful preservation (1988-1992), than extensive destruction (1992-94), and then its reconstruction and revival (1995-2004), based on an integrative plan reinvented the Old City with its traditional charm and city's contemporary needs.

Reconstruction of the Historic City Core in a way that it preserved original value ensured the survival of an outstanding cultural intermingling and illustrates the efficiency of restoration techniques at the turn of the centuries.

Mostar experienced a very intense destruction having a large number of structures ruined, yet the strongest features of the city remain preserved: the natural surroundings, the urban structure with a logical distribution of its contents and significance for the city. Reconstructions of individual structures aim to preserve the integrity of the city image.

Despite the fact that some objects are reconstructed on the original sites, their essence is re-established through the repetition of their original shape. The buildings present only one component of the historic core; both natural and architectural dominants are emphasized in the urban tissue.

The reconstructed bridge, except for its symbolic values and the memory of the site, with its significance plays a key role a meeting point in the urban matrix of the city. The Old Bridge and Historic City Core, is an exceptional example of physical reconstruction and cultural and historical rehabilitation, and this realization process (1999-2004) is now a part of city's identity and authenticity.

The successful reconstruction of the Old Bridge complex and its surrounding is directly associated with events of considerable historical significance, especially with an idea of reconciliation, as a first process of this type in Bosnia and Herzegovina after the war 1992-94. Sense and spirit of Bosnia and Herzegovina are compressed in the image and meaning of the Old Bridge. The essence of a bridge is meeting and connecting, opposite to differing and dividing.

The nominated property – The Old City of Mostar satisfies the general conditions of The World Heritage List (article 24 iv, v & vi).

- **Criterion 24 iv:** The property represents a group of buildings, a melting pot for authentic pre-Ottoman, eastern Ottoman, Mediterranean and western European influences spanned with a magnificent bridge complex. Because of ambient architecture and correlation with the landscape is an outstanding example of Multicultural European urban settlement with universal value that illustrates significant stages in human history
- **Criterion 24 v:** The property represents an outstanding example of traditional human settlement especially since it has become vulnerable under the impact of irreversible change.
- **Criterion 24 vi:** Mostar is an exceptional symbol of the human potential for successfully integrating groups with differing ethnic, cultural and religious backgrounds into homogenous civilized community.

3. Description

3. a. Description of Property

The area nominated for inscription is located on the canyon of the Neretva River with the Old Bridge complex at its center and bazaar and housing areas around it. The Old City presents a harmonious balance between nature and mankind activities. The river determines the structure of the city and accordingly forms the street network as well as the positions of objects.

The Radobolja River, which enters the Neretva on the right bank, gives a special significance to the area. The Radobolja provides a source of water for the growing settlement, and from it spring a number of small canals used for irrigation and for driving the wheels of numerous water mills.

The area of bazaar is mostly encircled by city walls and three solid fortresses: one around bridge with Tara and Halebija towers, Tabhana (Janissary barracks till 1830-es) on the west bank, and the Konak complex (military headquarters) on the hill above the Bridge on the east bank. The area of the Koski Mehmed Paša mosque presents extension of the bazaar towards north on the east bank and out of the city walls.

Bašćine gardens, located north from the Tabhana, are the only preserved part of the large Ottoman gardening system at Cernica field. These gardens, together with the green areas on the Neretva River banks, represent valuable components of the nominated area.

Nominated area and its buffer zone contain several important historic buildings predominantly established in the Ottoman time, encompasses several monumental structures: the Old Bridge complex (completed in 1566), with several archeological layers from the pre-Ottoman time; Kriva Ćuprija bridge (1558), Čejvan Ćehaja Mosque (1552), Koski Mehmed Paša mosque complex (1618), Vučjaković Mosque (1518), Neziraga Mosque (1555), Tabačica Mosque (completed before 1663), Hamam (completed before 1663), and Tabhana (16th c). In the same area the rest of the structures are mainly modest buildings such as: shops and store-houses (dućans and magaza), water-mills, inns (hans), and smaller group of houses all set up in the 16th century by the same donors who had contributed to the building of their mosques.

The buffer zone has preserved the urban tissue from the Ottoman time. An example is the network of streets with different levels of movements; a main street (džada), a small street (sokak), a blind street (čikma), and a house courtyard (avlija). The area encloses several notable mosques: Karadjozbeg (1557), Roznamedji Ibrahim Efendi (1620), Cernica (b.1633). The Orthodox Church complex was located on the hill-foot northeast from the bazaar with two important churches (built in 1833 and 1873). The area contains hundreds traditional houses in several neighborhoods (mahalas) from which the best preserved examples are Kajtaz house in Bjelušine and the Biščević-Lakišić housing complex on the Neretva River bank.

Every historic period added new architectural elements from its traditional style. Several massive structures in the nominated area (Girls High school, Dokić apartment block) resulted from the Austro-Hungarian occupation. New buildings that were constructed in the buffer zone, and that way transformed the area from the north of the bazaar on the east bank to streets with Middle-European character. Several buildings: Military club (1888), Wakuf Palace (1894), Municipality hall (1900), Serbian Primary school (1909), Landsbank (1910), Metropolitan palace (1910) built in neoclassical and secession style represented the landmarks in the area.

During the 20th century only a few larger intervention occurred in the buffer zone such as the construction of the hotel “Ruža” in the garden located west from the Baščine, and “Šipad” building in the Fejić Street.

All the structures mentioned above (excluding Neziraga mosque, destroyed in 1950) had shared the same destiny - they were destroyed during the 1992-94 war.

The Old Bridge complex represents the most important monument in the Old City. The complex consists of three towers, a mesjid (religious facility), walls, a gate and several supporting structures. Archeological research during rehabilitation process has proved numerous historic documents about historic layers, before and after the year 1566, when the stone arch was erected.

During the period between 1998 and 2004, the citizens and the city government in collaboration with international donors and organizations rehabilitated large portion of the nominated

area, and major parts of the buffer zone. The main focus was on the Old Bridge and the listed monumental structures where traditional building technology with the usage of traditional materials was applied with the help of UNESCO's International Committee of Experts.

The nominated area, despite the destructive events and consequences, has preserved most of the buildings, particularly of urban, visual and ethnological characteristic, with emphasized dynamics of space and form. The founders and the laborers have carved the aesthetic values and the monumentality of their time and cultural scope – the structures were given monumental character and left as bearers of building sequences built within the frame of limited materials and concepts, and in the continuous spirit of the site. This artwork is created with a synthesis of the autochthonous, Oriental-Ottoman and Mediterranean characters.

The Provisional List of National Monuments, issued in November 2002, contains forty buildings or sites with monumental characters in the city area of Mostar. Commission to Preserve National Monuments designated 22 properties up to now.

Commission to Preserve National Monuments designated the following properties as the national monuments:

In the nominated area:

1. Old Bridge with the towers, the architectural ensemble
2. Koski Mehmed Paša Mosque and medresa, the architectural ensemble
3. Nasuh Aga Vučjaković Mosque, the architectural ensemble
4. Neziraga Mosque, the architectural ensemble

In the buffer zone:

5. Clock Tower, the historic building,
6. Karadjozbeg Mosque, the architectural ensemble
7. Roznamedji Ibrahim Efendija Mosque, the architectural ensemble,
8. Old Orthodox Church of Birth of Virgin, the architectural ensemble,
9. Orthodox Cathedral – The Holy Trinity, the site and remains of the historic monument,
10. Metropolitan residence, the architectural ensemble,
11. Residential Complex of Biščević-Lakišić, the architectural ensemble.

12. The Old City of Mostar, Commission to Preserve National Monuments designated The Historic Urban Area of Mostar as a National Monument, in July 2004.

DESCRIPTION OF IMPORTANT PUBLIC STRUCTURES

a) Structures listed as national monuments

Detailed information can be found among the decisions regarding the national monuments that were adopted by the Commission to protect national monuments of Bosnia and Herzegovina.

The Old Bridge Complex in Mostar

Archaeological research and the following detailed archaeological excavations at the site of the Old Bridge complex, which were conducted continuously from 2000 to 2003 discovered remnants of wooden bridges from pre-Ottoman period. Even though a detailed archaeological research was not a part of the reconstruction project at the beginning, important discoveries appeared during works on the abutment walls. UNESCO through its ICE (International Committee of Experts) has decided to continue with detailed archaeological researches (5^{th} session). The remains of the first suspended bridge built before 1452 were discovered. The suspended bridge was supported at the left bank and eccentrically added to the already existing regular, symmetrical, polygonal fortification. Also numerous coins, pottery, canon balls and other artifacts were found during the excavations. The archeological site is located bellow the Old Bridge complex, on both sides of Neretva River, and is accessible for visitors. The whole area represents an archeological museum, with underground part

(remains of the wooden bridge and archeological artifacts) and open auditorium area (at Radobolja River confluence) with the original Old Bridge stones extracted from the river by Hungarian SFOR Unit in 1997.

The entire complex is composed of the tower Tara (at the east bank of Neretva) with the Austro-Hungarian two-story house at its base, towards the bridge. The mesjid, built during the Ottoman period, leans on the Austro-Hungarian house, and there by its side is the storage house dated from the same period, situated at the very entrance of the bridge. At the west bank by the bridge's access there is a trade store from the Ottoman period connected by wall to the tower Halebija. All structures have stonewalls formed of *tenelija* and *miljevina* limestone mixtures, plastered with lime mortar, with traditional wooden openings, metal shutters and characteristic stone roof tiles. Downstream from Tara, at the east bank, there is the tower Herceguša, a medieval stone structure with the watchtower on top.

The Old Bridge in Mostar is the engineering miracle of its time, built upon design of the great Ottoman architect Kodja Mimar Sinan constructed by his pupil architect Hayruddin. It is the one-arch stone structure with the downstream span of 28,62m and the upstream span of 28,71m. The arch itself is a winded surface with asymmetrical downstream and upstream elevations formed due to the displacements of the arch-scaffold during the construction period. The deformations emerged through time during five centuries of its existence. The structure is simply decorated with only two cornices, which highlight the elegance of its slim arch (thickness of the arch is approximately 90cm), and the width stretches between 395 and 400 cm. There are other single-arch bridges of the large span in the world, but none of them have had such thin arch structure directly based onto the rock mass of the riverbanks. The bridge is built from Eolithic limestone of the local name *tenelija* extracted from the local quarry. The arch blocks were connected with iron dowels, poured with led connecting the structure in such way. Also, the blocks were connected with the iron cramps on the extrados, which are again poured with led. Bind between the stone blocks was traditional lime mortar. Pavement of the bridge was constructed from the hard marble limestone, which becomes polished through time. The pavement was placed in layer of red soil (*terra rossa*) and lime, so called *Turkish insulation*. The iron fence on the bridge, dated from Austro-Hungarian period, was renewed in accordance to the original receipts of metal and building methodology, as well as dowels and cramps.

Koski Mehmed-paša Mosque complex is situated on the left side of Neretva River, between river, and the Mala Tepa Street. From east and north is hemmed with stores and market, and from west and south, where Neretva flows has open view. It belongs to early Istanbul style of Ottoman architecture, which has following characteristics: a main cupola above praying space, three little cupolas above porch and leaned minaret on the right side of the building. Mosque was built in 1618, and medresa was built later. The complex was heavily damaged in the 1992-1995 war. In 2000 Turkish government restored the complex.

Nesuhaga Vučjakovića Mosque is third domed mosque in Mostar, but with some details it differs from the other two. Nesuhaga mosque or mosque "Under linden" is situated on the left side of Neretva River, on the corner of M. Tito Street and Clock tower. Name "Under linden" it gets according to linden tree that is planted years ago in front that mosque. With its architectural details it represents unique example of Mediterranean-Dalmatian school of building.

The complex was heavily damaged in the 1992-1995 war. The mosque was restored in 1999 using the donation of Hashemite Kingdom of Jordan.

Neziraga Mosque or was situated on the Spile plateau above the Kriva Ćuprija (Crooked) bridge, 150 meters far from the Old Bridge. This locality dominates with down part of Radobolja valley and it is the most vivid part of the Old City. The mosque style belongs to the architectural group of mosques without cupola, with four-eaves roof covered with stone slates.

Parts of the mosque above one meter above the terrain were demolished in 1950 by local government. In 1999 the complex was reconstructed by the Research Centre for Islamic History, Art and Culture (IRCICA) Istanbul.

Clock Tower built before 1636 through donation of Fatima Šarić in a peripheral part of the Bazaar, Kazazi Street, on an elevation place so could be seen from the whole city. Its height is 16 meters and has five floors. The old clock was in function until 1926, and from 1981 the building was in its original function, that year it had been restored and a new clock has been built in.

The tower was partly damaged in the 1992-1995 war. In 1999, the tower was restored.

The Karadjozbeg Mosque**.** Karadjozbeg, brother of the grand Vizier Rustem-Paša (1544-52, 1554-61) erected a mosque as his memorial in 1557. Kodža Mimar Sinan is cited as the builder. Karadjozbeg had an immense influence on the development of Mostar, since he built a whole range of structures for public, sacral, and business uses. He was also connected with the building of the Old Bridge. The Karadjozbeg Mosque was built in the immediate vicinity of the bazaar, by the main road, in an area that was large enough for the range of structures usually built as a complex: mosque, medresa (religious high school), mekteb (religious primary school), han (inn), and imaret (public kitchen for the poor). Architecturally, it belongs to the simple domed type, with a porch under three small cupolas, a second porch, and a minaret.

The complex was heavily damaged in the 1992-1995 war. In 2004 the Research Centre restored the mosque for Islamic History, Art and Culture (IRCICA) Istanbul.

Roznamedji Ibrahim Efendija Mosque is situated on the corner of Kresina and Braće Fejića Street, not far from left side of Neretva River and it is considered as the most significant of Islamic culture in Mostar.

The mosque with its style belongs to the architectural group of mosques without stone cupola, with four-eaves roof covered with stone slates, above the wooden ceiling with centered cupola. The Roznamedji mosque has exceptionally beautiful minaret.

The mosque was partly damaged in the 1992-1995 war. Restoration of the building was completed in 2002.

The Orthodox Church complex. The Orthodox population had their own church probably in the 18th century, which was replaced in 1833 with the one devoted to the Nativity of the Mother of God, and built in Suhodolina. This building was the initial structure for development of the Orthodox community center. The church was built partly dug in a terrain, probably to be less visible from the town.

The building was constructed with a traditional material and technology, using Byzantine architectural elements combined with Islamic (*mushebak* in the gallery for women), and Romanesque (a bell tower).

The cemetery developed east and south of the church. A primary school was built next to the church in 1856. Lastly, another Eastern Orthodox Church devoted to the Holy Trinity was built in 1873, taking place west from the school.

The new Cathedral church Holy Trinity dominated the town view. It was the largest church in the entire Bosnia and Herzegovina, built between 1863 and 1873 in a Neo-Byzantine style by the architect Andreja Damjanov, from Veles, Macedonia. The church was built with five domes (additional one over apse) and with four central columns in the cross-inscribed plan.

Both churches were demolished in 1993. The older church was reconstructed in 1997.

The Metropolitan Palace, built in 1910 to house the Orthodox Metropolitan of Mostar, is one of Mostar's most graceful and elegant buildings designed by Karlo Parzik. With this building Baroque revival tend to convey a lightness and lyricism, which extends beyond that even of the villa style of Neo-Classical buildings. Perched on one of the highest points of the east bank of the Neretva, it can be seen from nearly any vantage point in the city. Its attic of niches, urns, coats of arms and statues adds to the drama of its sitting, and combines with the rich texture of East Bank architecture to give East Mostar a kind of worldly elegance. Though the Palace is a residence with offices, the prototype used in ecclesiastical, and the classicizing statues are of Orthodox saints.

The complex was heavily damaged in the 1992-1995 war. Complete rehabilitation design was prepared by the Aga Khan Trust for Culture & the World Monuments Fund Mostar Project team in 2001. Currently, the building is under rehabilitation organized by the City of Mostar Project Coordination Unit.

Residental Complex of Bišćević-Lakišić families was built the east river bank of Neretva, hundred meters west from the Karadjozbeg mosque complex. The entire complex developed gradually from the 17th century. The Complex is a relatively unaltered traditional residential complex, notable for its high visibility along the Neretva River.

Substantial masonry walls form the body of the house structure, with timber frame and infill construction used for cantilevered bays and interior partitions. A timber-framed roof is clad with local slate; deeply projecting eaves protect interior spaces from the summer sun. The two levels of open living spaces (the hajat below with tavan above) and a connecting stair provide access to the interior rooms. Those rooms consist of typical Ottoman living and kitchen spaces, including one special reception room on the first floor, the čosak (corner) that projects spectacularly above the Neretva River, supported on two tall masonry piers.

The south component, the family part of the complex, was burned in the 1992-95 war. In 2001, the complex was restored and revitalized as a part of the Aga Khan Trust for Culture & the World Monuments Fund Mostar Project.

THE NATURAL COMPONENTS OF THE OLD CITY

As Mostar possesses a unique townscape, structure and form, the natural parities are one of the most recognizable elements. The terrain morphology represents the crucial element in the city image. The city is defined primarily by the Neretva River that contours the physical structures and street scheme. Its role at the city configuration and development through the history is exceptional and most important. The Radobolja River gives a particular importance with its two main channels and several smaller ones. The intersection of the Neretva and Radobolja with the new open stage auditorium is specifically crucial.

Bašćine gardens are located at the right bank of Neretva, north from Tabhana present the only preserved part of the larger agricultural area, Cernica field, that had been known for a well-developed irrigation system that had utilized the Radobolja river as a source and as a cultural landscape in the very city core.

Kujundžiluk cave represents a real natural geological phenomenon. It takes several thundered meters of active space. In the city history it has served the function of the Ottoman inn, and later on it has served as the storage space of the old brewery and catering structure. During the war days it has served as the shelter to the people.

b) OTHER IMPORTANT PUBLIC BUILDINGS

Tabačica mosque was used predominantly by tanners (Tabačica means “belonging to tanners). According to the historical data was built in the 17th century. It is located about 100 meters west of the Old Bridge in the vicinity of Tabhana (which had been used as Janissary barrack until 1830s, latter transformed into tannery). Before that the tannery was located at the intersection of the Radobolja and the Neretva rivers. The mosque with its style belongs to the architectural group of mosques without stone cupola, with four-eaves roof covered with stone slates, above the wooden ceiling with centered cupola and tall undecorated minaret (26,5 meters). Tabačica mosque differs architecturally in certain details from Mostar’s other mosques. It is distinctive because one branch of the Radobolja River flows under the mosque. Decorative stone elements are in the interior, as well as painted decoration from the 19th century.

The mosque was damaged in the 1992-1995 war. UNESCO completed the restoration of mosque at 2000. The project also included restoration of the smaller shop in a front of the mosque as well as the small building located behind it.

Ćejvan Ćehaja mosque complex is located on the left bank of the Neretva, southeast of the Tara tower, about fifty meters to the east of the Old Bridge in the Velika Tepa (big market). It was built in the period between 1552 and 1553. It represents the oldest existing mosque in Mostar. The mosque with its style belongs to the architectural group of mosques without stone cupola, with four-eaves roof covered with stone slates, above the wooden ceiling with centered cupola. It is known for being the only mosque in Mostar with the minaret on the left side of the structure. In 1895 the Austro-Hungarian Government reconstructed the mosque and the minaret was in a Romanesque style (similar to the Clock tower) and it was replaced with current on (Ottoman style with elements of neoclassic style). The interior was decorated in a pseudo-Moorish style. In 1899 the Medresa belonging to the mosque complex was replaced with a new structure with significantly larger volume with the decorative elements pseudo-Moorish style.

During the 1992-1995 war, the minaret was destroyed above the base. UNESCO completed the reconstruction of the Ćejvan-ćehaja mosque minaret at 1996-1997 in close cooperation with the Institute for Protection of Cultural-Historical and Natural Heritage in Mostar.

Shops in the Kujundziluk. Kujundžiluk as a part of the Mostar čaršija developed on the Neretva left bank, where it occupied the area from above the Tara and Herceguša towers up to the area of Mala Tepa, and it belonged to the area of Lower čaršija. The copper and ironworkers crafts are present in Kujundžiluk, which is the centre of the goldsmiths' trade.

The shops at Kujundžiluk are presented as types of "dukkan" and magaza (shop tower). The structures in the street are mainly restored in 1958. At the same time the three shops on the north end of the street were reconstructed using all the elements of the previously existing identical shops on the main street.

Shops at Kujundžiluk were damaged in the 1992 war. Cultural Heritage without Borders reconstructed the shops in Kujundžiluk at 2001, collaborating with Institute for Protection of Cultural-Historical and Natural Heritage in Mostar.

Kajtaz house. The complex is located in one of the oldest parts of the town, in Bjelušine mahala on the hillside. It exemplified a rich family house of the 18th century. The economic (selamlik) part had full contact with a street, but the family part (haremlik) was isolated with full privacy, and oriented to the large courtyard that connects to a large garden. Position of the building provides a perfect insulation and a view. A specific element of the house plan was a kitchen inside of the building.

The economic part was destroyed in the 1992-95 war, and rebuilt in 1999, unfortunately, without respecting historic values of the complex.

Ćejvanbeg Hamam (Ottoman public bath). The exact date of construction is not known, but according to waqf records it must have been built after 1554. The hamam is located at the west of the Neretva River and north of the Radobolja River. It is assumed that the water for this hamam was drawn from the Radobolja River.

The Hamam lost its dressing hall section, located at the south flank, at an unknown date. The frigidarium section was still intact in 1881 but later lost; during that same period, the three storey Konjhodžića House was connected to the bath and was severely damaged during the hostilities of 1992-1994. The stone-vaulted roof of the tepidarium was lost at an unknown date. The exterior parts were without decoration.

Ćejvanbeg who founded the charitable foundation owned a mosque, 36 shops, han in Kujundžiluk, several bakeries in the bazaar.

After losing its functionality, the bath—restored in 1968—was used as a warehouse. Bath sustained heavy damages before, during, and after the hostilities of 1992-1994. Since 1994, no efforts

towards stabilization or repair have been made; despite its status as one of the oldest Ottoman structures in the historic city.

The Hamam was restored in 2004 by UNESCO with a grant of French government, and today has public use as an exhibition space.

Ćorovića house built in 1874 in the 19th century eclectic style highly influenced by Dalmatian precedents. The house commands M. Tito Street with the delicate authority of a Venetian Palace. It was built in a transitional moment between Ottoman and Austro-Hungarian rule when Mostar had an independent and pluralist identity. It bears witness to the divergent styles and tastes that coexisted in Mostar at the time. It is pleasing to note in this chronology that such a small city, by virtue of its diversity, could produce at once a monumental Ottoman house and an airy Adriatic Palace with equal enthusiasm. Its front façade addresses the important commercial street, while from behind the house is one of the few in Mostar with a terrace that is open to the river.

The Poet's House is nicknamed after its most famous tenant, Mostarian poet Alexa Šantić, who spent his last years in the house, and after his death it was transformed into a museum containing his manuscripts and books from his personal library.

The house was heavily damaged in the 1992-1995 war. Using Swiss fund the building is restored in June 2000, and today is in function of the cultural center of Serbian society "Prosveta".

The Girls' High School is one of the best examples of Neo-Classical Architecture from the Austro-Hungarian period in Mostar. It was constructed between 1893 and 1901. Like a Renaissance Palace, it presents a massive, opaque façade to the Main Street (western elevation), but the second wing of its L-shaped configuration northern elevation follows a perpendicular, ascending alleyway Kalhanska Street, enclosing a courtyard between the two wings. An ashlars ground floor with arched openings and large cut stones distinguishes the commercial spaces of the street level from the classrooms of the upper levels with their painted stucco walls. The classicizing ornament in the corbel volutes and deep cornices over the second story windows continue the Neo-classical theme, so that the dignity, historical authority, and official nature of the building are maintained.

The complex was heavily damaged in the 1992-1995 war. The Aga Khan Trust prepared complete rehabilitation design for Culture & the World Monuments Fund Mostar Project team in 2001.

The Municipality Building was built in 1900, designed by Josip Vancaš with its monumental mass and rusticated ground floor, is Mostar's prime example of Neo-Classical architecture. In 1896, the Dzinović Han—an Ottoman caravanserai—burned, providing an enlarged lot for the projected Municipality Building. When the building was designed, the opportunity was taken to re-plan its immediate urban context, by widening the surrounding streets. Its blocky proportions and imposing scale, together with a ground floor that suggested the rougher masonry of the first floors of palaces like the Palazzo Medici, were linked to Italian Renaissance examples. This style came to Mostar from Northern Europe, a fact that can be discerned in its central block, which lifts higher than its wings, and from the high pitched roof, all of which suggest northern European, rather than Italian, prototypes.

The Neo-classical style became, both for the Austro-Hungarian authorities and for the Municipality of Mostar, emblematic of a progressive, bourgeois Mostar. It was the public face of the new infrastructural and city planning innovations, and it introduced what would be the dominant style of Mostar's government buildings of the period. The solid massing suggested prosperity that associated this style with the influx of new capital and development in the city.

The building was heavily damaged in the 1992-1995 war. The Aga Khan Trust prepared complete rehabilitation design for Culture & the World Monuments Fund Mostar Project team in 2001.

The Konak housing building was constructed at the beginning of the 20th century for the Dokić family as an apartment house with rental units and a large shop at street level. This imposing masonry building combines apartments with large ordered windows and a massive commercial ground floor.

The commercial space pushes up against the street wall of M. Tito Street in Mostar, while the residential floors are set back protecting the spaces within from the noise and animation of the street, and affording them air and light. The articulation of the building fits squarely within Mostar's Neo-classical tradition, and places it with the large number of buildings constructed with the influx of capital and investment that accompanied Austro-Hungarian authority. There is no known prototype in Mostar for the enormous setback of the residential floors.

The building was heavily damaged in the 1992-1995 war. The Aga Khan Trust prepared complete rehabilitation design for Culture & the World Monuments Fund Mostar Project team in 2001.

Landbank built in 1910 in the Main Street, designed by Josip Vancaš, who was had reached perfection in a style of historicism in his numerous achievements, was very quickly accepting all the new movements in Vienna: elements of art nouveau and Secessionist styles begin to penetrate the austere historicism of earlier decades. The bank represented a lively tension between its solid, classical design and its elegant, impertinent ornamentation.

Following economic and political changes, buildings and urban fabric was transforming progressively through four decades of the Austro-Hungarian rule. New economy was asking for another planning policy, developed infrastructure and new land policy. New administration was using architecture as an important tool for reshaping of the Bosnian society ant its integration in the Austro-Hungarian state.

The building was heavily damaged in the 1992-1995 war. The Aga Khan Trust prepared complete rehabilitation design for Culture & the World Monuments Fund Mostar Project team in 2001.

The Waqf Palace built 1894, designed by Hans Nimeczek. This unique and important building was extraordinary for its conflation of the two predominant styles of the Austro-Hungarian period in Mostar. On first glance, it is the kind of large, masonry building divided into three blocks and three floors that recalls the massing of the Neo-classical style. Its ground floor is constructed of rusticated masonry and its rectangular windows are aligned in the manner of the Municipality Building, but a closer look reveals an ornamental scheme not rigorously classical. Applied to this palace body are ornamental motifs taken from Spanish Islamic, Moroccan and Mamluk architecture. The street façade of the palace includes twin horseshoe arches inscribed in a single blind arch (Spanish Islamic) and arcuated lintels fit together in a puzzle like design masonry, recalling Umayyad Cordoba and subsequent Moroccan uses of this motif. At the corners, insert columns, and in the side street walls, terra-cotta courses and planar reveals all imitate motifs common in Mamluk ashlars design. In an inventive creation of the Secessionist influenced architect, terra-cotta roundels with complex geometric designs combined this interest in North African Islamic design with the contemporary Viennese interest in craft-materials. Even the original balconies, which were executed by local craftsmen according to a long tradition, included ornamental motifs that related more closely to the Moroccan tradition than to Bosnian wood decoration, as well as certain details common to the Austrian tradition.

The building was destroyed in the 1992-95 war. In January 2005 City of Mostar Project Coordination Unit (PCU) based on design by the Aga Khan Trust for Culture & the World Monuments Fund completed restoration of the building without interior.

Additional information is provided in Appendix 3.a.

3. b. History and Development of Mostar

SHORT HISTORY OF MOSTAR

Mostar before Ottomans. Traces of the prehistoric era and the Roman days, discovered at more than one locality (Cim, Crkvine), provide evidence that the valley of Mostar has been inhabited since very ancient times, and inhabited in continuity. An old settlement in the immediate vicinity of Mostar - the Old Fort at Blagaj - developed from a Roman settlement, mentioned in 200AD, forty kilometers north from Narona, into an important medieval town. It became home to Stjepan Vukčić – Kosača in 1435, the Duke of Hum and the ruler of the region, who used title Herzeg from 1448 on, and gave Herzegovina its name.

A document written in 1440 refers to a fort next to the bridge on the Neretva River, associated with the name of Gost Radivoje, who was a member of Stjepan Vukčić's suite. Probably, this document confers the first historic reference about the locality of present-day Mostar.
In 1444 a fortress Nebojša (Civitate Neboysse) on the east side of the Neretva River (probably area of today Tara tower with its surrounding), in the district Večerić (Večenike) was mentioned.

A historic record, dated July 3, 1452, is a letter written by two Dubrovnik merchants informing their compatriots who were in the service of the Serbian king Djuradj Branković. The letter states that Vladislav Hercegović had fled from his father Herzeg Stjepan and conquered, among others, the bridge with adjoining forts on the Neretva River.

Mostar during the Ottoman time. From the mid 15th until the end of 19th century Bosnia and Herzegovina was part of the Ottoman State. Although it had much in common with other regions in the empire, its religious and cultural plurality, tolerance, patriotism and influence at the imperial court in Istanbul additionally distinguished it from the others.

Mosques, churches, and synagogues existed side by side, signifying that in Bosnia Catholic Croatians with their Western European culture, Eastern Orthodox Serbs with their elements of Byzantine culture, and Sephardic Jews who came to Bosnia after their expulsion from Spain in 1492 continued to live together with Bosnian Muslims for the more than four centuries.

Throughout the Ottoman period, justice and tolerance prevailed within this religiously complex community in which people of different faiths were often close relatives. The Ottomans tolerance towards various Christian denominations all through their four centuries long rule was based on the imperial decree (ahitname) issued to Franciscans by Sultan Mehmed the Second immediately after his army occupied Bosnia in 1463. Religious differences did not become grounds for political manipulation until much later times.

Architecture, as an integral part of the social and cultural life, was rich of the intermingling of pre-Ottoman, Ottoman-Islamic, Christian and Mediterranean influences.

A small group of architectural creations with monumental characteristics were built following a pattern developed and standardized in Istanbul and several other centers. A much larger group consisting of shop in the bazaar, the mosques in mahalas, and private houses shared the basic characteristics produced by specific environmental and cultural factors.

During the nineteenth century, the process of economic and social transformation has introduced in Bosnia and Herzegovina, which dethroned agricultural society, as it had existed for thousands of years, and replaced it with the urban, industrialized, technocratic society, which spreads for good or for ill-like wildfire through the world today.

New technology improved methods of industrial and agricultural production, supported by efficient communications, provided food for expanding population.

By the beginning of the nineteenth century, Bosnia was one of the least developed and most autonomous provinces of the Ottoman Empire, an extreme example of the effects of two centuries of administrative decay and decentralization of the Ottoman province.

Long before the Austro-Hungarian’s arrival in 1878, Bosnia and Herzegovina was in its economic sphere.

Congress of Berlin in 1878 secured the independence of Greece, Bulgaria, Montenegro, Serbia and Romania, and yielded Bosnia under Austro-Hungarian administration. Reforms that started in 1807 didn't generate the expected success in state organization and economy. The combination of the lower level technology, education and internal taxation made industrialization impossible. The finances of the Empire rapidly deteriorated until 1875, when the state virtually bankrupt.

Mostar in the Austro-Hungarian time. The Austro-Hungarian annexation of Bosnia was a reaction to a change of the relations between Russia and Ottoman State in Bulgaria, in order to prevent the formation of a larger South Slav state. Bosnia became Crown Land, ruled by the Austro-Hungarian Monarchy through the authority of the Joint Imperial Finance Ministry. That control was formally limited to certain extend until the annexation in 1908.

The new government requested to foster economic development by improving transportation, expanding exploitation of natural resources, and encouraging industrial development as the best guarantee for continued control of the area and for the future expansion. Expensive administration, around 10,000 officials, represented a new social group - the Austro-Hungarian bureaucrat, affected the economic growth.

Austro-Hungarians at first favored the idea of eventual Bosnian nationhood, as a strong defense against Serbian and Croatian nationalist movements, and their desire to absorb territory Bosnia and Herzegovina into Serbia or Croatia. Nevertheless, growing nationalist movements in Serbia and Croatia, which hoped to gain enough power to defy Austro-Hungarian domination--attempted to draw Bosnian Catholic and Orthodox citizens into their respective camps with claims that Bosnians-including Bosnian Muslims, were actually either Croatian or Serbian.

The colonizers, however, were extremely careful to maintain equilibrium among the groups, guaranteeing religious freedom and shielding less empowered groups from abuses.

By April 22, 1895 there were 17,010 residents in Mostar: 6,946 Muslims, 3,877 Orthodox Christians, 3,353 Catholics, and 164 Jews. At that time, foreign investors, and Austro-Hungarian bureaucrats constituted one tenth of the population.

The shot that killed Hapsburg heir Archduke Franz Ferdinand in Sarajevo on June 28, 1914 by Serbian nationalists became the opening salvo of World War I.

Mostar from WW I to WW II. One of the main political results of the WWI was dismantlement of the Austro-Hungarian state and establishment of the "Kingdom of Serbs, Croats, and Slovenes" including Bosnia and Herzegovina on December 1, 1918.

By 1941 these issues were overshadowed by the advances of Hitler's army. Bosnia and Herzegovina was folded into the "Independent State of Croatia" (NDH) and the entire country was ceded to the Croats in return for several sections of the Croatian coastline carved out by Italian fascists.

By the second half of 1941, a new resistance group oriented towards a socialist ideology-the Partisans-became main antifascist's power who was leading to a final victory together with world wide antifascist's alliance. In 1945, Bosnia and Herzegovina was under Partisan control, and a "Bosnian People's Government" was established in April the same year.

Mostar in SFR Yugoslavia. There were a number of rewritings of its constitution over 34 years; the last of these, in 1974, defined a Federative Socialist Republic of Yugoslavia with an assembly composed of Federal Council and Council of Republics and Provinces, one of which was Bosnia and Herzegovina. Starting from 1963, Bosnian constitution refers to "Serbs, Croats and Muslims allied in the past by a common life."

In Mostar, the socialist era boosted development of the city's industrial base. A metal working factory that served military contracts was constructed, introducing skilled metal workers to the

employment market. Cotton textile mills offered employment to a wide sector of the city's women of all ethnic backgrounds, and in the 1970's an aluminum plant south of Mostar's center further encouraged the immigration of rural residents into the city. At the end of World War II, Mostar was a city of 18,000 people and by 1980 there were close to 100,000.

Against serious backdrop, paths towards a healthier national economy were evident. During the 1960s and 1970s, a building boom fueled by foreign investment spread from the Dalmatian coast to Mostar, where a modest surge in tourism had linked Bosnian history to the city's historical monuments. Young professionals with an expansive vision of economy and development were beginning to restore the city. They devised a plan for the reconstruction of Mostar that was erudite and economically self-sustaining.

In the 1970s and 1980s, a healthy local economy fueled by foreign investment spurred recognition and conservation of the city's rich cultural heritage. An economically sustainable plan to preserve and reconstruct the old city of Mostar was implemented by the municipality, which drew thousands of tourists from the Adriatic coast and invigorated the economy of the city; the results of this ten-year project on preservation of the Old City of Mostar earned the prestigious Aga Khan Award for Architecture in 1986.

Mostar 1990-1996. By 1989, the collapse of Communism in Eastern Europe and the slackening of East-West tensions prefigured the dismemberment of Yugoslavia. In Serbia, ultra-nationalists nurtured and harnessed fascist's rhetoric included the rekindled notion of a greater Serbia which carried a rump Yugoslavia to war with breakaway republics: first Slovenia, then Croatia, and lastly Bosnia and Herzegovina.

In 1990, after a first democratic election in Bosnia and Herzegovina, a government was formed that included participation of Muslim, Bosnian-Croat and Bosnian-Serb parties. After Croatia declared independence bypassing lawful remedies, the Serbian army began to seize Croatian territory on the premise that minority-Serbians were imperiled. The Serbian state-run media had created the climate of paranoia that forged popular support for his largely military ambitions.

A same scenario was repeated in Slovenia, Yugoslav tanks under the command of Serbs general entered Slovenian territory. With the appearance of 5,000 Yugoslav troops in September 1991, the Serbian Democratic Party (SDS) began "the military phase of their carve-up of Bosnia and Herzegovina."

After American-UN representatives negotiated the peace plan between Croatia and Serbia in January of 1992, Yugoslav army forces under Serbian command were transferred quietly from Croatia to Bosnia and Herzegovina.

On March 1, 1992, 64 percent of the Bosnian electorate voted in response to a simple question: "Are you in favor of a sovereign and independent Bosnia and Herzegovina, a state of equal citizens and nations of Muslims, Serbs, Croats and others who live in it?" The overwhelming answer to this question was "Yes."

During the same period, Bosnian Serbs military and paramilitary forces pursued a campaign of terror and ethnic cleansing in Bosnia and Herzegovina. Mostar was overwhelmed by Serbian military units, and shelled from the surrounding hills during May and June of 1992. The industrial capacity of the city was mugged or destroyed while historic and sacred structures were targeted by artillery units encamped on the surrounding hills. Many important buildings especially in the historic area city were heavily damaged. Even the Old Bridge was bombed.

A Croat-Bosnian Federation was able to expel Serbian forces by June 1992. Shortly thereafter, local Bosniaks and Croatians became adversaries due to competing territorial ambitions and ongoing political instability. On November 9, 1993, the bridge's spring line was hit at point blank range by the Croatian Council of Defense (HVO) tank attacks, and Mostar's 400 year-old icons fell into the cold Neretva River, provoking deep sadness for citizens throughout the city for whom the Bridge had represented everything stable and sacrosanct.

Governments of Bosnia and Herzegovina and Croatia signed a Federation Agreement on 18 March 1994, which provided for an interim administration by the European Community in Mostar, a city still coveted by both Bosnians and Bosnian Croats.

NATO's intervention in the region began with the signing of a "General Framework Agreement for Peace in Bosnia and Herzegovina" on 21 November 1995 in Dayton, Ohio. Delineating a Bosnian-Croat Federation covering 51% of Bosnia's territory and Republika Srpska covering 49%, this agreement led to increased stability in Mostar. By June of 1996 local residents of all backgrounds and absent refugees were able to participate in elections for a unified municipal government in Mostar.

Mostar 1996-2004. This period was characterized with a slowly growing local economy and a joint administration, in which Muslim and Croat elected officials alternate in the post of Mayor and deputy Mayor. Moderate and centrist politicians have forwarded a conciliatory political agenda with increasing success on the west bank.

As wartime tensions slowly fade, energies are poured into new commercial and civic projects including the reconstruction of damaged historic architecture. Private sector initiatives to underwrite the reconstruction and revitalization of individual buildings, like the Pavarotti Center Music School, have infused hope in the city.

The steady normalization of political and economic affairs makes investment in physical reconstruction prudent and timely, since high-profile improvements have a positive and lasting impact on local morale.

Beginning in 1996, cooperation of the local government in Mostar, with the local Institute for the Protection of Monuments, the "Stari Mostar" Foundation, the World Bank, UNESCO, the Research Centre for Islamic History, Art and Culture (IRCICA) Istanbul, the Aga Khan Trust for Culture, the World Monuments Fund, universities worldwide, and many other professional partners have generated a reliable professional network and a sound agenda for revitalization of the historic core.

URBAN AND ARCHITECTURAL DEVELOPMENT OF MOSTAR

1463-1878: Formation and Development of the Ottoman Islamic Town

In 1468 the Ottomans took Blagaj and, most likely, the fortresses close to the nearby bridge over the Neretva. The small settlement around the bridge received its name from its keepers, because *mostar*, in fact, means 'bridge keeper'. This settlement with 19 houses located between the bridge fortification and Mejdan, was first referred to as "Mostar" in 1474, when it was described as the seat of the Ottomans *subaša* (police superintendent). Based on the same source, a register of real estates, (see: Aličić 201,438) in the same time, in today's central urban area inhabited several locations: Cim (50 houses), Zahum (1), Zalik (9), and Donji Suhodol (11).

Due to the strategic importance of this crossing over the Neretva, the insecure suspended bridge was replaced with a new timbered one in the period of Mehmed Fatih's rule, before 1481.

Since the main road from Bosnia and Herzegovina towards the Adriatic coast used this crossing over the Neretva, the bridge brought about a rapid expansion of the city and a concomitant development of crafts and trade.

The city also became the center of culture and education in this part of the Ottoman Empire. It was rounded off as a completed urban entity in about 1670, and did not change significantly until 1878, the year of the Austro-Hungarian occupation.

The reign of Suleiman II the Magnificent (1520-1566) signified the greatest rise and prosperity for the Ottoman Empire. In that period, huge wealth flowed into Istanbul, bringing unprecedented economic and social progress. The Sultan's aspirations after the glory of the antique world supported cultural development, especially the art and architecture of Islam.

Numerous structures of extraordinary beauty were built in this period: mosques, bridges, and hamams. In addition, the Ottoman architecture established certain spatial, constructional and decorative systems, based on its own aesthetic principles.

During this period the most important architectural monuments of Mostar came into being: the Stari Most (Old Bridge), the large Karadjozbeg and the Vučjaković mosques together with some smaller ones, schools, hamams, and a large number of other public buildings and housing structures.

Mostar's favorable geographic location caused it to be considered one of the most important commercial centers of the area with widely developed connections to other centers. This factor stimulated the development of craftsmanship, which thrived in more than 30 different crafts.

The city was at its peak in the late 17th century; its population reached 10 000, it boasted over 30 mosques, seven medresas and several mektebs, two hamams, and a number of other important public facilities.

The city became the seat of the *muftija* (supreme religious leader of the area) from mid-17th century. Almost all the trade and crafts were in the hands of Moslems in the 16th and 17th century.

Christians (Orthodox and Catholic) have always lived in the city side by side with Muslims. The first record of Christian population in Mostar dates back to 1575 (see: Čorović, p.16). Mostar became the seat of the Metropolitan (head of an ecclesiastical province) in 1767.

Catholics built their first church in 1847 along with the Bishop's residence at Vukodol. A cathedral was built at Podhum in 1866 to meet the needs of the increasing Catholic population.

Urban development. The foregoing outline of the historical development of Mostar during the time of the Ottoman Empire is meant to serve as a typical example of the transformation of an urban environment in Bosnia and Herzegovina from a medieval settlement to an important Ottoman-style town. A medieval fortress developed, probably during 14 and 15th centuries, on the east side of the Neretva River aiming to protect an important crossing. From the opposite side of the river was only a tower. The Ottomans considered the medieval fortress next to the bridge as the central point of the communication system for this region. The fortress also became the nucleus around which the city developed very rapidly.

The Old Bridge. The suspended bridge was replaced by a more solid, wooden structure before 1481, but only the stone bridge completed in 1566 was able to withstand the intense military and commercial traffic over it. The bridge was built most probably within a period of two years designed by Mimar Hajrudin with the money collected in Herzegovinian counties (*kadiluk*). The adjacent towers of Tara and Halebija were rebuilt during the construction of the stone bridge.

The bridge has been an object of admiration by people coming from both East and West: the poet and statesman Derviš-Paša Bajezidagić (16th century) compared it to a rainbow, geographer Hadzi-Kalfa said that its vault "will astonish all masters of the world", Evli Çelebi, the famous Ottoman travel-writer said that he "has crossed sixteen empires and has not seen such a high bridge"; the French traveler A. Poulet wrote in 1658 that this bridge is "more courageous and more impressive than the Rialto in Venice".

Town fortification. The towers, which were linked by the walls, protected the entire communication that leads to the Old Bridge. This system of towers and gates constructed a genuine fortress next to the bridge itself. Initial fortification structures were Towers (today known as Tara and Halebija) built before the suspended bridge.

The second fortification line encircled the bazaar. As the bazaar considerably enlarged and the town fortification system expanded and reinforced several times during the wars with Venice, and especially after the armistice at Karlovci.

The main bastion (*tabija*) of the town walls was situated east from the bridge, at Suhodolina, and dominated the city, with the commanders' residence located nearby. On the west side, the main component of the fortification, the janissary barrack, was located next to the Halebija tower.

The third component of the defense of the town was a web of walls of the housing complexes.

Bazaar – čaršija. The bazaar in Mostar was formed on both sides of the Old Bridge complex. On the east side of the Neretva River the gates enclosed the bazaar between the fortress and Suhodolina (a natural dry channel, very often during a winter transformed into a river). On the left bank, the bazaar

extended from behind the Halebija tower in the south to the clock tower in the east and to Sinan Pašina Mosque in the north.

The part along the river between fortress and the small tower on Suhodolina is called Kujundžiluk - a street with goldsmiths' shops. In the continuation of this street stands the Mala Tepa (*mala* means a small in Bosnian language and *tepa* means a hill in Turkish language) in the vicinity of the Koski Mehmed Paša Mosque, and above both streets was "upper" bazaar on the main road called Velika Tepa (velika means big in Bosnian language). Above the Velika Tepa, a part of the bazaar called Kazazi was located around Sahat kule (Clock tower).

A part of bazaar on the west bank of the Neretva River, called the Priječka čaršija (*a bazaar from the other side*), extends between the Old Bridge, Janissary Barrack (later transformed in a tannery-Tabhana) and Kriva Čuprija bridge. In addition, in this area contains a row of crucial watermills.

The bazaar in Mostar became particularly important during the construction of the Old Bridge, when only three donors; Hadži Mehmedbeg-Karadjozbeg, Čejvan-ćehaja, and Nasuh-Aga Vučijaković encompassed shops and many other facilities built there between 1550 and 1570. Their donations upgraded mosques, hamams, mektebs, medresas, imarets, shops, warehouses, watermills, as well as water supplying facilities.

There were 30 different guilds in Mostar. In 1875 these 11 crafts comprised 122 shops with 199 master-craftsmen and 563 workmen. After supplying water for many gardens and the inhabitants of the west bank of the Neretva, the Radobolja River ramified into several streams, flowing through the bazaar. Radobolja contrasts Neretva by offering more possibilities for human use. At a very early stage of the development of the city, a large-scale system of canals was constructed in residential areas on the west bank of the Neretva for irrigation of gardens and for household needs.

In the past Radobolja provided power for the numerous mills. The final number of mills in the bazaar area was 19, thus playing an important role for the city's economy. The water from the canals was also used by craftsmen, producers of blankets, tanners, and others. A watermill was particularly precious at the time, with leasehold on it cost more than on a shop, a hamam, or a house with a garden.

All the business activities in the bazaar (outside the public facilities) were carried out in two types of structures: shops and storehouses.

Mosques, inns, and public baths dominated the bazaar together with the Stari Most and its fortifications. Those structures built of a higher quality cut stone on a considerably larger scale, and separated from rows of shops, were placed freely on the ground. This entire body of structures added to a harmonious composition of an outstandingly urban character. Those who worked in the bazaar prayed in Bazaar's mosques during the day. All the inhabitants of the city utilized the hamams. Three hamams functioned in the town, one near the tannery, another close to the Sinan Paša Mosque at Mejdan, and third next to the Musala square.

Han, a large inn, where travelers could stay overnight, sustained a significant role in the life of bazaar. It is very interesting to note that a major portion of the trade belonged to the merchants of Orthodox faith from the middle of the 19th century onward. Orthodox merchants lived in several mahalas, especially at Bjelušine in houses that were slightly different from those of the Muslims of together with Muslims, while sharing the same economic class with them. They lived and worked in the bazaar with almost identical life-styles.

Mahalas. Residential micro regions (mahalas) formed traditional neighborhoods and such were traced in the entire Ottoman Empire. They established residential areas, having their own mosques, shops, schools, and other facilities needed in daily life. Every mahala embodied its own communal spirit and mutual-aid system, which contributed to the identity of each mahala and to a high degree of social cohesion.

It should be emphasized that religious or ethnical division did not exist in mahala's organization. Housing areas-mahalas, situated outside and (often) around the market, are connected to it by a network of generally narrow streets. Mostar had a clearly differentiated urban scheme that was taken over from the East. As a result, the housing area was clearly separated from the business section of the town.

In Mostar, housing areas were rather freely constructed outside the city walls for a long period of time. They differed from those near the bazaar close to the Old Bridge, which were more compact and orderly. The first mahala originated in the vicinity of the Old Bridge, with the Mejdan square as its center, where the provincial governor Sinan Paša built a mosque in 1474.

The water supply system had key importance for the housing development. Most probably the first one was built in the 15th century and was used originally for supplying water from the Neretva to the hamam at Mejdan. That system tapped Radobolja. The water pipes were installed across the Old Bridge on the Neretva during the actual building of the bridge.

Religious Complexes. The nucleus of a typical Ottoman town or settlement is the religious complex (mosque) with accompanying buildings, which provides the cultural, social, and judicial needs of the inhabitants. Mahalas grew around these complexes, their size being largely determined by the service capacity offered by the complex itself. Thus, a single place of worship did not dominate the Otttoman town, as it had occurred in medieval Europe.

The mosques were places where people of a neighborhood gathered, and therefore indicated both social and spiritual centers of the mahalas. A mosque has a threefold purpose: socio-religious, educational, and political.

The Karadjozbeg, the Vučjaković and Koski Mehmed Paša mosques built in Mostar between 1518 and 1618, and together with the Ali Paša mosque in Sarajevo and Aladja Mosque in Foča represented the best achievement of this type in Bosnia and Herzegovina.

Graveyards occupied almost all empty spaces in the city giving it a special visual dimension - snow-white tombstones scattered over a green patch.

The Orthodox population had their own church probably in the 18th century, which was replaced in 1833 with the one devoted to the Birth of Virgin, and built in Suhodolina. This building was the initial structure for development of the Orthodox community center. The cemetery developed east and south of the church. A primary school was built next to the church in 1856. Lastly, another Eastern Orthodox Church devoted to the Holy Trinity was built in 1873, taking place west from the school. The new Cathedral church Holy Trinity, built between 1863 and 1873, dominated the town view.

Catholic population had settled in pre-Ottoman Mostar in several locations. However, there is no evidence of their presumably existing churches. The first known church was built in 1847 along with the Bishop's residence at the Vukodol suburban area.

The St. Peter and Paul church was built at Podhum in 1866 to meet the needs of the increasing Catholic population. The church was constructed in neoclassical style; a basilica with tower apse plan.

Housing. Thirty to fifty houses in a group formed one mahala. They were plain on the street level but rich and expressive inside. Each house was carefully sited to catch a view of a cypress or a minaret from second story windows and each was legally obliged not to block the views of a neighbor. The street level entry would access the courtyard, creating a transition that allowed for intimacy and privacy within; rooms dedicated to family life were separated from those intended to receive outsiders.

A house was a dwelling complex composed of three parts: the house *per se*, the courtyard (avliya), with a kitchen a wood-shed, a toilet, a stable, a pantry, a drinking fountain, a pergola, and often a flower garden; and a vegetable and fruit garden, with a lawn, a small pavilion, and, possibly, running water.

MOSTAR 1878-1914: Transition from Islamic to European Architectural Models

In Mostar with the change of government in August 1878 a lively program of urban development was introduced. The city was infused with a significant amount of capital, and the city council began to implement broad reforms in city planning. The new government saw the city's past and present on the west bank of the Neretva River and its future on the west bank.

Consequently, broad avenues and an urban grid appeared on the West Bank of the Neretva, and significant investment was made in infrastructure, communications, and rental housing. Real Estate speculation began, a process, which would benefit some sectors of society and victimize others.

Such intensive growth posed new communal problems for the city government as well. During the early years of the Austro-Hungarian administration, the construction of new water pipes, modern city sewage (emptying into the Neretva), an electrical power line-network, and street illumination were all accomplished in a relatively short period of time.

Number and structure of population was changing rapidly. In 1885 Mostar had 1,975 houses, 2,104 dwelling units occupied by 12,665 inhabitants, of whom 6,442 were men and 6,223 women. There were 6,825 Muslims, 3,369 Orthodox and 2,359 Catholics, 98 Jews, and 17 followers of other religions (see: Karlo Peez: *Mostar und seine Kulturkreis*, Leipzg 1891).

Town development. Austro-Hungarians did not find an Ottoman city in Mostar; instead they discovered a Bosnian city which had been largely governing itself, and developing a separate, independent culture for centuries already. Nevertheless, they found a city, which belonged to the Ottomans in spirit; a city composed of elegant, two-and three-story structures, intimate mahalas of winding streets and shaded neighborhood squares near mosques.

While keeping as many of the existing administrative structures as possible, the Austro-Hungarians would use new city planning strategies much as the Ottomans had used the *Waqf* system: both to make a mark in Mostar and to control development, while giving benevolent and constructive meanings to these architectural symbols of their political domination. Before long, the character of Mostar's city fabric was transformed.

Massive, European-style blocks of four and five-story buildings pushed against the street walls of major commercial arteries, making centers monumental, aligned, and symmetrical where before they had been intimate and delicately varied.

The Old City was changed slowly: existing modest structures were replaced with new massive blocks that defined wide avenues, in place of intimate, winding neighborhood streets.

The transformations were initiated immediately after the change of government in 1878, and they were coordinated through the Mostar city council.

As in Ottoman times, when we speak about the aspirations of the Austro-Hungarian government, it is important to note that these artistic and planning goals were shared and executed by city leaders. A central figure in speaking of the development of the city is Mustafa-Mujaga Komadina, a member of the Mostar city council (1893-97, 1900-1909) and the mayor of Mostar from 1909 until the end of Austro-Hungarian rule in 1918.

The new government saw the city's past and present on the east bank and its future on the west bank of the Neretva. The new Austro-Hungarian bureaucracy and the indigenous bourgeois required housing, and a demand were thus created for European-style apartment blocks. A new type of dwelling -- rental housing-- created a new business -- real-estate speculation, and the changed character of housing created a new class -- real-estate owners, the urban equivalent to the agricultural landowners who had until now dominated Mostar's leadership. They were not only a new social category -- urban landlords--but also the most important capital owners and financiers in late 19th century Mostar.

The completion of a survey in 1881 established a base for future planning and construction

activities in Mostar. The aim of this planning was to form a new transportation network on the west bank of Neretva River that would enable continual economic growth. The construction of new bridges was the most important aspect of this plan and the banks of the river were crossed by three new bridges: Czar Franz Joseph Bridge (1882), the Mujaga Komadina bridge (June, 1913), and the Carina Bridge (March, 1918), two hundred meters to the south from Stari Most.

Intervention in the existing urban area. Urban development of Mostar during four decades period (1878-1918) can be shared in two main groups, first, intervention in the existing urban fabric, and, second, new development northwest from the urban area concentrated around the newly established railroad station, and south between Luka mahala and the south military campus.

In the Historic part of the city the following buildings were built: the building for rent (replaced the Djinovića han in 1899) first used as a military headquarters, Municipality building, the Girl's school complex (built after the Kalhana han was destroyed in 1893), new religious school-Mekteb, along with the reconstruction of Čejvan ćehaja mosque (1899), variety of houses and business buildings, Luka school (1908), a tobacco factory (1880-1885), the Serbs primary school (1909), the Lands Bank (1910). Above the Main Street important structures were erected: the Military headquarters at Konak (which replaced the existing Ottoman one) and the Orthodox Metropolitan Palace (1910) and school at the foot of Church complex, Vakuf palace (1894), the County government (1894), Officers and County, Sibijan mekteb in the Bašćine area a small electrical plant, built in 1912.

A new city center was built along the western border of the Ottoman town, at the Cernica field. The railroad link Sarajevo-Metković built on this edge became the hub for intensive construction activities: buildings related to the railroad, workshops, public buildings, schools, and large number of luxury houses.

Austro-Hungarian relation to Ottoman urban structures. The Ottoman structures went under permanent transformation during forty years of Austro-Hungarian presence in Mostar. A description made by Robert Michel, in his book "Mostar" published in 1909, provides an interesting observation. According to him the warmth of Mostar is a key to the mysteries of the East. The city is at harmony with its ambiance - a gray, lifeless rock, while Islam provides the other mark.

A picturesque picture of a feudal town, where an architectural hierarchy formed a holistic and logical entity, an easily apprehensible image of inner interrelations, was quickly brought down by the vast changes within the entire concept of the city. These changes even though they were visible and impostures did not damage an apprehension to the city's continuity as opposed to the architectural creation, where the idea of continuity was embraced only at the end of this period (1910), which remained within theoretical realm as a question of the use of style. It is clear that in this way the architecture was unbound from its traditional ways of building. The picture of the city center changes dramatically, with small efforts to preserve some traditional elements.

Characteristics of the Austro-Hungarian Architecture in Mostar. The first half of the 19th century in Europe had been a time of exploration of historical architectural styles. At first Classical and Gothic revivals dominated the field, but by mid-century, architects in Europe began to look to Renaissance palaces as prototypes for the stately urban buildings they were increasingly asked to design. It lent itself well to the urban requirements of the new 19th century cities, and its ornamentation was more plastic and versatile than other historical styles.

Mostar's historicist architecture coincided with the forward-looking ideology of its city planning. New developed area of the city on Westward became a landscape of Renaissance palaces and villas, one of two architectural currents that converged in Mostar during the Austro-Hungarian period.

We have seen that historicist statements were being made in Bosnia and Herzegovina even before the onset of Austro-Hungarian hegemony, with the designs for Mostar's Catholic and Orthodox churches; but after the change in government, Neo-Classical styles became the prominent modes of expression in Mostar's development.

The following buildings represent this historic period: The Vakuf Palace built in 1894 in the Orientalist architectural style, The Girls' High School (1901), The Metropolitan Palace (1910), the Municipality Building (1900) and The Konak housing building (1900), all in Neo-classical styles, and Landbank (1910) in style of Secession.

Mostar 1918-1945: Stagnation

In the period between the two World Wars Mostar didn't expend, thus it remained stagnant inside the borders that had been defined by the Austro-Hungarian occupation.

Right before the Second World War, Mostar had a population reaching 20,000 people, including the suburban area.

On October 27, 1940, the first aerial recording of Mostar was accomplished, making an important base for geodetic mapping of the town.

During the Second World War, besides the huge amount of human loss a number of housing blocks were ruined in the shelling. It is especially important to mention that Partisans had prevented the destruction of the bridges, planned by the enemy forces during their withdrawal from the city.

Mostar 1945 – 1992: Fast Development

In the period after the Second World War, the time of early socialist economic development, rapid population increase and strong residential and public construction characterize the development of Mostar. To establish the expansion of the city, free posts on the west bank of the Neretva were utilized, thus continuing from where they halted before the First World War, and filling the free surfaces, mainly gardens, of the existing urban structure. At this stage Mostar contains three urban components: the historical city core, its contact zones and a housing project, mainly dorms.

The realizations that mainly influenced the organization and the picture of Mostar in that time period were — the construction of new railways (with the required objects) next to the Stolac Hill — contouring of the industrial zone outside the city valley. The following events created a negative impact; illegal constructions, building of the shopping center "Razvitak", and slow development of the existing city street network.

After the Second World War, the city of Mostar organized urban planning activities in three steps: local legal assembly, institution for planning and the state administration that approves and controls.

The main problems of the urban planning of 1990s were insufficient materials and important moves, superficial agreements about life, vital decisions and tardiness in decision making, rambled organization, mistakes in planning, and uncontrolled spatial activity.

Industrial capacities. To attain a total construction of the city, naturally, a strong agricultural development became the most influential means. The most important structures were located in the southern industrial zone: Agricultural Metal industry "Soko" and Alumina Plant (1969). Subsequently another industrial complex existed in the north of the city (The Cotton Factory, and a compressor factory). In the same area are three hydro-electric power plants on Neretva (HE "Mostar", HE "Grabovica" and HE "Salakovac") significantly influenced the future development of the city.

The contemporary architectural concept became a general approach for the industrial structures, which were preconditioned with the contemporary technology during their construction. Steel and concrete structures of wide ranges were implemented with the help of modern building technology.

Infrastructure of the city. The most important intervention in the city was the replacement of the railroads and the station to a different location; thus the construction of new and electric railroad Sarajevo-Ploče in 1966.

The airport complex, the oldest of its kind on the Balkans (opened in 1913), presents an extremely crucial communication structure, while it is located only 5 km from the city. In 1985, Mostar

City district contained 97,4 km main roads (25 km in the urban zone), 32 km of regional roads and 260 km of local streets. At the time there were 22.904 cars and 2725 trucks registered in the city.

The water source Studentac, with its installations, solved the water demands of the city, since the source of Radobolja had been insufficient for any greater needs. The total inflow of water from both sources to the city's water supply system made up to 70 m3 per second.

In the Central urban zone of Mostar, a green area covered around forty hectares (parks covered eight hectares and other green surfaces 31.5 hectares). Forest area in the municipality covered 574 hectares.

Public Structures. Numerous buildings were constructed in this period to fulfill growing needs of inhabitants of Mostar and its region: medical institutes: Anti-tuberculosis clinic (1949), a surgical-gynecology hospital (1952), and medical center Bijeli Brijeg (1962-1991); educational Buildings: 13 primary schools for 11735 pupils many kindergarten, 11 secondary schools, the University "Džemal Bjedić"(1977), and two dorms; sport facilities: Velež" Stadium and swimming pool complex (1958) open mini-stadium "Kantarevac" in 1963; trade sites: shopping centers »Razvitak« and »HIT«, supermarket »Hepok« that have been built around 1970 and a few hundred commercial spaces at the ground floors of most residential buildings along the main city streets. The area between the Old Bridge and Musala Square, including Tito's and Braća Fejić streets (and connecting streets) remained as the most attractive part of the city, as it used to be in the past few centuries.

Housing. In any city, the residential buildings present 90 per cent of the entire construction. In Mostar, this kind of construction tries to keep up with the population growth; which increased from 58.471 (in 1953) to 89.580 (in 1971). In this historical period the residential construction claimed three main approaches: collective, individual and illegal. In the 1950s, the collective residential buildings settle on the edges of inherited urban fabric along the Boulevard and Šantić streets.

Cultural activity structures: The National Theater (1950), became the first construction of its kind in Bosnia and Herzegovina after the Second WW. The children theater settled in 1952 in the modified Jewish Temple, which had been constructed in 1905. The movie theater "Zvijezda" continued to work inside the theater "Urania", while the second modern Cinema "Parizan" was built in 1968. Culture House (or Workers' house) was built in Rondo in 1960, carried out the greatest cultural role in the city. Later, it was successfully modified into the Youth House, with rich daily contents. The structure's functional side demonstrated the dominance of socialist realist architecture. Herzegovian Archive and the Symphony Orchestra utilized adapted Austro Hungarian structures, which conveyed a temporary solution for this Institution. Museum of Herzegovina was located in five buildings (Ćejvan-Ćehaja mosque complex, Ćorovića house, the house of Gojko Vuković - and the Memorial house of Džemal Bijedić. The Partisan monument complex, a work of Bogdan Bogdanović that was raised in 1965, has the most monumental attributes.

Cathedral Mother of Church was built in 1980, applying the contemporary material and building technology. The bell tower remained incomplete. The Cathedral, together with Bishop's Palace, presented a unique complex.

Tourist services. Hotel "Neretva" opened in 1892, hotel "Hercegovina" from the same period, and hotel "Mostar", the adapted State Employment Office, provided the basis for the hotel accommodation in Mostar. The old hotel "Bristol" (1905) was ruined and a new one replaced it in 1959, yet with its architectural style it contrasts the environment immensely. Hotel "Neretva" has experienced several adaptations.

In 1978, the top-quality hotel in the city, "Ruža" reached the first phase of construction. In 1985, the total accommodation capacity was 639 beds. Another structure that should be mentioned is the Retirement/Nursery Home that was built in a hotel style in 1989 on the location between Center One and Center Two, and that presents a notable contribution to the city's architecture.

Series of cafes and restaurants of striking names and colorful interiors, with no other special contents, along with many private pensions for rent (in 1985 there were 251 structures with the capacity of 16,192 visitors, fulfilled the city's hospitality offer.

Preservation of building heritage in Mostar. Preservation of the building heritage is a permanent process that is a subject to the influences of socio-economical factors, inseparable from the overall situation of the social outbuilding.
When observing through time and space, the most significant characteristic of the building heritage in Mostar and its historical core is the outstanding transformation of economic structures. This was caused by the socio-economic changes, along with the exceptional forces (wars, fire, floods), yet transformations always reflects in the adaptation of the current modern technology development in construction and means of economic development

Activities between 1949 and 1977. Tradition of preservation of monuments is relatively short. The first document related to this subject was decision of the regional assembly of Bosnia, dated in 1870, which requesting construction of a new bridge to reduce pressure on the Old Bridge.

In 1949, a group of dignified citizens in Mostar initiated an activity to preserve the cultural heritage calling upon Allies' law about protection of the monuments. Despite the existing law, they pointed out the fact that a wrong policy was applied for the cultural heritage, thus resulting with the destruction of numerous structures of monumental and ambient values.

In 1950, the State Institute to protect monuments of Bosnia and Herzegovina, performed a study on Bazaar in Mostar and presented it to City's local government. In 1952 and 1953, the first preservation activities were performed on the towers of the Old Bridge and on several smaller structures in the Old City area.

In 1954 in Mostar, an administration for preservation and maintenance of the cultural monuments and natural rarities in the city and the region was formed.

The year 1955 can be regarded as the beginning of integral and constructive actions in the Historical city core; the Old Bridge and Kujundžiluk, which would sustain for three years and represent the base for the return of "life" in this part of the city. Following that, during the period of stagnation, rehabilitation work lasted until 1963. Meanwhile, additional works actualize two capital structures; consolidation of the arch of the old Bridge, and the conservation of Karadjozbeg Medresa in Mostar.

Between 1965 and 1973, several monuments experiences smaller interventions. The cooperation with the Dutch company "Philips" resulted with the implementation of the illumination on the communal infrastructure.

In 1991, the registered Monuments of Cultural and Historical Heritage in the territory of the today's city of Mostar are: Pre-historical sites 695, antic settlements 27, medieval constructions 1756, the Ottoman-Turkish heritage 86, Monuments 1918-45: five smaller monuments and three memorial completeness related to the antifascist liberation war.

It is important to emphasize that institutional protection was focused on the Old Bridge complex and its neighborhoods. Between 1952 and 1958, serious surveys and river banks consolidation works were realized in the bridge area. In 1963, the Old bridge vault consolidation, in 1956 and 1982, the photogrammetry surveys and a test of re-consolidation of the riverbank were realized.

The activities between 1977 and 1992. Two documents, "Preliminary urban program for cultural and historical heritage – planning regulation, revitalization and reconstruction of the Old City", belonging to the Institute for Urbanism in Mostar (1967) and the decision that was based on, "Decision of Spatial regulation and revitalization of a core area of the Old City", from the side of Municipal Assembly in Mostar, 1973, present the base for the planned and systematic protection of the Old City in Mostar.

In 1977, these two documents assisted in establishing the Organization for administration, use, protection and maintenance of cultural-historical heritage "Stari Mostar" (Old Mostar) in Mostar

with the aim to completely preserve Mostar's heritage, the historical city core and series of complexes and individual structures for whose protection the city took responsibility.

In the period between 1977 -1992 the economical base of the integrated process on preservation of the Old City depended on the revenues from the same area. Income from rental fees, contributions for the construction, and communal and tourist taxes provided funding for preservation and development of the area.

In the period between 1978 and 1991, 162 contributions inside the historical core and 50 outside were realized, having varied in methods and volumes.

The Aga Khan Award for architecture in 1986 was given to the Organization »Stari Mostar« (Old Mostar) Mostar, for "*...the remarkably conceived and realized of conservation of the entire 16th century center of this historic town. It does not consider conservation as acts of nostalgia or sentiment. The need for such work and presumably, the priority accorded it, is seen as an intelligent assessment of the state of civilization.*

The reassessment of traditional values in modern contexts and in ways that respond to modern challenges is something that goes beyond questions of architectural aesthetics and functions, and becomes a key role in the professionals ethics of the architect.

Traditional values and cultural continuity in a contemporary building context can be developed only by examining history of building base themselves on the study of the whole series of human activities. The need for a dynamic relationship between past and present is fulfilled in this example, which is a living storehouse of historic data, and is simultaneously a part of organic fabric of daily life of the community it serves. (Excerpt from the opinion of the Aga Khan Award Master Jury).

In 1986, the award-winning scheme for the preservation of Mostar Old City introduced an institutional dimension into the awards for conservation, which had hitherto concentrated on the technical aspects of restoration. Mostar has shown that some of the finest restoration work can be largely self-financing, and that will and proper organization, a substantial effort can be undertaken in this direction. Mostar is an outstanding winner in the institutional as well as the technical field and in the completeness with which it has addressed the renovation of the entire section of the old city.

Destruction of the City, 1992-1995

Between 1992 and 1995, the city had suffered severe damage. The area of the greatest destruction comprised the whole of the East Mostar, and the eastern part of Podhum, and buildings along the confrontation line Boulevard-Ričina-Aleksa Šantić Street.

Behind this line serious damage was limited to a few individual buildings: St. Peter and Paul Church at Pothum, Bishop's palace at Balinovac, with 50,000 books - both destroyed in May 1992 by the Serbian army. Virtually all historic buildings were severely damages: every mosque in the city, Orthodox churches, Austro/Hungarian bath, hotel Neretva, Vakuf palace, Metropolitan palace, Museum of Herzegovina, the Symphony Orchestra building, and finally the Old Bridge on November 9, 1993. The Serbian army placed dynamites on nine other bridges between May 24 and June 12, 1992.

Based on the European Union Administration of Mostar (EUAM) assessment done in 1994 the Brankovac community area had 87% and the Luka I area 86 % of its building damages. In total 2357 units (excluding historic monuments) needed more than 40 million US dollars to be repaired. As measured by repair cost, within the urban zone, the east part of Mostar had sustained over 80% of heavy damage. Industry was also purposely and broadly looted and dynamited or shelled (food production plants, the aluminum plant, the "Soko" aircraft factory, cotton and tobacco factories), the hydroelectric power plants dams and network and telecommunication structures were destroyed or disabled. Outside of the urban area, all of the outlying villages in the valley of the Neretva River and the eastern hills had sustained very heavy damage.

Destruction of the Old Bridge. On November 9, 1993, the Old Bridge in Mostar was finally brought down. The bridge that had seen so many wars, survived so many years, no longer exists. After thousands of shells from Serbian artillery beginning in April 1992, and than from the Croats beginning in May 1993, the crime was completed.

One of the building miracles of 16th-century Europe, the crowning achievement of an extraordinarily creative era of Islamic culture, was gone. The Stari Most had contained the meaning and the spirit of all Bosnia and Herzegovina: the essence of the bridge was meeting and joining together; the country, like the bridge, could be divided only by destroying it.

Because the Old Bridge was the product of both individual creativity and collective experience, it transcended our individual destiny. A dead man is one of us; the bridge is all of us forever.

The temporary bridges (Kamenica, Musala, Tenzin) erected above the Neretva in the area between Musala and Donja Mahala (and Luka) played the key role in protecting eastern part of Mostar in the period after May 9, 1993. The first temporary bridge on the traces of the Old Bridge, built in only three days, was open on December 30, 1993. Later this bridge was replaced by with three other, more secure, temporary pedestrian bridges of similar construction.

Rehabilitation of the City 1995-2004

Rehabilitation of Mostar is deeply dependent on the political situation after the war in Bosnia and Herzegovina. During ten post-war years, city didn't reach political stability, what was evident in daily life: all public functions were duplicated, police, education, finance, budget, and planning.

Till March 15, 2004, the city of Mostar had organized in six municipalities (three with Croatian and three wit Bosnian majorities) and with a central district (under direct jurisdiction of the City government).

As a result of the 1992-95 war the city of Mostar was facing following obstacles:

- Political situation: even after all agreements and elections the city is in many components still divided.
- Physical living problems represented a key problem: 6.101 units or 70-75 % of housing stock was destroyed, along with infrastructure.
- No primary economy (only Alumina Plant), and a great number of unemployed.
- Great change in the composition of population: around 2.000 killed, 2.500 wounded, 800 handicapped.
- More than 60% replaced population.

In March 2001, the City of Mostar set out the initial economic strategy for the ten years period. The strategy was built on five principles: partnership, transparency through consensus, enterprise environmental sustainability, equalities of opportunity. Related to the urban renewal idea was that the city should be an attractive place for citizens, visitors and investors to live and work. Part of this strategy was a new plan for the district area, to encourage restoration and redevelopment, and to establish "Pride in Mostar" organization with the task to find money to speed redevelopment. During first three implementation years, the results are very poor.

Planning and construction. Several pre-war problems were enlarged during the post –war period:

- High net density at areas of collective settlements with all consequences what that facts cause (deficit of green areas, cars parking at every corner, less space for children's playground, etc.)
- Insufficient communal equipment at areas of individual settlements, as insufficient equipment of social infrastructure.
- All though, high-grade agriculture land, industrial area and area of airport Ortijes limit expansion of the City at the north.
- Natural elements are essential limitation factor for development of the City of Mostar. The meaningful areas for future development of Mostar are free, not built zones of Rodoč, ex South and North camps with total surface of 263 ha.
- The lack of comprehensive planning.

In two groups of municipalities with national prefix level of intervention in the space was a very different: in the group of municipality with Bosniaks majority (in the war known as the East

Mostar) intervention was focus on reconstruction of infrastructure and housing stock. In the group of municipality with Croatian majority (in the war known as the West Mostar), the reconstruction needs were limited, and focus was on new constructions.

In the West Mostar, interventions in the urban area appeared in several modes:

- Intensive construction of modern commercial structures, which have transformed complete areas (Rodoč and Rudnik),
- Quality infill in existing urban fabric (new polyclinics at Boulevard, a primary school in Center Two).
- Commercial and administration structures which were infilling the urban fabric,
- Small commercial structures, mostly illegal, along the main communication and Addition of floors to existing structures, and enormous square meters constructed in new commercial structures around the Rondo square

In the East Mostar, with the reconstruction of destroyed buildings, semi-legal construction was increased in areas of Upper Mazoljice and Nadharemi, carried out by Bosniaks people, refugees from Srpska Republika from Eastern Herzegovina.

Only a few new structures, all being in the southern military camp area were constructed in the part of the city; a central part was transformed into the hospital, east part was allocated for the mass housing construction (with only one block constructed), the village for orphans on the Neretva river bank, sponsored by Egyptian government.

Both Bosniak and Croatian national corpuses gave special attention to the reconstruction or construction of religious structures. List of the reconstructed mosques has cover close to all mosques that existed in the Ottoman time. Two of them (Jahja Esfel at Carina and Neziraga) had actually been destroyed in 1950-ties.

The Church complex at Pjesak was successfully rehabilitated, however, the Franciscan church St. Peter and Paul, which was destroyed in May 1992, was replaced with a new one (still under completion), designed to dominate the city panorama with its enormous volume and an extremely high bell-tower.

European Union Projects. After the war, numerous international organizations used Mostar as a pilot territory to apply their projects in Bosnia and Herzegovina. Reconstruction activities started during the war with the initiation of local institutions. After the cease-fire between Bosnian and Croatian sides in 1994, the international institutions became present in the city through different programs.

The European Union Administration of Mostar (EUAM) aimed to unite the city through the establishment of security, administration, and through the reconstruction of the buildings and infrastructure.

EUAM spent 170 million German marks (around 85 million euro) on repairing 6000 houses, 30 public buildings, 28 schools, 20 health buildings, 70 water projects, five bridges, a construction of equipment pool, a technical training center and other similar investment. Fourteen historic buildings were repaired as well.

Meanwhile, 95 buildings with 47.795 m2 were demolished. Among them, the housing block with 64 apartments on top of the “Razvitak” department store marked the most crucial example.

Simultaneously along with EUAM, numerous NGOs were engaged in the city’s rehabilitation projects. Individual structures in the entire city area–apartment blocks and public buildings in the Boulevard and Šantić’s streets obtained a special attention in this process.

The repair costs estimated by the EUAM survey were almost US$400 million.

The Old City Rehabilitation Processes. The City of Mostar in the collaboration with the World Bank, UNESCO, the Aga Khan Trust for Culture (AKTC), the World Monuments Fund (WMF), the Research Centre for Islamic History, Art and Culture (IRCICA) and several others was carrying out a

set of complementary activities for the preservation and development of the City of Mostar. Starting from 1998, the project completion was scheduled for the summer 2004.

The project focused on the historic city area, which was the most ruined part of the city during the war, and on several other related areas.

Here, the project will be presented through following five intermingling components carried out by the City of Mostar in the collaboration with international institutions:

(1) Education and training: Mostar 2004 program;

(2) Management (Strategic planning for the urban area of Mostar: Old City preservation and development plan, and the establishment of the Stari Grad Agency);

(3) Rehabilitation of the Historic city core: restoration and reconstruction of individual structures and improvement of infrastructure

(4) Restoration and reconstruction of priority buildings: buildings selected in the Central urban area

(5) Rebuilding of the Old Bridge complex (under scientific patronage of UNESCO, Paris).

Mostar 2004 Program. Having in mind that in the both preparation and implementation phases an educational component should be presented through permanent program of education for all participants in the reconstruction process Research Centre for Islamic History, Art and Culture (IRCICA) Istanbul in the collaboration with the City of Mostar and many other institutions, and participants from 68 universities worldwide was carrying out the educational component of the rebuilding of Mostar, starting in 1994.

Mostar, with its extraordinary symbolic meaning for all Bosnians, as emphasized in the Old Bridge, has become the focus of a pilot project for the rebuilding of a multicultural Bosnia and Herzegovina. The year 2004 was proposed to be the celebration year of the rebuilding of Mostar.

The Mostar 2004 program proposed an integrated process of rebuilding, based on Mostar's pre-war experience, moved with the energy of both enthusiasm and knowledge and integrated under an international network. As part of this program, IRCICA had organized 10 phased workshops and symposiums, 36 exhibitions, 102 conferences, and published ten books. Throughout systematic works at universities and annual gathering in Istanbul (1994 and 1995) and Mostar (from 1997 till 2004) 1039 individuals have been involved. More than a hundred and fifty diploma projects, and more than fifty graduate theses, and ten publications are results of the large intellectual support network for the rebuilding of Mostar.

The best result of this component was the establishment of the multidisciplinary local team engaged in the realization of all project’s components. All team’s members are continuing their education through graduate programs at various schools as a part of the office program

Management. This component comprises of preparation and implementation of the Master plan of the Old City of Mostar, together with preparation of the key elements for the Strategic development plan for the urban area of Mostar. Integral parts of component are establishment of the urban governing system and the self-sustainable economic system for the area.

The plan was prepared by the Aga Khan Trust, Geneva and the World Monuments Fund, New York (AKTC&WMF) during the period between July 1998 and January 2001. After the public hearing, it was approved by the City of Mostar – Stari Grad Municipality Council on May 10, 2001. (see: Official Gazette of the Stari Grad Municipality of the City of Mostar, No1. May 2001).

Historic City Strategic Development Plan. Mostar in the third millennium should have a useful program of reconstruction and development. Defining such program demands hard work of a large number of experts, which the City Government anticipated and formed teams that deal with aspects of further development of the town.

Activities of AKTC/WMF are mostly focused on the urban aspects of development with the main purpose to preserve and develop the city historic core. The creation of both a quality data-base and the widest possible consensus are in continuous development. Special attention should be paid to

the following key sectors: (a) *Transport infrastructure (b) City infrastructure;* (c) *Urban planning and restructuring of existing institutions,* (d) *Balancing of public uses; (e) Development of housing*.

Special zones and plans should be determined for the whole area of the historical city in its boundaries from 1918. Within this area it is possible to define three separate zones. Each of these zones should be specially dealt with according to the quality and integrity of the each zone.
During period between 2002 and 2004, a particular attention was given to North Camp and Center One areas.

Old City Master Plan. "*The Old City Master Plan"*, prepared by JP "Prostor", Mostar in 1990, and the UNESCO "Mostar Urban Rehabilitation Map and Rehabilitation Plan of Stari Grad" published in 1997, presented a solid base for the planning in the historic area of Mostar.

The extent and uneven quality of transformations of the traditional city three different zones have been identified to be regulated differently according to the quality and integrity of its urban structure and buildings.

Zone A (Old City) is part of the town, known as the Old City, that has preserved its overall integrity and should be subject of strict control by approved Master plan. The border of this zone, among others, respects to the following factors: natural border (e.g. river, sea, mountains), historic border (e.g. city walls), functional division (e.g. bazaar and mahala), and administration-political division (e.g. municipality, land use).

Zone B (City Center) covers a part of the town with less urban and architectural integrity, but still is recognized as unique urban system and as such seeks for coordinated interventions.

Zone C (1918 Historic Area) covers the rest of the area within the 1918 boundaries. This zone has already experienced great changes, and preserves only a few valuable urban elements.

The area covered by Master Plan of Conservation and Development of The Old City some 45 hectares, with 1675 units, located at the very core of the historic city as defined by the 1918 city boundary. The Old City is the oldest portion of city fabric, dating back to Ottoman times. More than any other part of the historic city, it has maintained its traditional fabric and overall integrity, which will be subjected to stricter conservation controls.

The 2001 Master Plan and accompanying regulations are:

- Indicate the authority responsible for implementing and monitoring the Plan as well as for future detailed planning and periodic revisions to the Plan;
- Define the Plan's units of intervention and indicate the forms of intervention applicable to all buildings within the Planning Area with regard to the architectural and typological character of each structure and the level of protection to be achieved for each; with an indication of the norms to be applied to the rehabilitation and reorganization of individual buildings and areas.
- Specify the allowable uses of land and buildings in the Planning Area;
- Define the organization of vehicular traffic, parking and pedestrian circulation within the Planning Area;

Agency. The historic city center and residential neighborhoods of Mostar are of unique architectural and cultural significance. As one of Bosnia and Herzegovina's major attractions, their value and importance go beyond local interests and deserve international recognition and support.

Positive experience of the Mostar preservation project during the period 1978 -1991, and other international experiences had shown that the best results in preserving living historic towns have been achieved through the establishment of independent, specialized conservation and development agencies that have full control over a given (selected) area as well as special powers, resources and professional staff.

Rehabilitation of the Historic Core of the City. The historic neighborhoods of Mostar are currently undergoing substantial transformation. This is the result of interventions by group of private owners who, while rebuilding their homes damaged during the 1992-1994 war, modify and expand the buildings to such an extent that the traditional features are completely lost.

This process was rapidly and irreversibly changing the character of some of the most valuable and sensitive areas of the city, particularly those near the Old Bridge. The definition of viable kinds of intervention in these areas was urgently needed, especially for the plots and buildings in which reconstruction activities are ongoing or may be expected in them near future.

AKTC/WMF aims are preparation and implementation of the Action Plan for the rehabilitation of the Historic Neighborhoods of the Old Bridge on both side of the Neretva River, including monuments, commercial and dwelling complexes, and communal infrastructures.

These interventions and proposals constitute the basis of the comprehensive action plan for the neighborhoods presently being finalized, including the identification of implementation modalities for individual houses, groups of structures, and public domain areas. More specifically, the implementation modalities include:

(a) Ownership acquisition by the municipality, and subsequent restoration and re-use;
(b) Improvement through design assistance and small grants;
(c) Investments in upgrading of public domain,
(d) Corrective interventions in critical townscape points.

The AKTC/WMF local office in Mostar carries out the complete project. The implementation was realized in collaboration with the Project Coordination unit.

Restoration Program for Selected Buildings. The AKTC/WMF team had elaborated twenty-one damaged monuments and historic buildings in central Mostar as a part of the list of 100 important structures from all historic periods in the urban area of Mostar defined in the Strategic development program. The selection includes public buildings and private structures. Together these buildings document the influences and cultures which contributed to the development of the city over time, and today they represent the endangered legacy of its past.

From the list of 100 important structures, for the more than 20 buildings detailed restoration, reconstruction and rehabilitation projects including historic documentation, graphic design and reuse options including cost estimation were prepared (15 of them were presented in the AKTC/WMF publication *Reclaiming Historic Mostar*, August 1999).

Until July 2004 five structures from the list of twenty following priority buildings were completed: Muslibegović housing complex, Sevri Hadji Hasan Mosque (built in 1620), Biščević-Lakišić housing complex, and the Guest house in Ramića Street through AKTC/WMF Project. "Napredak" Cultural Center (1906); Orthodox Metropolitan Palace (1910), and Vakuf palace (1894) were completed in January 2005 by PCU based on designs provided by AKTC/WMF.

UNESCO was guiding the following projects: Reconstruction of the Kriva Ćuprija Bridge, based on donation of the Duke of Luxembourg (completed in 2002), reconstruction of the Čejvan Ćehaja mosque minaret (completed in 1997) as a part of the reconstruction of the Mosque complex and reconstruction of Tabačica mosque (completed in 2000) both in cooperation with Saudi High Committee for Bosnia and Herzegovina, and Ćejvan beg Hamam, based on donation of the French government (completed in 2004).

Vučjaković Mosque was restored based on donation of Hashemite Kingdom of Jordan, and Turkish government provided fund to restore the Koski Mehmed Paša Mosque and Derviš Paša Bajezidagić Mosque.

The court in Cernica was reconstructed with support of Swiss government in 1997, and Gymnasium is partly in function but still under restoration because the fund for completion was never collected.

Rebuilding of the Old Bridge complex. The Old Bridge, built in 1566, was representing one of the building miracles of 16th-century Europe, the crowning achievement of an extraordinarily creative era of Islamic culture. The Stari Most (Old Bridge) had contained the meaning and the spirit of all Bosnia and Herzegovina: the essence of the bridge is joining together, which is the beautiful expression of the Bosnian productive co-existence.

It is crucial to emphasize that the "Old Bridge" includes not only the vault of 28.7 meters span; its complex is composed of three towers, two mosques and several other structures. The vault--a miracle of 16th century technology--is the most dominant part, with extraordinary symbolic significance.

This powerful symbolism was the main target, and the primary reason for the desire of the Bosnia-Herzegovinians to rebuild it. The destruction of the Old Bridge, on November 9, 1993, symbolizes more than any single event, the war tragedy in Bosnia and Herzegovina. This destruction was an attempt to eradicate the reality of a multi-ethnic state and the thousand years-long history of Bosnia and Herzegovina.

If tearing down of the Old Bridge is a symbol of the destruction of Bosnia and Herzegovina, then its rebuilding will symbolize the restoration of this country and the reconciliation of its people who will come together to rebuild the Old Bridge, and all of Mostar's bridges, linking them as a people once again. We wish the Old Bridge to become a symbol of the restoration of the multi-ethnic society of Bosnia and Herzegovina.

The Research Centre initiated the Campaign for the Rebuilding of the Old Bridge internationally for Islamic History, Art and Culture (IRCICA) during the *World Economic Forum* in Davos, February 1996, with a concept developed through the Mostar 2004 Project-- the Old Bridge should be rebuilt on the basis of a shared contribution of many donors.

This idea started to be operational through the "Foundation for the Reconstruction of the Old Bridge and Old City"established on July 2, 1997 with H.E. Alija Izetbegović, president of Presidency of Bosnia and Herzegovina, as a leader. Rebuilding of the bridge presents main cultural and political task for citizens and the government.

Between August and November 21, 1997 the International Stabilization forces in Bosnia and Herzegovina (SFOR) completed operation of taking out parts of the destroyed Old Bridge from the river.

On July 13, 1998, UNESCO, World Bank and the City of Mostar issued a joint statement and launched an appeal for the restoration of the bridge. Since 1999, the City of Mostar has been carrying out this project through the City of Mostar- "The Project Coordination Unit" using the World Bank loan of $ 4.0 US millions, and $ 7,6 US millions donations of several European states (Italy, Turkey, Netherlands, Croatia) and Council of Europe Development Bank and 2.0 US millions from City of Mostar.

The complete project is under the scientific supervision of the UNESCO`s "International Committee of Experts (ICE) for reconstruction of the Old Bridge and rehabilitation of the Old City of Mostar" set up on October 1, 1998.

Data and documents collected in the last forty years, especially during the period between 1997 and 2000, had represented very solid base for the project.

The international Committee of expert defined on its first session in November 1998 a list of preliminary studies: underwater survey and removal of stone from the river, studies of stone, mortars, iron, lead, geological investigation, studies of foundation and all other necessary studies. During following seven sessions (last one was held in April 2004) ICE was carefully following development of the each detail of the project.

The Old Bridge complex was opened for public in summer of 2004 after four years of intensive research and reconstruction works. The international rehabilitation project guided by the City, World Bank and UNESCO, has gathered number of experts of international reputation. Structural design was done using the photogrammetry made in 1955 and 1982 by Survey Institute University of Zagreb. General Engineering did structural design with detail disposition of every stone block from Florence, Italy, headed by a team of recognized experts. Design was made in two years,

and its results, besides the structural calculations, were books of stone cutting and chiseling, which were direct sources for the reconstruction that followed. Material analyses were done by the LGA institute from Nurnberg, Germany. Their researches resulted with three books on stone, metals and mortars. Tests were conducted on the arch remnants recovered from the river after the bridge's destruction, as well as on the stone samples from the reopened original quarry (it is considered that quarry Mukoša is situated at the very location of the original bridge's quarry or very near to it). LGA has also installed the monitoring system (the system of strain gauges and pressure cells placed at the arch joints and bridge's extrados) during the construction phases of the bridge, which serve for monitoring the state of bridge's structure during the first years of exploitation (displacements and stresses).

The comparative analyses with the modern materials were also made. Researches on the state of the bridge's remnants, the foundation rock mass and its abutment walls, was done by Joint Venture of "Conex" and "Yeralti Armacilik". During the works, the standard methods were used along with the latest methods of testing by ultrasound and topography. Consolidation of the foundations and strengthening of the rock mass was done by Turkish company "Yapi-Merkezi". Each phase of preliminary works was monitored by UNESCO's ICE, and conclusions from their conferences were implemented through all phases of the project. After the researches were finished it was decided to continue with the facsimile reconstruction of the complex. Reconstruction of the bridge was realized by Turkish company ER-BU Ankara with the number of subcontractors. The supervisor on the reconstruction works was "Omega Engineering" company from Dubrovnik, which realized the Detail design of Towers rehabilitation and rehabilitation of the surrounding structures as well as the quadrant archaeological researches. Works on the towers reconstruction were done by Joint Venture "Građevinar-Fajić", "Kara-Drvo" and "HP Investing" from Mostar wiht their subcontractors. Preliminary works on stone cutting was performed by "Kara-Drvo" Company and the supervisor was Geological institute from Sarajevo. Each construction phase was done under the careful monitoring of UNESCO's expert committee, which had pointed direction of the reconstruction works and for this purpose have held eight sessions.

Additional information is provided in Appendix 3.b.

3. c. Form and Date of most Recent Records of Property

Starting in 1998, a joint team consisting of PCU and the AKTC/WMF has continuously recorded and monitored the Historical area of Mostar. Quarterly update is available.

The current update was completed on January 15, 2005. This record shows the completion phase of the rehabilitation project has been realized in the period between 1998 and 2004.

The following three documents give the most essential details about the rehabilitation project:

1. Decision by the Commission for preservation of national monuments of Bosnia and Herzegovina about the Historic city area of Mostar as the national monument of Bosnia and Herzegovina, date July 7, 2004. (Complete text of this decision is in the appendix)
2. Report about the Old Bridge complex rehabilitation published by the City of Mostar – Project Coordination Unit, World Bank and UNESCO ("Mostart", Mostar July 2004)
3. Report about planning and rehabilitation activities realized by the Aga Khan Trust for Culture and the World Monuments Fund: "Conservation and Revitalization of Historic Mostar, Geneva 2004)

3. d. Present state of Conservation

The state on conservation of every individual building and open space was updated on the January 15, 2005. Results are following:

a. Condition: 79% of buildings are in good conditions;
b. Form of intervention: 44% of buildings requested maintenance and 22% light rehabilitation.
c. Significance of the buildings: 13% has reduced value;
d. Historical classification: by number of buildings 52% are originated from Ottoman time (36% by area), 26% from Austro-Hungarian time (39% by area);

Situation with open space is following:

a) Conditions: 49% is very good and 46% good.
b) Form of interventions: 48% requested maintenance, 36% light rehabilitation, and 16% very serious intervention.
c) Significance: 89% of open space has environmental value, and 3% high architectural.

A detail account on present state of buildings, organized in 12 groups, is presented in the appendix 3.d.

3. e. Policies and programs related to the presentation and promotions of the property

Promotion policies of The Old City of Mostar focus on the universal values of multicultural society and co-existence. The image of the city is enhanced through the reconstruction processes wonderfully symbolized by The Bridge.

Mostar tends to be a pilot project, an example for other cities of Bosnia and Herzegovina and the world in means overcoming immense destruction.

The promotion activities started as early as 1994, with the establishment of Mostar 2004 Program with the workshops that were held annually. This is important because beside its presentational effect, it contained an educational component.

Many exhibitions starting in 1993 were held in different parts of the world; Strasbourg, Karachi, Istanbul, New York, Casablanca and others.

Many publications were aimed at the potential donors and investors with detailed information about priority objects. This campaign accomplished the restoration of five major objects in the town.

Intense activities in 2003/2004 with exhibitions and preparations for the opening of the Old Bridge received worldwide attention, and was one of the biggest events in 2004.

4. Management

4. a. Ownership

Ownership of properties within nominated area varies among: government bodies, religious communities, and private individuals and institutions.

4. b. Legal status

Pursuant to the Article V para 4 Annex 8 of the General Framework Agreement for Peace in Bosnia and Herzegovina (Official Gazette of Federation of Bosnia and Herzegovina no. 2/02, 27/02 and 6/04) and Article 39 para. 1 of the Rules of Procedure of the Commission to Preserve National Monuments, at the July 7th 2004, designated The Historic Urban Area of Mostar as a National Monument of Bosnia and Herzegovina. The decision mentioned above considers 15 properties designated earlier as National Monuments by the Commission.

A national monument is an asset or property that the Commission to Preserve national monuments has designated as a national monument, as well as assets or properties registered on the Provisional List of national monuments of Bosnia and Herzegovina. The national monument benefits from the highest degree of legal protection.

4. c. Protective measures and means of implementing them

The provisions related to the protection and rehabilitation measures, for the National Monument designated by the Commission, set forth the Law on the Implementation of the Decisions of the Commission to Preserve National monuments. All executive and development planning acts that are not in accordance with the provisions of the Decision are hereby revoked.

Following legislations provide protection for the monuments:

- Official Gazette of Federation of B-H, No.2/02, 27/02, and 6/04, Law on the Implementation of the Decisions of the Commission to Preserve National monuments, established pursuant to Annex 8 of the General Agreement for Peace in Bosnia and Herzegovina
- Official Gazette of B-H, No. 33/02 – Provisional list of National Monuments (Decision of Commission to Protect National Monuments), pp. 1250 – 1259
- Official Gazette of Federation of B-H, Law about spatial planning, No.52/02, – article 41/3
- Official Gazette of Federation of B-H, No. 55/02, Construction Law, pp. 2514 – 2532.

Responsibility for the enforcement of the Commission's decisions lies with the Entity Governments and the ministries responsible for the regional planning. On the level of Federation of Bosnia and Herzegovina, Ministry of Physical Planning and Environment is responsible for implementation of legislative protective measures. The Institute for the Protection of Monuments within the Federal Ministry of Culture is responsible for the expert supervision for all building, building-crafts and craft works on National Monument as it is proclaimed by the Decision of the Commission to Preserve National monuments.

Two institutions for protection of monuments operating in Mostar: Cantonal Institute for Protection of Monuments and the City Institute for protection of monuments.

Protective measures are defined in planning documents: UNESCO's "Mostar: Urban Heritage Map and Rehabilitation Plan of Stari grad", completed in 1997 was a base for 'The Master Plan for Preservation and Development of the Old City in Mostar" realized in cooperation between City of Mostar-Stari Grad Municipality and the Aga Khan Trust for Culture, Geneva & World Monuments Fund, New York. Municipality council adopted plan in May 2001. Planning department in the municipality was in charge for the implementation of the Master plan till March 15, 2004 when municipalities were abolished, and the authority passed to the city administration.

In 1999, the city of Mostar established the Project Coordination Unit (PCU) responsible for the rehabilitation of the Old Bridge complex, its historic neighborhoods and three priority buildings

("Napredak" cultural center, Metropolitan palace, and Vakuf palace). The PCU had a very active role in the collaboration with the AKTC/WMF, and other institutions during the implementation of the numerous rehabilitation projects.

4. d. Agency with management authority

On the December 29, 2004 City Council of Mostar adopted the decision for the establishment of the Agency to be in charge for the preservation and development of the Old City. The role of the agency will be to continue the task of PCU (from April 1, 2005), and other institutional operations in the Old City that have been accomplished in the last five years, in close cooperation with the state institutions for preservation, city departments, tourist organizations, tenants and owners.

Complete text of the City council decision is in the Management plan.

4. e. Level at which management is exercised

- The Commission to Preserve National monuments is an institution of the state of Bosnia and Herzegovina established pursuant to Annex 8 of the General Framework Agreement for Peace in Bosnia and Herzegovina and the Decision of the Presidency of Bosnia and Herzegovina responsible for the issuing the decisions designating the movable and immovable property as a National Monument applying the Criteria on the Designation of National Monument (Official Gazette of B-H no. 33/02).
- The Government of the Federation of Bosnia and Herzegovina is responsible for ensuring and providing the legal, scientific, technical, administrative and financial measures necessary to protect, conserve, display and rehabilitate the National Monument. The Government of the Federation shall be responsible for ensuring that a program is drawn up for the on-going protection of the historic center of Mostar, and for providing the resources for creating and implementing the necessary executive regional planning documentation for the rehabilitation of the historic center of Mostar.
- On the level of Federation of Bosnia and Herzegovina, Ministry of Physical Planning and Environment is responsible for implementation of legislative protective measures.
- At the city level, The Agency is responsible for implementation of legislative and protective measures.

4. f. Agreed plans related to property

(a) The Commission to Preserve National Monuments, at the July 7th 2004, designated The Historic urban area of Mostar as a National Monument of Bosnia and Herzegovina. The Commission's decisions are final, and are enforced pursuant to the Law on the Enforcement of Decisions of the Commission to Preserve National Monuments, which grants to National Monuments the highest degree of protection. All executive and development planning acts not in accordance with the provisions of the Decision are hereby revoked.

(b) Master Plan adopted on May 10th 2001 by the Council Old Town Municipality, Mostar.

4. g. Source and level of finance

The Old City of Mostar has a great economic potential. The management plan presents preservation and development strategy of the area. The main economic goal is to make the area self-sustainable using all resources. The self-sustainability is conditioned by the fiscal sustainability of the city. So the City of Mostar should have the special department devoted to this problem – public revenue payment. The fiscal sustainability is extremely important from the loan point of view. The Agency is the institution responsible for the strategy implementation, based on details related to the ownerships, rates, liabilities and responsibilities of each particular subject, the way of acting of each of the subjects, and so on.

The Agency will coordinate all institutions, city departments, owners of the property in the Old City, and tenants directly or indirectly included in Old City functioning, and all of them must know their own liabilities and responsibilities.

The Agency will organize existing cultural and natural resources as well as their protection and conservation.

Advantages of the Old City are the following:

- Pleasant climate, easy access to the city,
- Rich history and cultural heritage with the crown monument of Bosnia and Herzegovina: The Old Bridge – masterpiece of the Ottoman architecture, preserved bazaar with traditional handicrafts
- Unique natural heritage with the River Neretva as one of the most beautiful rivers in this region suitable for water sports, and with 400 years-old attractions – The Old Bridge Diving championship.

The plan has several economic targets: to improve marketing, tourist visits (today around 100.000 visitors) focusing on cultural and authentic tourist offers in the region (in the collaboration with tourist institutions and tour operators)

Economic reintegration of Mostar – one of the most important targets.

Education. During last ten years, through rehabilitation processes a large group of local young professionals achieved high international standards in different disciplines. They will carry out a permanent education of all subjects included in the activities and introducing the necessity of the conservation and protection of cultural and natural heritage to the compulsory education. By these processes the sense for the cultural heritage conservation and natural heritage protection is inbuilt in the mental structure of young generations.

Standardization. Within this strategy, the standardization of services must be done. According to this standardization many other elements important for the Old City functions can be developed. For example, the satisfaction of some standards can be the prerequisite for the lower rent or for the membership in some of the restaurant organization or some other type of organization e.g. Italian *Club di prodotto.* All tourism parties can work within this organization (membership is determined by the certain level of turnover).

Marketing. The marketing strategy requires a special place in the Old City Development Strategy. Since the cultural and natural heritage is considered as very sensitive topic from marketing point of view, it requires sophisticated marketing approach in order to avoid over commercialization. Any additional commercialization could have negative consequences such as the destruction of cultural and natural heritage.

Infrastructure. Complete infrastructure of the Old City should be synchronized in order to make The Old City as functional as possible and connected with other parts of Mostar. Establishment of unique communication among all subjects involved in the Old City has a priority.

Safety. Even though the war was terminated ten years ago, Mostar still has an image of a high risk destination. Good marketing campaign can solve this problem (every positive example must be used to promote Mostar as a safe destination e.g. the Prince Charles visit to the Old Bridge Opening Ceremony).

Control. The strategy must allow periodical control of its proceeding by Governing board, Advisory board and Public hearing. By this control it is possible to react timely and to change some parts or details in the strategy.

The financial requirements can be divided into funds needed to cover its operating costs and resources to pay for the implementation of the activities and projects foreseen by the Plan.

The operating budget and recurrent expenditures are to be accomplished through:

(a) income from municipal leases (Rent), endowments and concessions on properties in the Old City Area

(b) income received through the adaptive re-use of restored buildings and the management of public open spaces in the Historic City Core;
(c) income received via taxes from tour operators, hotels and restaurants for the efforts in maintaining and enhancing the historic city;
(d) income from the visitors fees (the Old Bridge Museum) and from the licensed souvenirs
(e) handling charges for implementation of government - and donor - sponsored projects to cover overheads and help pay for professional services and administrative expenses.

Development activities and projects in the Historic City Core would be financed through:

a) government and municipal funds earmarked for infrastructure networks, public facilities, and major restoration works;
b) donor funds in the case of specific projects and initiatives;
c) an income from the Old Bridge and Towers museum;
d) direct investment or partnership agreements with state companies and business concerns interested in the development of economic and tourism development activities;
e) low-interest loans (given by the local banks) and matching funds earmarked for housing and commercial rehabilitation;
f) self-help activities and contributions in kind from residents toward the implementation of small-scale projects benefiting the community.

Structure of expenditures**.** On the other side there are numerous expenditures of the Old City maintenance and its normal functioning. All expenditures should be specified e.g.

- 40-51% reinvestment - new rehabilitation projects
- 15-21% current maintenance, intensive maintenance
- 15-25% operational expenditures
- 5-12% promotion and cultural events

Rent collected in the Historic city core, from buildings and open areas, presents a main income for the preservation and development.

According to the last collected date there are more than 200 commercial structures and rent based on existing rent value is around 1,000,000.00 KM.

The average monthly value of rent for square meter should be corrected with coefficients related to activity, locality and entrance position, position in the building along the section. Regarding the activity profile the old handicrafts have preference.

Every rent, for a building or an open area, should be defined by a contract.

For successful operation necessary steps are: survey of technical and financial situation and establishment of the databank. The deadline for completion of the new contracts should be December 31, 2005.

4. h. Sources of expertise and training in conservation and management technique

Since 1994, the City of Mostar together with Research Centre for Islamic History, Art and Architecture (IRCICA), Istanbul and 27 other institutions developed an academic program Mostar 2004 – an educational component of Mostar's reconstruction process. During the total ten annual gatherings (in total 214 working days) 823 participants (from 68 universities, 31 countries) have made survey, proposing different projects, and through friendship have constructed a network to support the rehabilitation of Mostar and Bosnia and Herzegovina. Throughout the annual meetings, 386 students under the supervision of 42 professors from 14 universities have developed studio designs, diploma projects and master thesis.

The rehabilitation activities in Mostar, between 1996 and 2004, resulted with more than hundred realized rehabilitation projects. One of the most positive outcomes of the Mostar project is the quality expertise that have covered all aspects of rehabilitation, starting with research of archives,

archeological and architectural surveys, to planning, restoration design and implementation. In all projects majority of participants were local professionals who highly benefited from collaboration with involved foreign experts. The young professionals used rare opportunity to apply and develop their knowledge in the real life laboratory of preservation.

One of the highest achievements of this program is establishment of a well trained local team that is capable to carry out projects for preservation and development of historic Mostar.

Among more than fifty companies involved in the implementation processes only seven were from the outside of Mostar and four of them from outside of Bosnia and Herzegovina. More than hundred local professionals used opportunity to accomplish high level of craftsmanship. An important component for education of stonemasons was the training program organized in collaboration with UNESCO and the government of France.

4. i. Visitor facilities and statistics

The tourism is considered as one of the main industry branches of Mostar and Herzegovian region. The Tourism Community of Federation of Bosnia and Herzegovina should have managed it, but local tour operators and agencies take over most of this task.

On average, 80,000 tourists through agencies were visit Mostar every year in the pre-war period. After the war, the situation has changed. The chart below shows the trend of the organized visits through registered agencies: 5.000 in 1998, 45.000 in 2001, and in 2004 more than 100.000.

In order to provide good information for the tourists, the Tourist Info Center is located close to the Old Bridge (70 m far away from the Bridge). In this center, a tourist can obtain all the information he/she needs. In other words, this center gives information on accommodation, city and regional tours, travel schedule information, interpretation services, brochures and other printed materials etc... Tourism agencies collaborate with this center in order to make the tourism offer more compatible with tourist needs and demands in general.

Museums. The Museum Herzegovina with the rich ethnographic exhibition is located in the vicinity of the Old Bridge, and archeological exhibition is located in the Old Bridge complex. The Cultural Center is located in the hamam near the Old Bridge, and it mostly displays art exhibitions. In the Old City area the tourists can visit numerous handicraft shops containing the traditional handicraft of Bosnia and Herzegovina.

Restaurants –Besides the cultural heritage and handicraft shops the food is also important means for authenticity conservation. The Old City area encompasses 25 restaurants that offer traditional meals, as well as over 20 cafes and pastry shops where tourist can enjoy traditional coffee and sweets. Regarding the other facilities Old City can offer 26 shops, a post office, a bank, an education center and an ambulance. According to the regulations every commercial building contains lavatories.

Car parking – in the Old City area 1200 m2 of parking space is available.

Overnight accommodation. The Old City offers authentic accommodation (72 beds) that allows tourists to feel the real authenticity and cultural essences.

In addition, the Old City offers a very modern accommodation, with a total of 84 beds. All rooms and suits, traditional or modern, are offering modern facilities.

4. j. Property management plan and statement of objectives

The urgent need to build up technical capacity and institutional mechanisms directed towards the preservation and long-term management of Mostar's historic areas. The donor agencies left, the historic areas are in need of a management, which can ensure proper operation and maintenance, based on local income-generating mechanisms. Only a conscious planning and management effort will ensure that the quality and significance of the urban fabric as a whole can be retained and a sympathetic development process continued.

The main objectives of the Management plan are to:

- Provide effective administration of the nominated area of the Old City of Mostar
- Provide financial resources for self-sustainable preservation and development
- Protect the nominated site and its buffer zone by promoting sustainable management as a part of dynamic living and working city

- Improve access and interpretation, thereby encouraging people to enjoy and to understand the Old City of Mostar.
- Improve a public awareness of and interest and involvement in the heritage of Mostar by achieving a broad-based ownership of the Old City's management.

Every above listed aim is elaborated in the annexed Volume Four of the dossier.

4. k. Staffing level

Staff of the Agency, as an entity in charge for preservation and development of the Old City of Mostar will be composed of professionals, who are well trained during the process of rehabilitation, and capable to fulfilling all the conditions defined in the Statute of the Agency.

It is very important to emphasize the roles of the Governing and Advisory boards during the program preparation and the supervision on the work of Agency. The advisory board should compose by representatives of citizens, owners (City of Mostar, Islamic community), tenants, tourist organizations, preservationists, and developers.

Staff of the Agency is: Director, Executive Director, Finance/Marketing, Finance /Accountant, Lawyer /Administrator, Architect/ Restorer/Planner, and Information Technologist.

Experts and auxiliary office services should be contracted on a part-time basis depending on the explicit needs.

The communication between the Agency and all the related organizations and individuals should be established on interactive electronic basis, a 24 hours open information system.

The Agency should assist owners and tenants on the administrative, financial and technical matters.

5. Factors Affecting the Property

5. a. Development Pressures

One of the consequences of the war in Mostar was the reduction of the development pressure, because of the decrease of the industrial capacities and the population in general.

5. b. Environmental Pressures

The war caused a complete destruction of the industry. A positive result is that Mostar became a cleaner city i.e. there is no significant pollution that can have an impact on the stone or other materials in the Old City.

5. c. Natural disasters preparedness

Related to the natural disasters, it is important to stress out that the Neretva River flows through the Old City and it presents a potential danger for it. On December 17, 1999. Neretva flooded the terraces and buildings that were on the lower levels of the riverbanks. The flood also ruined the temporary mounting (Old) Bridge and the Kriva Ćuprija on the Radobolja River.

5. d. Visitor/tourism pressures

The main tourist population consists of Catholic pilgrims that come from Medjugorje and the rest are tourists staying on the Adriatic Coast, mostly in Dubrovnik and Split. Due to the fact that they visit in already organized groups, the created pressure is manageable.

5. e. Number of inhabitants within property, buffer zone

- Number of inhabitants in the property area is 128 (subzoneA1-4 employees, A2-1, A3-10, A4-6, A5-19, A6-19, A7- 12, A8-23, B6- 17, B9-8), and in the buffer zone 3420.
- Number of employees in the property area is 342 (subzoneA1-106 employees, A2-46, A3-12, A4-53, A5-25, A6-41, A7- 20, A8-17, B6- 4, B9-18), and in the buffer zone 1405.

6. Monitoring

6. a. Key indicators for measuring state of conservation

Evidence for the present state of conservation is presented in maps and charts following paragraph 3.d appendix of this text. Also included in the Volume Three – Photographs is a photo comparison of the condition of buildings in 1998 and in 2005.

Key indicators for the Old City of Mostar are:

i. percentage of buildings requiring urgent intervention - critical points
ii. rate of successful implementation of self-sustainability of the historic core according to The Management Plan
iii. percentage of buildings requiring major repair

Indicator (i) current state: Three structures require urgent intervention (1.115%) out of 269 in the Old City.

Indicator (ii) current state: This indicator is elaborated in 4.g and 4.i paragraphs of this text and Map - Building Use, and refers to introduction of feasible and adequate functions and managing income.

Indicator (iii) current state: 26 objects (10%) fall into category of ruins and very poor state.

6.b. Administrative arrangements for monitoring property

Regular system of monitoring the property will be the Agency, established December 29, 2004 by the City of Mostar, elaborated in 4.d paragraph of this text.

6.c. Results of previous reporting exercises

- During pre-war period several documents had a great importance for the planning and monitoring component of the whole process:
- Preliminary Program for the preservation of the Old City prepared by the Institute for Urban Planning Mostar in 1967,
- Decision on spatial arrangement and revitalization of the core of the Old City (Mostar Municipality Official Gazette No.10/74),
- Decision of the establishment of special organization for the governing, use, protection and rehabilitation of the cultural and historical heritage ”Stari Grad”(Mostar Municipality Official Gazette No. 2/77),
- Master plan for preservation of the Old City in Mostar prepared by JP “Prostor” Mostar (Mostar Municipality Official Gazette No. 4/90)
- Rehabilitation plan (Mostar: Urban Heritage Map and Rehabilitation Plan of Stari Grad, UNESCO, 1997.) that was the component of nomination documents for Stari Grad in 1998 (Nomination No. 946.) prepared very valuable base documentation for further activities in preservation and development of Stari Grad in Mostar.
- After 1998 the activities on rehabilitation are parallel to the detail survey recording process. The current state was recorded in the Master Plan accepted May 10th 2001 (see Master Plan Maps and Text, annex to this document).
- Additional update was made for the Management Plan submitted for UNESCO Nomination in 2003.

7. Documentation

7. a. Photographs, slides, video

List of photographs:

Photo 1: Document written in 1452, first mention of the City of Mostar (Dubrovnik Archive)
Photo 2: Mostar - View from Stotina (Museum of Herzegovina,1895)
Photo 3: Old Bridge (Museum of Herzegovina 1895)
Photo 4: Mostar Old City (AKTC/WMF Collection, October 1940)
Photo 5: Mostar Old Town (AKTC/WMF Collection, October 1940)
Photo 6: Mostar Koski Mehmet-Paša Mosque (Museum of Herzegovina)
Photo 7: Prijecka Čaršija (AKTC/WMF Collection , 1905)
Photo 8: Prijecka Čaršija (AKTC/WMF Collection, 1905)
Photo 9: In front of Hamam (AKTC/WMF Collection, 1908)
Photo 10: Han – Tepa (Museum of Herzegovina)
Photo 11: Mostar Main Street (Museum of Herzegovina 1905)
Photo 12: Jusovina Street (AKTC/WMF Collection, 2004)
Photo 13: Koski Mehmed Paša Mosque (Museum of Herzegovina,1918)
Photo 14: Koski Mehmed Paša Mosque (AKTC/WMF Collection, 2004)
Photo 15: Karadjozbey Mosque (AKTC/WMF Collection, 2004)
Photo 16: Roznamedzijina Mosque (AKTC/WMF Collection, 2004)
Photo 17: Neziraga Mosque (AKTC/WMF Collection, 2004)
Photo 18: Old Orthodox Church (Mutevelić Collection, 1975)
Photo 19: Konak and Ortodox Church Complex (Museum of Herzegovina 1899)
Photo 20: Orthodox Cemetery (Mutevelić Collection, 1975)
Photo 21: Orthodox Church (Mutevelić Collection, 1975)
Photo 22: Bišcevic - Lakišić (AKTC/WMF Collection, 2004)
Photo 23: Kajtaz House (Mutevelić Collection, 1975)
Photo 24: Girls High School (Museum of Herzegovina 1905)
Photo 25: Pacher Kisić Bookstore (Museum of Herzegovina 1908)
Photo 26: Dokić Konak (Museum of Herzegovina, 1905)
Photo 27: Metropolitan (Museum of Herzegovina)
Photo 28: Landbank (AKTC/WMF Collection 1984)
Photo 29: Synagogue (AKTC/WMF Collection 2004)
Photo 30: Hotel Ruža(AKTC/WMF Collection,1986)
Photo 31: Mostar (AKTC/WMF Collection, 1986)
Photo 32: Aerial view (AKTC/WMF Collection, 1997)
Photo 33: Old Town Destruction (AKTC/WMF Collection, 1997)
Photo 34: Aerial View (AKTC/WMF Collection, 1998)
Photo 35: Old Bridge Stone In The River (AKTC/WMF Collection, 1997)
Photo 36: Stone Mason (AKTC/WMF Collection, 2004)
Photo 37: Scaffolding (AKTC/WMF Collection, 2002)
Photo 38: Scaffolding (AKTC/WMF Collection, 2002)
Photo 39: Tara Reconstruction (AKTC/WMF Collection, 2004)
Photo 40: Stone Deposit (PCU Collection, 2003)
Photo 41: Stone cutting works (PCU Collection, 2003)
Photo 42: Masonry works (PCU Collection, 2003)
Photo 43: Masonry works (PCU Collection, 2003)
Photo 44: Masonry works (PCU Collection, 2003)
Photo 45: Masonry works - vault (PCU Collection, 2003)
Photo 46: Terra rossa hydro - isolation (PCU Collection, 2004)

Photo 47: Bridge pavement (PCU Collection, 2004)
Photo 48: Shop (AKTC/WMF Collection, 2004)
Photo 49: Shop (AKTC/WMF Collection, 2004)
Photo 50: Tabacica Mosque (AKTC/WMF Collection, 2004)
Photo 51: Tabacica Mosque (AKTC/WMF Collection, 2004)
Photo 52: Vučjaković Mosque (AKTC/WMF Collection, 2004)
Photo 53: Vučjaković Mosque (AKTC/WMF Collection, 2004)
Photo 54: Mostar Panoramic View (Ćiro Raić Collection, 2003)
Photo 55: Crooked Bridge (AKTC/WMF Collection, 2004)
Photo 56: Mostar – Hamam (AKTC/WMF Collection, 2004)
Photo 57: Old Bridge (AKTC/WMF Collection, 2004)
Photo 58: Old Bridge (AKTC/WMF Collection, 2004)
Photo 59: Old Bridge (AKTC/WMF Collection, 2004)
Photo 60: Old Bridge (AKTC/WMF Collection, 2004)
Photo 61: Mostar Old Bridge (AKTC/WMF Collection, July 23, 2004)

List of video documents:

Video 1: Documentary film “Journal of the Builder”; Author: Jasmila Žbanić (Deblokada, 2005)

Video 2: Documentary film “Opening Ceremony of The Old Bridge” (Music Production of Public Broadcasting of Bosnia and Herzegovina, 2004)

List of publications:

1. Mostart, A Bridge Story; Published by World Bank, UNESCO, PCU in July 2004
2. Conservation and Revitalization of Historic Mostar, AKTC/WMF, July 2004
3. Publications dedicated to the Rehabilitation of The Old bridge, PCU in January 2005
4. Decisions of the Commission to Protect National Monuments

7. b. Copies of property management plans and extracts of other plans relevant to the property

The Management Plan and Decisions issued by the Commission to Preserve National Monuments related to the Old City of Mostar are attached to this document.

The management Plan consists of following chapters:

1. Governing,
2. Finance,
3. Planning,
4. Implementation.

Decisions issued by the Commission to Preserve National Monuments related to the Old City of Mostar as followes:

1. Old Bridge with towers, the architectural ensemble,
2. Koski Mehmed Paša Mosque and medresa, the architectural ensemble,
3. Nasuh Aga Vučjaković Mosque, the architectural ensemble,
4. Nezir-aga Mosque, the architectural ensemble.
5. Clock Tower, the historic building,
6. Karadjozbeg Mosque, the architectural ensemble,
7. Roznamedji Ibrahim Efendija Mosque, the architectural ensemble,
8. Old Orthodox Church of Birth of Virgin, the architectural ensemble,
9. Orthodox Cathedral – The Holy Trinity, the site and remains of the historic monument,
10. Metropolitan residence, the architectural ensemble,
11. Residential Complex of Biščević-Lakišić, the architectural ensemble,
12. The Historic Urban Area of Mostar.

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7.d. Address where inventory, records and archives are held

Herzegovina Archive
Trg 1. Maja nr.17 ;Mostar,;Bosnia and Herzegovina

Commission to Preserve National Monuments
Obala Kulina bana 1 ;Sarajevo, Bosnia and Herzegovina
www.aneks8komisija.com.ba

Project Coordination Unit
Adema Buca 17; Mostar, Bosnia and Herzegovina
e-mail:pcu@starimost.ba

Stari Grad Agency, City of Mostar
Adema Buca 19 ;Mostar, Bosnia and Herzegovina

Institute for Preservation of Cultural, Historical and Natural Heritage, Mostar
Mala Tepa 26 ;Mostar, Bosnia and Herzegovina
e-mail:zavodmostar@yahoo.com

Federal Institute for Preservation of Cultural, Historical and Natural Heritage
Alekse Santica bb ;Sarajevo, Bosnia and Herzegovina

The Aga Khan Trust for Culture and the World monuments Fund – Project Mostar
Osmana Djikica 41; Mostar, Bosnia and Herzegovina
e-mail:aktcmo@bih.net.ba

8. Signature on behalf of the State Party

Bosnia and Herzegovina
Ministry of Foreign Affairs (on behalf of State Party)

Ms.Lidija Topić
Title: Deputy Minister

_____

Date: January 26, 2005

Nomination for Inscription on the World Heritage List

Nomination Dossier
“The Old City of Mostar”

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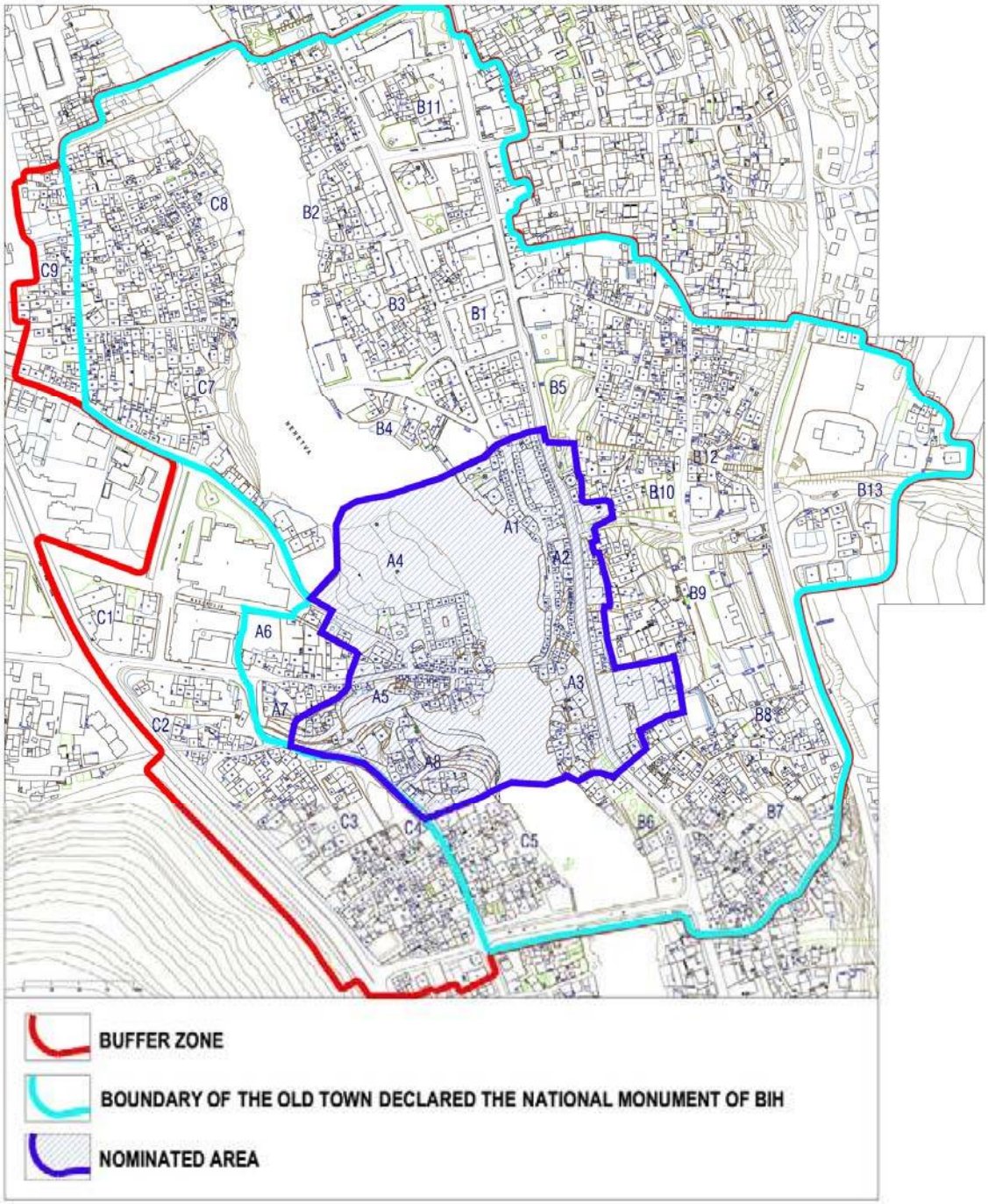
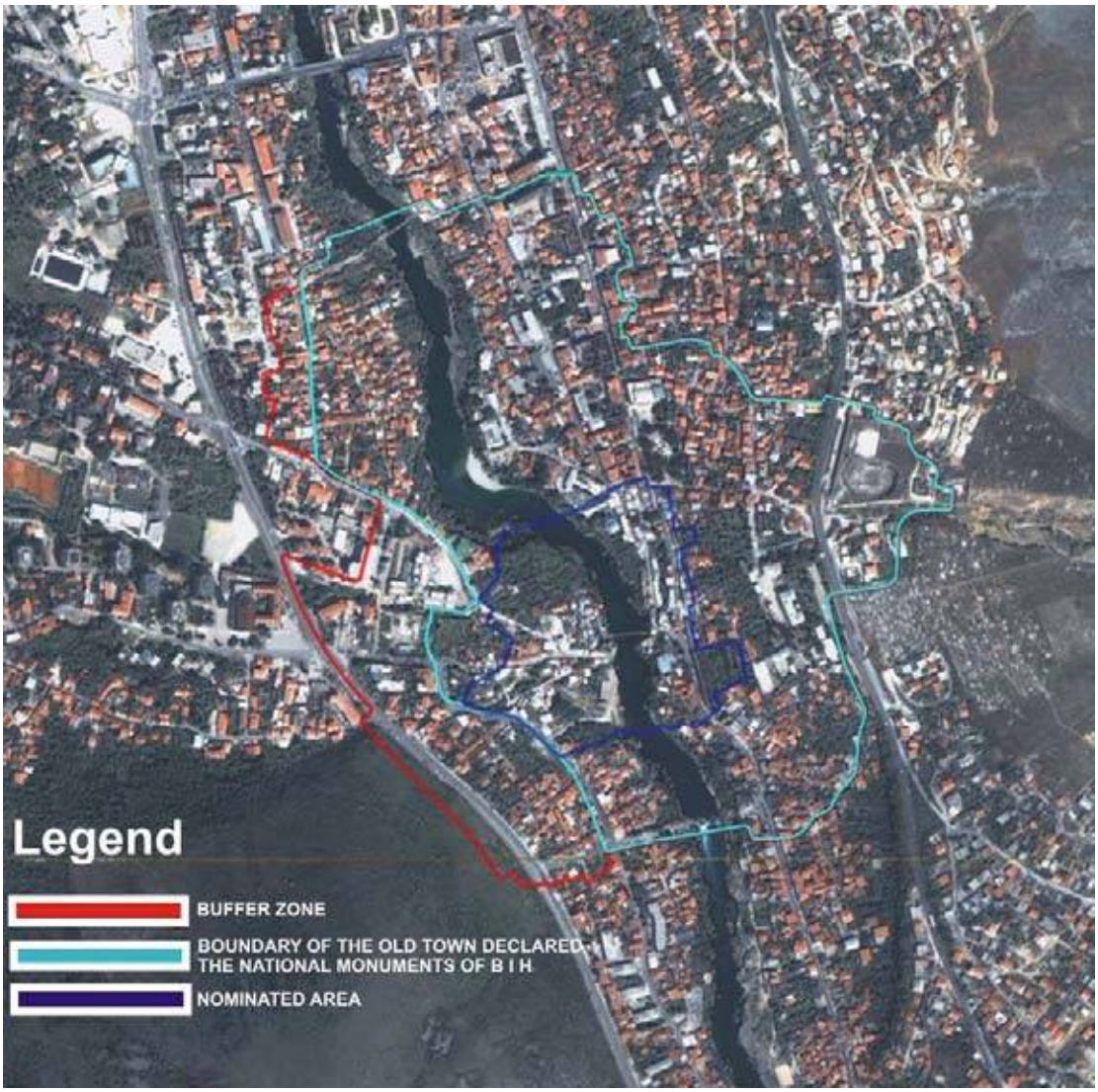
1. e MAPS

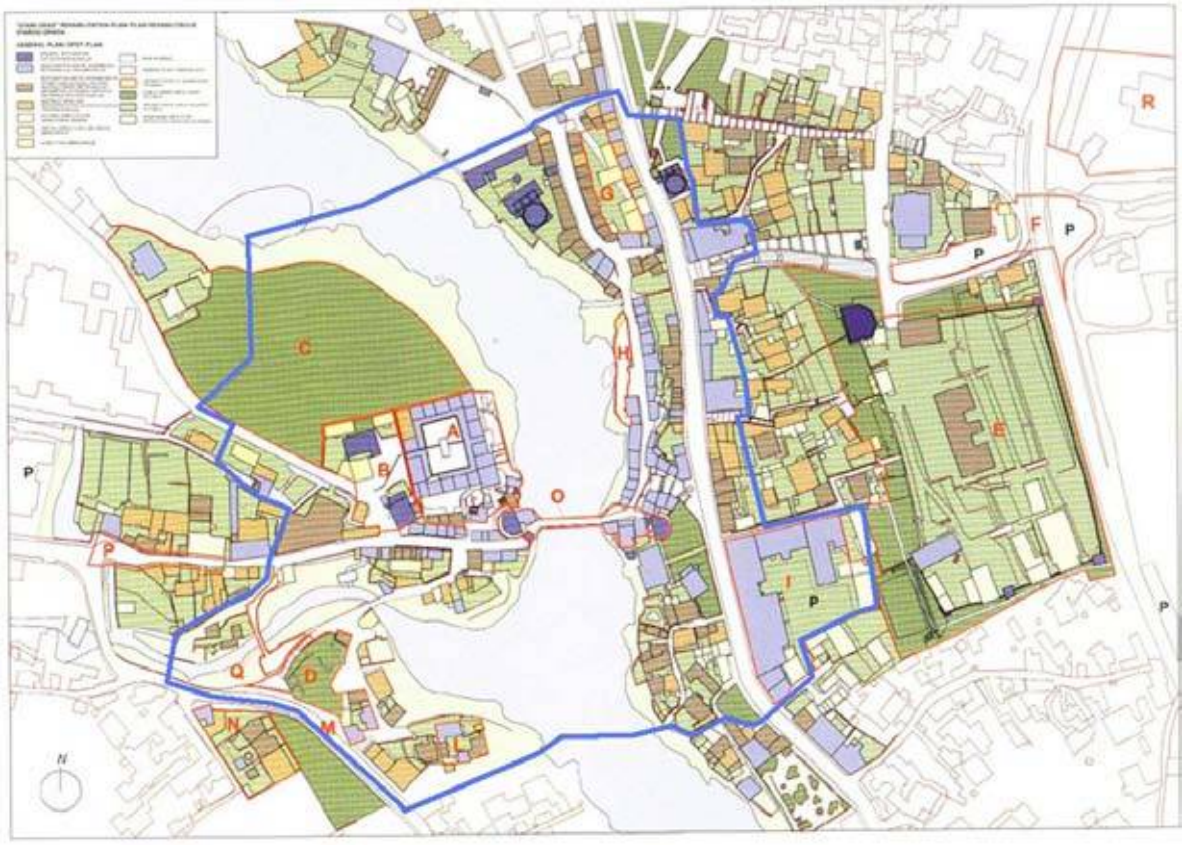
The Old City of Mostar – Identification of the property



Map 1: Borders of the area proposed for inscription with buffer zone



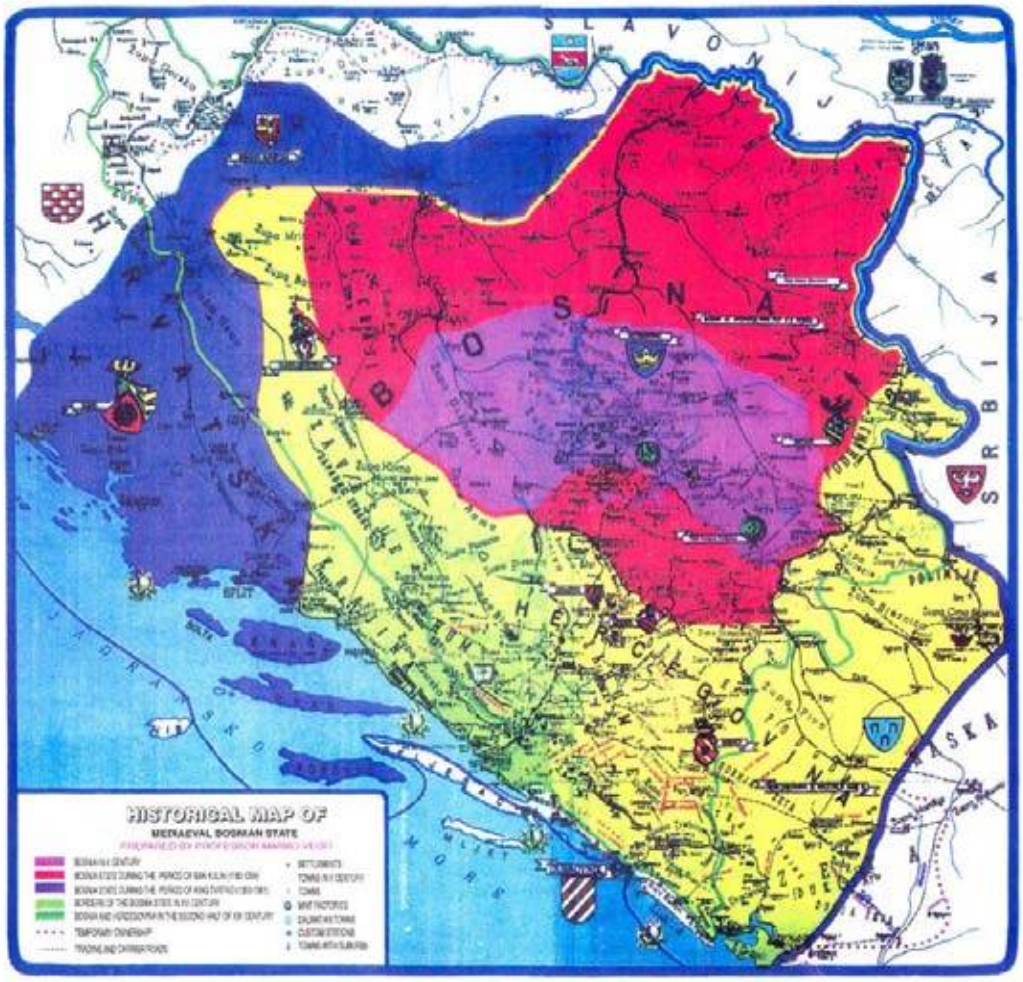
Map 2: Borders of the area proposed for inscription with buffer zone presented on the satellite photo



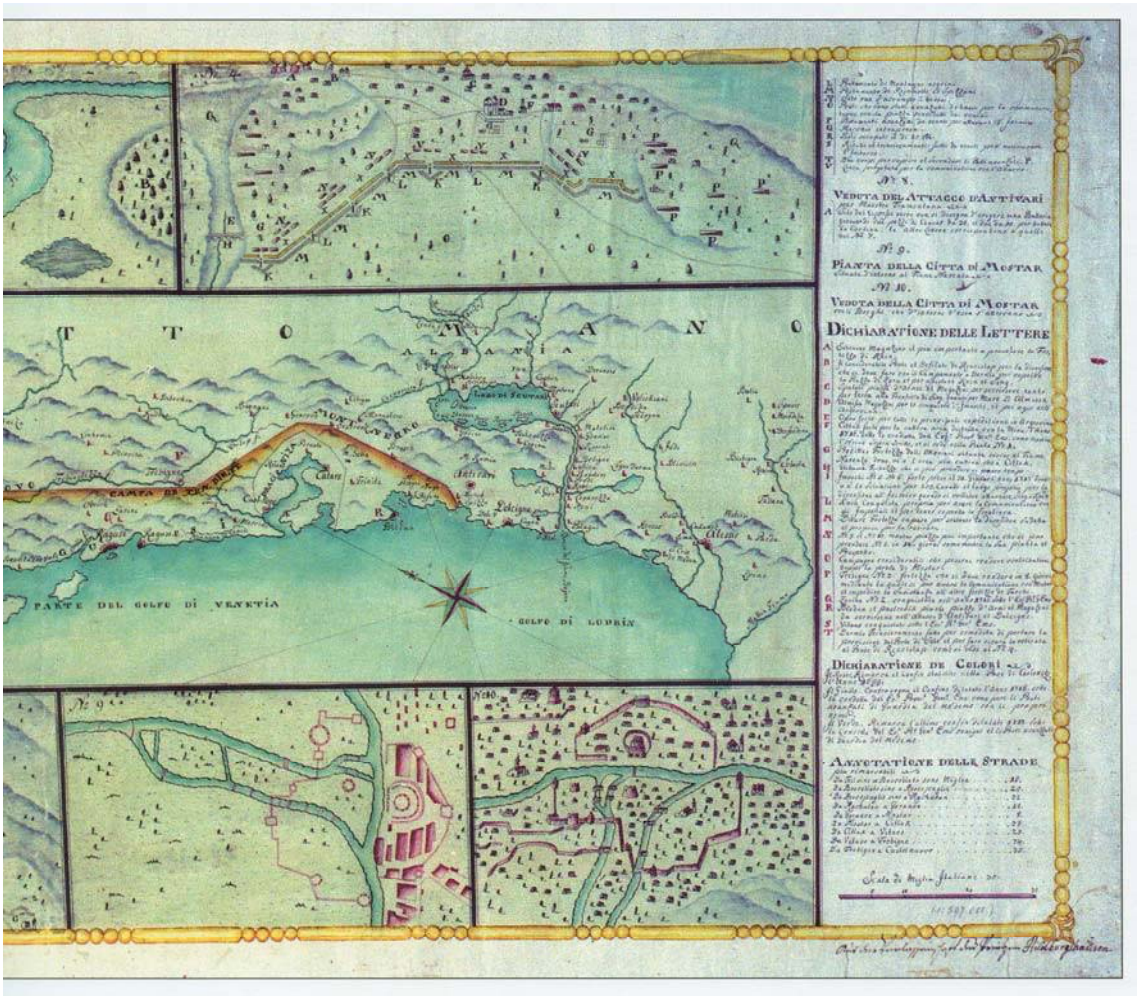
Map 3: Border of the area proposed for inscription on the map from the "Urban Heritage map of Mostar and rehabilitation of Stari Grad", UNESCO 1997

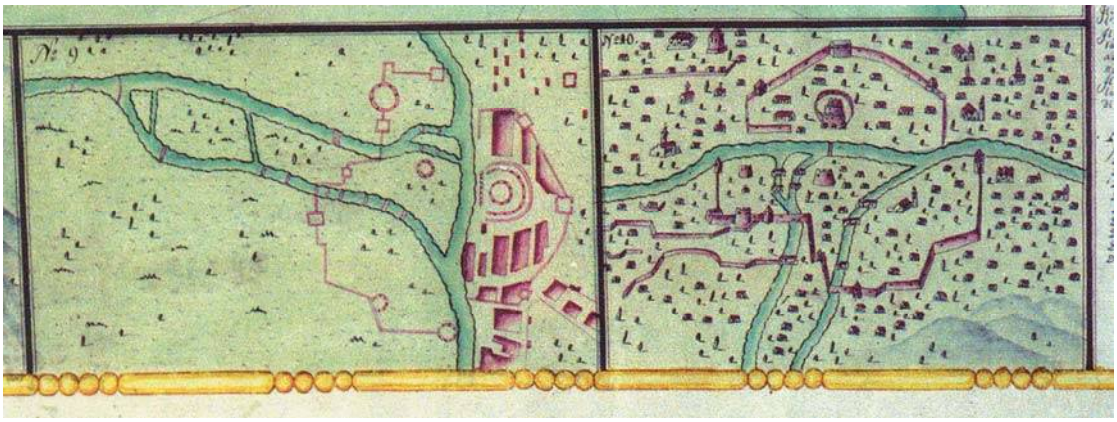
Map 4: Bosnia and Herzegovina in Europe in 2005

Map 5 : Map of Bosnia and Herzegovina in 2005 (original scale of 1/1.750.000)



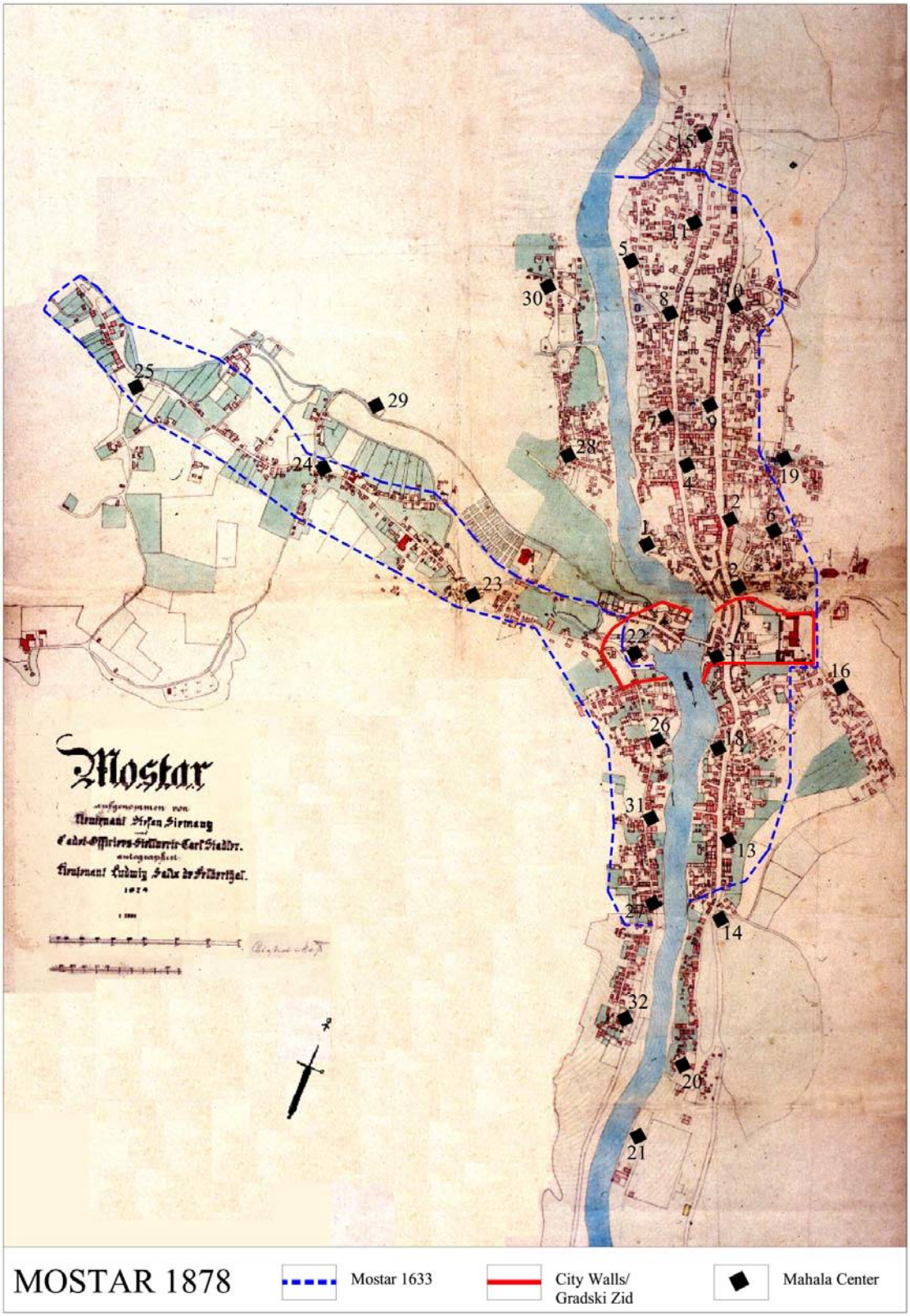
Map 6: Historical map of Medieval Bosnian State (Prepared by Marko Vego)





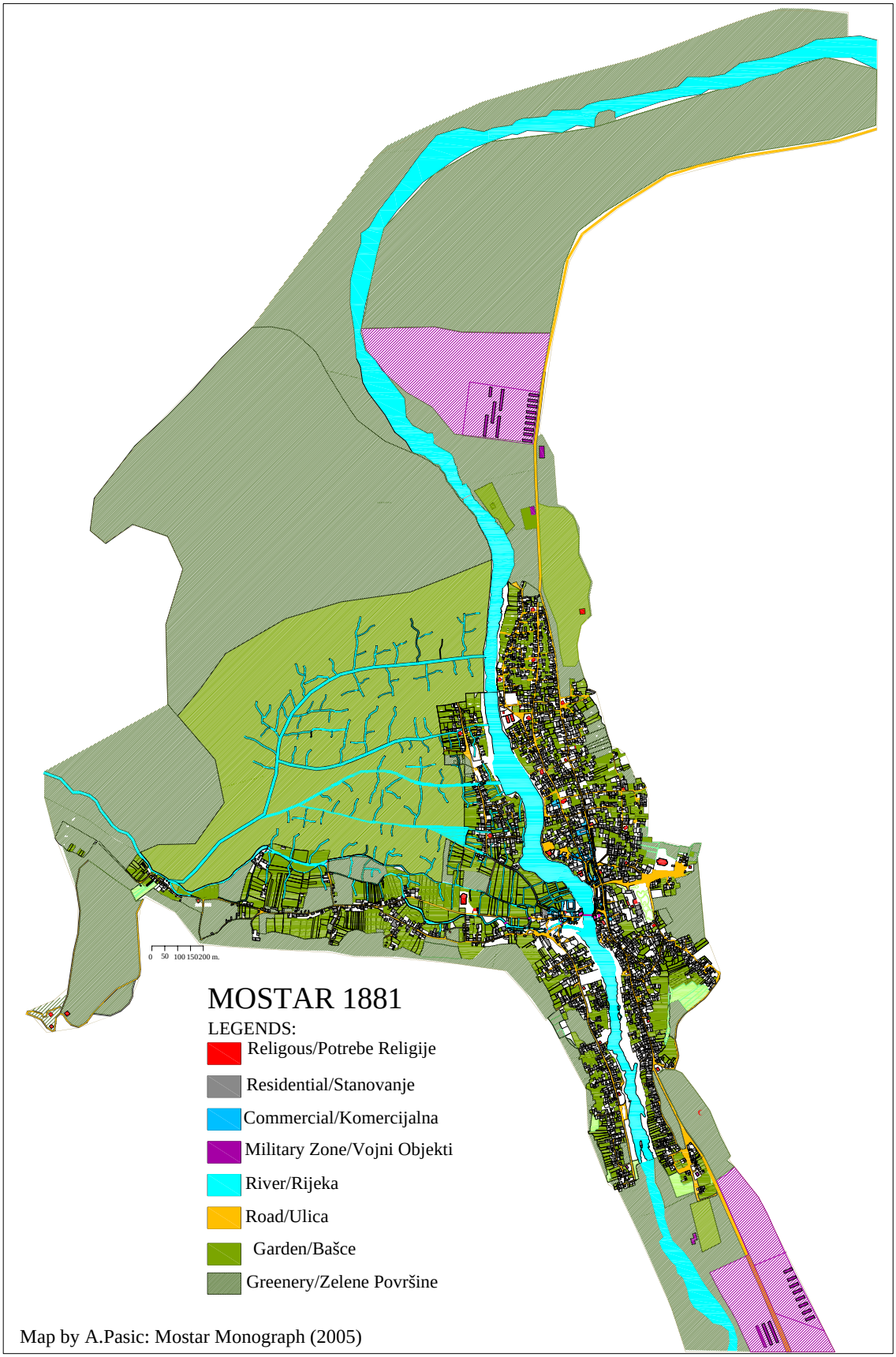
Map 7: Mostar – fortification in 1716: (above) a part of the complete map, (below) a detail of the map (The original map is in the War Archive Vienna)

The Old City of Mostar – Identification of the property



Map 8: Mostar – the structure of the city in 1878

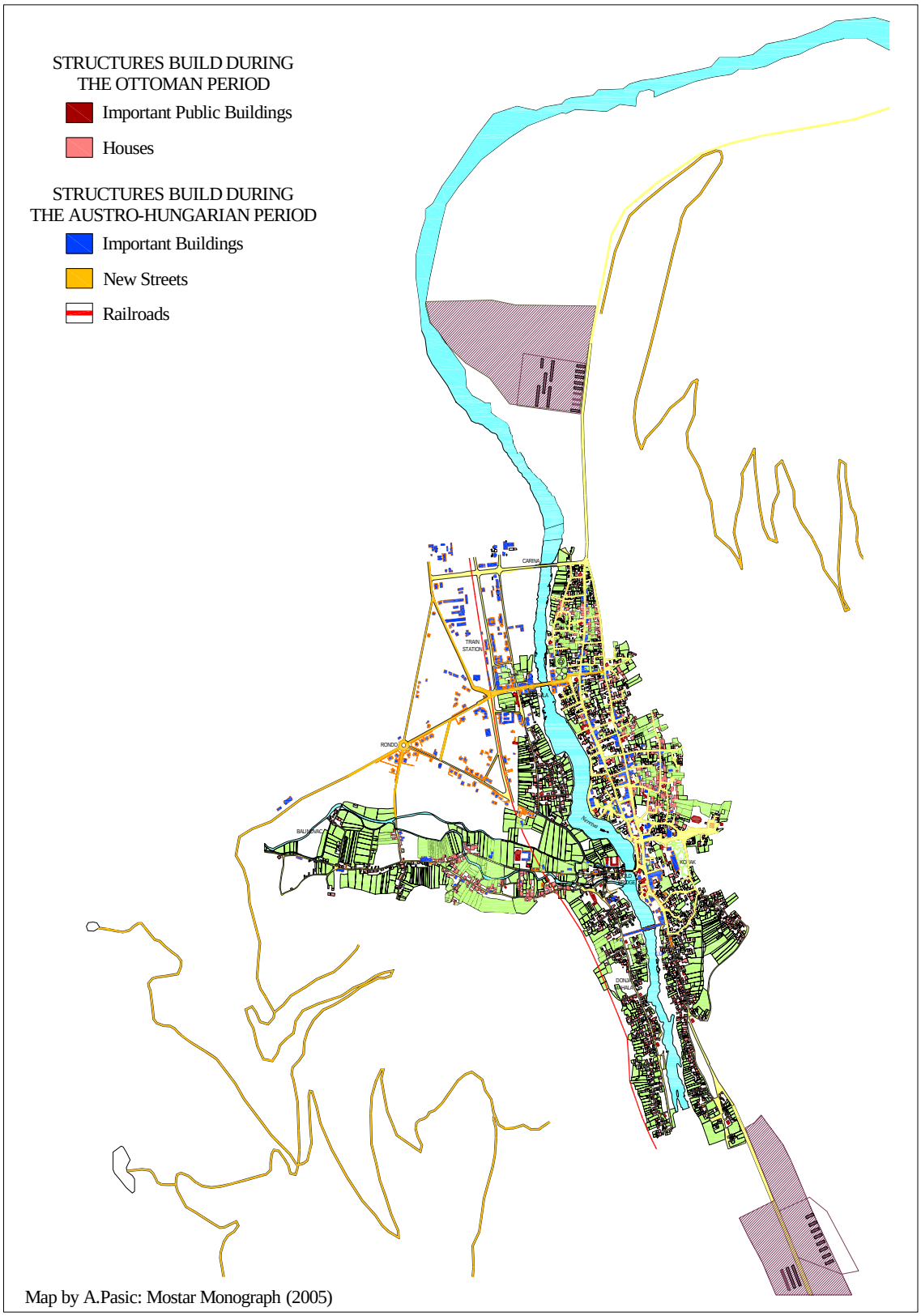
The Old City of Mostar – Identification of the property



Map 9: Mostar – map of the city in 1881

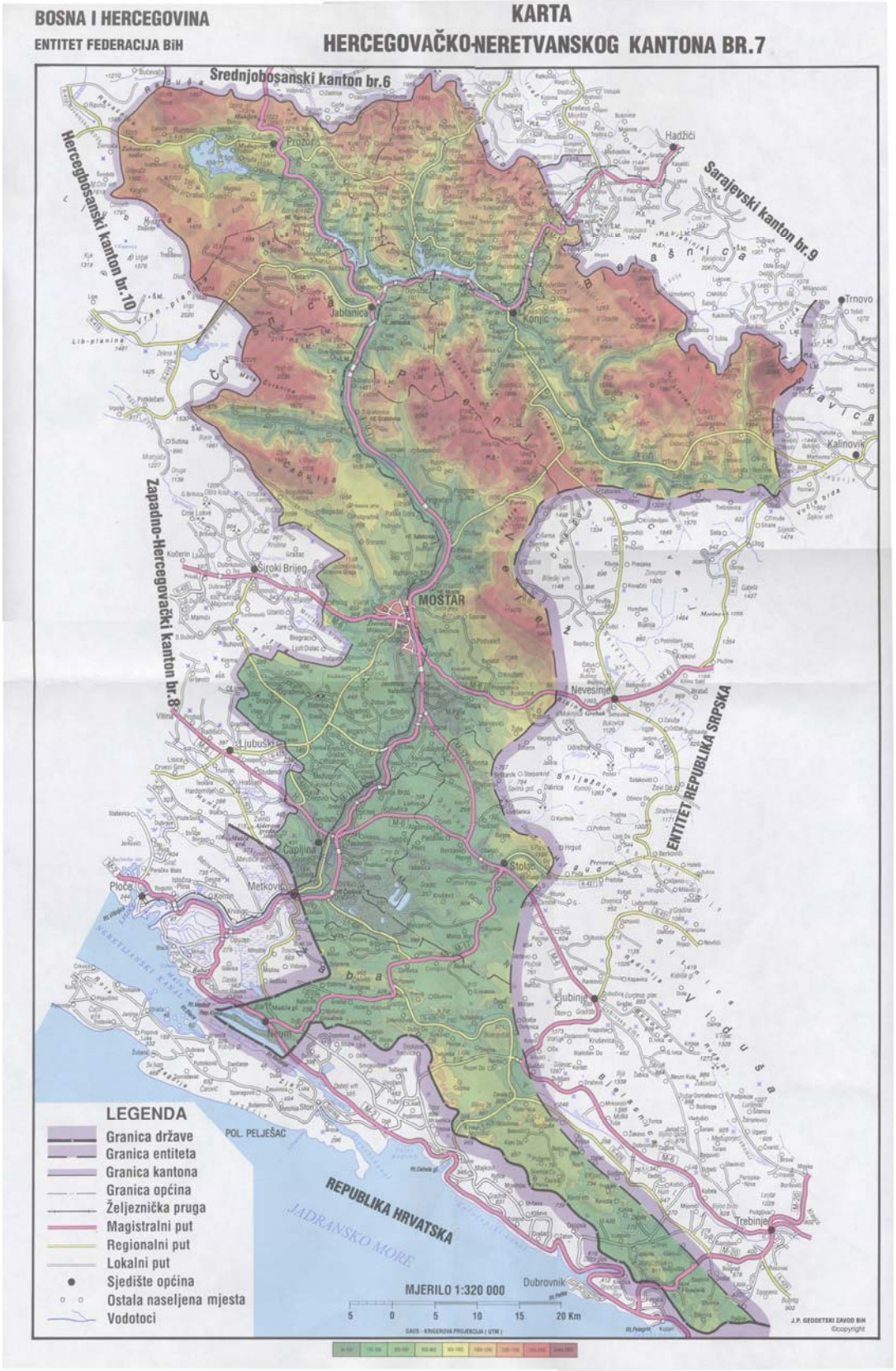
The Old City of Mostar – Identification of the property

Map 10: Historical map of Bosnia and Herzegovina in 1914 (original scale of 1/1.000.000)

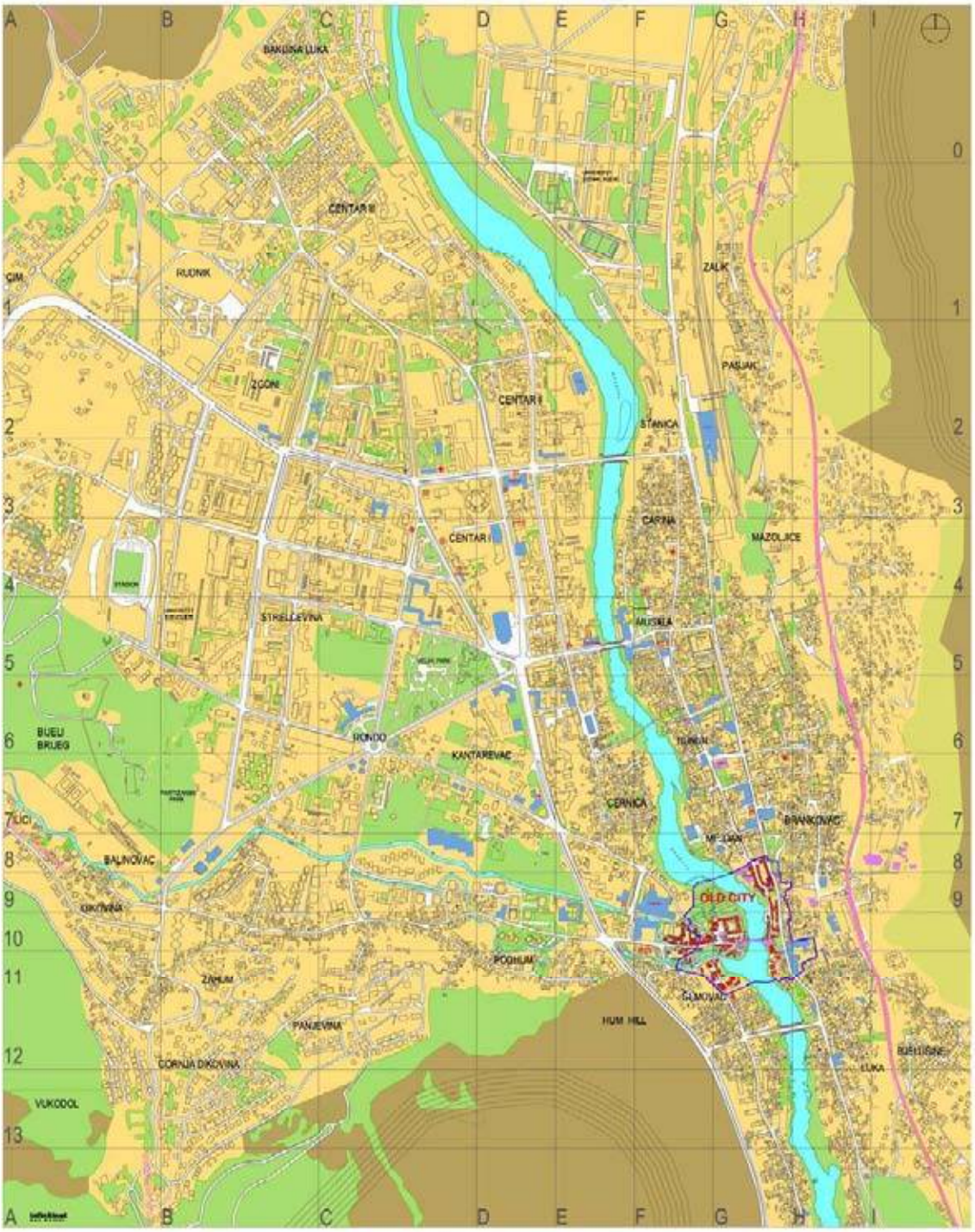


Map 11: Mostar - map of the city in 1918

The Old City of Mostar – Identification of the property



Map 12: Map of Herzegovina - Neretva Canton in 2004 (original scale 1/320.000)



Map 13: Map of city of Mostar in 2004

Nomination for Inscription on the World Heritage List

Nomination Dossier
"The Old City of Mostar"

3.a DESCRIPTION OF PROPERTY

3. Description

3. a. Description of Property

The area nominated for inscription is located on the canyon of the Neretva River with the Old Bridge complex at its center and bazaar and housing areas around it. The Old City presents a harmonious balance between nature and mankind activities. The river determines the structure of the city and accordingly forms the street network as well as the positions of objects.

The Radobolja River, which enters the Neretva on the right bank, gives a special significance to the area. The Radobolja provides a source of water for the growing settlement, and from it spring a number of small canals used for irrigation and for driving the wheels of numerous water mills.

The area of bazaar is mostly encircled by city walls and three solid fortresses: one around bridge with Tara and Halebija towers, Tabhana (Janissary barracks till 1830-es) on the west bank, and the Konak complex (military headquarters) on the hill above the Bridge on the east bank. The area of the Koski Mehmed Paša mosque presents extension of the bazaar towards north on the east bank and out of the city walls.

Bašćine gardens, located north from the Tabhana, are the only preserved part of the large Ottoman gardening system at Cernica field. These gardens, together with the green areas on the Neretva River banks, represent valuable components of the nominated area.

Nominated area and its buffer zone contain several important historic buildings predominantly established in the Ottoman time, encompasses several monumental structures: the Old Bridge complex (completed in 1566), with several archeological layers from the pre-Ottoman time; Kriva Ćuprija bridge (1558), Čejvan Ćehaja Mosque (1552), Koski Mehmed Paša mosque complex (1618), Vučjaković Mosque (1518), Neziraga Mosque (1555), Tabačica Mosque (completed before 1663), Hamam (completed before 1663), and Tabhana (16th c). In the same area the rest of the structures are mainly modest buildings such as: shops and store-houses (dućans and magaza), water-mills, inns (hans), and smaller group of houses all set up in the 16th century by the same donors who had contributed to the building of their mosques.

<u>Old City of Mostar (Nominated Area):</u> 1.Old Bridge Complex,2. Koski Mehmed Paša Mosque,3.Nesuh-age Vučijeković Mosque, 4.Nezir-aga Mosque

The buffer zone has preserved the urban tissue from the Ottoman time. An example is the network of streets with different levels of movements; a main street (džada), a small street (sokak), a blind street (čikma), and a house courtyard (avlija). The area encloses several notable mosques: Karadjozbeg (1557), Roznamedji Ibrahim Efendi (1620), Cernica (b.1633). The Orthodox Church complex was located on the hill-foot northeast from the bazaar with two important churches (built in 1833 and 1873). The area contains hundreds traditional houses in several neighborhoods (mahalas) from which the best preserved examples are Kajtaz house in Bjelušine and the Biščević-Lakišić housing complex on the Neretva River bank.

Every historic period added new architectural elements from its traditional style. Several massive structures in the nominated area (Girls High school, Dokić apartment block) resulted from the Austro-Hungarian occupation. New buildings that were constructed in the buffer zone, and that way transformed the area from the north of the bazaar on the east bank to streets with Middle-European character. Several buildings: Military club (1888), Wakuf Palace (1894), Municipality hall (1900), Serbian Primary school (1909), Landbank (1910), Metropolitan palace (1910) built in neoclassical and secession style represented the landmarks in the area.

During the 20th century only a few larger intervention occurred in the buffer zone such as the construction of the hotel "Ruža" in the garden located west from the Baščine, and "Šipad" building in the Fejić Street.

<u>Old City of Mostar (proposed area of property and buffer zone):</u> 1.Old Bridge Complex,2. Koski Mehmed Paša Mosque, 3. Nesuh-aga Vučjaković Mosque, 4. Nezir-aga Mosque, 5. Clock Tower, 6. Karadjozbeg Mosque, 7. Roznamedji Ibrahim Efendija Mosque, 8. Old Orthodox Church of Birth of Virgin, 9. Orthodox Cathedral – The Holy Trinity, 10. Metropolitan residence, 11. Residential Complex of Biščević-Lakišić

All the structures mentioned above (excluding Neziraga mosque, destroyed in 1950) had shared the same destiny - they were destroyed during the 1992-94 war.

The Old Bridge complex represents the most important monument in the Old City. The complex consists of three towers, a mesjid (religious facility), walls, a gate and several supporting structures. Archeological research during rehabilitation process has proved numerous historic documents about historic layers, before and after the year 1566, when the stone arch was erected.

During the period between 1998 and 2004, the citizens and the city government in collaboration with international donors and organizations rehabilitated large portion of the nominated area, and major parts of the buffer zone. The main focus was on the Old Bridge and the listed monumental structures where traditional building technology with the usage of traditional materials was applied with the help of UNESCO's International Committee of Experts.

The nominated area, despite the destructive events and consequences, has preserved most of the buildings, particularly of urban, visual and ethnological characteristic, with emphasized dynamics of space and form. The founders and the laborers have carved the aesthetic values and the monumentality of their time and cultural scope – the structures were given monumental character and left as bearers of building sequences built within the frame of limited materials and concepts, and in the continuous spirit of the site. This artwork is created with a synthesis of the autochthonous, Oriental-Ottoman and Mediterranean characters.

The Provisional List of National Monuments, issued in November 2002, contains forty buildings or sites with monumental characters in the city area of Mostar. Commission to Preserve National Monuments designated 22 properties up to now.

Commission to Preserve National Monuments designated the following properties as the national monuments:

In the nominated area:

1. Old Bridge with the towers, the architectural ensemble
2. Koski Mehmed-paša Mosque and medresa, the architectural ensemble
3. Nesuh-aga Vučijaković Mosque, the architectural ensemble
4. Nezir-aga Mosque, the architectural ensemble

In the buffer zone:

5. Clock Tower, the historic building,
6. Karadjozbeg Mosque, the architectural ensemble
7. Roznamedji Ibrahim-efendija Mosque, the architectural ensemble,
8. Old Orthodox Church of Birth of Virgin, the architectural ensemble,
9. Orthodox Cathedral – The Holy Trinity, the site and remains of the historic monument,
10. Metropolitan residence, the architectural ensemble,
11. Residential Complex of Biščević-Lakišić, the architectural ensemble.

12. The Old City of Mostar, Commission to Preserve National Monuments designated The Historic Urban Area of Mostar as a National Monument, in July 2004.

DESCRIPTION OF IMPORTANT PUBLIC STRUCTURES

a) Structures listed as national monuments

Detailed information can be found among the decisions regarding the national monuments that were adopted by the Commission to protect national monuments of Bosnia and Herzegovina.

The Old Bridge Complex in Mostar

Archaeological research and the following detailed archaeological excavations at the site of the Old Bridge complex, which were conducted continuously from 2000 to 2003 discovered remnants of wooden bridges from pre-Ottoman period. Even though a detailed archaeological research was not a part of the reconstruction project at the beginning, important discoveries appeared during works on the abutment walls. UNESCO through its ICE (International Committee of Experts) has decided to

continue with detailed archaeological researches (5th session). The remains of the first suspended bridge built before 1452 were discovered. The suspended bridge was supported at the left bank and eccentrically added to the already existing regular, symmetrical, polygonal fortification. Also numerous coins, pottery, canon balls and other artifacts were found during the excavations. The archeological site is located bellow the Old Bridge complex, on both sides of Neretva River, and is accessible for visitors. The whole area represents an archeological museum, with underground part (remains of the wooden bridge and archeological artifacts) and open auditorium area (at Radobolja River confluence) with the original Old Bridge stones extracted from the river by Hungarian SFOR Unit in 1997.

The entire complex is composed of the tower Tara (at the east bank of Neretva) with the Austro-Hungarian two-story house at its base, towards the bridge. The mesjid, built during the Ottoman period, leans on the Austro-Hungarian house, and there by its side is the storage house dated from the same period, situated at the very entrance of the bridge. At the west bank by the bridge's access there is a trade store from the Ottoman period connected by wall to the tower Halebija. All structures have stonewalls formed of *tenelija* and *miljevina* limestone mixtures, plastered with lime mortar, with traditional wooden openings, metal shutters and characteristic stone roof tiles. Downstream from Tara, at the east bank, there is the tower Herceguša, a medieval stone structure with the watchtower on top.

The Old Bridge Complex in Mostar (1)

The Old Bridge in Mostar is the engineering miracle of its time, built upon design of the great Ottoman architect Kodja Mimar Sinan constructed by his pupil architect Hayruddin. It is the one-arch stone structure with the downstream span of 28,62m and the upstream span of 28,71m. The arch itself is a winded surface with asymmetrical downstream and upstream elevations formed due to the displacements of the arch-scaffold during the construction period. The deformations emerged through time during five centuries of its existence. The structure is simply decorated with only two cornices, which highlight the elegance of its slim arch (thickness of the arch is approximately 90cm), and the

width stretches between 395 and 400 cm. There are other single-arch bridges of the large span in the world, but none of them have had such thin arch structure directly based onto the rock mass of the riverbanks. The bridge is built from Eolithic limestone of the local name *tenelija* extracted from the local quarry. The arch blocks were connected with iron dowels, poured with led connecting the structure in such way. Also, the blocks were connected with the iron cramps on the extrados, which are again poured with led. Bind between the stone blocks was traditional lime mortar. Pavement of the bridge was constructed from the hard marble limestone, which becomes polished through time. The pavement was placed in layer of red soil (*terra rossa*) and lime, so called *Turkish insulation*. The iron fence on the bridge, dated from Austro-Hungarian period, was renewed in accordance to the original receipts of metal and building methodology, as well as dowels and cramps (metal parts were analyzed and manufactured at the Metallurgical institute "Kemal Kapetanović" from Zenica).

The Old Bridge complex was opened for public in summer of 2004 after four years of intensive research and reconstruction works. The international rehabilitation project guided by the City, World Bank and UNESCO, has gathered number of experts of international reputation. Structural design was done using the photogrammetry made in 1955 and 1982 by Survey Institute University of Zagreb. General Engineering did structural design with detail disposition of every stone block from Florence, Italy, headed by a team of recognized experts. Design was made in two years, and its results, besides the structural calculations, were books of stone cutting and chiseling, which were direct sources for the reconstruction that followed. Material analyses were done by the LGA institute from Nurnberg, Germany. Their researches resulted with three books on stone, metals and mortars. Tests were conducted on the arch remnants recovered from the river after the bridge's destruction, as well as on the stone samples from the reopened original quarry (it is considered that quarry Mukoša is situated at the very location of the original bridge's quarry or very near to it). LGA has also installed the monitoring system (the system of strain gauges and pressure cells placed at the arch joints and bridge's extrados) during the construction phases of the bridge, which serve for monitoring the state of bridge's structure during the first years of exploitation (displacements and stresses).

The comparative analyses with the modern materials were also made. Researches on the state of the bridge's remnants, the foundation rock mass and its abutment walls, was done by Joint Venture of "Conex" and "Yeralti Armacilik". During the works, the standard methods were used along with the latest methods of testing by ultrasound and topography. Consolidation of the foundations and strengthening of the rock mass was done by Turkish company "Yapi-Merkezi". Each phase of preliminary works was monitored by UNESCO's ICE, and conclusions from their conferences were implemented through all phases of the project. After the researches were finished it was decided to continue with the facsimile reconstruction of the complex. Reconstruction of the bridge was realized by Turkish company ER-BU Ankara with the number of subcontractors. The supervisor on the reconstruction works was "Omega Engineering" company from Dubrovnik, which realized the Detail design of Towers rehabilitation and rehabilitation of the surrounding structures as well as the quadrant archaeological researches. Works on the towers reconstruction were done by Joint Venture "Građevinar-Fajić", "Kara-Drvo" and "HP Investing" from Mostar with their subcontractors. Preliminary works on stone cutting was performed by "Kara-Drvo" Company and the supervisor was Geological institute from Sarajevo. Each construction phase was done under the careful monitoring of UNESCO's expert committee, which had pointed direction of the reconstruction works and for this purpose have held eight sessions.

Koski Mehmed-paša Mosque complex is situated on the left side of Neretva River, between river, and the Mala Tepa Street. From east and north is hemmed with stores and market, and from west and south, where Neretva flows has open view. It belongs to early Istanbul style of Ottoman architecture, which has following characteristics: a main cupola above praying space, three little cupolas above porch and leaned minaret on the right side of the building. Mosque was built in 1618, and medresa was built later. The complex was heavily damaged in the 1992-1995 war. In 2000 Turkish government restored the complex.

Nesuh-aga Vučjakovića Mosque is third domed mosque in Mostar, but with some details it differs from the other two. Nesuhaga mosque or mosque "Under linden" is situated on the left side of Neretva River, on the corner of M. Tito Street and Clock tower. Name "Under linden" it gets according to linden tree that is planted years ago in front that mosque. With its architectural details it represents unique example of Mediterranean-Dalmatian school of building.

The complex was heavily damaged in the 1992-1995 war. The mosque was restored in 1999 using the donation of Hashemite Kingdom of Jordan.

Koski Mehmed-paša Mosque (2)

Nesuh-aga Vučjakovića Mosque (3)

Nezir-aga Mosque or was situated on the Spile plateau above the Kriva Ćuprija (Crooked) bridge, 150 meters far from the Old Bridge. This locality dominates with down part of Radobolja valley and it is the most vivid part of the Old City. The mosque style belongs to the architectural group of mosques without cupola, with four-eaves roof covered with stone slates.

Parts of the mosque above one meter above the terrain were demolished in 1950 by local government. In 1999 the complex was reconstructed by the Research Centre for Islamic History, Art and Culture (IRCICA) Istanbul.

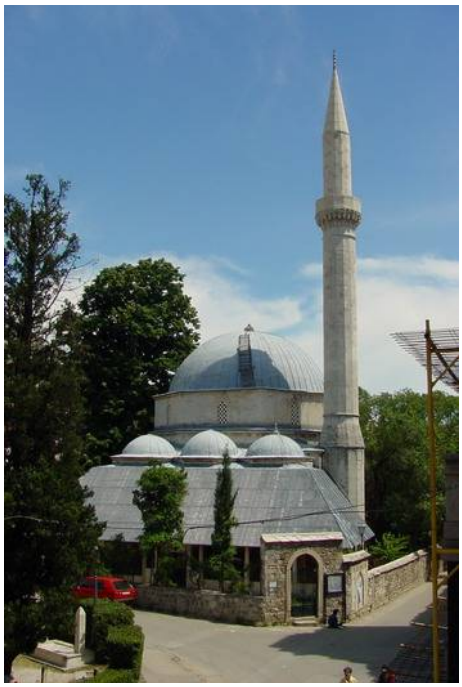
Clock Tower built before 1636 through donation of Fatima Šarić in a peripheral part of the Bazaar, Kazazi Street, on an elevation place so could be seen from the whole city. Its height is 16 meters and has five floors. The old clock was in function until 1926, and from 1981 the building was in its original function, that year it had been restored and a new clock has been built in.

The tower was partly damaged in the 1992-1995 war. In 1999, the tower was restored.

Nezir-aga Mosque (4)

Clock Tower (5)

The Karadjozbeg Mosque**.** Karadjozbeg, brother of the grand Vizier Rustem-Paša (1544-52, 1554-61) erected a mosque as his memorial in 1557. Kodža Mimar Sinan is cited as the builder. Karadjozbeg had an immense influence on the development of Mostar, since he built a whole range of structures for public, sacral, and business uses. He was also connected with the building of the Old Bridge. The Karadjozbeg Mosque was built in the immediate vicinity of the bazaar, by the main road, in an area that was large enough for the range of structures usually built as a complex: mosque, medresa(religious high school), mekteb(religious primary school), han (inn), and imaret (public kitchen for the poor). Architecturally, it belongs to the simple domed type, with a porch under three small cupolas, a second porch, and a minaret.



Karadjozbeg Mosque (6)

Roznamedji Ibrahim-efendija Mosque (7)

The complex was heavily damaged in the 1992-1995 war. In 2004 the Research Centre restored the mosque for Islamic History, Art and Culture (IRCICA) Istanbul.

Roznamedji Ibrahim-efendija Mosque is situated on the corner of Kresina and Braće Fejića Street, not far from left side of Neretva River and it is considered as the most significant of Islamic culture in Mostar.

The mosque with its style belongs to the architectural group of mosques without stone cupola, with four-eaves roof covered with stone slates, above the wooden ceiling with centered cupola. The Roznamedji mosque has exceptionally beautiful minaret.

The mosque was partly damaged in the 1992-1995 war. Restoration of the building was completed in 2002.

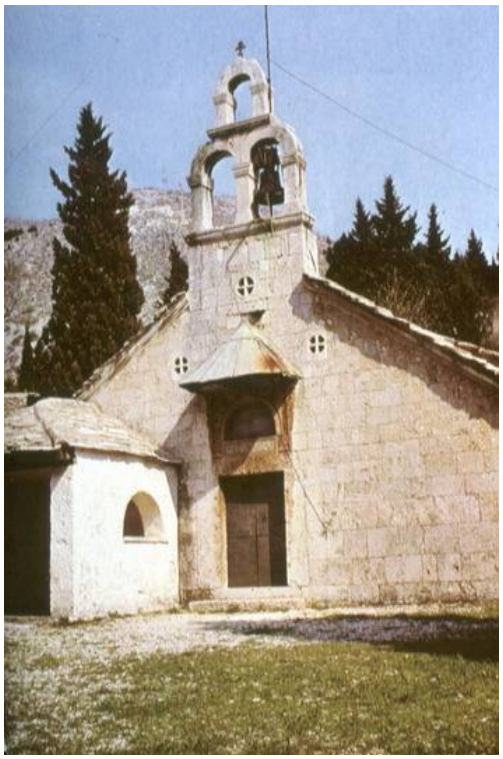
The Orthodox Church complex. The Orthodox population had their own church probably in the 18th century, which was replaced in 1833 with the one devoted to the Nativity of the Mother of God, and built in Suhodolina. This building was the initial structure for development of the Orthodox community center. The church was built partly dug in a terrain, probably to be less visible from the town.

The building was constructed with a traditional material and technology, using Byzantine architectural elements combined with Islamic (*mushebak* in the gallery for women), and Romanesque (a bell tower).

The cemetery developed east and south of the church. A primary school was built next to the church in 1856. Lastly, another Eastern Orthodox Church devoted to the Holy Trinity was built in 1873, taking place west from the school.

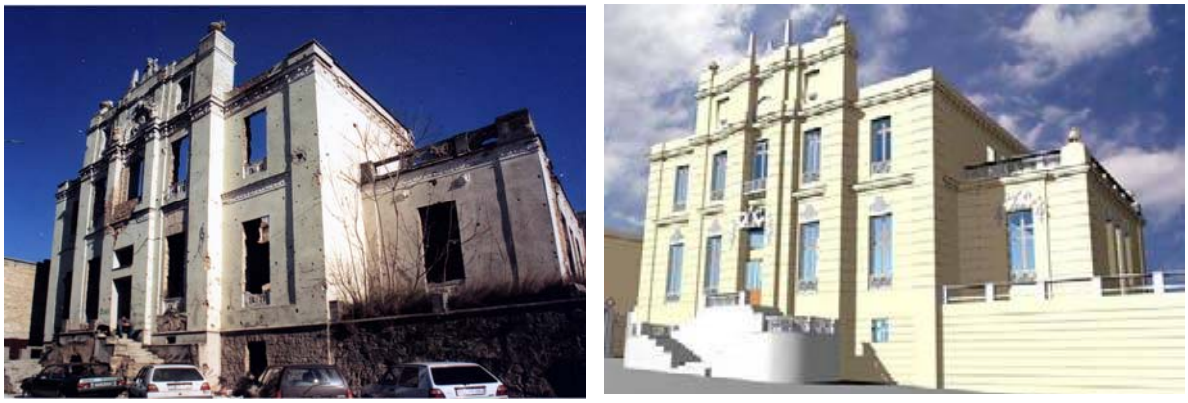
The new Cathedral church Holy Trinity dominated the town view. It was the largest church in the entire Bosnia and Herzegovina, built between 1863 and 1873 in a Neo-Byzantine style by the architect Andreja Damjanov, from Veles, Macedonia. The church was built with five domes (additional one over apse) and with four central columns in the cross-inscribed plan.

Both churches were demolished in 1993. The older church was reconstructed in 1997.



The Old Ortodox Church from 1833(8)

The New Cathedral Church Holy Trinity (9)



The Metropolitan Palace (10)

The Metropolitan Palace, built in 1910 to house the Orthodox Metropolitan of Mostar, is one of Mostar's most graceful and elegant buildings designed by Karlo Parzik. With this building Baroque revival tend to convey a lightness and lyricism, which extends beyond that even of the villa style of Neo-Classical buildings. Perched on one of the highest points of the east bank of the Neretva, it can be seen from nearly any vantage point in the city. Its attic of niches, urns, coats of arms and statues adds to the drama of its sitting, and combines with the rich texture of East Bank architecture to give East Mostar a kind of worldly elegance. Though the Palace is a residence with offices, the prototype used in ecclesiastical, and the classicizing statues are of Orthodox saints.

The complex was heavily damaged in the 1992-1995 war. Complete rehabilitation design was prepared by the Aga Khan Trust for Culture & the World Monuments Fund Mostar Project team in 2001. Currently, the building is under rehabilitation organized by the City of Mostar Project Coordination Unit.

Residental Complex of Bišćević-Lakišić families (11)

Residential Complex of Bišćević-Lakišić families was built the east river bank of Neretva, hundred meters west from the Karadjozbeg mosque complex. The entire complex developed gradually from

the 17th century. The Complex is a relatively unaltered traditional residential complex, notable for its high visibility along the Neretva River.

Substantial masonry walls form the body of the house structure, with timber frame and infill construction used for cantilevered bays and interior partitions. A timber-framed roof is clad with local slate; deeply projecting eaves protect interior spaces from the summer sun. The two levels of open living spaces (the hajat below with tavan above) and a connecting stair provide access to the interior rooms. Those rooms consist of typical Ottoman living and kitchen spaces, including one special reception room on the first floor, the "čošak", which projects spectacularly above the Neretva River, supported on two tall masonry piers.

The south component, the family part of the complex, was burned in the 1992-95 war. In 2001, the complex was restored and revitalized as a part of the Aga Khan Trust for Culture & the World Monuments Fund Mostar Project.

THE NATURAL COMPONENTS OF THE OLD CITY

As Mostar possesses uniqueness of townscape, structure and form, the natural parities became some of the most important elements for the recognition of the city. The terrain morphology represents the crucial element in the city image. The city is defined primarily by the Neretva River that contours the physical structures and street scheme. Its role at the city configuration and development through the history is exceptional and most important. The Radobolja River gives a particular importance with its two main channels and several smaller ones. The intersection of the Neretva and Radobolja with the new open stage auditorium is specifically crucial.

Neretva riverbank

Baščine gardens are located at the right bank of Neretva, north from Tabhana present the only preserved part of the larger agricultural area, Cernica field, that had been known for a well-developed irrigation system that had utilized the Radobolja river as a source.

Baščine gardens

Kujundžiluk cave represents a real natural geological phenomenon. It takes several thundered meters of active space. In the city history it has served the function of the Ottoman inn, and later on it has served as the storage space of the old brewery and catering structure. During the war days it has served as the shelter to the people.

b) OTHER IMPORTANT PUBLIC BUILDINGS

Tabačica mosque was used predominantly by tanners (Tabačica meaning "belonging to tanners). According to the historical data was built in the 17th century. It is located about 100 meters west of the Old Bridge in the vicinity of Tabhana (which had been used as Janissary barrack until 1830s, latter transformed into tannery). Before that the tannery was located at the intersection of the Radobolja and the Neretva rivers. The mosque with its style belongs to the architectural group of mosques without stone cupola, with four-eaves roof covered with stone slates, above the wooden ceiling with centered cupola and tall undecorated minaret (26,5 meters). Tabačica mosque differs architecturally in certain details from Mostar's other mosques. It is distinctive because one branch of the Radobolja River flows under the mosque. Decorative stone elements are in the interior, as well as painted decoration from the 19th century.

The mosque was damaged in the 1992-1995 war. UNESCO completed the restoration of mosque at 2000. The project also included restoration of the smaller shop in a front of the mosque as well as the small building located behind it.

Tabačica mosque

Ćejvan Ćehaja mosque complex

Ćejvan-Ćehaja mosque complex is located on the left bank of the Neretva, southeast of the Tara tower, about fifty meters to the east of the Old Bridge in the Velika Tepa (big market). It was built in the period between 1552 and 1553. It represents the oldest existing mosque in Mostar. The mosque with its style belongs to the architectural group of mosques without stone cupola, with four-eaves roof covered with stone slates, above the wooden ceiling with centered cupola. It is known for being the only mosque in Mostar with the minaret on the left side of the structure. In 1895 the Austro-Hungarian Government reconstructed the mosque and the minaret was in a Romanesque style (similar to the Clock tower) and it was replaced with current on (Ottoman style with elements of neoclassic style). The interior was decorated in a pseudo-Moorish style. In 1899 the Medresa belonging to the mosque complex was replaced with a new structure with significantly larger volume with the decorative elements pseudo-Moorish style.

During the 1992-1995 war, the minaret was destroyed above the base. UNESCO completed the reconstruction of the Ćejvan-Ćehaja mosque minaret at 1996-1997 in close cooperation with the Institute for Protection of Cultural-Historical and Natural Heritage in Mostar.

Shops in the Kujundziluk. Kujundžiluk as a part of the Mostar čaršija developed on the Neretva left bank, where it occupied the area from above the Tara and Herceguša towers up to the area of Mala Tepa, and it belonged to the area of Lower ćaršija. The copper and ironworkers crafts are present in Kujundžiluk, which is the centre of the goldsmiths' trade.

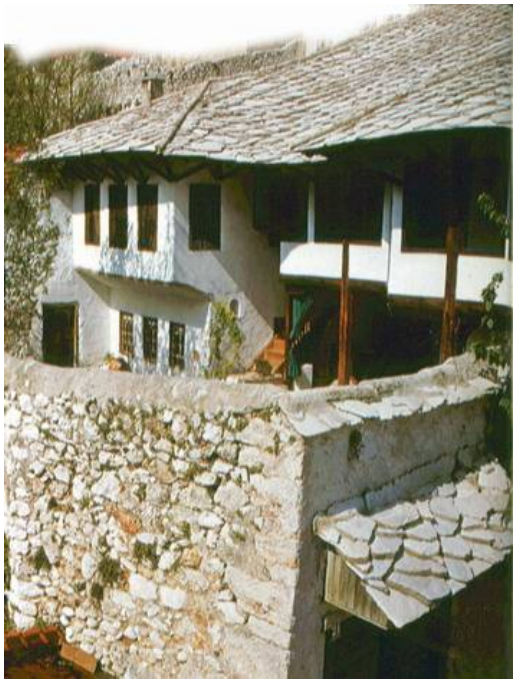
The shops at Kujundžiluk are presented as types of "dukkan" and magaza (shop tower). The structures in the street are mainly restored in 1958. At the same time the three shops on the north end of the street were reconstructed using all the elements of the previously existing identical shops on the main street.

Shops at Kujundžiluk were damaged in the 1992 war. Cultural Heritage without Borders reconstructed the shops in Kujundžiluk at 2001, collaborating with Institute for Protection of Cultural-Historical and Natural Heritage in Mostar.

Shops in the Kujundžiluk

Kajtaz house. The complex is located in one of the oldest parts of the town, in Bjelušine mahala on the hillside. It exemplified a rich family house of the 18th century. The economic (selamlik) part had full contact with a street, but the family part (haremlik) was isolated with full privacy, and oriented to the large courtyard that connects to a large garden. Position of the building provides a perfect insulation and a view. A specific element of the house plan was a kitchen inside of the building.

The economic part was destroyed in the 1992-95 war, and rebuilt in 1999, unfortunately, without respecting historic values of the complex.



Kajtaz house

Ćejvanbeg Hamam

Ćejvanbeg Hamam (Ottoman public bath). The exact date of construction is not known, but according to waqf records it must have been built after 1554. The hamam is located at the west of the Neretva River and north of the Radobolja River. It is assumed that the water for this hamam was drawn from the Radobolja River.

The Hamam lost its dressing hall section, located at the south flank, at an unknown date. The "frigidarium" section was still intact in 1881 but later lost; during that same period, the three storey Konjhodžića House was connected to the bath and was severely damaged during the hostilities of 1992-1994. The stone-vaulted roof of the tepidarium was lost at an unknown date. The exterior parts were without decoration.

Ćejvanbeg who founded the charitable foundation owned a mosque, 36 shops, han in Kujundžiluk, several bakeries in the bazaar.

After losing its functionality, the bath—restored in 1968—was used as a warehouse. Bath sustained heavy damages before, during, and after the hostilities of 1992-1994. Since 1994, no efforts towards stabilization or repair have been made; despite its status as one of the oldest Ottoman structures in the historic city.

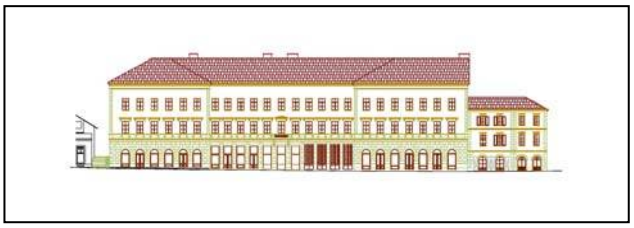
The Hamam was restored in 2004 by UNESCO with a grant of French government, and today has public use as an exhibition space.

Ćorovića house built in 1874 in the 19th century eclectic style highly influenced by Dalmatian precedents. The house commands M. Tito Street with the delicate authority of a Venetian Palace. It was built in a transitional moment between Ottoman and Austro-Hungarian rule when Mostar had an independent and pluralist identity. It bears witness to the divergent styles and tastes that coexisted in Mostar at the time. It is pleasing to note in this chronology that such a small city, by virtue of its diversity, could produce at once a monumental Ottoman house and an airy Adriatic Palace with equal enthusiasm. Its front façade addresses the important commercial street, while from behind the house is one of the few in Mostar with a terrace that is open to the river.

The Poet's House is nicknamed after its most famous tenant, Mostarian poet Alexa Šantić, who spent his last years in the house, and after his death it was transformed into a museum containing his manuscripts and books from his personal library.

The house was heavily damaged in the 1992-1995 war. Using Swiss fund the building is restored in June 2000, and today is in function of the cultural center of Serbian society "Prosveta".

Ćorovića house



The Girls' High School

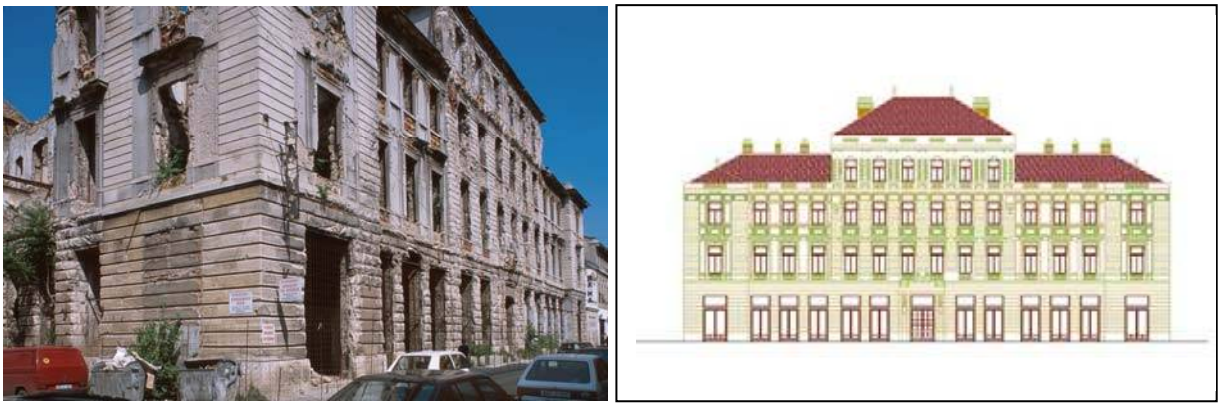
The Girls' High School is one of the best examples of Neo-Classical Architecture from the Austro-Hungarian period in Mostar. It was constructed between 1893 and 1901. Like a Renaissance Palace, it presents a massive, opaque façade to the Main Street (western elevation), but the second wing of its L-shaped configuration northern elevation follows a perpendicular, ascending alleyway Kalhanska Street, enclosing a courtyard between the two wings. An ashlars ground floor with arched openings and large cut stones distinguishes the commercial spaces of the street level from the classrooms of the upper levels with their painted stucco walls. The classicizing ornament in the corbel volutes and deep cornices over the second story windows continue the Neo-classical theme, so that the dignity, historical authority, and official nature of the building are maintained.

The complex was heavily damaged in the 1992-1995 war. The Aga Khan Trust prepared complete rehabilitation design for Culture & the World Monuments Fund Mostar Project team in 2001.

The Municipality Building was built in 1900, designed by Josip Vancaš with its monumental mass and rusticated ground floor, is Mostar's prime example of Neo-Classical architecture. In 1896, the Dzinović Han—an Ottoman caravanserai—burned, providing an enlarged lot for the projected Municipality Building. When the building was designed, the opportunity was taken to re-plan its immediate urban context, by widening the surrounding streets. Its blocky proportions and imposing scale, together with a ground floor that suggested the rougher masonry of the first floors of palaces like the Palazzo Medici, were linked to Italian Renaissance examples. This style came to Mostar from Northern Europe, a fact that can be discerned in its central block, which lifts higher than its wings, and from the high pitched roof, all of which suggest northern European, rather than Italian, prototypes.

The Neo-classical style became, both for the Austro-Hungarian authorities and for the Municipality of Mostar, emblematic of a progressive, bourgeois Mostar. It was the public face of the new infrastructural and city planning innovations, and it introduced what would be the dominant style of Mostar's government buildings of the period. The solid massing suggested prosperity that associated this style with the influx of new capital and development in the city.

The building was heavily damaged in the 1992-1995 war. The Aga Khan Trust prepared complete rehabilitation design for Culture & the World Monuments Fund Mostar Project team in 2001.



The Municipality Building

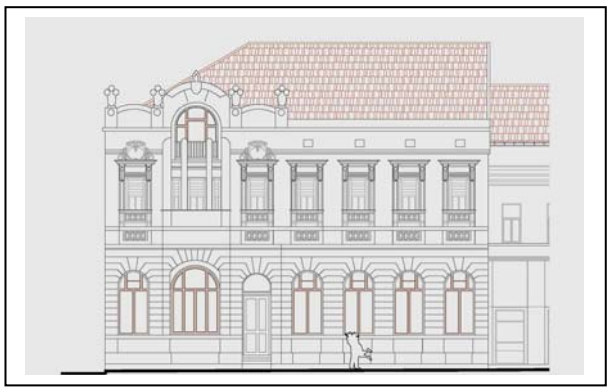
The Konak housing building was constructed at the beginning of the 20th century for the Dokić family as an apartment house with rental units and a large shop at street level. This imposing masonry building combines apartments with large ordered windows and a massive commercial ground floor. The commercial space pushes up against the street wall of M. Tito Street in Mostar, while the residential floors are set back protecting the spaces within from the noise and animation of the street, and affording them air and light. The articulation of the building fits squarely within Mostar's Neo-classical tradition, and places it with the large number of buildings constructed with the influx of capital and investment that accompanied Austro-Hungarian authority. There is no known prototype in Mostar for the enormous setback of the residential floors.

The building was heavily damaged in the 1992-1995 war. The Aga Khan Trust prepared complete rehabilitation design for Culture & the World Monuments Fund Mostar Project team in 2001.

The Konak housing building

Landbank built in 1910 in the Main Street, designed by Josip Vancaš, who was had reached perfection in a style of historicism in his numerous achievements, was very quickly accepting all the new movements in Vienna: elements of art nouveau and Secessionist styles begin to penetrate the austere historicism of earlier decades. The bank represented a lively tension between its solid, classical design and its elegant, impertinent ornamentation.

Following economic and political changes, buildings and urban fabric was transforming progressively through four decades of the Austro-Hungarian rule. New economy was asking for another planning policy, developed infrastructure and new land policy. New administration was using architecture as an important tool for reshaping of the Bosnian society ant its integration in the Austro-Hungarian state.



Landbank

The building was heavily damaged in the 1992-1995 war. The Aga Khan Trust for Culture & the World Monuments Fund Mostar Project team prepared complete rehabilitation design in 2001.

The Waqf Palace built 1894, designed by Hans Nimeczek. This unique and important building was extraordinary for its conflation of the two predominant styles of the Austro-Hungarian period in Mostar. On first glance, it is the kind of large, masonry building divided into three blocks and three floors that recalls the massing of the Neo-classical style. Its ground floor is constructed of rusticated masonry and its rectangular windows are aligned in the manner of the Municipality Building, but a closer look reveals an ornamental scheme not rigorously classical. Applied to this palace body are ornamental motifs taken from Spanish Islamic, Moroccan and Mamluk architecture. The street façade of the palace includes twin horseshoe arches inscribed in a single blind arch (Spanish Islamic) and arcaded lintels fit together in a puzzle like design masonry, recalling Umayyad Cordoba and subsequent Moroccan uses of this motif. At the corners, insert columns, and in the side street walls, terra-cotta courses and planar reveals all imitate motifs common in Mamluk ashlars design. In an inventive creation of the Secessionist influenced architect, terra-cotta roundels with complex geometric designs combined this interest in North African Islamic design with the contemporary Viennese interest in craft-materials. Even the original balconies, which were executed by local craftsmen according to a long tradition, included ornamental motifs that related more closely to the Moroccan tradition than to Bosnian wood decoration, as well as certain details common to the Austrian tradition.

The Waqf Palace

The building was destroyed in the 1992-95 war. In January 2005 City of Mostar Project Coordination Unit (PCU) based on design by the Aga Khan Trust for Culture & the World Monuments Fund completed restoration of the building without interior.

Nomination for Inscription on the World Heritage List

Nomination Dossier
“The Old City of Mostar”

▪

3.b HISTORY AND DEVELOPMENT

HISTORY OF MOSTAR

Mostar before Ottomans. Traces of the prehistoric era and the Roman days, discovered at more than one locality (Cim, Crkvine), provide evidence that the valley of Mostar has been inhabited since very ancient times, and inhabited in continuity. An old settlement in the immediate vicinity of Mostar - the Old Town at Blagaj - developed from a Roman settlement, mentioned in 200AD, forty kilometers north from Narona, into an important medieval town. It became home to Stjepan Vukčić – Kosača in 1435, the Duke of Hum and the ruler of the region, who used title Herzeg from 1448 on, and gave Herzegovina its name.

A document written in 1440 refers to a fort next to the bridge on the Neretva River, associated with the name of Gost Radivoje, who was a member of Stjepan Vukčić's suite. Probably, this document confers the first historic reference about the locality of present-day Mostar.

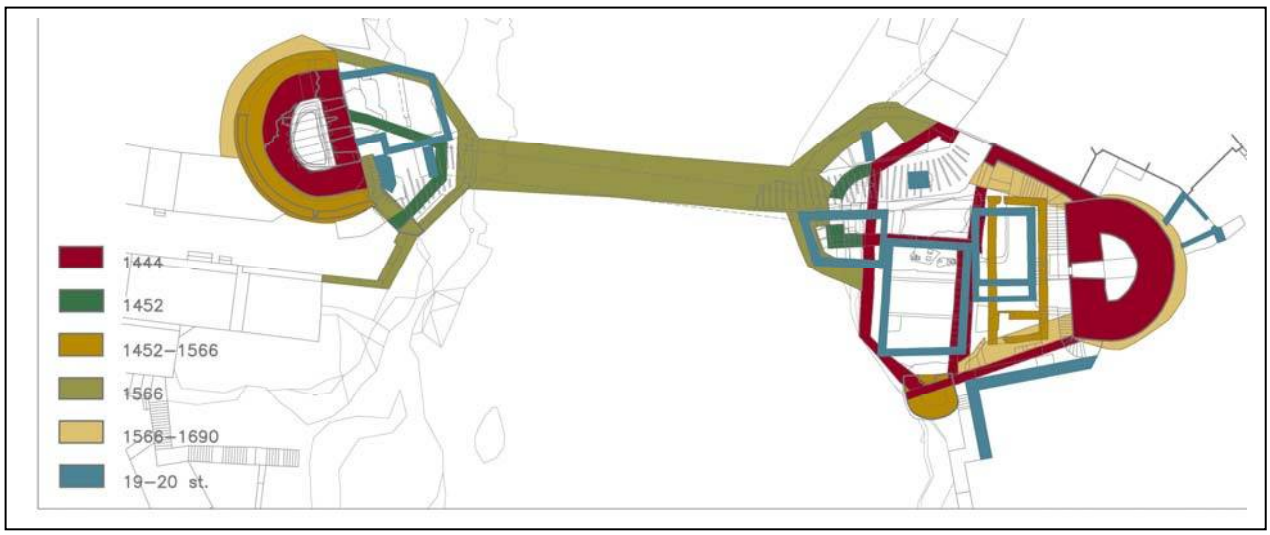
In 1444 a fortress Nebojša (Civitate Neboysse) on the east side of the Neretva River (probably area of today Tara tower with its surrounding), in the district Večerić (Večenike) was mentioned.

A historic record, dated July 3, 1452, is a letter written by two Dubrovnik merchants informing their compatriots who were in the service of the Serbian king Djuradj Branković. The letter states that Vladislav Hercegović had fled from his father Herzeg Stjepan and conquered, among others, the bridge with adjoining forts on the Neretva River.

Picture top right:Herceg Stjepan Fortress near Mostar

Right: Letter by two Dubrovnik merchants 1452

Bellow: Old Bridge Complex- development phases



Mostar during the Ottoman time. From the mid 15th until the end of 19th century Bosnia and Herzegovina was part of the Ottoman State. Although it had much in common with other regions in the empire, its religious and cultural plurality, tolerance, patriotism and influence at the imperial court in Istanbul additionally distinguished it from the others.

Mosques, churches, and synagogues existed side by side, signifying that in Bosnia Catholic Croatians with their Western European culture, Eastern Orthodox Serbs with their elements of Byzantine culture, and Sephardic Jews who came to Bosnia after their expulsion from Spain in 1492 continued to live together with Bosnian Muslims for the more than four centuries.

Throughout the Ottoman period, justice and tolerance prevailed within this religiously complex community in which people of different faiths were often close relatives. The Ottomans tolerance towards various Christian denominations all through their four centuries long rule was based on the imperial decree (ahitname) issued to Franciscans by Sultan Mehmed the Second immediately after his army occupied Bosnia in 1463. Religious differences did not become grounds for political manipulation until much later times.

Architecture, as an integral part of the social and cultural life, was rich of the intermingling of pre-Ottoman, Ottoman-Islamic, Christian and Mediterranean influences.

A small group of architectural creations with monumental characteristics were built following a pattern developed and standardized in Istanbul and several other centers. A much larger group consisting of shop in the bazaar, the mosques in mahalas, and private houses shared the basic characteristics produced by specific environmental and cultural factors.

During the nineteenth century, the process of economic and social transformation has introduced in Bosnia and Herzegovina, which dethroned agricultural society, as it had existed for thousands of years, and replaced it with the urban, industrialized, technocratic society, which spreads for good or for ill-like wildfire through the world today.

New technology improved methods of industrial and agricultural production, supported by efficient communications, provided food for expanding population.

By the beginning of the nineteenth century, Bosnia was one of the least developed and most autonomous provinces of the Ottoman Empire, an extreme example of the effects of two centuries of administrative decay and decentralization of the Ottoman province.
Long before the Austro-Hungarian's arrival in 1878, Bosnia and Herzegovina was in its economic sphere.

In Ottoman times, the word "Bosnian" (*bosnaklar* in Turkish) had refereed to all of those who lived in Bosnia, regardless of their religion. Before the 19th century, there was not a separate *national* identity for religious groups like the Catholics or Orthodox in Bosnia; they were Bosnians who practiced different religions.

Top: The imperial decree (ahitname)

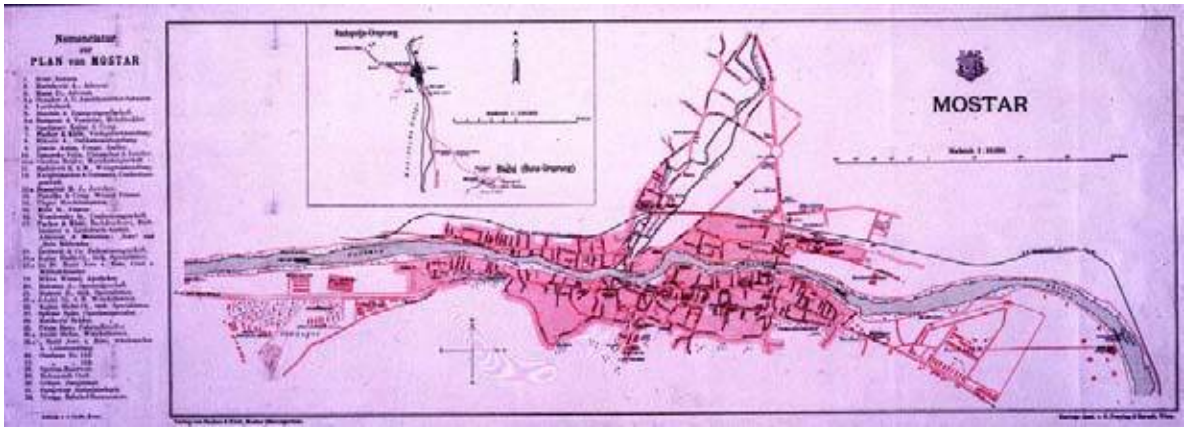
Bottom: Map made by Ausrto-Hungarian authorities

Finally, in the second part of nineteenth century, nationalism appeared on the scene, and the nationalists thought that if one is Catholic, one is Croat, if one is Orthodox one is Serb. However, in terms of the origins of these Bosnian Catholics and Orthodox, this was a non-sense.

Congress of Berlin in 1878 secured the independence of Greece, Bulgaria, Montenegro, Serbia and Romania, and yielded Bosnia under Austro-Hungarian administration. Reforms that started in 1807 didn't generate the expected success in state organization and economy. The combination of the lower level technology, education and internal taxation made industrialization impossible. The finances of the Empire rapidly deteriorated until 1875, when the state virtually bankrupt.

Mostar in the Austro-Hungarian time. The Austro-Hungarian annexation of Bosnia was a reaction to a change of the relations between Russia and Ottoman State in Bulgaria, in order to block the formation of a larger South Slav state. Bosnia became Crown Land, ruled by the Austro-Hungarian Monarchy through the authority of the Joint Imperial Finance Ministry. That control was formally somewhat limited till annexation in 1908.

The new government wanted to foster economic development by improving transportation, expanding exploitation of natural resources, and encouraging industrial development as the best guarantee for continued control of the area and for the future expansion. Expensive administration, around 10,000 officials, represented a new social group - the Austro-Hungarian bureaucrat, affected the economic growth.



Austro-Hungarians at first favored the idea of eventual Bosnian nationhood, as a strong defense against Serbian and Croatian nationalist movements, and their desire to absorb territory Bosnia and Herzegovina into Serbia or Croatia. Nevertheless, growing nationalist movements in Serbia and Croatia--which hoped to gain enough power to defy Austro-Hungarian domination--attempted to draw Bosnian Catholic and Orthodox citizens into their respective camps with claims that Bosnians--including Bosnian Muslims-- were actually either Croatian or Serbian.

The colonizers, however, were extremely careful to maintain equilibrium among the groups, guaranteeing religious freedom and shielding less empowered groups from abuses.

Above: Plan of Mostar made by Austro-Hungarian authorities in 1881

Bellow right: Map of Mostar in 1918

By April 22, 1895 there were 17,010 residents in Mostar: 6,946 Muslims, 3,877 Orthodox Christians, 3,353 Catholics, and 164 Jews. At that time, foreign investors, and Austro-Hungarian bureaucrats constituted one tenth of the population.

The shot that killed Hapsburg heir Archduke Franz Ferdinand in Sarajevo on June 28, 1914 by Serbian nationalists became the opening salvo of World War I.

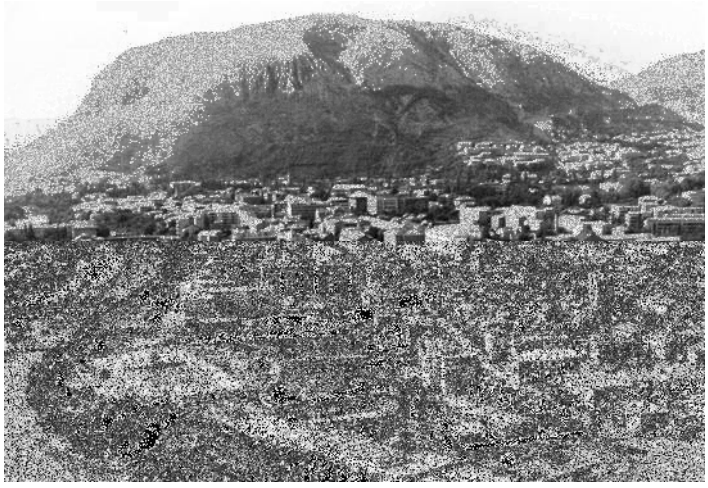
Mostar from WW I to WW II. One of the main political results of the WWI was dismantlement of the Austro-Hungarian state and establishment on December 1, 1918 of the "Kingdom of Serbs, Croats, and Slovenes" including Bosnia and Herzegovina.

By 1941 these issues were overshadowed by the advances of Hitler's army. Bosnia and Herzegovina was folded into the "Independent State of Croatia" (NDH) and the entire country was ceded to the Croats in return for several sections of the Croatian coastline carved out by Italian fascists.

By the second half of 1941, a new resistance group oriented towards a socialist ideology-the Partisans-became main antifascist's power who was leading to a final victory together with world wide antifascist's alliance. In 1945, Bosnia and Herzegovina was under Partisan control, and a "Bosnian People's Government" was established in April same year.

Mostar in SFR Yugoslavia. There were a number of rewritings of its constitution over 34 years; the last of these, in 1974, defined a Federative Socialist Republic of Yugoslavia with an assembly composed of a Federal Council and a Council of Republics and Provinces, one of which was Bosnia and Herzegovina. Starting from 1963, Bosnian constitution refers to "Serbs, Croats and Muslims allied in the past by a common life."

In Mostar, the socialist era boosted development of the city's industrial base.



View to the new city center 1970.

A metal working factory that served military contracts was constructed, introducing skilled metal workers to the employment market. Cotton textile mills offered employment to a wide sector of the city's women of all ethnic backgrounds, and in the 1970's an aluminum plant south of Mostar's center further encouraged the immigration of rural residents into the city. At the end of World War II, Mostar was a city of 18,000 people and by 1980 there were close to 100,000.

Against serious backdrop, paths towards a healthier national economy were evident. During the 1960s and 1970s, a building boom fueled by foreign investment spread from the Dalmatian coast to Mostar, where a modest surge in tourism had linked Bosnian history to the city's historical monuments. Young professionals with an expansive vision of economy and development were beginning to restore the city. They devised a plan for the reconstruction of Mostar that was erudite and economically self-sustaining.

In the 1970s and 1980s, a healthy local economy fueled by foreign investment spurred recognition and conservation of the city's rich cultural heritage. An economically sustainable plan to preserve and reconstruct the old town of Mostar was implemented by the municipality, which drew thousands of tourists from the Adriatic coast and invigorated the economy of the city; the results of this ten-year project on preservation of the Old City of Mostar earned the prestigious Aga Khan Award for Architecture in 1986.

The Old City in 1986

Mostar 1990-1996. By 1989, the collapse of Communism in Eastern Europe and the slackening of East-West tensions prefigured the dismemberment of Yugoslavia. In Serbia, ultra-nationalists nurtured and harnessed fascist's rhetoric included the rekindled notion of a greater Serbia which carried a rump Yugoslavia to war with breakaway republics: first Slovenia, then Croatia, and lastly Bosnia and Herzegovina.

In 1990, after a first democratic election in Bosnia and Herzegovina, a government was formed that included participation of Muslim, Bosnian-Croat and Bosnian-Serb parties. After Croatia declared independence bypassing lawful remedies, the Serbian army began to seize Croatian territory on the premise that minority-Serbians were imperiled. The Serbian state-run media had created the climate of paranoia which forged popular support for his largely military ambitions.

A same scenario was repeated in Slovenia, Yugoslav tanks under the command of Serbs general entered Slovenian territory. With the appearance of 5,000 Yugoslav troops in September 1991, the Serbian Democratic Party (SDS) began "the military phase of their carve-up of Bosnia and Herzegovina."

After the peace plan between Croatia and Serbia was negotiated by American-UN representatives in January of 1992, Yugoslav army forces under Serbian command were transferred quietly from Croatia to Bosnia and Herzegovina.

Destruction of the city, view to thr right riverbank

On March 1, 1992, 64 percent of the Bosnian electorate voted in response to a simple question: "Are you in favor of a sovereign and independent Bosnia and Herzegovina, a state of equal citizens and nations of Muslims, Serbs, Croats and others who live in it?" The overwhelming answer to this question was "Yes."

During the same period, Bosnian Serbs military and paramilitary forces pursued a campaign of terror and ethnic cleansing in Bosnia and Herzegovina. Mostar was overwhelmed by Serbian military units, and shelled from the surrounding hills during May and June of 1992. Many important buildings especially in the historic area city were heavily damaged. Even the Old Bridge was bombed.

A Croat-Bosnian Federation was able to expel Serbian forces by June 1992. Shortly thereafter, local Bosniaks and Croatians became adversaries due to competing territorial ambitions and ongoing political instability. On November 9, 1993, the bridge's spring line was hit at point blank range by the Croatian Council of Defense (HVO) tank attacks, and Mostar's 400 year-old icon fell into the cold Neretva River, provoking deep sadness for citizens throughout the city for whom the Bridge had represented everything stable and sacrosanct.

Governments of Bosnia and Herzegovina and Croatia signed a Federation Agreement on 18 March, 1994 which provided for an interim administration by the European Community in Mostar, a city still coveted by both Bosnians and Bosnian Croats. Following this partial peace agreement, Mostar remained a violently divided city; the east side remained without electricity, running water, 70% of its pre-war housing units, and nearly all economic activity. In the years following, European Community administrators were able to engineer political equilibrium, implement humanitarian assistance, restore essential infrastructure, and build new schools.

NATO's intervention in the region began with the signing of a "General Framework Agreement for Peace in Bosnia and Herzegovina" on 21 November 1995 in Dayton, Ohio. Delineating a Bosnian-Croat Federation covering 51% of Bosnia's territory and Republika Srpska covering 49%, this agreement led to increased stability in Mostar. By June of 1996 local residents of all backgrounds and absent refugees were able to participate in elections for a unified municipal government in Mostar.

Mostar 1996-2004. This period was characterized with a slowly growing local economy and a joint administration, in which Muslim and Croat elected officials alternate in the post of Mayor and deputy Mayor. Moderate and centrist politicians have forwarded a conciliatory political agenda with increasing success on the west bank.

As wartime tensions slowly fade, energies are poured into new commercial and civic projects -including the reconstruction of damaged historic architecture. Private sector initiatives to underwrite the reconstruction and revitalization of individual buildings, like the Pavarotti Center Music School, have infused hope in the city.

The steady normalization of political and economic affairs makes investment in physical reconstruction prudent and timely, since high-profile improvements have a positive and lasting impact on local morale.

Beginning in 1996, cooperation of the local government in Mostar, with the local Institute for the Protection of Monuments, the "Stari Mostar" Foundation, the World Bank, UNESCO, the Research Centre for Islamic History, Art and Culture (IRCICA) Istanbul, the Aga Khan Trust for Culture, the World Monuments Fund, universities worldwide, and many other professional partners have generated a reliable professional network and a sound agenda for revitalization of the historic core.

Restored shops in Onešćukova street, summer 2004

URBAN AND ARCHITECTURAL DEVELOPMENT OF MOSTAR

1463-1878: Formation and Development of the Ottoman Islamic Town

In 1468 the Ottomans took Blagaj and, most likely, the fortresses close to the nearby bridge over the Neretva. The small settlement around the bridge received its name from its keepers, because *mostar*, in fact, means 'bridge keeper'. This settlement with 19 houses located between the bridge fortification and Mejdan, was first referred to as “Mostar” in 1474, when it was described as the seat of the Ottomans *subaša* (police superintendent). Based on the same source, a register of real estates, (see: Aličić 201,438) in the same time, in today’s central urban area inhabited several locations: Cim (50 houses), Zahum (1), Zalik (9), and Donji Suhodol (11).

Due to the strategic importance of this crossing over the Neretva, the insecure suspended bridge was replaced with a new timbered one in the period of Mehmed Fatih's rule, before 1481.

Since the main road from Bosnia and Herzegovina towards the Adriatic coast used this crossing over the Neretva, the bridge brought about a rapid expansion of the city and a concomitant development of crafts and trade.

The city also became the center of culture and education in this part of the Ottoman Empire. It was rounded off as a completed urban entity in about 1670, and did not change significantly until 1878, the year of the Austro-Hungarian occupation.

The reign of Suleiman II the Magnificent (1520-1566) signified the greatest rise and prosperity for the Ottoman Empire. In that period, huge wealth flowed into Istanbul, bringing unprecedented economic and social progress. The Sultan's aspirations after the glory of the antique world supported cultural development, especially the art and architecture of Islam.

Numerous structures of extraordinary beauty were built in this period: mosques, bridges, and hamams. In addition, the Ottoman architecture established certain spatial, constructional and decorative systems, based on its own aesthetic principles.

During this period the most important architectural monuments of Mostar came into being: the Stari Most (Old Bridge), the large Karadjozbeg and the Vučjaković mosques together with some smaller ones, schools, hamams, and a large number of other public buildings and housing structures.

Mostar's favorable geographic location caused it to be considered one of the most important commercial centers of the area with widely developed connections to other centers. This factor stimulated the development of craftsmanship, which thrived in more than 30 different crafts.

The city was at its peak in the late 17th century; its population reached 10 000, it boasted over 30 mosques, seven medresas and several mektebs, two hamams, and a number of other important public facilities.

The city became the seat of the *muftija* (supreme religious leader of the area) from mid-17th century. Almost all the trade and crafts were in the hands of Moslems in the 16th and 17th century.

Christians (Orthodox and Catholic) have always lived in the city side by side with Muslims. The first record of Christian population in Mostar dates back to 1575 (see: Čorović, p.16). Mostar became the seat of the Metropolitan (head of an ecclesiastical province) in 1767.

Catholics built their first church in 1847 along with the Bishop's residence at Vukodol. A cathedral was built at Podhum in 1866 to meet the needs of the increasing Catholic population.

Urban development. The foregoing outline of the historical development of Mostar during the time of the Ottoman Empire is meant to serve as a typical example of the transformation of an urban environment in Bosnia and Herzegovina from a medieval settlement to an important Ottoman-style town. A medieval fortress developed, probably during 14 and 15th centuries, on the east side of the Neretva River aiming to protect an important crossing. From the opposite side of the river was only a tower. The Ottomans considered the medieval fortress next to the bridge as the central point of the communication system for this region. The fortress also became the nucleus around which the city developed very rapidly.

The Old Bridge. The suspended bridge was replaced by a more solid, wooden structure before 1481, but only the stone bridge completed in 1566 was able to withstand the intense military and commercial traffic over it. The bridge was built most probably within a period of two years designed by Mimar Hajrudin with the money collected in Herzegovinian counties (*kadiluk*). The adjacent towers of Tara and Halebija were rebuilt during the construction of the stone bridge.

The Old Bridge Comple
from old postcard 1890.

The bridge constitutes one stone arch with a span of 28.70 meters. The supporting vault is 90 cm thick, four meters wide, and its height in summer when the water is low is about 20 m. Three ribs rest on its vault, a middle one and two at equal distances on either side of it, to support the roadway. The entire construction is thus considerably lightened.

The stone used for the bridge is the local *tenelija*, a limestone of exceptional physical and chemical qualities. It is used for the entire bridge including the balustrade, and its sides were cut so smooth that there was no need for an intervening adhesive material. The roadway is made of limestone resistant to the wear of people and animals crossing the bridge. Pieces of stone were joined to each other by iron clamps and then filled with lead. The basic architectural form of the bridge reflects an extraordinary marriage of constructional logic and beauty, maintained in its original form.

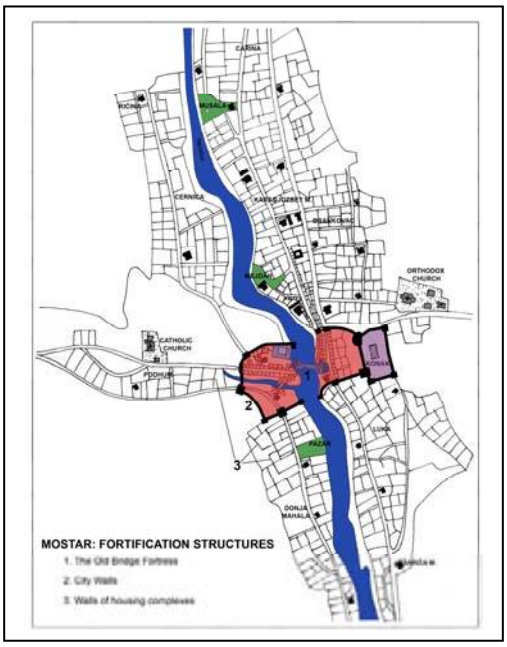
The bridge has been an object of admiration by people coming from both East and West: the poet and statesman Derviš-Paša Bajezidagić (16th century) compared it to a rainbow, geographer Hadzi-Kalfa said that its vault "will astonish all masters of the world", Evli Çelebi, the famous Ottoman travel-writer said that he "has crossed sixteen empires and has not seen such a high bridge"; the French traveler A. Poulet wrote in 1658 that this bridge is "more courageous and more impressive than the Rialto in Venice".

Town fortification. The towers, which were linked by the walls, protected the entire communication that leads to the Old Bridge. This system of towers and gates constructed a genuine fortress next to the bridge itself. Initial fortification structures were Towers (today known as Tara and Halebija) built before the suspended bridge.

The second fortification line encircled the bazaar. As the bazaar considerably enlarged and the town fortification system expanded and reinforced several times during the wars with Venice, and especially after the armistice at Karlovci.

The main bastion (*tabija*) of the town walls was situated east from the bridge, at Suhodolina, and dominated the city, with the commanders' residence located nearby. On the west side, the main component of the fortification, the janissary barrack, was located next to the Halebija tower.

The third component of the defense of the town was a web of walls of the housing complexes.



Fortification structures in Mostar

Bazaar – čaršija. The bazaar in Mostar was formed on both sides of the Old Bridge complex. On the east side of the Neretva River the gates enclosed the bazaar between the fortress and Suhodolina (a natural dry channel, very often during a winter transformed into a river). On the left bank, the bazaar extended from behind the Halebija tower in the south to the clock tower in the east and to Sinan Pašina Mosque in the north.

The part along the river between fortress and the small tower on Suhodolina is called Kujundžiluk - a street with goldsmiths' shops. In the continuation of this street stands the Mala Tepa (*mala* means a small in Bosnian language and *tepa* means a hill in Turkish language) in the vicinity of the Koski Mehmed Paša Mosque, and above both street was "upper" bazaar on the main road called Velika Tepa (*velika* means a big in Bosnian language). Above the Velika Tepa was a part of the bazaar called Kazazi was located around Sahat kule (Clock tower).

Bazaar on the west bank of the Neretva River, called the Priječka čaršija

A part of bazaar on the west bank of the Neretva River, called the Priječka čaršija (*a bazaar from the other side*), extends between the Old Bridge, Janissary Barrack (later transformed in a tannery-Tabhana) and Kriva Čuprija bridge. In addition, in this area stands a row of crucial watermills.

The bazaar in Mostar became particularly important during the construction of the Old Bridge, when only three donors; Hadži Mehmedbeg-Karadjozbeg, Čejvan-ćehaja, and Nasuh-Aga Vučijaković encompassed shops and many other facilities built there between 1550 and 1570. Their donations upgraded mosques, hamams, mektebs, medresas, imarets, shops, warehouses, watermills, as well as water supplying facilities.

This period of intensive building gave the city all its public structures and influenced the formation of housing (the infrastructure of) micro regions, the mahalas, which provided home for all those who worked in the bazaar.

There were 30 different guilds in Mostar. The following 11 existed in 1762: ekmekdžije (bakers' guild), terzije (tailors), bašmakćije (shoemakers), dyers, čurćije (furriers), ćebedžije (manufacturers of shaggy homespun blanket), kujundžije (goldsmiths), timurdžije (blacksmiths, locksmiths, makers of sabres and rifles), tabadžije (tanner's), berberi (barbers) and dundžeri (builders). In 1875 these 11 crafts comprised 122 shops with 199 master-craftsmen and 563 workmen. The tanners' guild, the most developed of all, had their shops extremely well constructed and a row of tanners' shops was located within the northern section of the city walls. The tanners also had their own mosque, the only one of its kind. Red *sahtijan* or *kajser* (goat leather), one of their products, was considered the best in the Islamic world at the time and became a valuable export commodity.

After supplying water for many gardens and the inhabitants of the west bank of the Neretva, the Radobolja River ramified into several streams, flowing through the bazaar. Radobolja contrasts Neretva by offering more possibilities for human use. At a very early stage of the development of the city, a large-scale system of canals was constructed in residential areas on the west bank of the Neretva for irrigation of gardens and for household needs.

Radobolja sources out from Ilići Village, 3 km away from the Old Bridge, spliting its water among several beds and flowing into the Neretva. Numerous canals bifurcate successively from the riverbed and their network irrigates a large number of gardens in the housing areas of Podhum and, especially, in the Cernica field.

In the past Radobolja provided power for the numerous mills. The final number of mills in the bazaar area was 19, thus playing an important role for the city economy. The water from the canals was also used by craftsmen, producers of blankets, tanners, and others. A watermill was particularly precious at the time, and leasehold on it cost more than on a shop, a hamam, or a house with a garden.

All the business activities in the bazaar (outside the public facilities) were carried out in two types of structures: shops and storehouses.

The shops aligned as small ground floor structures attached to each other on both sides of narrow streets. They, combined their wooded construction with lateral stonewalls and stone roof cladding. Rising a little above the street level and closed with two horizontal wooden shutters in front, the shops made up the so-called *ćepenak*. A craftsman or merchant used the lower shutter to sit on and work when the shop was open. Therefore, the people sat on the floor as they did at home. A second type of shops was the one with storage room behind them. A third type of shop, the "storehouse" (*magaza*), was occasionally a two-story structure. The ground floor served as a shop, while the upstairs or the basement provided a storage space.

Thick stone walls, ceilings made with timber beams, vaulted stone roofs with roof cladding made of stone slates, windows protected by iron bars (*demir*) and iron shutters were features of this new type of shop. Stone storehouses were built on plots of dukkans "cleaned" by fire, and its practice begun in the middle of the 19th century under the Dalmatian influence.

Mosques, inns, and public baths dominated the bazaar together with the Stari Most and its fortifications. Those structures built of a higher quality cut stone on a considerably larger scale, and separated from rows of shops, were placed freely on the ground. This entire body of structures added to a harmonious composition of an outstandingly urban character. Those who worked in the bazaar prayed in Bazaar's mosques during the day. The hamams were utilized by all the inhabitants of the city. -Three hamams functioned in the town, one near the tannery, another close to the Sinan Paša Mosque at Mejdan, and third next to the Musala square. They represented an important element of the highly developed Ottoman housing culture. While people met in a hamam, they relaxed by the murmur of the water within its interior, discussed their affairs and made business deals.

Han, a large inn, where travelers could stay overnight, sustained a significant role in the life of bazaar. They were of various sizes, while their outside appearance didn't exhibit much difference from the ordinary houses. The bedrooms usually occupied the first floor, while the ground-floor was used for stables and other auxiliary rooms. Travelers and guests slept side by side. Bedding was not available, hence, anybody who wanted to have it would provide his own. The courtyard inside the building generated space for horses and goods. In Mostar, the first known han built by Čejvan-ćehaja before 1558. It was located in Kujundžiluk. The other han related with the same donor, Kalhana, was situated on the main street on the foot of the fortress.

Mala Tepa Han

Other well-known hans were: the Karadjozbegov han (built before 1570) close to his mosque, the Koski-Mehmed Paša han or caravasarai, the town's largest and in its time, the most modern in terms of utilities. The Djinovića han, the Ševin han, the Hindin han, the Čadrin han, the Lelekov han, the Baltin han, and the han of the Orthodox parish. All hans were closed immediately after the Austro-Hungarian occupation and that was followed by their demolishment or adaptation for different purposes.

It is very interesting to note that a major portion of the trade belonged to the merchants of Orthodox faith from the middle of the 19th century onward. Orthodox merchants lived in several mahalas, especially at Bjelušine in houses that were slightly different from those of the Muslims of together with Muslims, while sharing the same economic class with them. They lived and worked in the bazaar with almost identical life-styles.

Mahalas. Residential micro regions (mahalas) formed traditional neighborhoods and such were traced in the entire Ottoman Empire. They established residential areas, having their own mosques, shops, schools, and other facilities needed in daily life. Every mahala embodied its own communal spirit and mutual-aid system, which contributed to the identity of each mahala and to a high degree of social cohesion. This was a particular social scheme of small towns, and every mahala had its wealthy and poor inhabitants. In some, the wealthy prevailed over the poor; in others the poor could outnumber the better-off.

Donja mahala(residential neighborhood) beginning of XX century

Even so, slum - like settlements were not known to exist. The poorer residents always remained under the patronage of the rich neighborhood families, and consequently this neutralized the extreme social differences.

It should be emphasized that religious or ethnical division did not exist in mahala's organization. Housing areas-mahalas, situated outside and (often) around the market, are connected to it by a network of generally narrow streets. Mostar had a clearly differentiated urban scheme that was taken over from the East. As a result, the housing area was clearly separated from the business section of the town.

In Mostar, housing areas were rather freely constructed outside the city walls for a long period of time. They differed from those near the bazaar close to the Old Bridge, which were more compact and orderly. The first mahala originated in the vicinity of the Old Bridge, with the Mejdan square as its center, where the provincial governor Sinan Paša built a mosque in 1474.

The water supply system had key importance for the housing development. Most probably the first one was built in the 15th century and was used originally for supplying water from the Neretva to the hamam at Mejdan. That system tapped Radobolja. The water pipes were installed across the Old Bridge on the Neretva during the actual building of the bridge.

Unless they used pulleys to take water from the Neretva, households obtained their water from the Radobolja and its canals. Additionally, water was taken from the public fountain next to the mosque or public water taps in the parts of the city further away from the Neretva or the Radobolja.

Houses located on high hillsides used water from cisterns built for common needs in courtyards of the mosques or other public structures. The larger housing complexes had their own cisterns. The same mahalas were inhabited both by Muslims and Christians.

Religious Complexes. The nucleus of a typical Ottoman town or settlement is the religious complex (mosque) with accompanying buildings, which provides the cultural, social, and judicial needs of the inhabitants. Mahalas grew around these complexes, their size being largely determined by the service capacity offered by the complex itself. Thus, a single place of worship did not dominate the Otttoman town, as it had occurred in medieval Europe.

The mosques were places where people of a neighborhood gathered, and therefore indicated both social and spiritual centers of the mahalas. A mosque has a threefold purpose: socio-religious, educational, and political.

Karadjozbeg Mosque complex

The mosque complex represented the center of the housing micro region, the mahala, and consisted of a mosque, a mekteb, and a cemetery (*harem* or *mezarluk*). Higher schools, the medresas, were usually built near the most important mosque of a city.

In the 16th century, time of the greatest investment in public monumental structure in Bosnia and Herzegovina, the most widespread type of the mosque was the standard single-unit mosque with a porch roofed by three small cupolas and one minaret adjoining the central cube. Such mosques were built in Macedonia, Bosnia and Herzegovina, and Serbia, and there was hardly a town worthy of the name, which did not boast at least one such mosque.

The Karadjozbeg, the Vučjaković and Koski Mehmed Paša mosques built in Mostar between 1518 and 1618, and together with the Ali Paša mosque in Sarajevo and Aladja Mosque in Foča represented the best achievement of this type in Bosnia and Herzegovina.

Graveyards occupied almost all empty spaces in the city giving it a special visual dimension - snow-white tombstones scattered over a green patch.

As usual, the basic building material was local stone or brick, but while mosque facades in Macedonia and Serbia were made by applying the ancient Byzantine technique of picturesque alternation of layers of brick and stone as well as by inserting bricks between cut stone in the manner of cloisonné, the mosques in Bosnia and Herzegovina were built without the multicolored elements and have only stone facades, sometimes covered by a layer of mortar and then whitewashed. However, domes throughout the region used squinches or pendentives as a transitional structure connecting them to the square base on which they rested. The size of the domes was proportionate to the total height of the mosque.

Mosques covered with a hip roof structure were built during the entire Ottoman era. In terms of relative numbers, this represents the dominant type of mosque in the Balkans. Mosques of this type are frequently of modest dimensions, although there are a few monumental ones, like the Sulejmanija in Travnik. A separate sub-type is represented by the mosque with a wooden cupola inside a pitched roof, like the the Šarića, Sevri Hadži Hasanova and the Tabačica mosques in Mostar. A most beautiful example of this sub-type of mosque is the Roznamedžijina Mosque in Mostar. The Karadjozbeg Mosque, built in 1557, was designed by Kodza Mimar Sinan**.** It belongs to the simple domed type of mosque's architecture, with a porch under three small cupolas, a second porch, and a minaret represents the best example of this architecture in Bosnia and Herzegovina.

The Orthodox population had their own church probably in the 18th century, which was replaced in 1833 with the one devoted to the Birth of Virgin, and built in Suhodolina. This building was the initial structure for development of the Orthodox community center. The cemetery developed east and south of the church. A primary school was built next to the church in 1856. Lastly, another Eastern Orthodox Church devoted to the Holy Trinity was built in 1873, taking place west from the school. The new Cathedral church Holy Trinity built between 1863 and 1873 dominated the town view.

Old Orthodox Church

Catholic population had settled in pre-Ottoman Mostar in several locations. However, there is no evidence of their presumably existing churches. The first known church was built in 1847 along with the Bishop's residence at the Vukodol suburban area.

The St. Peter and Paul church was built at Podhum in 1866 to meet the needs of the increasing Catholic population. The church was constructed in neoclassical style; a basilica with tower apse plan.

Housing. Thirty to fifty houses in a group formed one mahala. They were anonymous/plain on the street level but rich and expressive inside. Each house was carefully sited to catch a view of a cypress or a minaret from second story windows and each was legally obliged not to block the views of a neighbor. The street level entry would access the courtyard, creating a transition that allowed for intimacy and privacy within; rooms dedicated to family life were separated from those intended to receive outsiders.

The Muslim house was strictly isolated from the street, while the Christian one was more open to public life. This aspect mostly distinguishes the Muslim and the Christian parts of a mahala. By its internal organization of space the Christian house differs somewhat from the Muslim one, but all the basic design elements greatly resemble. The cult of neighborhood presents one of the basic principles influencing housing construction in this part. The philosophy of housing is deeply social and humane.

Kajtaz residential complex

Family was the basic social unit of Islamic-Bosnian community; so that the family house represents the basic structural cell of an urban settlement. Houses are self-contained and detached with a courtyard and the garden enclosed by a wall, particularly on the side facing the street.

A house was a dwelling complex composed of three parts: the house *per se*, the courtyard (avliya), with a kitchen a wood-shed, a toilet, a stable, a pantry, a drinking fountain, a pergola, and often a flower garden; and a vegetable and fruit garden, with a lawn, a small pavilion, and, possibly, running water.

Access to the housing complex and movement through it were determined by the location of the gates. The wall and the gate prevented strangers from upsetting the privacy of family life. In the larger housing complexes there were two courtyards: an "economic" one, oriented to dealings with the outside world, and a more intimate family courtyard. They were also referred to as the "male" and the "female" courtyard respectively.

Auxiliary structures were usually attached to the courtyard wall, which were therefore built fairly thick. In the economic courtyard the stable with its hay loft presented the most important structure. The main facilities in the "female" or family courtyard were the kitchen, the drinking fountain, and the toilet.

The main unifying feature of the various types of Ottoman houses in Bosnia and Herzegovina is the basic layout of the different functional units: two or more multifunctional rooms on two floors, with flexible use--without heavy furniture and limitations as to seasonal occupancy, around the common space, hall or *hayat* --one spatial entity spread over two floors with a connecting staircase, placed by the wall opposite the open part of the hall.

MOSTAR 1878-1914: Transition from Islamic to European Architectural Models

In Mostar with the change of government in August 1878 a lively program of urban development was introduced. The city was infused with a significant amount of capital, and the city council began to implement broad reforms in city planning. The new government saw the city's past and present on the west bank of the Neretva River and its future on the west bank.

View to the boulevard, end of XIX century

Consequently, broad avenues and an urban grid appeared on the West Bank of the Neretva, and significant investment was made in infrastructure, communications, and rental housing. Real Estate speculation began, a process, which would benefit some sectors of society and victimize others.

Such intensive growth posed new communal problems for the city government as well. During the early years of the Austro-Hungarian administration, the construction of new water pipes, modern city sewage (emptying into the Neretva), an electrical power line-network, and street illumination were all accomplished in a relatively short period of time.

A contemporary hospital was completed in 1888; an up-to-date fire brigade was instituted in 1885, and a Meteorology station in 1903. The city gained a new power plant in 1911, and in 1894, street illumination replaced the 330 lanterns that had been used before. Telephone service for civil customers was introduced to Mostar in 1906.

Number and structure of population was changing rapidly. In 1885 Mostar had 1,975 houses, 2,104 dwelling units occupied by 12,665 inhabitants, of whom 6,442 were men and 6,223 women. There were 6,825 Muslims, 3,369 Orthodox and 2,359 Catholics, 98 Jews, and 17 followers of other religions (see: Karlo Peez: *Mostar und seine Kulturkreis,* Leipzg 1891). Of the total number of inhabitants 7,035 were bachelors and 4,356 were married. By April 22, 1895, there were 17,010 residents of Mostar, of which 6946 were Muslims 3877 were Orthodox Christians, 3353 were Catholics and 164 Jews. Over one tenth of the population of the city, or 1715 people, constituted part of the Austro-Hungarian administration, or had come from abroad to profit from it. From February 1, 1889 Mostar was functioning as a City-county, from administrative point of view. Mostar was divided into eight zones, five on the east bank of the Neretva River: Carina, Luka, Brankovac, Bjelušine, The Old City; and three on the west bank of Neretva river: Cernica, Prethum, Zahum.

Town development. Austro-Hungarians did not find an Ottoman city in Mostar; instead they discovered a Bosnian city which had been largely governing itself, and developing a separate, independent culture for centuries already. Nevertheless, they found a city which belonged to the Ottomans in spirit; a city composed of elegant, two-and three-story structures, intimate mahalas of winding streets and shaded neighborhood squares near mosques.

While keeping as many of the existing administrative structures as possible, the Austro-Hungarians would use new city planning strategies much as the Ottomans had used the *Waqf* system: both to make a mark in Mostar and to control development, while giving benevolent and constructive meanings to these architectural symbols of their political domination. Before long, the character of Mostar's city fabric was transformed. On the West side of the Neretva, new administrative and residential neighborhoods were built in a grid of broad, monumental avenues and hubs. New technologies, communications, and transportation methods were introduced, which were connected to the city factories by broad tree-lined streets.

Massive, European-style blocks of four and five-story buildings pushed against the street walls of major commercial arteries, making centers monumental, aligned, and symmetrical where before they had been intimate and delicately varied.

The Old Town was changed slowly: existing modest structures were replaced with new massive blocks that defined wide avenues, in place of intimate, winding neighborhood streets.

View from Neretva river to Koskina Mosque, Konak and Orthodox church

Thus, because of transformations in the Austro-Hungarian period, Mostar developed important city centers on both sides of the river, "eliminating the asymmetry" that is a recurring characteristic of river cities. But since both banks of the Neretva in the Old Town had been completely developed from the beginning of Ottoman times, the same discretion and respect for the wild, natural context around the river gorge was maintained in the Austro-Hungarian period.

The transformations were initiated immediately after the change of government in 1878, and they were coordinated through the Mostar city council.

A large number of new buildings of various characters began to sprout throughout the city. The construction of the military camps, the railroad station on the east bank of the Neretva, and several governmental buildings in the western perimeters of the city, are indications that in the first years of occupation, the future territory of the city was set and that the new city center was defined. A stronger concentration of capital spurred faster growth of the city, similar to the one initiated in the first half of the 16th century.

As in Ottoman times, when we speak about the aspirations of the Austro-Hungarian government, it is important to note that these artistic and planning goals were shared and executed by city leaders. A central figure in speaking of the development of the city is Mustafa-Mujaga Komadina, a member of the Mostar city council (1893-97, 1900-1909) and the mayor of Mostar from 1909 until the end of Austro-Hungarian rule in 1918.

As a businessman he invested in the construction of buildings, and as a politician he became a major force behind development projects and social programs that benefited all social and ethnic groups within the city. He was far from being alone: citizens and leaders in Mostar worked constructively with the Austro-Hungarian regime, at the same time that they organized to protect their own rights.

The new government saw the city's past and present on the east bank and its future on the west bank of the Neretva. The new Austro-Hungarian bureaucracy and the indigenous bourgeois required housing, and a demand were thus created for European-style apartment blocks. A new type of dwelling -- rental housing-- created a new business -- real-estate speculation, and the changed character of housing created a new class -- real-estate owners, the urban equivalent to the agricultural landowners who had until now dominated Mostar's leadership. They were not only a new social category -- urban landlords--but also the most important capital owners and financiers in late 19th century Mostar.

The completion of a survey in 1881 established a base for future planning and construction activities in Mostar. The aim of this planning was to form a new transportation network on the west bank of Neretva River that would enable continual economic growth. The construction of new bridges was the most important aspect of this plan and the banks of the river were crossed by three new bridges: Czar Franz Joseph Bridge (1882), the Mujaga Komadina bridge (June, 1913), and the Carina Bridge

(March, 1918), two hundred meters to the south from Stari Most.

The opening of these bridges linked the east and the west banks of the Neretva, and created important communication means between the railroad station on the east bank and the modern commercial districts on the west side. New streets were constructed under the strong influence of Western European planning, with its paradigm of broad, processional avenues and open visual communications between different city sectors.

Intervention in the existing urban area. Urban development of Mostar during four decades period (1878-1918) can be shared in two main groups, first, intervention in the existing urban fabric, and, second, new development northwest from the urban area concentrated around the newly established railroad station, and south between Luka mahala and the south military campus.

In the Historic part of the city the following buildings were built: the building for rent (replaced the Djinovića han in 1899) first used as a military headquarters, Municipality building, the Girl's school complex (built after the Kalhana han was destroyed in 1893), new religious school-Mekteb, along with the reconstruction of Čejvan ćehaja mosque (1899), variety of houses and business buildings, Luka school (1908), a tobacco factory (1880-1885), the Serbs primary school (1909), the Lands Bank (1910). Above the Main Street important structures were erected: the Military headquarters at Konak (which replaced the existing Ottoman one) and the Orthodox Metropolitan Palace (1910) and school at the foot of Church complex, Vakuf palace (1894), the County government (1894), Officers and County, Sibijan mekteb in the Bašćine area a small electrical plant, built in 1912.

A new city center was built along the western border of the Ottoman town, at the Cernica field. The railroad link Sarajevo-Metković built on this edge became the hub for intensive construction activities: buildings related to the railroad, workshops, public buildings, schools, and large number of luxury houses.

Up right: Hotel Neretva and Musala Bridge

Bellow: Napredak object

Austro-Hungarian relation to Ottoman urban structures. The Ottoman structures went under permanent transformation during forty years of Austro-Hungarian presence in Mostar. A description made by Robert Michel, in his book "Mostar" published in 1909, provides an interesting observation. According to him the warmth of Mostar is a key to the mysteries of the East. The city is at harmony with its ambiance - a gray, lifeless rock, while Islam provides the other mark.

A picturesque picture of a feudal town, where an architectural hierarchy formed a holistic and logical entity, an easily apprehensible image of inner interrelations, was quickly brought down by the vast changes within the entire concept of the city. These changes even though they were visible and impostures did not damage an apprehension to the city's continuity as opposed to the architectural creation, where the idea of continuity was embraced only at the end of this period (1910), which

remained within theoretical realm as a question of the use of style. It is clear that in this way the architecture was unbound from its traditional ways of building. The picture of the city center changes dramatically, with small efforts to preserve some traditional elements.

Characteristics of the Austro-Hungarian Architecture in Mostar. The first half of the 19th century in Europe had been a time of exploration of historical architectural styles. At first Classical and Gothic revivals dominated the field, but by mid-century, architects in Europe began to look to Renaissance palaces as prototypes for the stately urban buildings they were increasingly asked to design. It lent itself well to the urban requirements of the new 19th century cities, and its ornamentation was more plastic and versatile than other historical styles.

Mostar's historicist architecture coincided with the forward-looking ideology of its city planning. New developed area of the city on Westward became a landscape of Renaissance palaces and villas, one of two architectural currents that converged in Mostar during the Austro-Hungarian period.

We have seen that historicist statements were being made in Bosnia and Herzegovina even before the onset of Austro-Hungarian hegemony, with the designs for Mostar's Catholic and Orthodox churches; but after the change in government, Neo-Classical styles became the prominent modes of expression in Mostar's development.

Up right: Villa Lisca Mansard

Bellow: Landbank on main street

The following buildings represents this historic period: The Vakuf Palace built in 1894 in the Orientalist architectural style, The Girls' High School (1901), The Metropolitan Palace (1910), the Municipality Building (1900) and The Konak housing building (1900), all in Neo-classical styles, and Landbank (1910) in style of Secession.

Mostar 1918-1945: Stagnation

In the period between the two World Wars Mostar doesn't expend- it remains stagnant inside the borders that had been defined by the Austro-Hungarian occupation.

Right before the Second World War, Mostar had a population reaching 20,000 people, including the suburban area.

On October 27, 1940, the first aerial recording of Mostar was accomplished, making an important base for geodetic mapping of the town.

During the Second World War, besides the huge amount of human loss a number of housing blocks were ruined in the shelling. It is especially important to mention that Partisans had prevented the destruction of the bridges, planned by the enemy forces during their withdrawal from the city.

Mostar 1945 – 1992: Fast Development

In the period after the Second World War, the time of early socialist economic development, ~~the~~ rapid population increase and strong residential and public construction characterize the development of Mostar. To establish the expansion of the city, free posts on the west bank of the Neretva were utilized, thus

continuing from where they halted before the First World War, and filling the free surfaces, mainly gardens, of the existing urban structure. At this stage Mostar contains three urban components: the historical city core, its contact zones and a housing project, mainly dorms.

The realizations that mainly influenced the organization and the picture of Mostar in that time period were — the construction of new railways (with the required objects) next to the Stolac Hill —contouring of the industrial zone outside the city valley. The following events created a negative impact; illegal constructions, building of the shopping center "Razvitak", and slow development of the existing city street network.

Urban Planning. In 1967, two documents were completed: urban design for the new housing Zgoni for 14.300 inhabitants, occupying an area of 33,6 hectares, and the Preliminary studies for the city center. In 1967 the municipality council adopted the Preliminary Program for protection of the Historic core of Mostar. Program for General Urban plan was established in 1968. In 1980 the municipality council adopted the Spatial plan for the territory of municipality. The same year the urban plan of the city was adopted, basing itself on the principle that encourages establishing a system of the city centers which would avoid any division due to functions or hierarchy.

Moreover, these two plans set up a solid legal base for exertion on the city territory and formation of regular plans for the individual city parts. The preparation of these plans required a number of studies among which a few should be selected due to their value: Urban-sociologic, Urban-morphologic and a study on traffic. Unfortunately, they were launched in Belgrade with the cooperation of professionals from Mostar. To realize the plans, the professional agencies arranged a high quality outside cooperation with the desire to gain excellent elaborators.

After the Second World War, the city of Mostar organized urban planning activities in three steps: local legal assembly, institution for planning and the state administration that approves and controls all aspects.

The main problems of the urban planning of 1990s were insufficient materials and important moves, superficial agreements about life, vital decisions and tardiness in decision-making, rambled organization, mistakes in planning, and uncontrolled spatial activity.

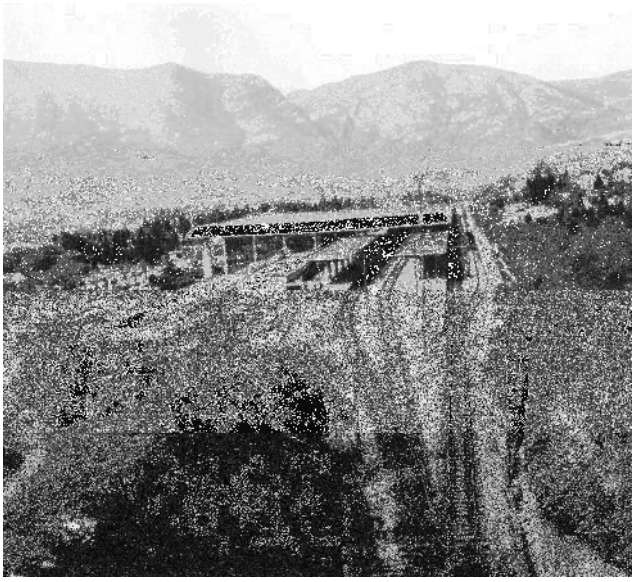
Post WWII architecture shows inconsistency since the leading architects of that period were educated in the 1920s and 1930s on different principles such as socialist-realism's soviet perspective on creativity that strongly influenced all the aspects of social and cultural life.

Industrial capacities. To attain a total construction of the city, naturally, a strong agricultural development became the most influential. The most important structures were located in the southern industrial zone: Agricultural Metal industry "Soko" and Alumina Plant (1969). Subsequently another industrial complex exists in the north of the city (The Cotton Factory, and a compressor factory). In the same area are three hydroelectric power plants on Neretva (HE "Mostar", HE "Grabovica" and HE "Salakovac") significantly influenced the future development of the city.

The contemporary architectural concept became a general approach for the industrial structures, which were preconditioned with the contemporary technology during their construction. Steel and concrete structures of wide ranges were implemented with the help of modern building technology.

Infrastructure of the city. The most important intervention in the city was the replacement of the railroads and the station to a different location; thus the construction of new and electric railroad Sarajevo-Ploče in 1966. Moreover, this determined a successful solution, while the whole system contacts the city at a single point. The new building for the railroads station, completed between 1967 and 1977, was very luxurious, but hard to use and maintain. The area of the Old Train station, popularly called Center One, became a most valuable space for further development of the city center.

The airport complex, the oldest of its kind on the Balkans (opened in 1913), presents an extremely crucial communication structure while it is located only 5 km from the city. The airport was reconstructed in 1964 for the modern air-trafficking and the new runway stretches 2400 meters.



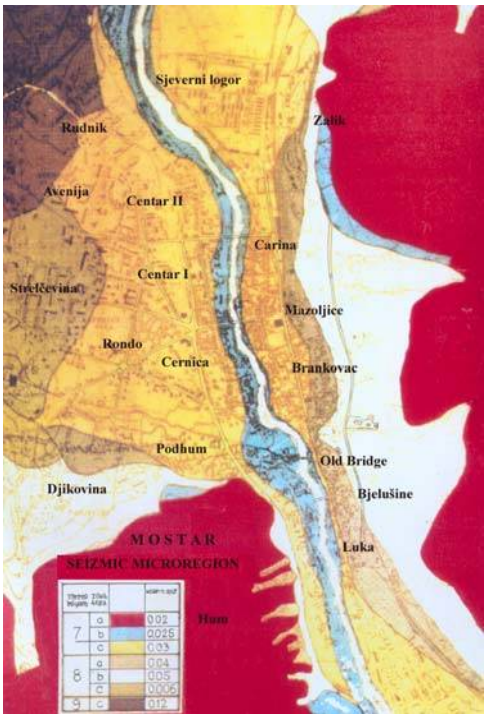
New train station

The construction of the new road network with the housing complexes in the north eastern part of the city, the extension of the Boulevard towards Rodoč, the Hasan Brkić Bridge on Čekrk (1978), and the intersection between the Carina Bridge and Avenue 14th of February present the most significant interventions on the city's street network. In 1985, Mostar City district contained 97,4 km main roads (highways)(25 km in the urban zone), 32 km (8,2 km) of regional roads and 260 km (66,7 km) of local streets. At the time there were 22.904 cars and 2725 trucks registered in the city.

The water source Studenac, with its installations, solved the water demands of the city, since the source of Radobolja had been insufficient for any greater needs. The total inflow of water from both sources to the city's water supply system made up to 70 m3 per second.

In the Central urban zone of Mostar, a green area covered around forty hectares (parks covered eight hectares and other green surfaces 31.5 hectares). Forest area in the municipality covered 574 hectares.

Seismic micro-regions as a basic pre-condition for planning and construction in the city were defined and under permanent observations by the special unit of the local Planning institute. It is important to emphasize that a sizeable part of the territory of Mostar has bed seismic characteristics of soil, especially in the north-west part of the central urban valley.



Mostar seizmic microregion

Public Structures. Numerous buildings were constructed in this period to fulfill growing needs of inhabitants of Mostar and its region: medical institutes: Anti-tuberculosis clinic (1949), a surgical-gynecology hospital (1952), and medical center Bijeli Brijeg (1962-1991); educational Buildings: 13 primary schools for 11735 pupils many kindergarten, 11secundary schools, university The University "Džemal Bjedić"(1977), and two dorms; sport facilities: Velež" Stadium and swimming pool complex (1958) open mini-stadium "Kantarevac" in 1963; trade sites: shopping centers »Razvitak« and »HIT«, supermarket »Hepok« that have been built around 1970 and a few hundred commercial spaces at the ground floors of most residential buildings held along the main city streets. The area between the Old Bridge and Musala Square, including Tito's and Braće Fejić streets (and connecting streets) remained as the most attractive part of the city, as it used to be for the past few centuries.

Swimming pool, constructed in 1958

Housing. In any city the residential buildings present 90 per cent of the entire construction. In Mostar, this kind of construction tries to keep up with the population growth; which increased from 58.471 (in 1953) to 89.580 (in 1971). In this historical period the residential construction claimed three main approaches: collective, individual and illegal. In the 1950s, the collective residential buildings settle on the edges of inherited urban fabric along the Boulevard and Šantić streets.

Starting in the 1960s the construction activities intensified on the free areas (cultivated green surfaces) on the west side of the historical city. Đikovina, Panjevina, Zgoni, Strelćevina and Avenija.

The most new settlements were used predominantly as dorms since the biggest number of public contents should be used in the part of the city built before 1918. In the 1970s the city expanded towards Bijeli brijeg and in the direction of Rudnik area. Starting in the 1980s the same trend continued: new buildings were infilling empty plots in the existing housing neighborhoods. Boulevard, Šemovac Balinovac along one Radobolja River Vladimir Nazor and Stjepan Radić Street and the old "Velež" stadium premises.

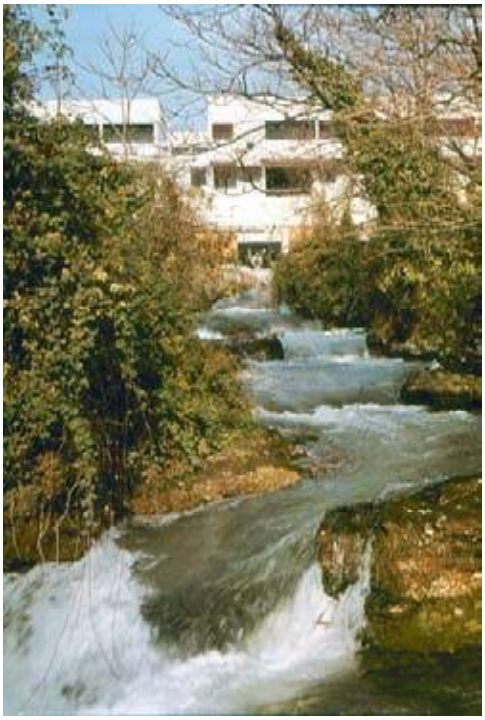
Cultural activity structures: The National Theater (1950), became the first construction of its kind in Bosnia and Herzegovina after the Second WW. The structure embodied typical architectural elements of its time; the socialist-realism. The children theater settled in 1952 in the modified Jewish Temple, which had been constructed in 1905. The movie theater "Zvijezda" continues to work inside the theater Urania, while the second modern Cinema "Parizan" was built in 1968. Culture House (or Workers' house) was built in Rondo in 1960, carried out the greatest cultural role in the city. Later, it was successfully modified into the Youth House, with rich daily contents. The art Gallery and the national library (containing 248000 books) were placed inside along the building with the primary contents. The structure's functional side demonstrated the dominance of socialist realist architecture. Herzegovian Archive and the Symphony Orchestra utilize adapted Austro Hungarian structures which conveyed a temporary solution for this Institution. Museum of Herzegovina was located in five buildings (Čejvan-Čehaja mosque complex, Ćorovića house, the house of Gojko Vuković- and the Memorial house of Džemal Bijedić. The Partisan monument complex, a work of Bogdan Bogdanović that was raised in 1965, has the most monumental attributes.

Cathedral Mother of Church was built in 1980, applying the contemporary material and building technology. The bell tower remained incomplete. The Cathedral, together with Bishop's Palace, presented a unique complex.

Tourist services. Hotel "Neretva" opened in 1892, hotel "Hercegovina" from the same period, and hotel "Mostar", the adapted State Employment Office, provided the basis for the hotel accommodation in Mostar. The old hotel "Bristol" (1905) was ruined and a new one replaced it in 1959, yet with its architectural style it contrasts the environment immensely. Hotel "Neretva" has experienced several adaptations. In 1978, the hotel underwent its biggest adaptation as the neighboring Gredić Family House, adapted and upgraded with terraces above the river and underneath the hotel, dominated the old hotel structure. New addition, which replaced Gredić Family House call villa "Neretva", delineated an aesthetically rich and a luxurious structure. Nevertheless, its location was not the most carefully chosen.

In 1978, the top-quality hotel in the city, "Ruža" reached the first phase of construction. In 1985, the total accommodation capacity was 639 beds. Another structure that should be mentioned is the Retirement/Nursery Home that was built in a hotel style in 1989 on the location between Center One and Center Two, and that presents a notable contribution to the city's architecture.

Series of cafes and restaurants of striking names and colorful interiors, with no other special contents, along with many private pensions for rent (in 1985 there were 251 structures with the capacity of 16,192 visitors, fulfilled the city's hospitality offer.



Hotel Ruža is placed on one of radobolja streams, constructed in 1978.

Preservation of building heritage in Mostar. Preservation of the building heritage is a permanent process that is a subject to the influences of socio-economical factors, inseparable from the overall situation of the social outbuilding.

When observing through time and space, the most significant characteristic of the building heritage in Mostar and its historical core is the outstanding transformation of economic structures. This was caused by the socio-economic changes, along with the exceptional forces (wars, fire, floods), yet transformations always reflects in the adaptation of the current modern technology development in construction and means of economic development

Activities between 1949 and 1977. Tradition of preservation of monuments is relatively short. The first document related to this subject was decision of the vilayet assembly Bosnia, dated in 1870., which requesting construction of a new bridge to reduce pressure on the Old Bridge, which has monumental value.

In 1949, a group of dignified citizens in Mostar initiated an activity to preserve the cultural heritage calling upon Allies' law about protection of the monuments. Despite the existing law, they pointed out the fact that a wrong policy was applied for the cultural heritage, thus resulting with the destruction of numerous structures of monumental and ambient values.

In 1950, the State Institute to Protect monuments of Bosnia and Herzegovina, performed a study on Bazaar in Mostar and presented it to City's local government. In 1952 and 1953, the first preservation activities were performed on the towers of the Old Bridge and on several smaller structures in the Old Town area.

In 1954 in Mostar, an administration for preservation and maintenance of the cultural monuments and natural rarities in the city and the region was formed.

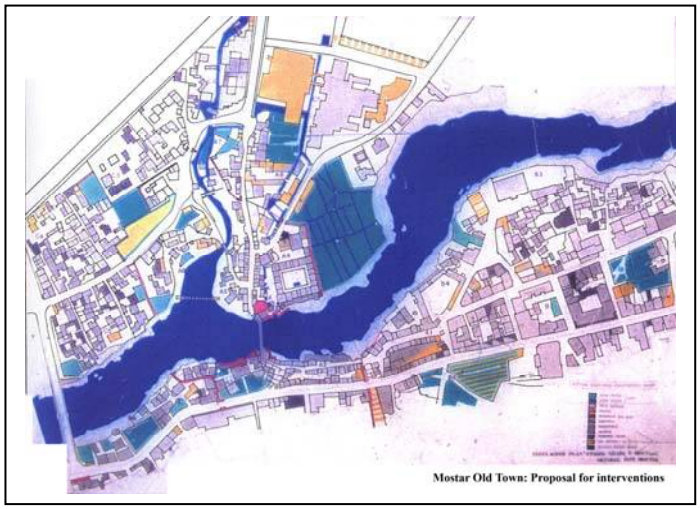
The year 1955 can be regarded as the beginning of integral and constructive actions in the Historical city core; the Old Bridge and Kujundžiluk, which would sustain for three years and represent the base for the return of "life" in this part of the city. Following that, the period of stagnation, rehabilitation work lasts until 1963. Meanwhile, additional works actualize two capital structures; consolidation of the arch of the old Bridge, and the conservation of Karadjozbeg Medresa in Mostar.

Between 1965 and 1973, several monuments experiences smaller interventions. The cooperation with the Dutch company "Philips" resulted with the implementation of the illumination on the communal infrastructure.

In 1991, the registered Monuments of Cultural and Historical Heritage in the territory of the today's city of Mostar are: Pre-historical sites 695, antic settlements 27, medieval constructions 1756, the Ottoman-Turkish heritage 86, Monuments 1918-45: five smaller monuments and three memorial completeness related to the antifascist liberation war.

It is important to emphasized that institutional protection was focused on the Old Bridge complex and its neighborhoods. Between 1952 and 1958, the serious surveys and river banks consolidation works were realized on the bridge area. In 1963, the consolidation of the bridge's vault was realized. In 1956 and 1982, the photogrammetry surveys and a test of re-consolidation of the river bank were realized.

The activities between 1977 and 1992. Two documents, "Preliminary urban program for cultural and historical heritage – planning regulation, revitalization and reconstruction of the Old Town", belonging to the Institute for Urbanism in Mostar (1967) and the decision that was based on, "Decision of Spatial regulation and revitalization of a core area of the Old Town", from the side of Municipal Assembly in Mostar, 1973, present the base for the planned and systematic protection of the Old Town in Mostar.



Map of Master Plan from 1990.

In 1977, these two documents assisted in establishing the Organization for administration, use, protection and maintenance of cultural-historical heritage "Stari grad" (Old Town) in Mostar with the aim to completely preserve Mostar's heritage, the historical city core and series of complexes and individual structures for whose protection the city took responsibility.

In the period between 1977 -1992 the economical base of the integrated process on preservation of the Old Town depended on the revenues from the same area. Income from rental fees, contributions for the construction, and communal and tourist taxes provided funding for preservation and development of the area.

In the period between 1978 and 1991, 162 contributions inside the historical core and 50 outside were realized, having varied in methods and volumes.

The Aga Khan Award for architecture in 1986 was given to the Organization »Stari grad« (Old Town) Mostar, for "*...the remarkably conceived and realized of conservation of the entire 16th century center of this historic town. It does not consider conservation as acts of nostalgia or sentiment. The need for such work and presumably, the priority accorded it, is seen as an intelligent assessment of the state of civilization.*

The reassessment of traditional values in modern contexts and in ways that respond to modern challenges is something that goes beyond questions of architectural aesthetics and functions, and becomes a key role in the professionals ethics of the architect.

Traditional values and cultural continuity in a contemporary building context can be developed only by examining history of building base themselves on the study of the whole series of human activities.

The need for a dynamic relationship between past and present is fulfilled in this example, which is a living storehouse of historic data, and is simultaneously a part of organic fabric of daily life of the community it serves. (Excerpt from the opinion of the Aga Khan Award Master Jury).

In 1986, the award winning scheme for the preservation of Mostar Old Town introduced an institutional dimension into the awards for conservation, which had hitherto concentrated on the technical aspects of restoration. Mostar has shown that some of the finest restoration work can be largely self-financing, and that will and proper organization, a substantial effort can be undertaken in this direction. Mostar is an outstanding winner in the institutional as well as the technical field and in the completeness with which it has addressed the renovation of the entire section of the old city.

Destruction of the City, 1992-1995

Between 1992 and 1995, the city had suffered severe damage. The area of the greatest destruction comprised the whole of the Bosniaks East Mostar. To this should be added the eastern part of Podhum (Bosniaks population too), and buildings along the confrontation line Boulevard-Ričina-Aleksa Šantić street.

Behind this line serious damage was limited to a few individual buildings: St. Peter and Paul Church at Pothum, Bishop's palace at Balinovac, with 50,000 books - both destroyed in May 1992 by the Serbian army. Virtually all historic buildings were severely damages: every mosque in the city, Orthodox churches, Austro/Hungarian bath, hotel Neretva, Vakuf palace, Metropolitan palace, Museum of Herzegovina, the Symphony Orchestra building, and finally the Old Bridge on November 9, 1993. Nine other bridges were dynamited by the Serbs army between May 24 and June 12, 1992.

Based on the European Union Administration of Mostar (EUAM) assessment done in 1994 the Brankovac community area had 87% and the Luka I area 86 % of its building damages. In total 2357 units (excluding historic monuments) needed more than 40 million US dollars to be repaired. As measured by repair cost, within the urban zone, the east part of Mostar had sustained over 80% of heavy damage. Industry was also purposely and broadly looted and dynamited or shelled (food production plants, the aluminum plant, the "Soko" aircraft factory, cotton and tobacco factories), the hydro-electric power plants dams and network and telecommunication structures were destroyed or disabled. Outside of the urban area, all of the outlying villages in the valley of the Neretva River and the eastern hills had sustained very heavy damage.

Above:Aerial photo of the historic core in 1997

Bellow: Destroyed catholic church of St Peter and Paul

Destruction of the Old Bridge. On November 9, 1993, the Old Bridge in Mostar was finally brought down. The bridge that had seen so many wars, survived so many years, no longer exists. After thousands of shells from Serbian artillery beginning in April 1992, and than from the Croats beginning in May 1993, the crime was completed.

One of the building miracles of 16th-century Europe, the crowning achievement of an extraordinarily creative era of Islamic culture, was gone. The Stari Most had contained the meaning and the spirit of all Bosnia and Herzegovina: the essence of the bridge was meeting and joining together; the country, like the bridge, could be divided only by destroying it.

Video clip of destruction of The Old Bridge

Because the Old Bridge was the product of both individual creativity and collective experience, it transcended our individual destiny. A dead man is one of us; the bridge is all of us forever.

The temporary bridges (Kamenica, Musala, Tenzin) erected above the Neretva in the area between Musala and Donja Mahala (and Luka) played the key role in protecting eastern part of Mostar in the period after May 9, 1993. The first temporary bridge on the traces of the Old Bridge, built in only three days, was open on December 30, 1993. Later this bridge was replaced by with three other, more secure, temporary pedestrian bridges of similar construction but.

Rehabilitation of the City 1995-2004

Rehabilitation of Mostar is deeply dependent on the political situation after the war in Bosnia and Herzegovina. During ten post-war years, city didn't reach political stability, what was evident in daily life: all public functions were duplicated, police, education, finance, budget, and planning.

Till March 15, 2004, the city of Mostar had organized in six municipalities (three with Croatian and three wit Bosnian majorities) and with a central district (under direct jurisdiction of the City government).

As a result of the 1992-95 war the city of Mostar was facing following obstacles:

- Political situation: even after all agreements and elections the city is in many components still divided.
- Physical living problems represented a key problem: 6.101 units or 70-75 % of housing stock was destroyed, along with infrastructure.
- No primary economy (only Alumina Plant), and a great number of unemployed.
- Great change in the composition of population: around 2.000 killed, 2.500 wounded, 800 handicapped.
- More than 60% replaced population.

In March 2001, the City of Mostar set out the initial economic strategy for the ten years period. The strategy was built on five principles: partnership, transparency through consensus, enterprise environmental sustainability, equalities of opportunity. Related to the urban renewal idea was that the city should be an attractive place for citizens, visitors and investors to live and work. Part of this strategy was a new plan for the district area, to encourage restoration and redevelopment, and to establish "Pride in Mostar" organization with the task to find money to speed redevelopment. During first three implementation years, the results are very poor.

Planning and construction. Several pre-war problems were enlarged during the post –war period:

- High net density at areas of collective settlements with all consequences what that facts cause (deficit of green areas, cars parking at every corner, less space for children's playground, etc.)
- Insufficient communal equipment at areas of individual settlements, as insufficient equipment of social infrastructure.
- All though, high-grade agriculture land, industrial area and area of airport Ortijes limit expansion of the City at the north.
- Natural elements are essential limitation factor for development of the City of Mostar. The meaningful areas for future development of Mostar are free, not built zones of Rodoč, ex South and North camps with total surface of 263 ha.
- The lack of comprehensive planning.

any interest to solve the problem a group of highly respected experts never completed the task.

In two groups of municipalities with national prefix level of intervention in the space was a very different: in the group of municipality with Bosniaks majority (in the war known as the East Mostar) intervention was focus on reconstruction of infrastructure and housing stock. In the group of municipality with Croatian majority (in the war known as the West Mostar), the reconstruction needs were limited, and focus was on new constructions.

In the West Mostar, interventions in the urban area appeared in several modes:

- Intensive construction of modern commercial structures, which have transformed complete areas (Rodoč and Rudnik),
- Quality infill in existing urban fabric (new polyclinics at Boulevard, a primary school in Center Two).
- Commercial and administration structures which were infilling the urban fabric,
- Small commercial structures, mostly illegal, along the main communication and Addition of floors to existing structures, and enormous square meters constructed in new commercial structures around the Rondo square

In the East Mostar, with the reconstruction of destroyed buildings, semi-legal construction was increased in areas of Upper Mazoljice and Nadharemi, carried out by Bosniaks people, refugees from Srpska Republika from Eastern Herzegovina.

Only a few new structures, all being in the southern military camp area were constructed in the part of the city, a central part was transformed into the hospital, east part was allocated for the mass housing construction (with only one block constructed), on the Neretva river bank the village for orphans, sponsored by Egyptian government, was built.

Both Bosniak and Croatian national corpuses gave special attention to the reconstruction or construction of religious structures. List of the reconstructed mosques has cover close to all mosques that existed in the Ottoman time. Two of them (Jahja Esfel at Carina and Neziraga) had actually been destroyed in 1950-ties.

The Church complex at Pjesak was successfully rehabilitated, however, the Franciscan church St. Peter and Paul, which was destroyed in May 1992, was replaced with a new one (still under completion), designed to dominate the city panorama with its enormous volume and an extremely tall bell-tower.

European Union Projects. After the war, numerous international organizations used Mostar as a pilot territory to apply their projects in Bosnia and Herzegovina. Reconstruction activities started during the war with the initiation of local institutions. After the cease-fire between Bosnian and Croatian sides in 1994, the international institutions became present in the city through different programs.

The European Union Administration of Mostar (EUAM) aimed to unite the city through the establishment of security, administration, and through the reconstruction of the buildings and infrastructure.

EUAM spent 170 million German marks (around 85 million euro) on repairing 6000 houses, 30 public buildings, 28 schools, 20 health buildings, 70 water projects, five bridges, a construction of equipment pool, a technical training center and other similar investment. Fourteen historic buildings were repaired as well.

Meanwhile, 95 buildings with 47.795 m2 were demolished. Among them, the housing block with 64 apartments on top of the "Razvitak" department store marked the most crucial example.

Simultaneously along with EUAM numerous NGOs engaged in the city's rehabilitation projects. Individual structures in the entire city area,–apartment blocks and public buildings in the Boulevard and Šantic's streets obtained a special attention in this process.

The repair costs estimated by the EUAM survey were almost US$400 million.

The Old Town Rehabilitation Processes. The City of Mostar in the collaboration with the World Bank, UNESCO, the Aga Khan Trust for Culture (AKTC), the World Monuments Fund (WMF), the Research Centre for Islamic History, Art and Culture (IRCICA) and several others was carrying out a set of complementary activities for the preservation and development of the City of Mostar. Starting from 1998, the project completion was scheduled for the summer 2004.

The project focused on the historic city area, which was the most ruined part of the city during the war, and on several other related areas.

Here, the project will be presented through following five intermingling components carried out by the City of Mostar in the collaboration with international institutions:

(1) Education and training: Mostar 2004 program;
(2) Management (Strategic planning for the urban area of Mostar: Old Town preservation and development plan, and the establishment of the Stari Grad Agency);
(3) Rehabilitation of the Historic city core: restoration and reconstruction of individual structures and improvement of infrastructure
(4) Restoration and reconstruction of priority buildings: buildings selected in the Central urban area

i. Rebuilding of the Old Bridge complex (under scientific patronage of UNESCO, Paris).

Jusovina street, rehabilitated in 2002

Mostar 2004 Program. Having in mind that in the both preparation and implementation phases an educational component should be presented through permanent program of education for all participants in the reconstruction process Research Centre for Islamic History, Art and Culture (IRCICA) Istanbul in the collaboration with the City of Mostar and many other institutions, and participants from 68 universities worldwide was carrying out the educational component of the rebuilding of Mostar, starting from 1994.

Mostar, with its extraordinary symbolic meaning for all Bosnians, as emphasized in the Old Bridge, has become the focus of a pilot project for the rebuilding of a multicultural Bosnia and Herzegovina. 2004 is proposed to be the celebration year of the rebuilding of Mostar.

The Mostar 2004 program proposes an integrated process of rebuilding, based on Mostar's pre-war experience, moved with the energy of both enthusiasm and knowledge and integrated under an international network. As part of this program, IRCICA had organized 10 phased workshops and symposiums, 36 exhibitions, 102 conferences, and published ten books. Throughout systematic works at universities and annual gathering in Istanbul (1994 and 1995) and Mostar (from 1997 till 2004) 1039 individuals have been involved. More than a hundred and fifty diploma projects, and more than fifty graduate theses, and ten publications are results of the large intellectual support network for the rebuilding of Mostar.

The best result of this component was the establishment of the multidisciplinary local team engaged in the realization of all project's components. All team's members are continuing their education through graduate programs at various schools as a part of the office program

Management. This component comprises of preparation and implementation of the Master plan of the Old City of Mostar, together with preparation of the key elements for the Strategic development plan for the urban area of Mostar. Integral parts of component are establishment of the urban governing system and the self-sustainable economic system for the area.

The plan was prepared by the Aga Khan Trust, Geneva and the World Monuments Fund, New York (AKTC&WMF) during the period between July 1998 and January 2001. After the public hearing, it was approved by the Old Town Municipality Council on May 10, 2001. (see: Official Gazette of the Old Town Municipality of the City of Mostar, No1. May 2001).

Historic City Strategic Development Plan. Mostar in the third millennium should have a useful program of reconstruction and development. Defining such program demands hard work of a large number of experts, which the City Government anticipated and formed teams that deal with aspects of further development of the town.

Activities of AKTC/WMF are mostly focused on the urban aspects of development with the main purpose to preserve and develop the city historic core. The creation of both a quality data-base and the widest possible consensus are in continuous development. Special attention should be paid to the following key sectors: (a) *Transport infrastructure (b) City infrastructure;* (c) *Urban planning and restructuring of existing institutions,* (d) *Balancing of public uses; (e) Development of housing*.

Special zones and plans should be determined for the whole area of the historical city in its boundaries from 1918. Within this area it is possible to define three separate zones. Each of these zones should be specially dealt with according to the quality and integrity of the each zone.
During period between 2002 and 2004, a particular attention was given to North Camp and Center One areas.

Old Town Master Plan. "*The Old Town Master Plan"*, prepared by JP "*Prostor"*, Mostar in 1990, and the UNESCO "Mostar Urban Rehabilitation Map and Rehabilitation Plan of Stari Grad" published in 1997, presented a solid base for the planning in the historic area of Mostar.

The extent and uneven quality of transformations of the traditional city three different zones have been identified to be regulated differently according to the quality and integrity of its urban structure and buildings.

Zone A (Old Town) is part of the town, known as the Old Town, that has preserved its overall integrity and should be subject of strict control by approved Master plan. The border of this zone, among others, respects to the following factors: natural border (e.g. river, sea, mountains), historic border (e.g. city walls), functional division (e.g. bazaar and mahale), and administration-political division (e.g. municipality, land use).

Zone B (City Center) covers a part of the town with less urban and architectural integrity, but still is recognized as unique urban system and as such seeks for coordinated interventions.

Zone C (1918 Historic Area) covers the rest of the area within the 1918 boundaries. This zone has already experienced great changes, and preserves only a few valuable urban elements.

Satellite image of the city (2004) with borders

The area covered by Master Plan of Conservation and Development of The Old Town some 45 hectares, with 1675 units, located at the very core of the historic city as defined by the 1918 city boundary. The Old Town is the oldest portion of city fabric, dating back to Ottoman times. More than any other part of the historic city, it has maintained its traditional fabric and overall integrity, which will be subjected to stricter conservation controls.

The 2001 Master Plan and accompanying regulations are:

- indicate the authority responsible for implementing and monitoring the Plan as well as for future detailed planning and periodic revisions to the Plan;
- define the Plan's units of intervention and indicate the forms of intervention applicable to all buildings within the Planning Area with regard to the architectural and typological character of each structure and the level of protection to be achieved for each; with an indication of the norms to be applied to the rehabilitation and reorganization of individual buildings and areas.
- specify the allowable uses of land and buildings in the Planning Area;
- define the organization of vehicular traffic, parking and pedestrian circulation within the Planning Area;

Agency. The historic city center and residential neighborhoods of Mostar are of unique architectural and cultural significance. As one of Bosnia and Herzegovina's major attractions, their value and importance go beyond local interests and deserve international recognition and support.

Positive experience of the Mostar preservation project during the period 1978 -1991, and other international experiences had shown that the best results in preserving living historic towns have been achieved through the establishment of independent, specialized conservation and development agencies that have full control over a given (selected) area as well as special powers, resources and professional staff.

Rehabilitation of the Historic Core of the City. The historic neighborhoods of Mostar are currently undergoing substantial transformation. This is the result of interventions by group of private owners who, while rebuilding their homes damaged during the 1992-1994 war, modify and expand the buildings to such an extent that the traditional features are completely lost.

This process was rapidly and irreversibly changing the character of some of the most valuable and sensitive areas of the city, particularly those near the Old Bridge. The definition of viable kinds of intervention in these areas was urgently needed, especially for the plots and buildings in which reconstruction activities are ongoing or may be expected in them near future.

AKTC/WMF aims are preparation and implementation of the Action Plan for the rehabilitation of the Historic Neighborhoods of the Old Bridge on both side of the Neretva River, including monuments, commercial and dwelling complexes, and communal infrastructures.

View to the Old City from hum hill in 2005

These interventions and proposals constitute the basis of the comprehensive action plan for the neighborhoods presently being finalized, including the identification of implementation modalities for individual houses, groups of structures, and public domain areas. More specifically, the implementation modalities include:

(a) ownership acquisition by the municipality, and subsequent restoration and re-use;
(b) improvement through design assistance and small grants;
(c) investments in upgrading of public domain,
(d) corrective interventions in critical townscape points.

The complete project is carried out by the AKTC/WMF local office in Mostar. The implementation was realized in collaboration with the Project Coordination unit.

Restoration Program for Selected Buildings. The AKTC/WMF team had elaborated twenty-one damaged monuments and historic buildings in central Mostar as a part of the list of 100 important structures from all historic periods in the urban area of Mostar defined in the Strategic development program. The selection includes public buildings and private structures. Together these buildings document the influences and cultures which contributed to the development of the city over time, and today they represent the endangered legacy of its past.

From the list of 100 important structures, for the more than 20 buildings were prepared detailed restoration, reconstruction and rehabilitation projects including historic documentation, graphic design and reuse options including cost estimation (15 of them were presented in the AKTC/WMF publication *Reclaiming Historic Mostar*, August 1999).

The restored Napredak building, december 2004

Till July 2004 five structures from the list of twenty following priority buildings were completed: Muslibegović housing complex, Sevri Hadji Hasan Mosque (built in 1620), Biščević-Lakišić housing complex, and the Guest house in Ramića Street through AKTC/WMF Project. "Napredak" Cultural Center (1906); Orthodox Metropolitan Palace (1910), and Wakuf palace (1894) were completed in January 2005 by PCU based on designs provided by AKTC/WMF.

UNESCO was guiding the following projects: Reconstruction of the Kriva Ćuprija Bridge, based on donation of the Duke of Luxembourg (completed in 2002), reconstruction of the Čejvan Ćehaja mosque minaret (completed in 1997) as a part of the reconstruction of the Mosque complex and reconstruction of Tabačica mosque (completed in 2000) both in cooperation with Saudi High Committee for Bosnia and Herzegovina, and Čejvan beg Hamam, based on donation of the French government (completed in 2004).

Vučjaković Mosque was restored based on donation of Hashemite Kingdom of Jordan, and Turkish government provided fund to restore the Koski Mehmed Paša Mosque and Derviš Paša Bajezidagić Mosque.

Swiss government supported reconstruction of the court in Cernica in 1997. Gymnasium is partly in function because the funds for completion were never collected.

The restored Hamam and Tabacica Mosque.

Waquf Palace, under restoration in winter 2004

Bellow: Koski Mehmed Pasa Mosque

Bellow riaht: Vuciiakovica Mosaue

Rebuilding of the Old Bridge complex. The Old Bridge, built in 1566, was representing one of the building miracles of 16th-century Europe, the crowning achievement of an extraordinarily creative era of Islamic culture. The Stari Most (Old Bridge) had contained the meaning and the spirit of all Bosnia and Herzegovina: the essence of the bridge is joining together, which is the beautiful expression of the Bosnian productive co-existence.

It is crucial to emphasize that the "Old Bridge" includes not only the vault of 28.7 meters span; its complex is composed of three towers, two mosques and several other structures. The vault--a miracle of 16th century technology--is the most dominant part, with extraordinary symbolic significance.

This powerful symbolism was the enemy's main target, and the primary reason for the desire of the Bosnians to rebuild it. The destruction of the Old Bridge, on November 9, 1993, symbolizes more than any single event, the war tragedy in Bosnia and Herzegovina. This destruction was an attempt to eradicate the reality of a multi-ethnic state and the thousand years-long history of Bosnia and Herzegovina.

If tearing down of the Old Bridge is a symbol of the destruction of Bosnia and Herzegovina, then its rebuilding will symbolize the restoration of this country and the reconciliation of its people who will come together to rebuild the Old Bridge, and all of Mostar's bridges, linking them as a people once again. We wish the Old Bridge to become a symbol of the restoration of the multi-ethnic society of Bosnia and Herzegovina.

Old Bridge Complex – during restoration

The Campaign for the Rebuilding of the Old Bridge was initiated internationally by the Research Centre for Islamic History, Art and Culture (IRCICA) during the *World Economic Forum* in Davos, February 1996, with a concept developed through the Mostar 2004 Project-- the Old Bridge should be rebuilt on the basis of a shared contribution of many donors.

This idea started to be operational through the *Foundation for the Reconstruction of the Old Bridge and Old Town* established on July 2, 1997 with H.E. Alija Izetbegović, president of Presidency of Bosnia and Herzegovina, as a leader. Rebuilding of the bridge presents main cultural and political task for citizens and the government.

Between August and November 21, 1997 operation of taking out parts of the destroyed Old Bridge from the river was completed by the International Stabilization forces in Bosnia and Herzegovina (SFOR).

On July 13, 1998, UNESCO, World Bank and the City of Mostar issued a joint statement and launched an appeal for the restoration of the bridge. Since 1999, the City of Mostar has been carrying out this project through the City of Mostar- "The Project Coordination Unit" using the World Bank loan of $ 4.0 US millions, and $ 7,6 US millions donations of several European states (Italy, Turkey, Netherlands, Croatia) and Council of Europe Development Bank and 2.0 US millions from City of Mostar.

The complete project is under the scientific supervision of the UNESCO`s "International Committee of Experts (ICE) for reconstruction of the Old Bridge and rehabilitation of the Old Town of Mostar" set up on October 1, 1998.

Data and documents collected in the last forty years, especially during the period between 1997 and 2000, had represented very solid base for the project.

The international Committee of expert defined on its first session in November 1998 a list of preliminary studies: underwater survey and removal of stone from the river, studies of stone, mortars, iron, lead, geological investigation, studies of foundation and all other necessary studies. During following seven sessions (last one was held in April 2004) ICE was carefully following development of the each detail of the project.

Rebuilding of the Old Bridge complex began in 2000, and was completed in July 2004.

All details related to the Old Bridge rehabilitation project are in the Appendix Volume Six-1.

Image from the Opening Ceremony in July 2004

Nomination for Inscription on the World Heritage List

The Old City of Mostar

3. Description

3.d Present state of conservation

The Old City of Mostar, January 15, 2005

Old City of Mostar – Present state of conservation

	BUILDING	AREA [m2]	HEIGHT [floors]	CONDITION OF BUILDING	HISTORICAL CLASSIFICATION	SIGNIFI-CANCE	FORMS OF INTERVEN-TION
The Old Bridge (Stari Most) Area							
1	The Old Bridge	440,0		Very good, Rehabilitated by PCU, UNESCO, WB	Pre-Ottoman/ Ottoman	Monumental	Maintenance
2	A3-68a Tara Tower	78.6	Large single	Very good, Rehabilitated by PCU, UNESCO, WB	Pre-Ottoman/ Ottoman	Monumental	Maintenance
3	A4-2a Halebija Tower	139.3	Large single	Very good, Rehabilitated by PCU, UNESCO, WB	Pre-Ottoman/ Ottoman	Monumental	Maintenance
4	Herceguša Tower with City Wall	16.6	Large single	Very good, Rehabilitated by PCU, UNESCO, WB	Ottoman	Monumental	Maintenance
5	A3-68	47.8	3	Very good, Rehabilitated by PCU, UNESCO, WB	Austro-Hungarian	Architectural	Maintenance
6	A3-69	103.5	1	Very good, Rehabilitated by PCU, UNESCO, WB	Austro-Hungarian	High Architectural	Maintenance
7	A3-70	36.1	2	Very good, Rehabilitated by PCU, UNESCO, WB	Ottoman	Architectural	Maintenance
8	A4-2	63.0	1	Very good, Rehabilitated by PCU, UNESCO, WB	Ottoman	Architectural	Maintenance
9	A4-2b	18,0	1	Very good, Rehabilitated by PCU, UNESCO, WB	Ottoman	Monumental	Maintenance
10	A2-80 archeology	250.0	1	Very good, Rehabilitated by PCU, UNESCO, WB	Pre-Ottoman	Monumental	Maintenance
11	A4-2 archeology	95.0	1	Very good, Rehabilitated by PCU, UNESCO, WB	Pre-Ottoman	Monumental	Maintenance
Area A1							
12	A1-1	47.6	3	Poor	Austro-Hungarian	Architectural	Rehabilitation B
13	A1-2	43.3	1	Good	Post Austro-Hungarian	Neutral	Maintenance
14	A1-3	23.1	1	Good	Ottoman	Architectural	Maintenance
15	A1-4	25.8	1	Poor	Ottoman	Neutral	Rehabilitation C

	BUILDING	AREA [m2]	HEIGHT [floors]	CONDITION OF BUILDING	HISTORICAL CLASSIFICATION	SIGNIFI-CANCE	FORMS OF INTERVEN-TION
16	A1-5	21.2	1	Good	Ottoman	Architectural	Maintenance
17	A1-6	39.7	2	Good	Austro-Hungarian	Architectural	Maintenance
18	A1-7	24.8	1	New Construction	Austro-Hungarian	Environmental	Restoration
19	A1-8a	41.5	1	Good	Post Austro-Hungarian	Environmental	Rehabilitation A
20	A1-8b	39.3	1	Good	Post Austro-Hungarian	Environmental	Maintenance
21	A1-9	37.7	3	New Construction	Austro-Hungarian	Architectural	Maintenance
22	A1-10	78.1	2	Good	Austro-Hungarian	Neutral	Maintenance
23	A1-11	35.2	1	Good	Post Austro-Hungarian	Environmental	Rehabilitation A
24	A1-12	33.6	1	Good	Socialist	Environmental	Rehabilitation A
25	A1-13	24.6	1	Fair	Ottoman	Environmental	Rehabilitation A
26	A1-14	81.2	2	Very good	Ottoman	High Architectural	Maintenance
27	A1-16	56.1	3	Very poor	Austro-Hungarian	High Environmental	Restoration
28	A1-17	42.6	3	Fair	Austro-Hungarian	High Environmental	Maintenance
29	A1-18, 19, 20, 22, 22a	206.4	1	New Construction	Contemporary (since 1992)	Neutral	New Construction
30	A1-21	15.7	2	Fair	Austro-Hungarian	Environmental	Maintenance
31	A1-23	49.1	2	Very poor	Austro-Hungarian	Environmental	Reconstruction
32	A1-26	17.6	2	Good	Austro-Hungarian	Neutral	Maintenance
33	A1-27	24.0	2	Good	Austro-Hungarian	Neutral	Maintenance
34	A1-28	45.0	3	Good	Socialist	Neutral	Maintenance
35	A1-29	41.4	3	Fair	Austro-Hungarian	Neutral	Maintenance
36	A1-30	32.0	2	Good	Socialist	Environmental	Maintenance
37	A1-31	27.8	1	Good	Socialist	High Environmental	Maintenance
38	A1-32	26.5	1	Good	Ottoman	Environmental	Maintenance
39	A1-32a	20.5	1	Fair	Ottoman	Environmental	Maintenance
40	A1-33	75.0	1	Good	Ottoman	Environmental	Maintenance
41	A1-34 Koski - Mehmed Paša Mosque	316.0	1	Very good, Rehabilitated by Turkish Government	Ottoman	Monumental	Maintenance
42	A1-34a	267.7	1	Good	Ottoman	Monumental	Maintenance
43	A1-34b	76.8	2	Good	Socialist	Neutral	Maintenance
44	A1-35	21.6	2	Fair	Ottoman	Architectural	Rehabilitation B
45	A1-36	38.6	2	Fair	Austro-Hungarian	Environmental	Rehabilitation B

	BUILDING	AREA [m2]	HEIGHT [floors]	CONDITION OF BUILDING	HISTORICAL CLASSIFICATION	SIGNIFI-CANCE	FORMS OF INTERVEN-TION
46	A1-36a	12.8	2	Fair	Austro-Hungarian	Environmental	Rehabilitation B
47	A1-37	28.5	3	Very poor	Austro-Hungarian	Environmental	Rehabilitation B
48	A1-38	37.5	3	Good	Austro-Hungarian	Environmental	Maintenance
49	A1-39	35.8	3	Good	Austro-Hungarian	Environmental	Maintenance
50	A1-40	37.7	3	Good	Austro-Hungarian	Environmental	Maintenance
51	A1-41	87.7	2	Good	Austro-Hungarian	Environmental	Maintenance
52	A1-42	63.8	2	Good	Ottoman	Environmental	Maintenance
53	A1-43	56.1	2	Fair	Ottoman	High Environmental	Maintenance
54	A1-44	67.5	2	Fair	Ottoman	High Environmental	Maintenance
55	A1-45	27.5	1	Fair	Ottoman	High Environmental	Maintenance
56	A1-46	31.2	1	Fair	Ottoman	High Environmental	Maintenance
57	A1-47	45.7	2	Good	Ottoman	Architectural	Maintenance
58	A1-48	48.0	1	Fair	Ottoman	Architectural	Maintenance
Area A2							
59	A2-50	28.3	2	Poor	Ottoman	Architectural	Maintenance
60	A2-50a	23.0	2	Good	Ottoman	Architectural	Maintenance
61	A2-51	24.3	2	Good	Ottoman	Architectural	Maintenance
62	A2-52	11.2	1	Good	Ottoman	Architectural	Maintenance
63	A2-53	18.4	1	Good	Ottoman	High Environmental	Maintenance
64	A2-54	37.3	3	Good	Ottoman	High Environmental	Maintenance
65	A2-55	28.5	2	Very good	Ottoman	High Environmental	Maintenance
66	A2-56	68.3	1	Very good	Ottoman	High Environmental	Maintenance
67	A2-57	34.3	2	Very good	Ottoman	High Environmental	Maintenance
68	A2-58	32.4	2	Very good	Ottoman	High Environmental	Maintenance
69	A2-59	22.2	1	Very good	Ottoman	High Environmental	Maintenance
70	A2-60	20.2	1	Very good	Ottoman	High Environmental	Maintenance
71	A2-61	24.8	2	Poor	Ottoman	High Environmental	Restoration
72	A2-61a	8.7	2	Fair	Ottoman	High Environmental	Rehabilitation A
73	A2-61b	14.9	2	Fair	Ottoman	High Environmental	Rehabilitation A
74	A2-62	35.1	2	Good	Ottoman	High Environmental	Maintenance
75	A2-63	34.6	2	Good	Ottoman	High Environmental	Rehabilitation A

	BUILDING	AREA [m2]	HEIGHT [floors]	CONDITION OF BUILDING	HISTORICAL CLASSIFICATION	SIGNIFI-CANCE	FORMS OF INTERVEN-TION
76	A2-64	20.5	3	Good	Ottoman	High Environmental	Rehabilitation A
77	A2-73	17.3	1	Very good, Rehabilitated by PCU, UNESCO, WB	Ottoman	Architectural	Maintenance
78	A2-74	24.0	1	Very good, Rehabilitated by PCU, UNESCO, WB	Ottoman	Architectural	Maintenance
79	A2-75	27.7	1	Good	Ottoman	Architectural	Restoration
80	A2-76	31.0	1	Fair	Ottoman	Architectural	Restoration
81	A2-77	47.7	1	Fair	Ottoman	Architectural	Restoration
82	A2-78	77.4	2	Fair	Ottoman	Architectural	Restoration
83	A2-79	18.8	1	Very good, Rehabilitated by CHWB, Sweden	Ottoman	High Environmental	Maintenance
84	A2-80	47.6	2	Very good, Rehabilitated by CHWB, Sweden	Ottoman	High Environmental	Maintenance
85	A2-81	28.3	2	Good	Austro-Hungarian	Environmental	Maintenance
86	A2-82	47.8	1	Good	Austro-Hungarian	Environmental	Rehabilitation B
87	A2-83	85.1	2	Good	Post Austro-Hungarian	Environmental	Maintenance
88	A2-83a	8.9	1	Poor	Socialist	Neutral	Reconstruction
89	A2-84	39.2	1	Poor	Post Austro-Hungarian	Environmental	Maintenance
90	A2-85	20.2	1	Good	Austro-Hungarian	Environmental	Rehabilitation B
91	A2-85a	12.1	1	Good	Austro-Hungarian	Environmental	Rehabilitation A
92	A2-85b	13.4	1	Good	Austro-Hungarian	Environmental	Rehabilitation A
93	A2-85c	15.0	1	Good	Austro-Hungarian	Environmental	Rehabilitation A
94	A2-85d	15.4	1	Good	Austro-Hungarian	Environmental	Rehabilitation A
95	A2-86	21.5	1	Good	Austro-Hungarian	Environmental	Maintenance
96	A2-87	23.2	1	Good	Austro-Hungarian	Environmental	Maintenance
97	A2-88	23.8	1	Poor	Austro-Hungarian	Environmental	Restoration
98	A2-89	31.0	3	Fair	Austro-Hungarian	Environmental	Restoration
99	A2-90	79.4	3	Poor	Austro-Hungarian	Environmental	Restoration
Area A3							
100	A3-65	30.4	2	Very poor	Ottoman	Architectural	Restoration
101	A3-66	37.0	3	Good	Ottoman	Architectural	Restoration

	BUILDING	AREA [m2]	HEIGHT [floors]	CONDITION OF BUILDING	HISTORICAL CLASSIFICATION	SIGNIFI-CANCE	FORMS OF INTERVEN-TION
102	A3-67	32.5	3	Very good, Rehabilitated by PCU, UNESCO, WB	Ottoman	Architectural	Maintenance
103	A3-67a	32.7	1	Very good, Rehabilitated by PCU, UNESCO, WB	Ottoman	Architectural	Maintenance
104	A3-91	229.4	2	Very good	Austro-Hungarian	Architectural	Maintenance
105	A3-92 Ćejvan-Ćehaja Mosque	125.3	Large single	Very good	Ottoman	Monumental	Maintenance
106	A3-93	108.2	2	Fair	Ottoman	High Environmental	Rehabilitation A
107	A3-93a	11.9	1	Fair	Ottoman	Neutral	Rehabilitation A
108	A3-94	43.7	2	Very good, Rehabilitated by AKTC/WMF	Contemporary (since 1992)	Negative	Rehabilitation A
109	A3-95	42.5	2	Very good, Rehabilitated by AKTC/WMF	Ottoman	High Environmental	Reconstruction
110	A3-95a	21.3	1	Very good, Rehabilitated by AKTC/WMF	Ottoman	High Environmental	Reconstruction
111	A3-96	93.9	2	Very good, Rehabilitated by AKTC/WMF	Ottoman	High Environmental	Maintenance
112	A3-97	55.7	2	Very good, Rehabilitated by AKTC/WMF	Ottoman	High Environmental	Maintenance
113	A3-98	56.4	2	Very good, Rehabilitated by AKTC/WMF	Ottoman	High Environmental	Maintenance
114	A3-98a	32.0	1	Very good, Rehabilitated by AKTC/WMF	Contemporary (since 1992)	Negative	Maintenance
Area A4							
115	A4-69	90.8	1	Good	Post Austro-Hungarian	Environmental	Rehabilitation C
116	A4-70 Ćejvan-Beg Hamam	170.0	1	Very good, Rehabilitated by UNESCO, French Government	Ottoman	High Architectural	Maintenance
117	A4-71	50.1	1	Good	Socialist	Environmental	Rehabilitation A
118	A4-73	73.1	2	Under construction	Post Austro-Hungarian	Negative	Priority Intervention
119	A4-74	107.3	1	Fair	Ottoman	Architectural	Restoration
120	A4-75	35.1	1	Very poor	Ottoman	Architectural	Restoration
121	A4-76	89.2	1	Fair	Ottoman	Architectural	Restoration

	BUILDING	AREA [m2]	HEIGHT [floors]	CONDITION OF BUILDING	HISTORICAL CLASSIFICATION	SIGNIFI-CANCE	FORMS OF INTERVEN-TION
122	A4-77	63.1	1	Very good, Rehabilitated by AKTC/WMF	Ottoman	Architectural	Maintenance
123	A4-78	45.0	2	Ruin	Ottoman	Architectural	Restoration
124	A4-79	37.4	1	Fair	Ottoman	Architectural	Restoration
125	A4-80	42.1	1	Fair	Ottoman	Architectural	Restoration
126	A4-81	47.7	2	Good	Ottoman	Architectural	Maintenance
127	A4-82	77.6	2	Fair	Ottoman	Architectural	Restoration
128	A4-83	58.4	2	Fair	Ottoman	Architectural	Maintenance
129	A4-83a	51.9	2	Good	Ottoman	Architectural	Maintenance
130	A4-84	53.8	2	Good	Ottoman	Architectural	Maintenance
131	A4-85	48.8	2	Fair	Ottoman	Architectural	Restoration
132	A4-86	60.4	1	Fair	Ottoman	Architectural	Maintenance
133	A4-87	39.5	1	Good	Ottoman	Architectural	Restoration
134	A4-88	42.7	1	Good	Ottoman	Architectural	Restoration
135	A4-89	56.0	3	Good	Ottoman	Architectural	Maintenance
136	A4-90	32.0	1	Good	Ottoman	Architectural	Restoration
137	A4-91	18.6	1	Very good, Rehabilitated by UNESCO	Ottoman	Architectural	Maintenance
138	A4-91a Tabačica Mosque	181.1	Large single	Very good, Rehabilitated by UNESCO	Ottoman	Monumental	Maintenance
139	A4-92	17.5	1	Good	Ottoman	High Environmental	Maintenance
140	A4-93	26.6	1	Good	Ottoman	High Environmental	Maintenance
141	A4-93a	17.5	1	Good	Ottoman	High Environmental	Maintenance
142	A4-94	26.2	1	Good	Ottoman	High Environmental	Maintenance
143	A4-94a	25.4	1	Good	Ottoman	High Environmental	Maintenance
144	A4-95	31.1	1	Good	Ottoman	High Environmental	Maintenance
145	A4-96	14.7	1	Good	Ottoman	High Environmental	Maintenance
146	A4-97	45.4	2	Good	Contemporary (since 1992)	High Environmental	Rehabilitation A
147	A4-98	29.3	1	Fair	Ottoman	High Environmental	Rehabilitation A
148	A4-98a	26.4	1	Poor	Ottoman	High Environmental	Rehabilitation A
149	A4-99	62.4	1	Fair	Ottoman	Architectural	Maintenance
150	A4-100	34.8	1	Poor	Ottoman	Architectural	Restoration
151	A4-101	29.3	1	Good	Ottoman	Architectural	Maintenance
152	A4-102	28.6	2	Very good, Rehabilitated by AKTC/WMF	Ottoman	Architectural	Maintenance
153	A4-103	15.6	2	Very good, Rehabilitated by AKTC/WMF	Ottoman	Architectural	Maintenance
154	A4-104	37.9	2	Good	Ottoman	Architectural	Maintenance

	BUILDING	AREA [m2]	HEIGHT [floors]	CONDITION OF BUILDING	HISTORICAL CLASSIFICATION	SIGNIFI-CANCE	FORMS OF INTERVEN-TION
Area A5							
155	A5-3	37.1	1	Good	Ottoman	Architectural	Maintenance
156	A5-4	49.2	1	Good	Ottoman	Architectural	Maintenance
157	A5-5	65.2	2	Good	Ottoman	High Environmental	Rehabilitation A
158	A5-5a	22.5	2	Under construction	Ottoman	Environmental	Rehabilitation C
159	A5-6	34.3	2	Good	Socialist	Environmental	Rehabilitation C
160	A5-6a	6.3	1	Poor	Contemporary (since 1992)	Environmental	Reconstruction
161	A5-6b	61.4	1	Poor	Contemporary (since 1992)	Environmental	Reconstruction
162	A5-7	62.6	2	Very good, Rehabilitated by AKTC/WMF	Austro-Hungarian	Environmental	Maintenance
163	A5-7a	31.0	3	Very good, Rehabilitated by AKTC/WMF	Ottoman	Architectural	Maintenance
164	A5-8	67.7	4	Good	Contemporary (since 1992)	Negative	Rehabilitation C
165	A5-8a	16.3	2	Under construction	Contemporary (since 1992)		New Construction
166	A5-19	27.9	2	Very good, Rehabilitated by AKTC/WMF	Ottoman	High Environmental	Maintenance
167	A5-20	38.5	2	Very good, Rehabilitated by AKTC/WMF	Austro-Hungarian	High Environmental	Rehabilitation A
168	A5-20a	23.7	2	Very good, Rehabilitated by AKTC/WMF	Austro-Hungarian	High Environmental	Rehabilitation A
169	A5-21	18.8	1	Very good, Rehabilitated by AKTC/WMF	Ottoman	High Environmental	Maintenance
170	A5-22	43.2	2	Good	Contemporary (since 1992)	Negative	Rehabilitation B
171	A5-23	51.1	2	Good	Contemporary (since 1992)	Negative	Rehabilitation B
172	A5-24	32.7	1	Good	Contemporary (since 1992)	Environmental	Rehabilitation A
173	A5-25a	16.9	1	Good	Ottoman	High Environmental	Maintenance
174	A5-25b	16.5	1	Good	Ottoman	High Environmental	Maintenance
175	A5-25c, 25d	40.0	1		Ottoman	High Environmental	New Construction
176	A5-26	13.8	2	Good	Ottoman	High Environmental	Rehabilitation A
177	A5-27a	14.7	1	Good	Post Austro-Hungarian	High Environmental	Rehabilitation A
178	A5-27b	13.3	1	Good	Post Austro-Hungarian	High Environmental	Rehabilitation A

	BUILDING	AREA [m2]	HEIGHT [floors]	CONDITION OF BUILDING	HISTORICAL CLASSIFICATION	SIGNIFI-CANCE	FORMS OF INTERVEN-TION
179	A5-27c	26.2	1	Good	Post Austro-Hungarian	High Environmental	Rehabilitation A
180	A5-28	23.0	1	Good	Post Austro-Hungarian	High Environmental	Rehabilitation A
181	A5-29	14.0	1	Good	Post Austro-Hungarian	High Environmental	Rehabilitation A
182	A5-30	25.9	2	Fair	Ottoman	High Environmental	Rehabilitation A
183	A5-31	10.7	2	Fair	Ottoman	High Environmental	Rehabilitation A
184	A5-32a	14.4	2	Fair	Ottoman	High Environmental	Restoration
185	A5-32b	11.3	2	Very good, Rehabilitated by AKTC/WMF	Ottoman	High Environmental	Restoration
186	A5-32c	12.0	2	Very good, Rehabilitated by AKTC/WMF	Ottoman	High Environmental	Maintenance
187	A5-33	10.6	1	Very good, Rehabilitated by AKTC/WMF	Austro-Hungarian	High Environmental	Maintenance
188	A5-33a Watermill	40.5	2	Very good, Rehabilitated by AKTC/WMF	Ottoman	High Environmental	Maintenance
Area A6							
189	A6-62	203.4	1	Good	Austro-Hungarian	Neutral	Maintenance
190	A6-62a	82.5	1	Good	Austro-Hungarian	Environmental	Maintenance
191	A6-63a	67.6	1	Good	Austro-Hungarian	Neutral	Maintenance
192	A6-63b	21.1	1	Good	Austro-Hungarian	Neutral	Maintenance
193	A6-63c	41.6	1	Good	Austro-Hungarian	Neutral	Maintenance
194	A6-64a	35.6	1	Very good, Rehabilitated by AKTC/WMF	Ottoman	Environmental	Maintenance
195	A6-64b	31.7	1	Very good, Rehabilitated by AKTC/WMF	Ottoman	Environmental	Maintenance
196	A6-65	53.5	2	Very good, Rehabilitated by AKTC/WMF	Ottoman	High Environmental	Maintenance
197	A6-66	123.2	1	Good	Austro-Hungarian	Neutral	Maintenance
198	A6-66a	75.2	1	Good	Contemporary (since 1992)	Neutral	Maintenance
199	A6-74	46.1	1	Good	Socialist	Environmental	Rehabilitation A
200	A6-74b	61.3	1	Good	Socialist	Environmental	Rehabilitation A

Old City of Mostar – Present state of conservation

	BUILDING	AREA [m2]	HEIGHT [floors]	CONDITION OF BUILDING	HISTORICAL CLASSIFICATION	CANCE	FORMS OF INTERVEN-TION
Area A7							
201	A7-34	24.6	1	Under construction	Ottoman	Negative	Maintenance
202	A7-35	40.4	2	Poor	Socialist	Negative	Reconstruction
203	A7-36	58.5	1	Good	Ottoman	Environmental	Maintenance
204	A7-36a	47.0	1	Good	Socialist	Environmental	Maintenance
205	A7-36b	34.7	1	Very good, Rehabilitated by PCU, AKTC/WMF	Contemporary (since 1992)	Environmental	Maintenance
206	A7-37	44.8	2	Poor	Austro-Hungarian	Environmental	Rehabilitation B
207	A7-37a	59.2	2	New Construction	Contemporary (since 1992)		Rehabilitation A
208	Crooked Bridge	60.9		Good	Ottoman	Monumental	Maintenance
Area A8							
209	A8-9	64.3	2	Good	Ottoman	Environmental	Rehabilitation A
210	A8-9a	66.6	2	Very good, Rehabilitated by AKTC/WMF	Ottoman	Architectural	Maintenance
211	A8-10	31.8	2	Fair	Ottoman	Environmental	Rehabilitation B
212	A8-10a	31.9	2	Fair	Ottoman	Environmental	Rehabilitation B
213	A8-11	57.0	2	Ruin	Austro-Hungarian	High Environmental	Reconstruction
214	A8-11a	29.7	2	Ruin	Austro-Hungarian	High Environmental	Reconstruction
215	A8-11b	29.6	2	Ruin	Austro-Hungarian	High Environmental	Reconstruction
216	A8-11c	75.7	2	Ruin	Austro-Hungarian	High Environmental	Reconstruction
217	A8-11d	48.6	2	Ruin	Austro-Hungarian	High Environmental	Reconstruction
218	A8-11e	12.1	1	Ruin	Contemporary (since 1992)	High Environmental	Reconstruction
219	A8-12	93.7	1	Ruin	Austro-Hungarian	Architectural	Reconstruction
220	A8-13	146.5	2	Fair	Post Austro-Hungarian	Neutral	Rehabilitation A
221	A8-13a	16.2	1	Fair	Post Austro-Hungarian	Neutral	Rehabilitation A
222	A8-14	21.4	2	Ruin	Austro-Hungarian	Neutral	Reconstruction
223	A8-14a	53.4	2	Ruin	Austro-Hungarian	Neutral	Reconstruction
224	A8-15	71.5	2	Good	Ottoman	Environmental	Rehabilitation C
225	A8-15a	61.0	2	Poor	Socialist	Environmental	Reconstruction
226	A8-16	68.2	2	Fair	Ottoman	Environmental	Rehabilitation A

	BUILDING	AREA [m2]	HEIGHT [floors]	CONDITION OF BUILDING	HISTORICAL CLASSIFICATION	SIGNIFI-CANCE	FORMS OF INTERVEN-TION
227	A8-17	55.4	2	Good	Socialist	Environmental	Rehabilitation A
228	A8-17a	78.2	2	Under construction	Post Austro-Hungarian	Environmental	Rehabilitation A
229	A8-17b	30.6	2	Good	Socialist	Environmental	Rehabilitation A
230	A8-17c	21.4	2	Good	Ottoman	Environmental	Rehabilitation A
231	A8-18	38.9	2	Very good, Rehabilitated by AKTC/WMF	Ottoman	Environmental	Maintenance
232	A8-18a Nezir-Aga Mosque	141.1	Large single	Very good, Rehabilitated by IRCICA	Ottoman	High Architectural	Maintenance
233	A8-18b	61.2	2	Very good, Rehabilitated by IRCICA	Ottoman	High Architectural	Maintenance
234	A8-18c	18.9	1	Very good, Rehabilitated by IRCICA	Ottoman	High Architectural	Maintenance
Area B5							
235	B5-12	75.6	3	Ruin	Austro-Hungarian	High Architectural	Restoration
236	B5-13	92.7	3	Ruin	Austro-Hungarian	High Architectural	Restoration
237	B5-13a	96.0	2	Ruin	Austro-Hungarian	Environmental	Reconstruction
238	B5-14	1882.5	3	Ruin	Austro-Hungarian	High Architectural	Restoration
239	B5-15	92.7	1	Fair	Austro-Hungarian	Environmental	Rehabilitation B
240	B5-15a	39.0	2	Poor	Contemporary (since 1992)	Negative	Rehabilitation A
241	B5-16	54.7	2	Good	Austro-Hungarian	Environmental	Rehabilitation A
242	B5-17	68.8	2	Poor	Austro-Hungarian	Environmental	Rehabilitation A
243	B5-18	61.7	2	Fair	Austro-Hungarian	Neutral	Rehabilitation A
244	B5-19	14.9	1	Good	Contemporary (since 1992)	Negative	Rehabilitation A
245	B5-20a	58.7	3	Poor	Contemporary (since 1992)	Negative	Rehabilitation A
246	B5-21	258.8	2	Fair	Austro-Hungarian	Environmental	Rehabilitation B
247	B5-22	90.0	1	Good	Austro-Hungarian	Architectural	Rehabilitation A
248	B5-23	53.7	3	Poor	Austro-Hungarian	Architectural	Restoration
249	B5-24	83.2	1	Poor	Austro-Hungarian	Architectural	Rehabilitation A
251	B5-26	105.0	2	Very poor	Austro-Hungarian	Architectural	Rehabilitation C

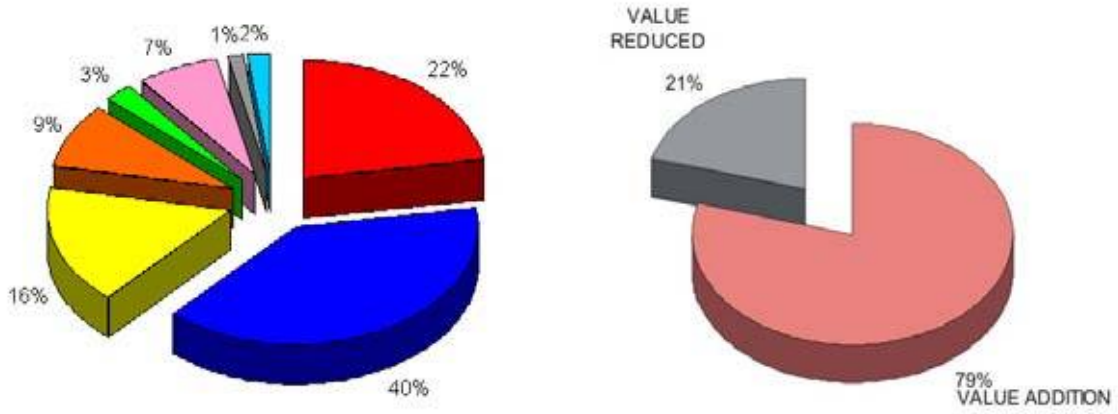
	BUILDING	AREA [m2]	HEIGHT [floors]	CONDITION OF BUILDING	HISTORICAL CLASSIFICATION	SIGNIFI-CANCE	FORMS OF INTERVEN-TION
252	B5-27	424.3	4	Ruin	Austro-Hungarian	High Architectural	Restoration
253	B5-28	98.6	2	Good	Post Austro-Hungarian	Environmental	Rehabilitation A
254	B5-29 Vučijaković Mosque	179.1	Large single	Very good, Rehabilitated by H.K.Jordan	Ottoman	Monumental	Maintenance
Area B6							
255	B6-15	107.6	2	Ruin	Ottoman	High Environmental	Restoration
256	B6-15a	22.4	2	Good	Contemporary (since 1992)	Negative	Rehabilitation C
257	B6-16	90.1	2	Ruin	Ottoman	Environmental	Reconstruction
258	B6-17	65.0	2	Poor	Austro-Hungarian	Negative	Rehabilitation A
259	B6-18	6.7	2	Poor	Contemporary (since 1992)	Environmental	Reconstruction
260	B6-18a	22.0	1	Good	Socialist	Environmental	Rehabilitation A
261	B6-19	38.6	2	Good	Contemporary (since 1992)	Negative	Rehabilitation A
262	B6-20	35.2	2	Very poor	Contemporary (since 1992)	Environmental	Reconstruction
263	B6-21	95.4	2	Good	Socialist	Neutral	Rehabilitation A
264	B6-22	37.7	2	Poor	Ottoman	Negative	Rehabilitation A
265	B6-23	86.3	2	Good	Contemporary (since 1992)	Negative	Rehabilitation A
Area B8							
266	B8-27	187.9	1	Ruin	Austro-Hungarian	Negative	Rehabilitation C
267	B8-28	58.6	1	Ruin	Contemporary (since 1992)	Negative	New Construction
268	B8-29	150.3	2	Fair	Ottoman	Environmental	New Construction
269	B8-29a	11.2	1	Fair	Ottoman	Environmental	New Construction

OPEN AREA:

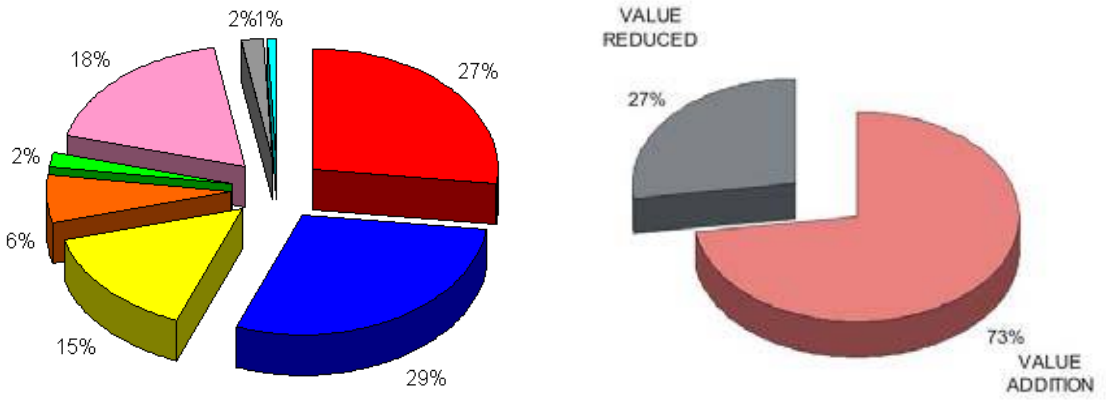
	SUBJECT	AREA [m2]	CONDITION	SIGNIFICANCE	FORMS OF INTERVENTION
1	The Stari Most Street	253.0	Very good, Rehabilitated by City of Mostar	Architectural	Maintenance
2	Kujundžiluk Street	707.0	Very good, Rehabilitated by City of Mostar	High Architectural	Maintenance
3	Terrace Labirint	382.0	Very good, Rehabilitated by City of Mostar	Negative	Maintenance
4	Mala Tepa Street	703.0	Very good, Rehabilitated by City of Mostar	Environmental	Maintenance
5	Ramića Street	187.0	Very good, Rehabilitated by City of Mostar	Environmental	Maintenance
6	Ćemalovića Street	148.0	Very good, Rehabilitated by City of Mostar	Environmental	Maintenance
7	Neretva East Riverbank – South of the Old Bridge	543.0	Very good, Rehabilitated by City of Mostar	Environmental	Maintenance
8	Neretva East Riverbank – North of the Old Bridge	1685.0	Good	Environmental	Rehabilitation A
9	Oneščukova Street	687.0	Very good, Rehabilitated by City of Mostar	Environmental	Maintenance
10	Priječka Čaršija	393.0	Very good, Rehabilitated by City of Mostar	Environmental	Maintenance
11	Baščine Garden	8213.0	Good	Environmental	Rehabilitation C
12	Rade Bitange Street	378.0	Very good, Rehabilitated by City of Mostar	Neutral	Rehabilitation A
13	Tabhana Square	658.0	Very good, Rehabilitated by City of Mostar	Environmental	Maintenance
14	Tabhana	1257.0	Fair	Architectural	Rehabilitation C
15	Neretva West Riverbank	2162.0	Good	Environmental	Rehabilitation A
16	The Old Bridge Stage Area	1305.0	Very good, Rehabilitated by City of Mostar	Environmental	Maintenance
17	The Old Bridge Auditorium	3318.0	Very good, Rehabilitated by City of Mostar	Environmental	Maintenance
18	Radobolja Riverbanks	1844.0	Very good, Rehabilitated by City of Mostar	Environmental	Maintenance
19	Jusovina Street	1196.0	Very good, Rehabilitated by City of Mostar	Environmental	Maintenance

TABLE 1: BUILDINGS - Condition

	Color	Value	No of objects	Area (m2)
1		VERY GOOD	60	4310.4
2		GOOD CONDITION	105	4665.9
3		FAIR CONDITION	44	2397.1
4		POOR CONDITION	24	1015.3
5		VERY POOR CONDITION	7	339.4
6		RUIN	19	2882.1
7		NEW CONSTRUCTION	4	303.3
8		UNDER CONSTRUCTION	5	141.6
		TOTAL:	**268**	**16055.1**



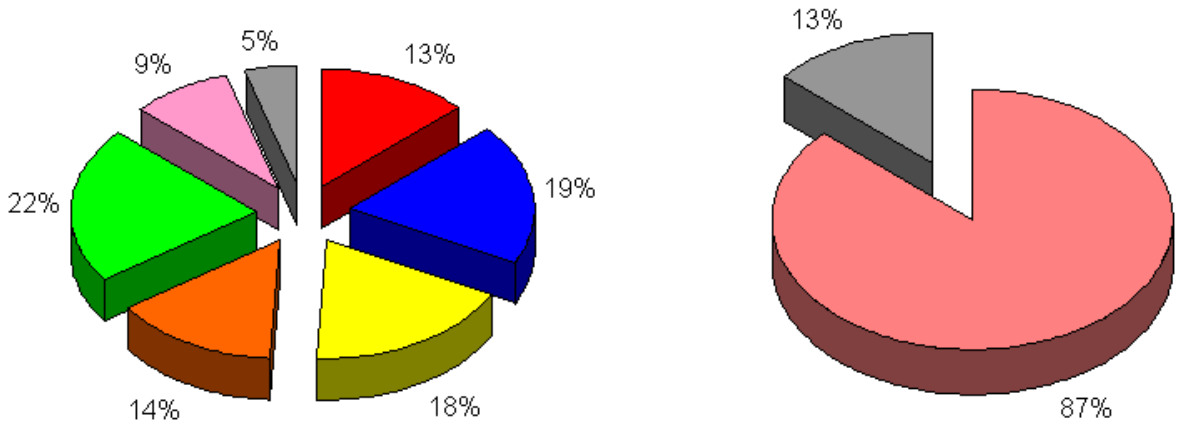
CONDITIONS OF BUILDINGS BY NUMBER OF OBJECTS



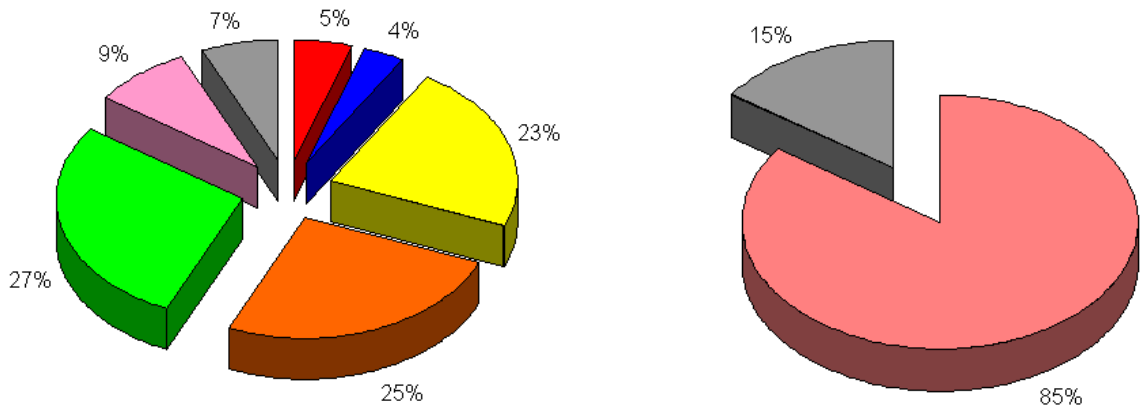
CONDITIONS OF BUILDINGS BY AREA

TABLE 2: BUILDINGS - Significance

	Colour	Value		Area (m2)		No of objects
1		MONUMENTAL (STATE DESIGNATION)	2167.6		13	
2		HIGH ARCHITECTURAL (CITY DESIGNATION)	3051.0		10	
3		ARCHITECTURAL (CITY DESIGNATION)	2979.7		60	
4		HIGH ENVIRONMENTAL (CITY DESIGNATION)	2305.2		68	
5		ENVIRONMENTAL (CITY DESIGNATION)	3481.8		74	
6		NEUTRAL (CITY DESIGNATION)		1388.7		23
7		NEGATIVE (CITY DESIGNATION)		737.9		18
		TOTAL:	**13985.3**	**2126.6**	**225**	**41**



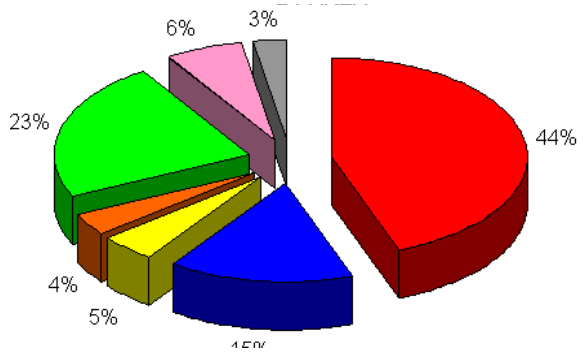
SIGNIFICANCE OF BUILDINGS BY AREA



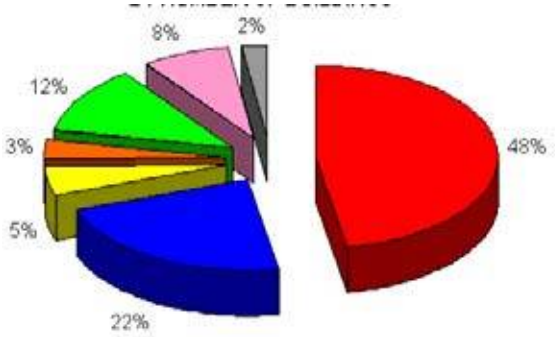
SIGNIFICANCE OF BUILDINGS BY NUMBER OF OBJECTS

TABLE 3: BUILDINGS - Forms of intervention

	Colour	Value	No of objects	Area (m2)
1		MAINTENANCE	127	7355.8
2		REHABILITATION "A"	60	2535.9
3		REHABILITATION "B"	14	771.4
4		REHABILITATION "C"	9	627.9
5		RESTORATION	32	3784.7
6		RECONSTRUCTION	21	1013.9
7		NEW CONSTRUCTION	6	482.8
		TOTAL:	**269**	**16572.4**



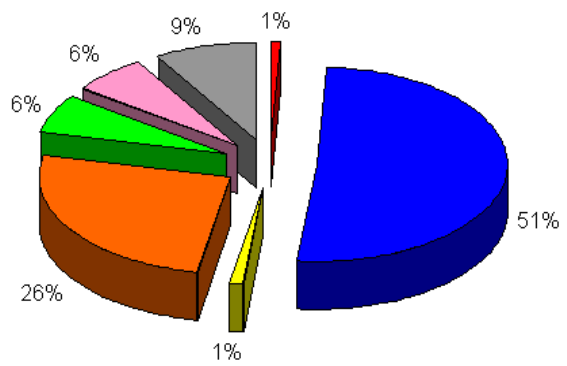
FORMS OF INTERVENTION BY AREA



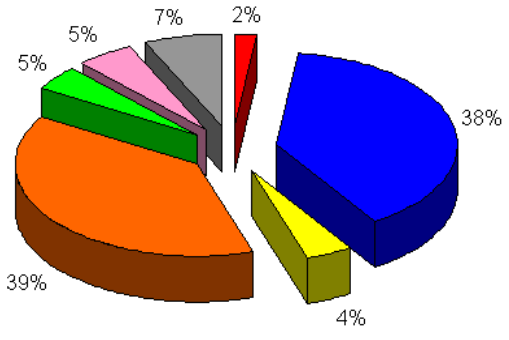
FORMS OF INTERVENTIONS BY NUMBER OF BUILDINGS

TABLE 4: BUILDINGS – Historical Classification

	Colour	Value	No of objects	Area (m2)
1		PRE-OTTOMAN	2	345.0
2		OTTOMAN	136	6433.4
3		PRE-OTTOMAN/OTTOMAN	3	657.9
4		AUSTRO-HUNGARIAN	69	6419.3
5		POST AUSTRO-HUNGARIAN	17	753.9
6		SOCIALIST	17	808.4
7		CONTEMPORARY (since 1992)	23	1147.8
		TOTAL:	**267**	**16565.7**



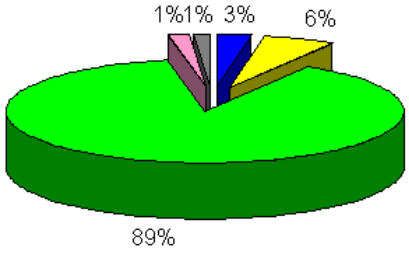
HISTORICAL CLASSIFICATIONS BY NUMBER OF BUILDINGS

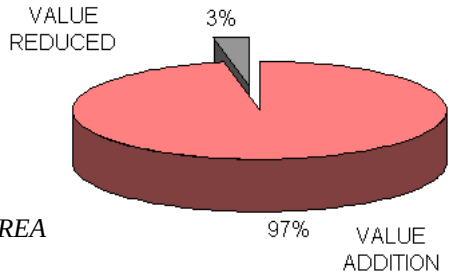


HISTORICAL CLASSIFICATIONS BY AREA

TABLE 4: OPEN AREA - Significance

	Colour	Value		Area (m2)
1		HIGH ARCHITECTURAL (CITY DESIGNATION)	707	
2		ARCHITECTURAL (CITY DESIGNATION)	1510	
3		ENVIRONMENTAL (CITY DESIGNATION)	23042	
4		NEUTRAL (CITY DESIGNATION)		378
5		NEGATIVE (CITY DESIGNATION)		382
		TOTAL:	**25259**	**760**

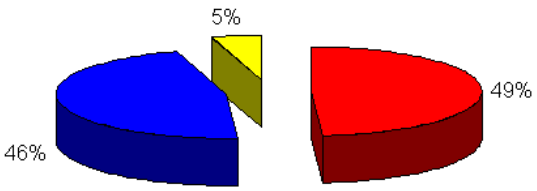




SIGNIFICANCE BY AREA

TABLE 5: OPEN AREA - Condition

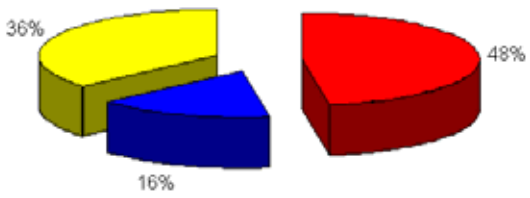
	Colour	Value	Area (m2)
1		VERY GOOD, REHABILITATED BY PCU, AKTC/WMF, UNESCO, WB	12702
2		GOOD	12060
3		FAIR	1257
		TOTAL:	**26019**



CONDITION BY AREA

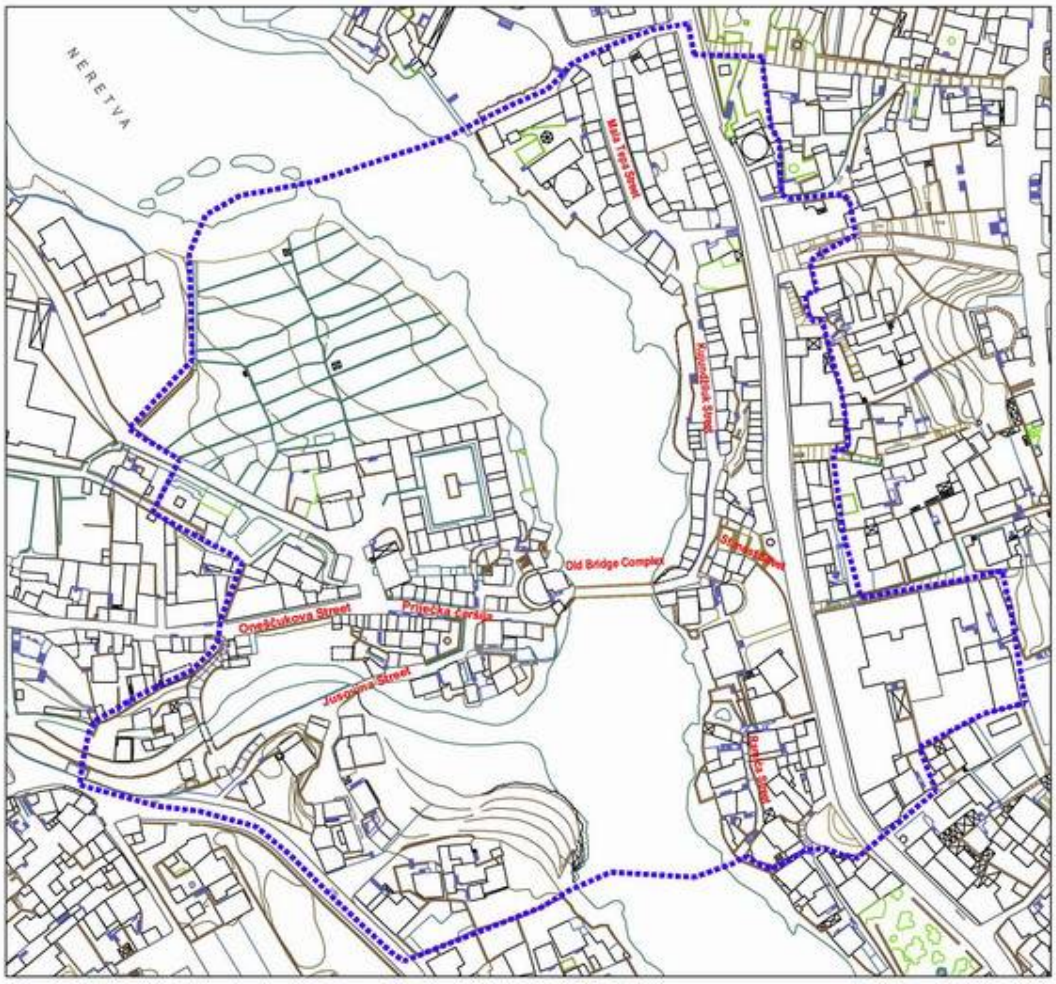
TABLE 6: OPEN AREA - Forms of intervention

	Colour	Value	Area (m2)
1		MAINTENANCE	12324
2		REHABILITATION "A"	4225
3		REHABILITATION "C"	9470
		TOTAL:	**26019**



FORMS OF INTERVENTION BY AREA

Old City of Mostar – Present state of conservation
Photo comparison 1998-2005



Orientation map

Old Bridge Complex

Stari most, Old Bridge (1998)

Stari most, Old Bridge (2005)

Old City of Mostar – Present state of conservation
Photo comparison 1998-2005

Old A3-69-70 (1998)

A3-69-70 (2005)

Old A3-68-69 (1998)

A3-68-69 (2005)

Old City of Mostar – Present state of conservation
Photo comparison 1998-2005

Halebija kula / Tower (1998)

Halebija kula / Tower (2005)

Tara kula / Tower (1998)

Tara kula / Tower (2005)

Halebija kula / Tower (1998)

Halebija kula / Tower (2005)

Old City of Mostar – Present state of conservation
Photo comparison 1998-2005

Mala Tepa

Caffe Evropa / A1-14 (1998)

Caffe Evropa / A1-14 (2005)

A1-33 (1998)

A1-33 (2005)

Kujundžiluk Street

A2-57-60 (1998)

A3-68-69 (2005)

Old City of Mostar – Present state of conservation
Photo comparison 1998-2005

A2-53-54-55-56 (1998)

A2-53-54-55-56 (2005)

A2-57-60 (1998)

A2-57-60 (2005)

A2-57-60 (1998)

A3-68-69 (2005)

Old City of Mostar – Present state of conservation
Photo comparison 1998-2005

Stari Most Street

A2-73 (1998)

A2-73 (2005)

A2-57-60 (1998)

A2-57-60 (2005)

Ramića Street

Ramica ulica / Street (1998)

Ramica ulica / Street (2005)

Priječka Street

A4-102 (1998)

A4-102 (2005)

A4-103 (1998)

A2-57-60 (2005)

A4-77 (1998)

A4-77 (2005)

Old City of Mostar – Present state of conservation
Photo comparison 1998-2005

A4-70 – Hamam (1998)

A4-70 – Hamam (2005)

A6-64a-64b (1998)

A6-64a-64b (2005)

A6-65 (1998)

A6-65 (2005)

Onešćukova Street

A7-34 (1998)

A7-34 (2005)

A7-36b (1998)

A7-36b (2005)

A5-32-33 (1998)

A5-32-33 (2005)

Old City of Mostar – Present state of conservation
Photo comparison 1998-2005

Onešćukova Street

A5-32a,32b,33c (1998)

A5-32a,32b,33c (2005)

Jusovina Street

A5-33a (1998)

A5-33a (2005)

A5-20-20a-19 (1998)

A5-20-20a-19 (2005)

Old City of Mostar – Present state of conservation
Photo comparison 1998-2005

A5-19 (1998)

A5-19 (2005)

A5-21 (1998)

A5-21 (2005)

A5-7a (1998)

A5-7a (2005)

Old City of Mostar – Present state of conservation
Photo comparison 1998-2005

A8-18 (1998)

A8-18 (2005)

A8-09a (1998)

A8-09a (2005)

A7-36b (1998)

A7-36b (2005)

Ramića Street Area

A3-96-98 (1998)

A3-96-98 (2005)

Mosques At The Old Town Zone

Nezir Agina džamija – Mosque (1998)

Nezir Agina džamija – Mosque (2005)

A4-91a – Tabacica (1998)

A4-91a – Tabacica (2005)

Koski Mehmed pašina džamija (1998)

Koski Mehmed pašina džamija (2005)

Nomination for Inscription on the World Heritage List

Nomination Dossier
"The Old City of Mostar"

▪

7. a SELECTED PHOTOGRAPHS

The Old City of Mostar – Selected Photographs

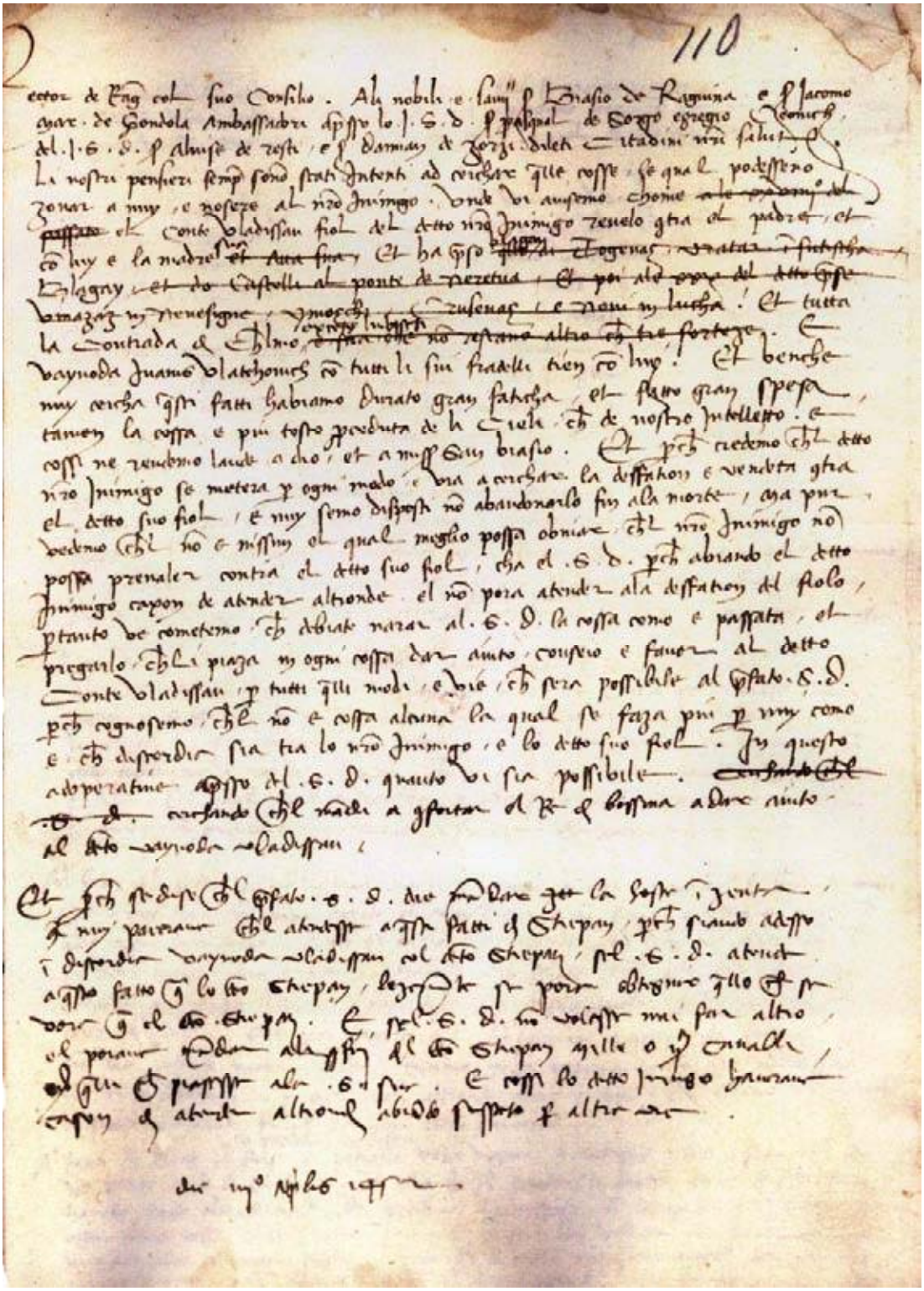


Photo 1: First Document written in 1452, first mention of the City of Mostar (Dubrovnik Archive)

The Old City of Mostar – Selected Photographs

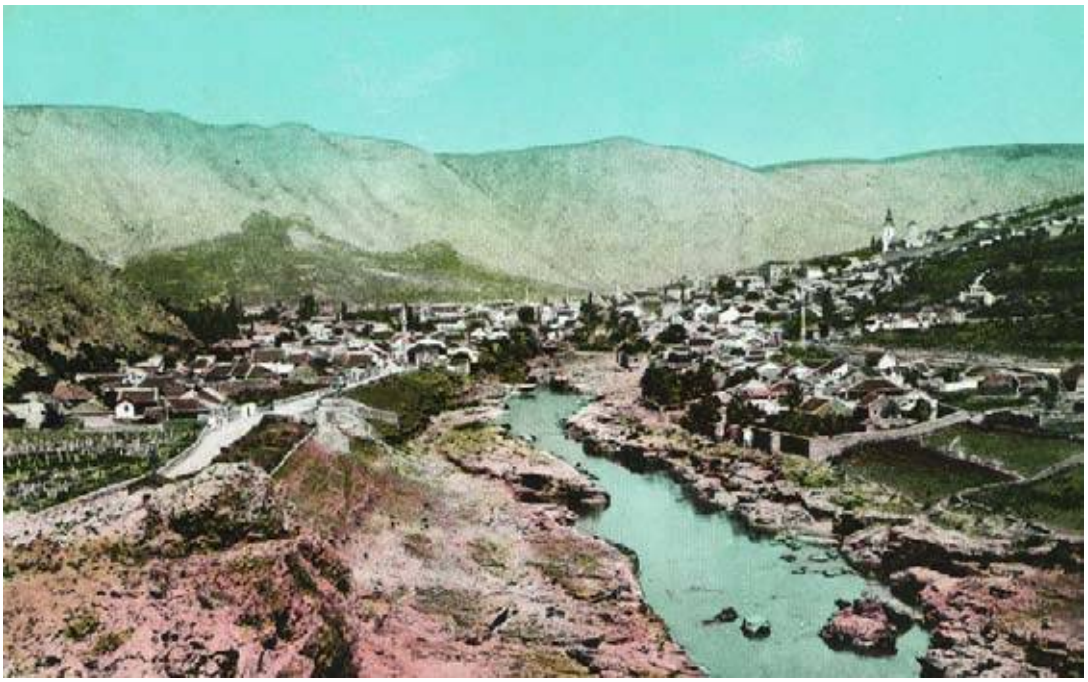


Photo 2: Mostar - View from Stotina (Museum of Herzegovina,1895)

Photo 3: Old Bridge (Museum of Herzegovina 1895)

The Old City of Mostar – Selected Photographs

Photo 4: Mostar Old City (AKTC/WMF Collection, October 1940)

Photo 5: Mostar Old Town (AKTC/WMF Collection, October 1940)

The Old City of Mostar – Selected Photographs

Photo 6: Mostar Koski Mehmet-Paša Mosque (Museum of Herzegovina)

Photo 7: Priječka Čaršija (AKTC/WMF Collection, 1905)

The Old City of Mostar – Selected Photographs

Photo 8: Priječka Čaršija (AKTC/WMF Collection, 1905)

The Old City of Mostar – Selected Photographs

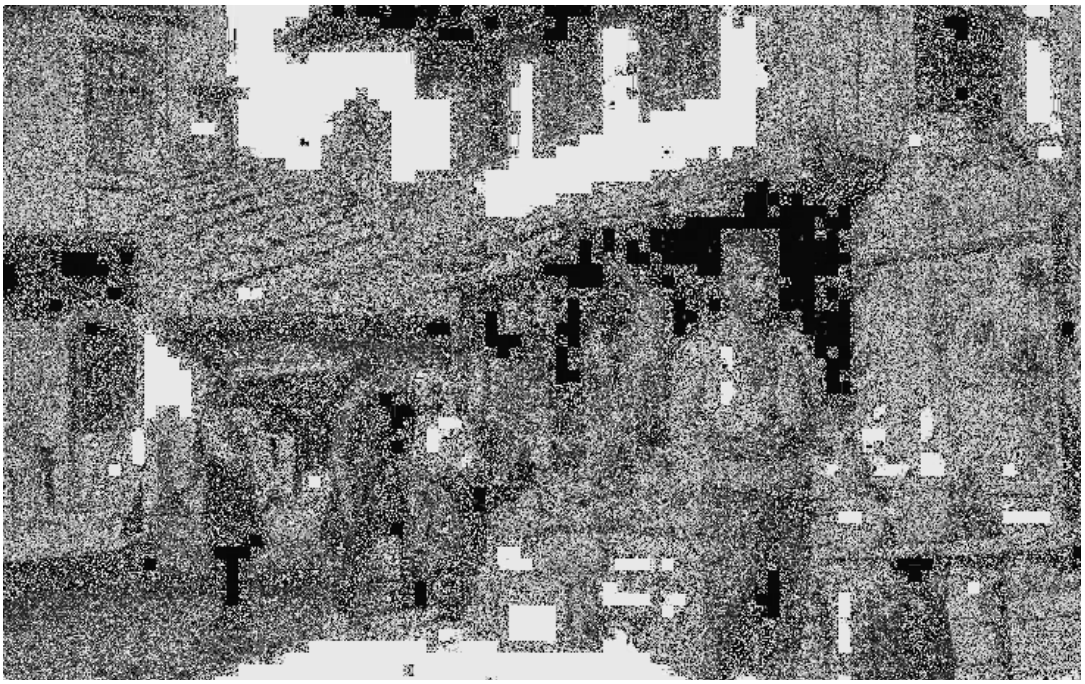


Photo 9: In front of Hamam (AKTC/WMF Collection, 1908)

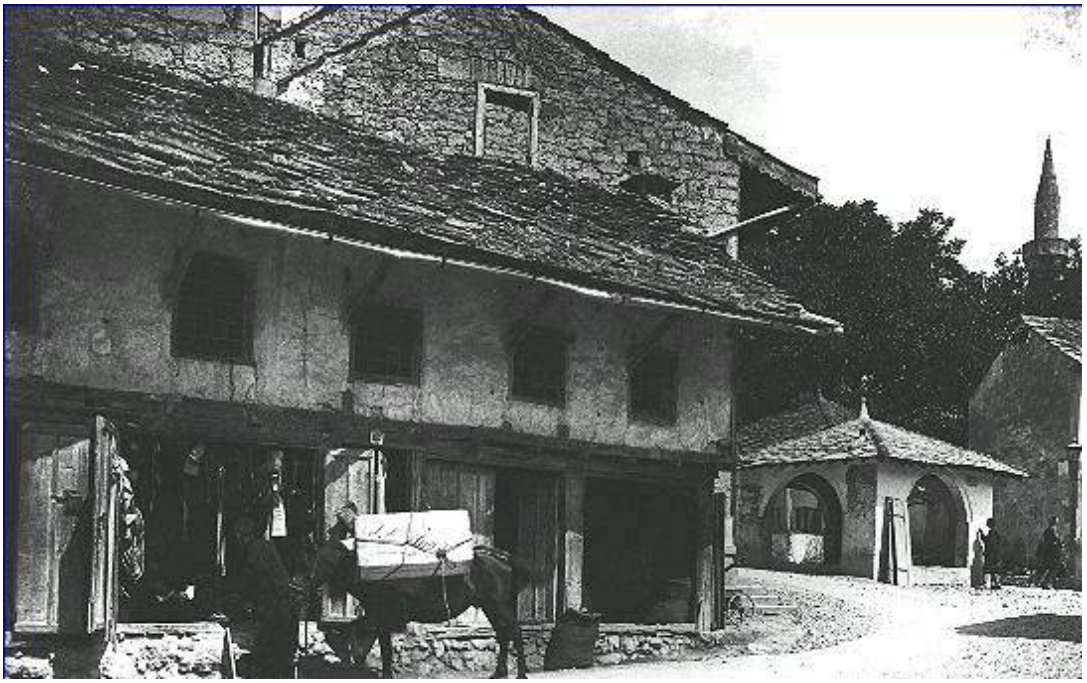


Photo 10: Han – Tepa (Museum of Herzegovina)

The Old City of Mostar – Selected Photographs

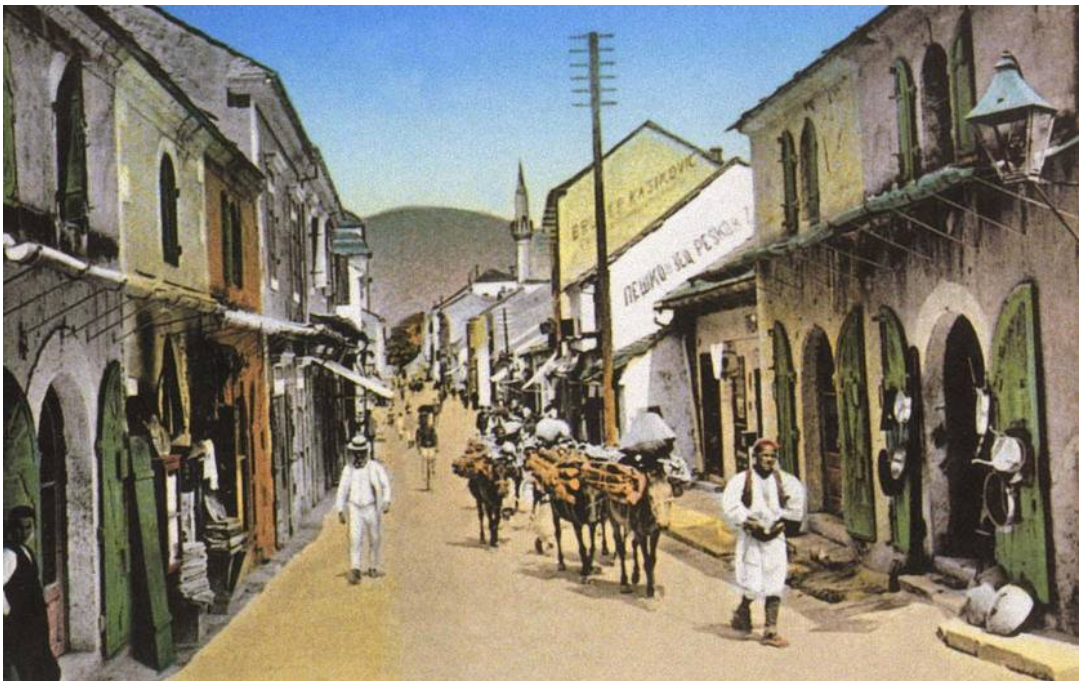


Photo 11: Mostar Main Street (Museum of Herzegovina, 1905)

The Old City of Mostar – Selected Photographs

Photo 12: Jusovina Street (AKTC/WMF Collection, 2004)

The Old City of Mostar – Selected Photographs

Photo 13: Koski Mehmed Paša Mosque (Museum of Herzegovina, 1918)

Photo 14: Koski Mehmed Paša Mosque (AKTC/WMF Collection, 2004)

The Old City of Mostar – Selected Photographs

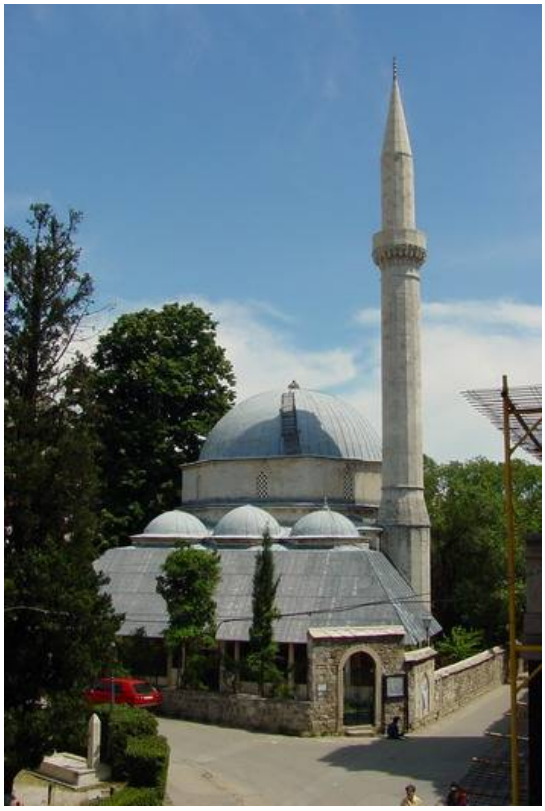


Photo 15: Karadjozbey Mosque (AKTC/WMF Collection, 2004)

Photo 16: Roznamedzijina Mosque (AKTC/WMF Collection, 2004)

The Old City of Mostar – Selected Photographs

Photo 17: Neziraga Mosque (AKTC/WMF Collection, 2004)

The Old City of Mostar – Selected Photographs

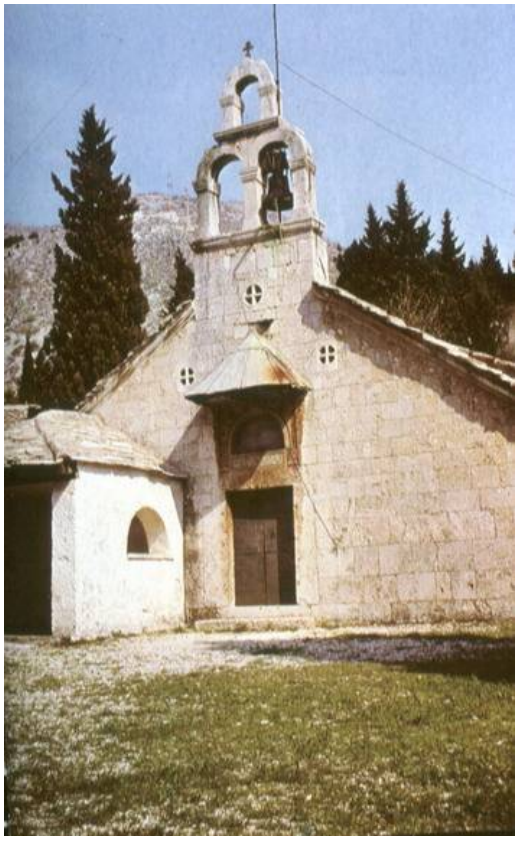


Photo 18: Old Orthodox Church (Mutevelić Collection, 1975)

Photo 19: Konak and Ortodox Church Complex (Museum of Herzegovina, 1899)

The Old City of Mostar – Selected Photographs

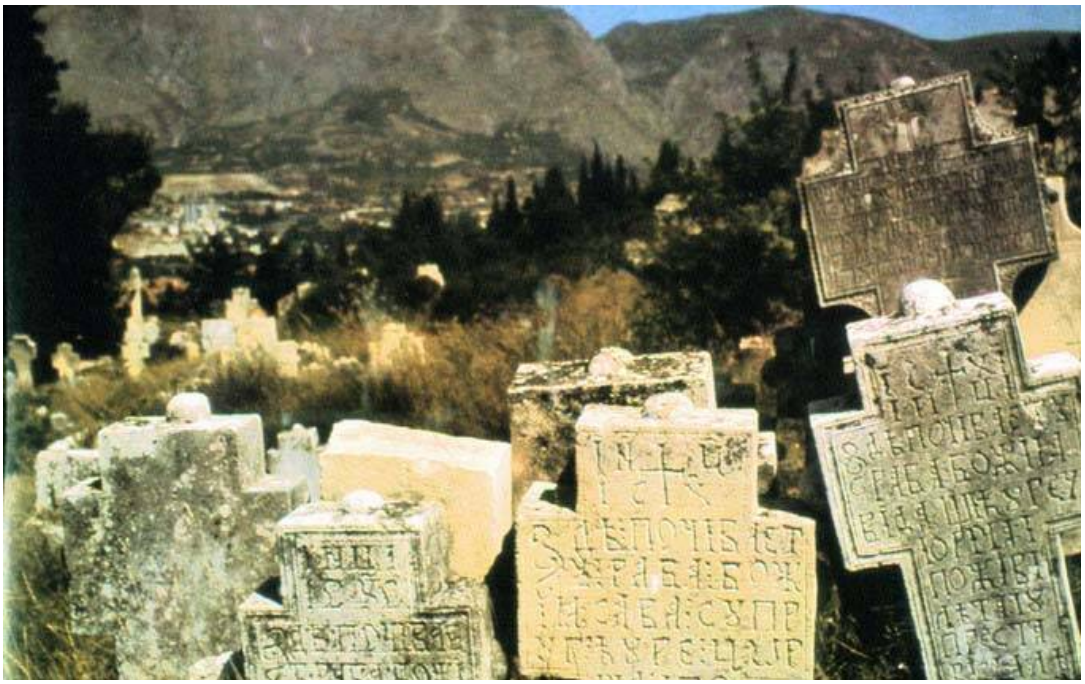


Photo 20: Orthodox Cemetery (Mutevelić Collection, 1975)

Photo 21: Orthodox Church (Mutevelić Collection, 1975)

The Old City of Mostar – Selected Photographs

Photo 22: Biščević - Lakišić (AKTC/WMF Collection, 2004)

Photo 23: Kajtaz House (Mutevelić Collection, 1975)

The Old City of Mostar – Selected Photographs

Photo 24: Girls High School (Museum of Herzegovina, 1905)

Photo 25: Pacher Kisić Bookstore (Museum of Herzegovina, 1908)

The Old City of Mostar – Selected Photographs

Photo 26: Dokić Konak (Museum of Herzegovina, 1905)

Photo 27: Metropolitan (Museum of Herzegovina)

The Old City of Mostar – Selected Photographs

Photo 28: Landbank (AKTC/WMF Collection, 1984)

Photo 29: Synagogue (AKTC/WMF Collection, 2004)

The Old City of Mostar – Selected Photographs

Photo 30: Hotel Ruža(AKTC/WMF Collection,1986)

Photo 31: Mostar (AKTC/WMF Collection, 1986)

The Old City of Mostar – Selected Photographs

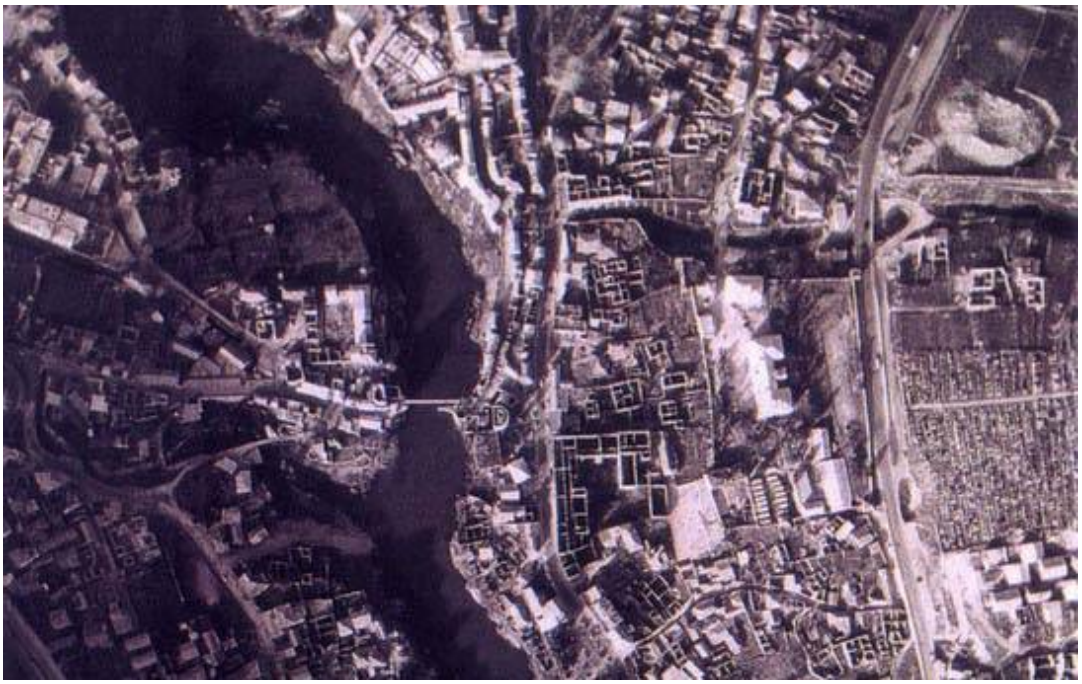


Photo 32: Aerial view (AKTC/WMF Collection, 1997)

Photo 33: Old Town Destruction (AKTC/WMF Collection, 1997)

The Old City of Mostar – Selected Photographs

Photo 34: Aerial View (AKTC/WMF Collection, 1998)

Photo 35: Old Bridge Stone In The River (AKTC/WMF Collection, 1997)

The Old City of Mostar – Selected Photographs

Photo 36: Stone Mason (AKTC/WMF Collection, 2004)

The Old City of Mostar – Selected Photographs

Photo 37: Scaffolding (AKTC/WMF Collection, 2002)

Photo 38: Scaffolding (AKTC/WMF Collection, 2002)

The Old City of Mostar – Selected Photographs

Photo 39: Tara Reconstruction (AKTC/WMF Collection, 2004)

The Old City of Mostar – Selected Photographs

Photo 40: Stone Deposit (PCU Collection, 2003)

Photo 41: Stone cutting works (PCU Collection, 2003)

The Old City of Mostar – Selected Photographs

Photo 42: Masonry works (PCU Collection, 2003)

Photo 43: Masonry works (PCU Collection, 2003)

The Old City of Mostar – Selected Photographs

Photo 44: Masonry works (PCU Collection, 2003)

Photo 45: Masonry works - vault (PCU Collection, 2003)

The Old City of Mostar – Selected Photographs

Photo 46: Terra rossa hydro - isolation (PCU Collection, 2004)

Photo 47: Bridge pavement (PCU Collection, 2004)

The Old City of Mostar – Selected Photographs

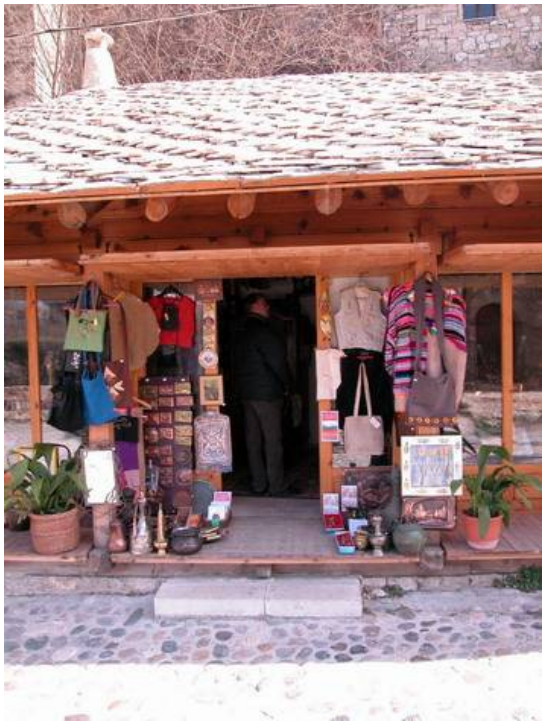


Photo 48: Shop (AKTC/WMF Collection, 2004)

Photo 49: Shop (AKTC/WMF Collection, 2004)

The Old City of Mostar – Selected Photographs

Photo 50: Tabačica Mosque (AKTC/WMF Collection, 2004)

Photo 51: Tabačica Mosque
(AKTC/WMF Collection, 2004)

The Old City of Mostar – Selected Photographs

Photo 52: Vučjaković Mosque
(AKTC/WMF Collection, 2004)

Photo 53: Vučjaković Mosque
(AKTC/WMF Collection, 2004)

The Old City of Mostar – Selected Photographs

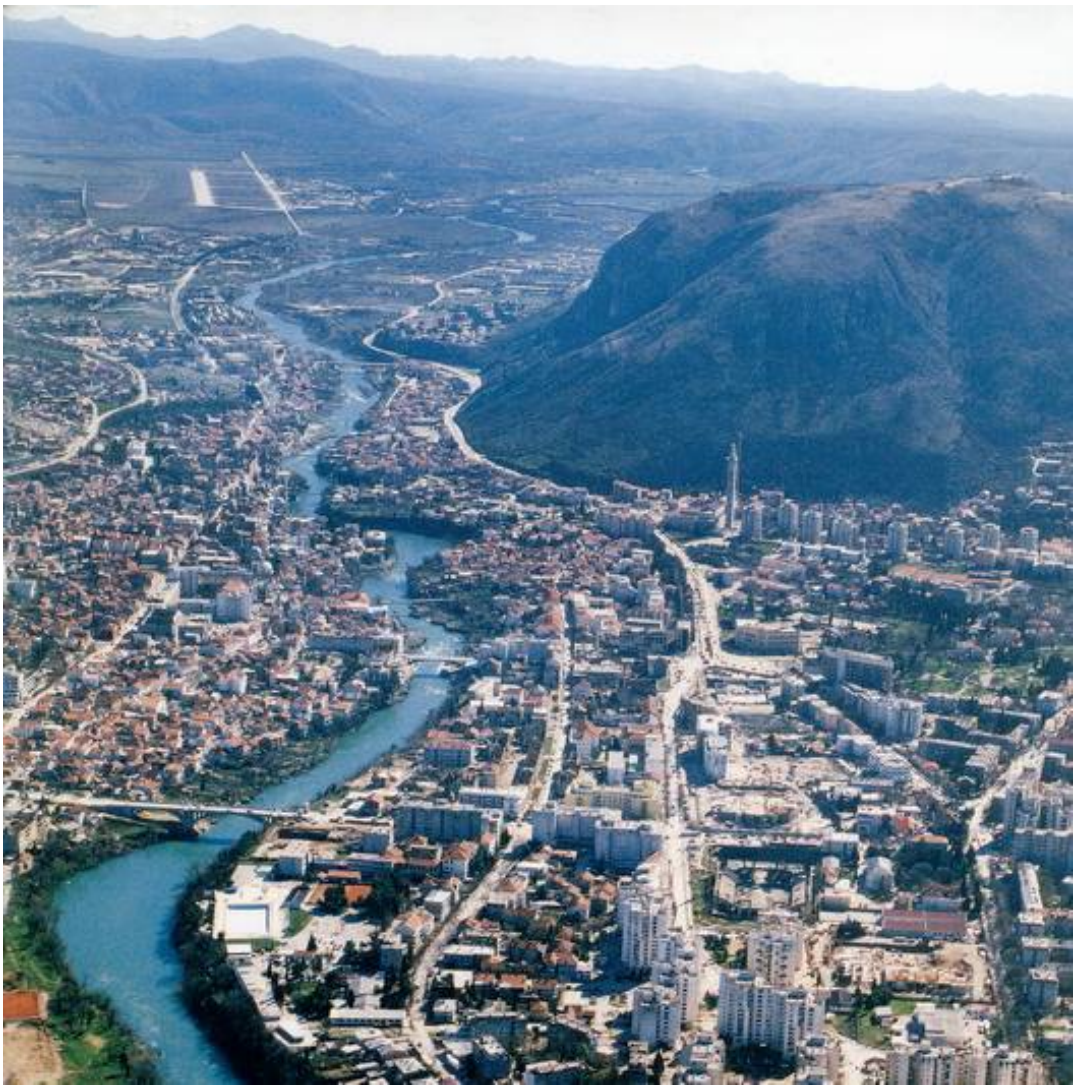


Photo 54: Mostar Panoramic View (Ćiro Raić Collection, 2003)

The Old City of Mostar – Selected Photographs

Photo 55: Crooked Bridge (AKTC/WMF Collection, 2004)

The Old City of Mostar – Selected Photographs

Photo 56: Mostar – Hamam (AKTC/WMF Collection, 2004)

The Old City of Mostar – Selected Photographs

Photo 57: Old Bridge (AKTC/WMF Collection, 2004)

Photo 58: Old Bridge (AKTC/WMF Collection, 2004)

The Old City of Mostar – Selected Photographs

Photo 59: Old Bridge (AKTC/WMF Collection, 2004)

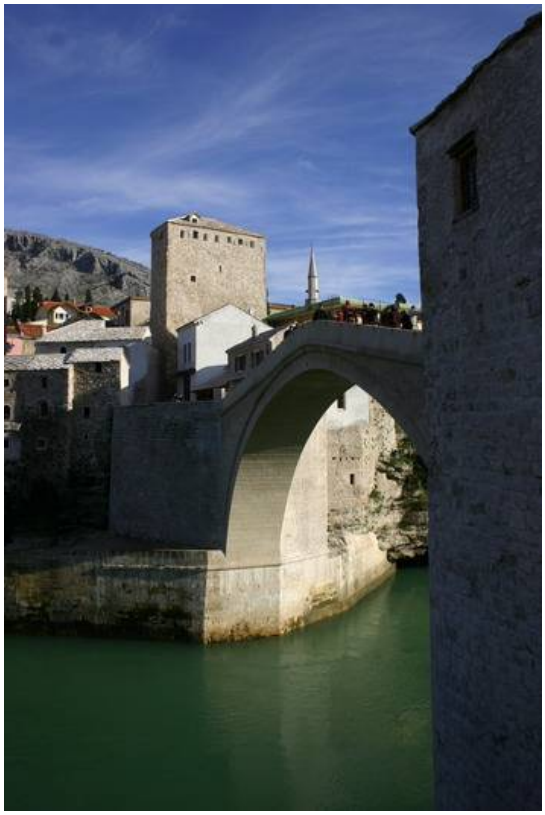


Photo 60: Old Bridge (AKTC/WMF Collection, 2004)

The Old City of Mostar – Selected Photographs

Photo 61: Mostar Old Bridge (AKTC/WMF Collection, July 23, 2004)

City of Mostar

The Old City of Mostar

Management Plan

January 2005

Management Plan

Contents:

Chapter One – Governing

Chapter Two – Finance

Chapter Three – Planning

Chapter Four – Implementation

Chapter One

GOVERNING

Introduction

International experience has shown that the best results in preserving living historic towns have been achieved through the establishment of independent, specialised institutions that have full control over a given area as well as special powers, resources and professional staff.

Contrary to a planning authority with general responsibility for an entire city, a dedicated institution can focus on the historical area and treat it as a single, integrated whole. The planning methods and implementation mechanisms needed in historic urban areas are in fact quite different from those applied to contemporary city sectors as they require finer-grained planning methodologies as well as specific building and restoration techniques.

In the context of their urban conservation projects implemented in Mostar from 1998 to 2004, international institutions had drawn the City's attention to the urgent need to build institutional mechanisms directed towards the preservation and long-term management of Mostar's historic areas, on both sides of the Neretva River, as marked in the preservation and development plan adopted by the Old Town Municipality in May 2001**.** Only a conscious planning and management effort will ensure that the quality and significance of the urban fabric as a whole can be retained and a sympathetic development process continued.

The Agency as a professional entity attached to the City, will be responsible for day-to-day management of the Old City of Mostar. It will be bestowed with special implementation powers by the City of Mostar, in order to be able to operate effectively.

The City Council adopted the decision on the establishment of the «Old City» Agency on December 29th 2004. The complete text is shown below.

Text of the decision *on the Establishment of the «Stari grad» Agency Mostar*

The City Council of the City of Mostar adopted the decision on the basis of the article 11 of the Law on the local autonomy (Official Gazette of Federation of Bosnia and Herzegovina No. 6/95) article 18 and article 64, paragraph 3 item 9 of the Law on local autonomy (Official Gazette of Herzegovina-Neretva Canton No. 4/00), article 2 paragraph 2 and article 4 of the Law on administration in the Federation of Bosnia and Herzegovina (Official Gazette of the Federation of Bosnia and Herzegovina No. 28/97 and 26/02) article 8 of the Statute of the City of Mostar (Official Gazette of the City No. 4/04) according to the Decision on the determination of the personnel policies general regulations (Official Gazette of the City No. 14/04), and the meeting that was held on 29.12.2004

DECISION ON THE
ESTABLISHMENT OF THE «STARI GRAD» AGENCY MOSTAR

I

The Agency "Old City" (hereinafter: Agency) for protection, management and maintenance of the Old City of Mostar is established in order to promote cultural-historical heritage values and accomplishment of the long-term, organized and planned preservation and reconstruction of the Old City of Mostar. The Agency has the status of the legal organization.

II

Agency works as: Agency "Old City" Mostar for preservation, management and maintenance.
Headquarter of the Agency is in Mostar
The address of the Agency will be defined by the special act of the Agency.

III

The Agency has its own seal according to the Decision on the seal of the City of Mostar. All details related to the seal will be determined by the special decision.
Letterhead and other documents of the Agency are written in English language too.

IV

The Agency work on following activities

- *To implement the integrated conservation and development plan of the Old City, and the other valuable buildings and sites of the cultural-historical heritage in the city area.*
- *To work on programs of the zones determined for the detailed planning, according to the Master Plan (To work on the detail-planning areas according to the Master Plan)*
- *To act as an executing agency for the implementation of the public and donor financed projects and activities*
- *To manage, maintain and operate plots and buildings in the Old City area owned by the City of Mostar as well as the buildings entrusted to the Agency by the donors*
- *To buy and sell property on behalf of the founder, acquire the property not presently in use as well as manage public properties in the area and the buildings donated to the City, in order to generate income for the current Old City rehabilitation projects according to the annual plan adopted by the founder*
- *To collect revenue generated from use of historic buildings, commercial use of public open spaces, promotion of the cultural tourism and other sources, and re-invest these proceeds in the area*

- *To operate with the fund for the current conservation, rehabilitation and Agency activities through revenue generated from the use of the buildings and open spaces managed by the Agency, including taxes from the local tourism economy focused to the Old City and donors funds*
- *To make contractual agreements with residents, owners, contractors and other private and public bodies*
- *To provide technical advice and monitor land use and tourism activities*
- *To develop educational and training opportunities, to increase awareness of value of value of Mostar and promote international standards of the cultural heritage conservation*

The Agency activities can be developed and expanded by the organizational documents.

V

The Agency's chart and other general acts define all questions related to its work, and it should be adopted in 60 days from its legal registration, not later than three months from this decision adoption.

VI

The Governing Board manages the Agency.
The founder appoints the Governing Board and it has five members.
The Governing Board is responsible for entire business policy, set annual objectives and monitors their realization.
The Governing Board makes decisions by the vote majority.
The Agency's chart will define duration of the mandate and the way of work of the Board of Directors.

VII

The director governs the Agency. The director has the deputy as an executive director. On the basis of the previous agreement with the founder the Governing Board through the open competition names the director and executive director.
The Agency's chart will define duration of the mandate and the way of work of the director.

VIII

The citizens' council works within the Agency as the voluntary advisory body of the Agency. The Agency's chart will define its work.

IX

The Agency's chart will define in details an internal organization of the Agency. In general, organizational structure will be consisted of the two complementary units, one of them will deal with management and maintenance and the other one with conservation.
Details of the organizational structure and the plan of the working places of the Agency will be determined by the special record of the administrative bodies of the Agency.

X

The Agency is the non-profit organization and it is financed from the budget of the City of Mostar and other sources according to this decision, the statute and the law.
The Agency directs all realized revenues generated by its work, charges of its services and local and international donor's funds to the budget of the City of Mostar.

XI

The City of Mostar will provide the initial funds for the establishment and beginning of work of the Agency in the amount of 100,000.00 KM

XII

This decision is the certificate of establishment and it presents the base for the Agency registration to the legal record.

XIII

This decision comes into force in eight days from the day of publication in the "Official Gazette of the City of Mostar".

The President of the City Council
Murat Čorić

Explanation

1. Legal basis

It is contained in the regulations of the chapter 11 of the Law on the local autonomy of the Federation of Bosnia and Herzegovina, chapter 18 article 64 paragraph 3 item 9 of the Law on autonomy of the Herzegovina-Neretva canton, Law on administration of the federation of Bosnia and Herzegovina – regulations of the article 2 and article 4, and direct authorization is contained in the regulations of the article 8 of the City of Mostar Statute. It prescribes that City establishes institutions for the accomplishment of the tasks within its local autonomy and administration authorizations entrusted by the constitution and law.

2. Reasons for adoption

The registration of the Old City of Mostar on the List of the preserved cultural heritage of UNESCO an objective of the City of Mostar and Bosnia and Herzegovina that would last for several years. One of the prerequisites, among others, is suitable management plan for the Old City area. The establishment of the Agency "Stari Grad" in order to provide long-term planned conservation and preservation of the Old City in Mostar is predicted by the memorial of understandings signed among City of Mostar, the World Bank and the Aga Khan Trust for Culture.

3. Financial resources

100,000.00 KM is needed for the establishment and work of the Agency in 2005. The Agency will collect and direct the funds generated by its operations to the budget of the City; the part of these funds will be used for the Agency work.

Staff of the Agency

Staff of the Agency, as an entity in charge for preservation and development of the Old City of Mostar will be composed of professionals, who are well trained during the process of rehabilitation, and capable to fulfilling all the conditions defined in the Statute of the Agency.

It is very important to emphasize the roles of the Governing and Advisory boards during the program preparation and the supervision on the work of Agency. The advisory board should compose by representatives of citizens, owners (City of Mostar, Islamic community), tenants, tourist organizations, preservationists, and developers.

Staff of the Agency are:

- Director
- Executive Director
- Finance/Marketing
- Finance /Accountant
- Lawyer /Administrator
- Architect/ Restorer/Planner
- Information Technologist

Experts and auxiliary office services should be contracted on a part-time basis depending on the explicit needs.

The communication between the Agency and all the related organizations and individuals should be established on interactive electronic basis, a 24 hours open information system.
The Agency should assist owners and tenants on the administrative, financial and technical matters.

The Old City of Mostar -Legal background

The following institutes work on the preservation of cultural, historical and natural heritage:

- Commission to Preserve National Monuments
- Federal Institute for preservation of monuments within Federal Ministry of Culture in collaboration with Institute for preservation of the cultural, historical and natural heritage of Herzegovina – Neretva canton and Institute for preservation of the cultural, historical and natural heritage of City of Mostar
- Federal Ministry of Physical Planning and Environment

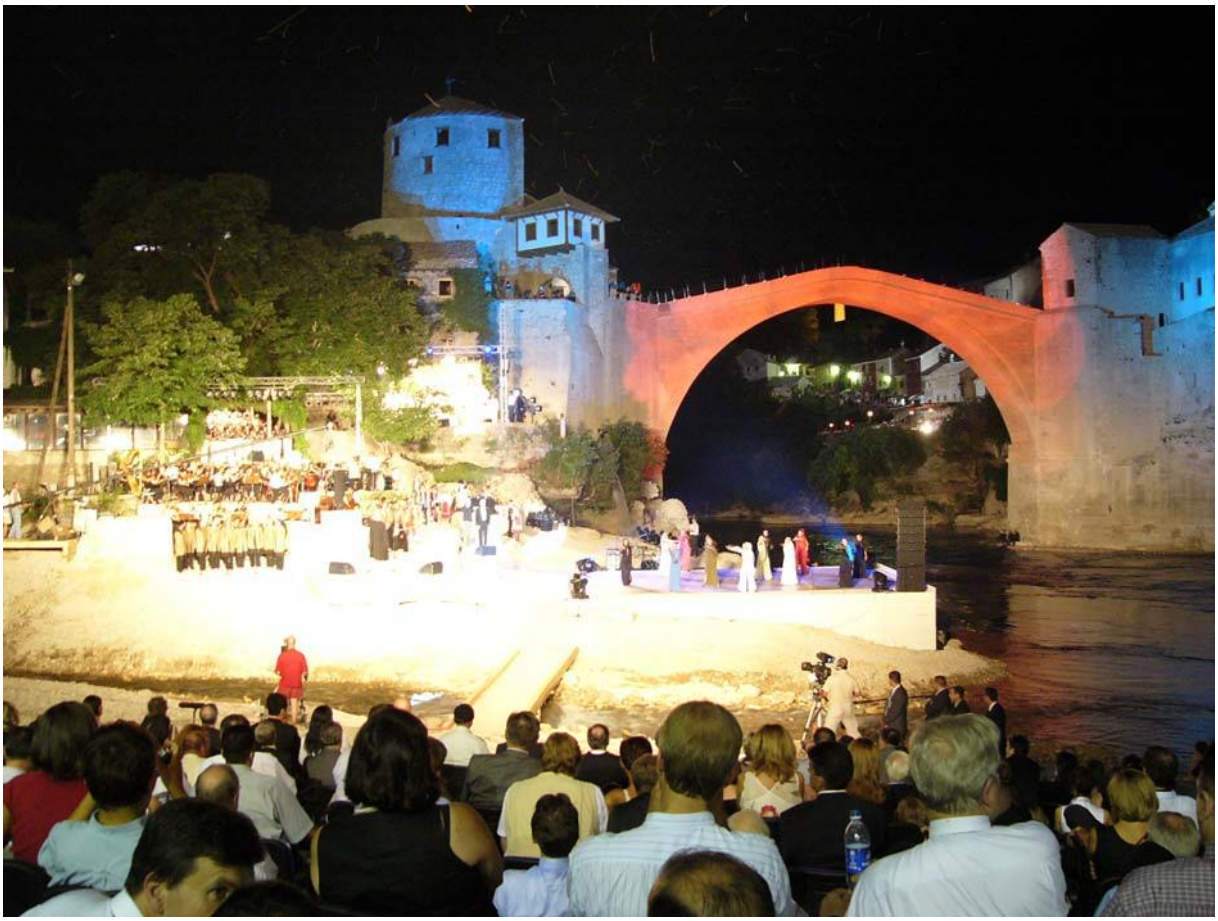
Responsibility for the enforcement of the Commission's decisions lies with the Entity Governments and the ministries responsible for regional planning. On the level of Federation of Bosnia and Herzegovina, Ministry of Physical Planning and Environment is responsible for implementation of legislative protective measures. The Institute for the Protection of Monuments within the Federal Ministry of Culture is responsible for the expert supervision for all building, building-crafts and craft works on National Monument as it is proclaimed by the Decision of the Commission to Preserve National monuments.

All details concernig the responsibilities of involved institutions will be defind in the new law that is in procedure of adopting

Chapter Two

FINANCE

One of the main objectives of the Management Plan is to provide preservation and development self-sustainability for the Old City of Mostar.



A motive from the Old Bridge opening ceremony, july 23, 2004,

2.1 Finance of the Reconstruction Projects

After the war 1992-95 the reconstruction process of the Old City of Mostar has started. The City of Mostar and many international financial and cultural institutions as well as donors' countries have been involved in this process as follows:

a) The City of Mostar - $ 2,000,000 US direct investment in the Old City reconstruction and $ 1,200,000 US investment in the infrastructure of the historic core;

b) The World Bank – soft loan for the reconstruction of the Old Bridge complex, the rehabilitation of the neighborhoods, and the priority buildings, in total $ 4,000,000 US – The pay back period is 25 years and it will begin in September 2009;

c) Donation to the reconstruction of the Old Bridge complex in total amount of $ 7,600,000 US was provided by:

- Republic of Turkey $ 1,000,000 US ,
- Italy $ 3,000,000 US,
- Netherlands $ 2,000,000 US
- Council of Europe Development Bank $ 1,000,000 US,
- Croatia $ 600,000 US;

d) The Aga Khan Trust for Culture (AKTC) and the World Monuments Fund (WMF) – for reconstruction and restoration of priority buildings (Muslibegović House, Sevri Hadži Hasan Mosque, Lakišić House), rehabilitation of 21 buildings in the historic neighborhoods, planning and design, and training of staff, in total $ 4,300,000 US;

e) UNESCO – Urban Heritage map of Mostar and rehabilitation of Stari Grad (1997), reconstruction of the Ćejvan Ćehaja Mosque Minaret (1996-97), restoration of Tabačica Mosque – in collaboration with High Saudi Committee for Bosnia and Herzegovina (1998-2000), restoration of the Kriva Ćuprija Bridge – in collaboration with Luxemburg government (2001-2002), restoration of the Ottoman Hammam – in collaboration with French government (2002-2004), Second school on Conservation of the Monuments, held in Mostar (2003), work of the International Committee of Experts – in total $ 769,943.18 US

f) The Research Centre for Islamic History, Art and Culture (IRCICA) Istanbul – for reconstruction of the Neziraga mosque, restoration of the Karadjozbeg Mosque and the Mostar 2004 Program, in total app. $ 2,000,000 US.

g) Republic of Turkey donated funds for the restoration of the Koski Mehmed Pasha mosque; Hashemite Kingdom of Jordan donated funds for the restoration of the Vučjaković mosque, The French government finance the restoration of Hamam and Stone mason training program;

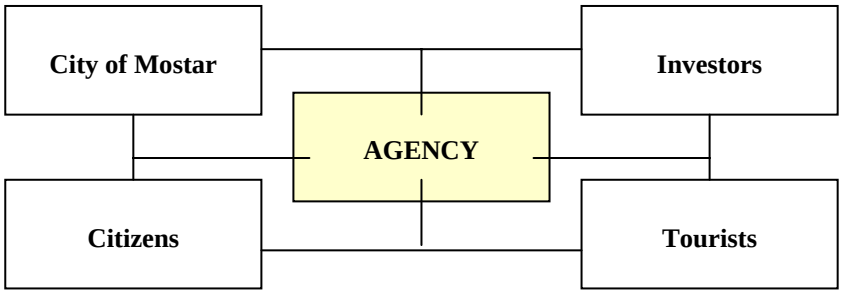
These are some of the most important investors and donors but it is important to mention many other donors have participated in the rebuilding activities in the Old City of Mostar after the 1992-95 war.

2.2 Finance of the Preservation and Development Project

The Old City of Mostar has a great economic potential. The management plan presents preservation and development strategy of the area. The main economic goal is to make the area self-sustainable using all resources.

The self-sustainability is conditioned by the fiscal sustainability of the city. So the City of Mostar should have the special department devoted to this problem – public revenue payment.

The Old City Agency is the institution responsible for the strategy implementation, based on details related to the ownerships, rates, liabilities and responsibilities of each particular subject, the way of acting of each of the subjects, and so on.



The Agency will coordinate all institutions, city departments, owners of the property in the Old City of Mostar, and tenants directly or indirectly included in Old City functioning. Responsibilities and liabilities of stakeholders should be defined by special agreement.

The Agency will organize existing cultural and natural resources as well as their protection and conservation.

Strengths of the Old City are the following:

- pleasant climate, easy access to the city,
- Rich history and cultural heritage with the crown monument of Bosnia and Herzegovina: The Old Bridge – masterpiece of the Ottoman architecture, reserved bazaar with traditional handicrafts
- Unique natural heritage with the River Neretva as one of the most beautiful rivers in this region suitable for water sports, and with 400 years-old attractions – The Old Bridge Diving championship.

The plan has several economic targets: to improve marketing, tourist visits (in 2004 around 100.000 visitors) focusing on cultural and authentic tourist offers in the region (in the collaboration with tourist institutions and tour operators)

Education. During last ten years, through rehabilitation processes a large group of local young professionals achieved high international standards in different disciplines. They will carry

out a permanent education of all subjects included in the activities and introducing the necessity of the conservation and protection of cultural and natural heritage to the compulsory education. By these processes the sense for the cultural heritage conservation and natural heritage protection is inbuilt in the mental structure of young generations.

Standardization. Within this strategy, the standardization of services must be done. According to this standardization many other elements important for the Old City of Mostar functions can be developed. For example, the satisfaction of some standards can be the prerequisite for the lower rent or for the membership in some of the restaurant organization or some other type of organization e.g. Italian *Club di prodotto.* Within this organization, all tourism parties can work (membership is determined by the certain level of turnover).

Marketing. The marketing strategy requires a special place in the Old City of Mostar Development Strategy. Since the cultural and natural heritage is considered as very sensitive topic from marketing point of view, it requires sophisticated marketing approach in order to avoid over commercialization. Any additional commercialization could have negative consequences such as the destruction of cultural and natural heritage.

Infrastructure. Complete infrastructure of the Old City of Mostar should be synchronized in order to make The Old City of Mostar as functional as possible and connected with other parts of Mostar. Establishment of unique communication among all subjects involved in the Old City of Mostar has a priority.

Safety. Even though the war was terminated ten years ago, Mostar still has an image of a high risk destination. Good marketing campaign can solve this problem (every positive example must be used to promote Mostar as a safe destination e.g. the Prince Charles visit to the Old Bridge Opening Ceremony).

Control. The strategy must allow periodical control of its proceeding by Governing board, Advisory board and Public hearing. By this control it is possible to react timely and to change some parts or details in the strategy.

The financial requirements can be divided into funds needed to cover its operating costs, resources to pay for the implementation of the activities and projects foreseen by the Plan and funds needed to pay back a loan to the World Bank.

The operating budget and recurrent expenditures are to be accomplished through:

(a) income from municipal leases (Rent), endowments and concessions on properties in the Old City of Mostar Area
(b) income perceived through the adaptive re-use of restored buildings and the management of public open areas in the Historic City Core;
(c) income received via taxes from tour operators, hotels and restaurants for the efforts in maintaining and enhancing the historic city;
(d) income from the visitors fees (the Old Bridge Museum and other important monuments, mosques, churches, galleries) and from the licensed souvenirs:
(e) handling charges for implementation of government - and donor - sponsored projects to cover overheads and help pay for professional services and administrative expenses.

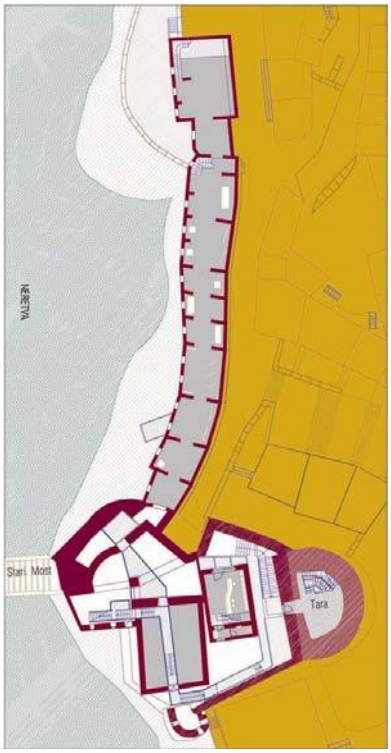
Development activities and projects in the Old City of Mostar would be financed through:

a) government and municipal funds earmarked for infrastructure networks, public facilities, and major restoration works;
b) donor funds in the case of specific projects and initiatives;
c) an income from the Old Bridge and Towers museum;
d) direct investment or partnership agreements with state companies and business concerns interested in the development of economic and tourism development activities;
e) low-interest loans (given by the local banks) and matching funds earmarked for housing and commercial rehabilitation;
f) self-help activities and contributions in kind from residents toward the implementation of small-scale projects benefiting the community.

The pay back a loan – to the World Bank in total amount of $ 4,000,000 US with interest was defined by a contract between the City of Mostar and the World Bank in 1999. The pay back period is 25 years and it will begin in September 2009 (grace period of 10 years).

The Old Bridge Museum is considered as one of the key generators of the maintenance of the existing structures and promotion of the project.

The area of the stage and the auditorium on the intersection of the Neretva and Radobolja rivers is the second important generator for development of the project.



The Museum of the Old Bridge, plan of the underground level

Structure of expenditures**.** On the other side there are numerous expenditures of the Old City of Mostar maintenance and its normal functioning. All expenditures should be specified e.g.

- 40-51% reinvestment - new rehabilitation projects
- 15-21% current maintenance, intensive maintenance
- 15-25% operational expenditures
- 5-12% promotion and cultural events

A few types of finance support for the maintenance and development activities are predicted:

- Soft loans – for the profit activities (restaurants, hotels,…)
- Small grants – for the rehabilitation of the residential buildings
- Agency matching with investors

- Concessions – e.g. The Girls' High School

Building maintenance - Rehabilitation processes in the Old City of Mostar will be realized through several financial mechanisms based on nature of the building, rehabilitation needs, and character of ownership.

Investment in public area and infrastructure should be organized through the City administration because the infrastructure of the Old City of Mostar is only a part of unique city infrastructure system. The state administration has a full responsibility for maintenance and development of the water supply system, sewerage system, streets and Neretva and Radobolja rivers' banks.

Rent collected in the Old City of Mostar presents a main income for the preservation and development. According to the last collected date there are 201 commercial structures as follows:

Commercial Buildings in the Old City of Mostar		
No.	The Owner	Number of buildings
1	City of Mostar	120
2	Islamic Community	38
3	Private Property	43

Total surface of 120 structures owned by the City of Mostar is around 4,500 m2, from which 970 m2 belong to the 9 structures in the Old Bridge complex.

Theoretically, a total annual rent based on existing rent-value of m2 of 18 KM/m2 monthly is 972,000.00 KM.

Surface of 38 commercial buildings are owned by the Islamic Community of Mostar with 1,790.40 m2 under rent.

Surface of the 43 structures owned by different individuals is 1,420.00 m2.

Related to numerous implementation programs of importance for all owners of properties and tenants special tax should be introduced (e.g. monument's tax in Croatia) for general benefit for the Old City of Mostar and each individual.

Taking into consideration a positive experience of the Institution in charge for managing the Old City of Mostar before 1992, the Plan aims to improve balance of use of structures the plan reintroducing following coefficients to better classified value of rent:

a) Activity coefficient		
1	Cafes and Restaurants	2.00
2	Sale of handicraft goods and peace of arts	1.75
3	Commercial and Tourism Agencies	1.50
4	Authentic restaurants and Pastry-shops	1.00
5	Bookstores	0.50
6	Creative works especially of national art and handicraft	0.25

Since the Old City of Mostar should be the core of the authenticity, the old handicrafts have preference. For this reason the handicrafts must be supported by the City and other important authorities. The low rent coefficient for this activity (0.25) is a good example of the support, but the other types of the subventions such as tax exemptions would attract more people to work on the old handicrafts.

Traditional craft: shoemaker shop

In collaboration with tourist organization a special system of benefits should be introduced for the activities on the highest level of international standards. All these structures will be marked.

b) Location coefficient		
1	Streets: Fejić, Mala Tepa, Kujundžiluk, Old Bridge, Onešćukova – east part, Tabhana, Jusovina	1.50
2	Others	1.00

c) Entrance position coefficient		
1	Entrance from the street	1.00
2	Entrance from the auxiliary street	0.75

d) Coefficient by the position in the building		
1	The Ground floor	1.00
2	The Floors and attic	0.75
3	The basement with windows	0.50
4	The basement without windows	0.25

Coefficient application examples:

Example 1.
A4-84 Restaurant in Tabhana, surface 67m2 (ground floor 37m2, first floor 30m2)
Today's rent is 1206 KM
37x1 + 30x0.75 = 59.50m2
59.50 x 18 = 1071.00 KM
1071.00 x 1 x 1.50 x 0.75 = 1204.88 KM - Corrected rent.

Example 2.
Building A4-93, creative art of national art and handicrafts, in Onešćukova Street, surface 10m2 (ground floor)
10 x 18 = 180KM - Today's rent
180 x 0.25 x 1.5 x 1 x 1 = 67.50 KM Corrected rent

Example 3.
Building A6 – 65, Tourism agency in Rade Bitange Street, surface 80 m2 (two floors)
40 x 1 + 40 x 0.75 = 70 m2
70 x 18 = 1260 KM
1260 x 1.5 x 1.5 x 1 = 2,835.00 KM Corrected rent.

Application of the coefficients gives us clearer picture of the annual rent income. On this way the rent is balanced disregarding the different activities, locations and positions in the building.

Second important rent is coming from the occupied open areas, especially during the summer. It is possible to rent 3,000 m2.

There are two types of occupancy:
a) connected with existing permanent structure
b) independent ones.

The open area tenancy should be planned in advance, and distributed by a specific request respecting priority, quality of activities, and free access to every individual structure. The area of the stage and the auditorium on the intersection of the Neretva and Radobolja rivers has a special rental procedure.

Policy for renting buildings and open areas in the Old City of Mostar should carefully examine the usefulness of the buildings in the period of last 20 years, with a special focus on consequences of the1992 war.

Every rent should be defined by a contract. All contracts should be based on public tendering organized by the Agency.

Exception could be the activities of special importance for the authenticity of the Old City of Mostar and they could be free of charge, based on decision of the city council. Renewal of the contracts with the existing users will be carefully investigated, considering all the criteria

mentioned above, especially the financial accomplishment. The deadline for the completion of the new contracts should be December 31, 2005.

The present decision concerning the rentals of the commercial structures that belong to the former Old Town Municipality 25.10.2002, applies the following among others:

The building which requesting a serious intervention, will be rented through open competition. Selected tenants will restore building with his fund based on the prepared project design. Invested amount by tenants will be calculated as a pre-paid rent for several years – the investments are not accepted in the case of change of the used commercial objects that had been previously occupied. This mechanism has an advantage to both, owners and tenants.

Deduction by 70% of the full amount is approved for the persons engaged in the deficit activities. The following are considered as the deficit activities:

- Creating the paintings and objects made of iron, bronze and other metals
- Creating gold and blacksmith products, wood carvings and artistic mosaics
- Making of lace, tapestry and other artistic fabrics
- Production of engravings, and various inscribe plates
- Production of wooden crafts, onyx, leader objects
- Key cutting and blade sharpening
- Shoe and umbrella repairs

On March 15th 2004, the six City Municipalities of Mostar united in the single Municipality with six local offices.

Financial debt is evident: a percentage of realized payments were 30% in May 2004.

The decision concerning the rental of commercial structures is in the process of preparation by the City Council. Proposal for rent is to be unified for the entire city, but without any consideration on specificity or authenticity of the Old City of Mostar.

Necessary steps:

1. Survey of technical and financial situation
2. Establishment of the archives
3. Annual updating of the validity of appropriate deficit occupations is essential.

Chapter Three

PLANNING

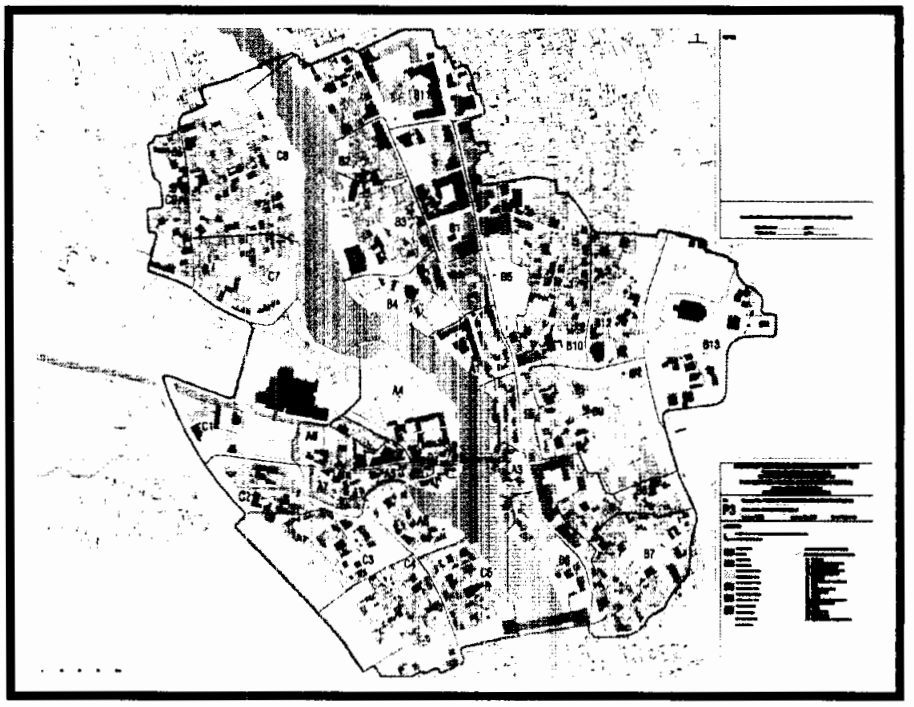
In 1949, an organized process of preservation of building heritage was started following unreasonable demolition of the Neziragina mosque by local authorities.

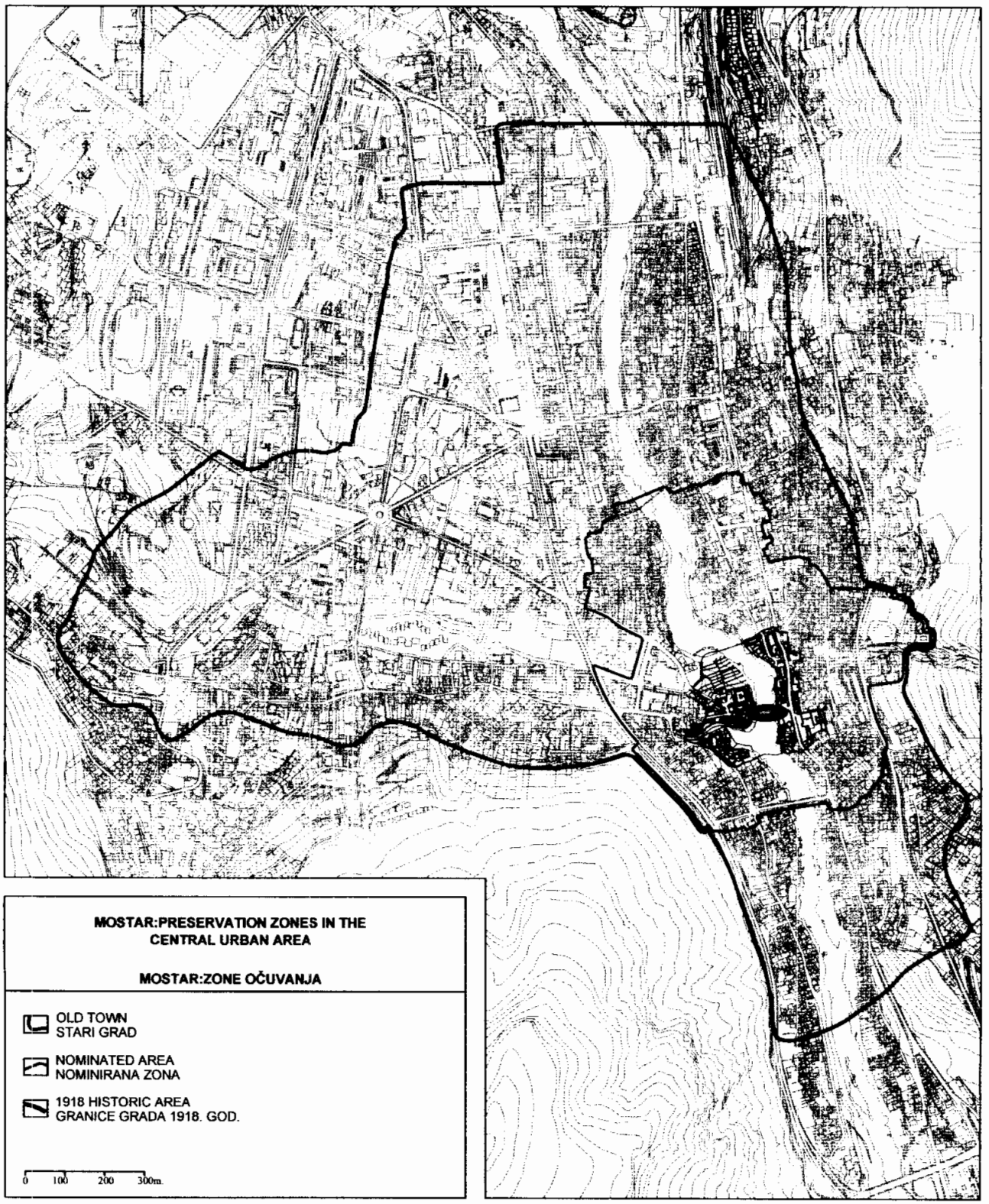
The preservation of heritage was going in continuity with more or less success, without a break during the 1992-95 war. Numerous projects were realized

During pre-war period several documents had a great importance for the planning component of the whole process:

- *Preliminary Program for the preservation of the Old Town prepared by the Institute for Urban Planning Mostar in 1967,*
- *Decision on spatial arrangement and revitalization of the core of the Old Town (Mostar Municipality Official Gazette No.10/74),*
- *Decision of the establishment of special organization for the governing, use, protection and rehabilitation of the cultural and historical heritage "Stari Grad"(Mostar Municipality Official Gazette No. 2/77),*
- *Master plan for preservation of the Old Town in Mostar prepared by JP Prostor Mostar (Mostar Municipality Official Gazette No. 4/90).*

All these documents were used in the rebuilding activities after 1995.




MOSTAR:PRESERVATION ZONES IN THE CENTRAL URBAN AREA
MOSTAR:ZONE OČUVANJA
OLD TOWN
STARI GRAD
NOMINATED AREA
NOMINIRANA ZONA
1918 HISTORIC AREA
GRANICE GRADA 1918. GOD.
0 100 200 300m.

3.1. REHABILITATION PLAN OF STARI GRAD, 1997.

Rehabilitation plan (Mostar: Urban Heritage Map and Rehabilitation Plan of Stari Grad, UNESCO, 1997.) that was the component of nomination documents for Stari Grad in 1998. (Nomination No. 946.) prepared very valuable base documentation for further activities in preservation and development of Stari Grad in Mostar[5].

Plan contains three main components:

(a) Analysis of existing condition of buildings, type of construction and used materials, stone in particular;

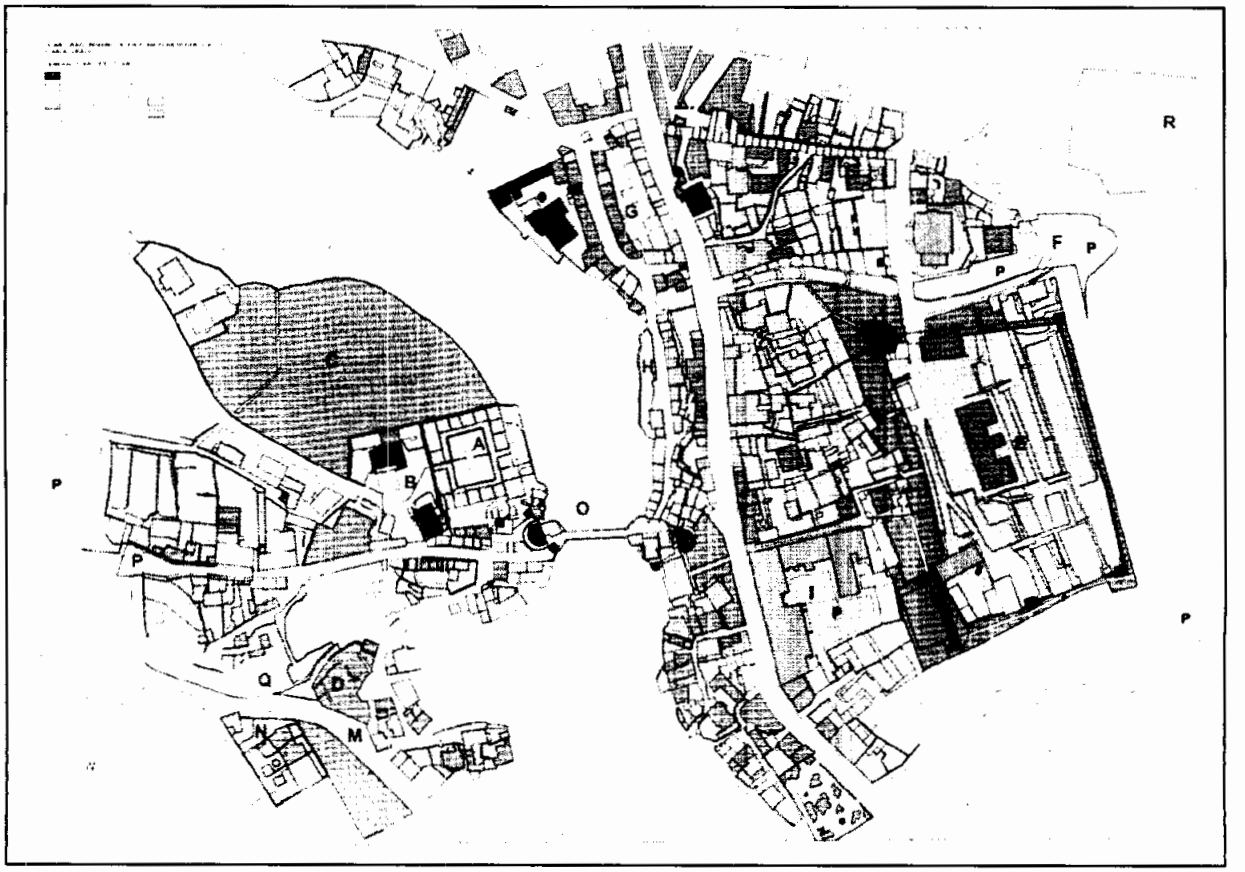
(b) Photographic and photogrametry analysis of buildings and few street elevations (259 pictures);
(c) Planning element comprises:

- Regulations for interventions applicable to buildings,
- Comparable analysis of status in 1989. (according to the Master Plan of Stari Grad prepared in JP "Prostor Mostar", 1989.) and 1996. (15 maps),
- Proposed interventions in designated zones, which is shown on maps (4 maps and 20 drawings)

[5] Plan wasn't in legal procedure in a form of Master Plan

Beside rich analysis, visual in particular, structure of this project is comparing condition before 1992 (based on the Master Plan from 1989.) with condition in 1996. Plan didn't incline to serious historical analysis.

This elaborate served as reference documentation for preparation of The Mostar Old Town Conservation and Development Plan, 2001.



General plan

There are three basic differences in proposals between Master Plan from 2001 and this plan:

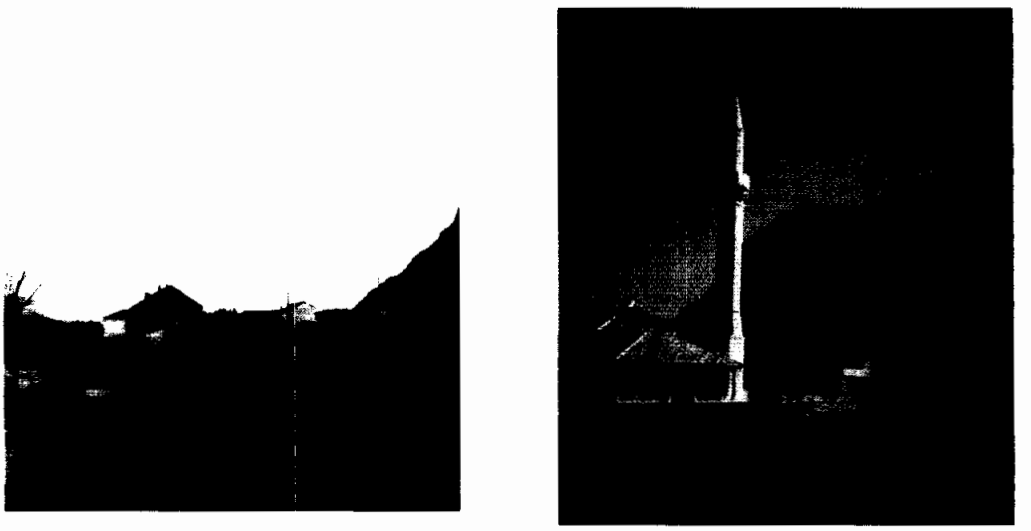
b. Square between Tabačica mosque and the ancient bath (hamam). Authors of this project didn't consult two historic facts: a) Tabhana was part of the fortification system, and b) square in front of the ancient bath (hamam) never existed.
In the master plan preparation phase in 2001 the ancient bath (hamam) was studied in form of full Restoration project, considering all historic and urban changes in the last century.

d. Area where the Neziraga mosque complex once stood. Authors of this project wanted to keep this area as locality of archaeological value.

Contrary this assumption, Neziraga mosque complex was restored in 1999, taking into consideration following facts:

- Mosque was destroyed in an organized manner by the local government in 1949-50.
- Mosque was fully preserved above the parapet height.
- Rich photographic documentation is accessible.
- From the urban aspect mosque complex is missing as an urban landmark in the historic city core.

- Restoration of this complex was foreseen in the Master plan from 1989.



Neziraga Mosque Complex before and after restoration

f. Konak street as a parking lot.
This idea was consider during preparation of the Master plan in 1989, but was dismissed in the professional discussions as unrealistic, regarding the Suhodolina function as natural collector of floodwater from Podveležje, and big expenses of construction and exploitation.

3.2. STRATEGIC DEVELOPMENT PROGRAM

AKTC/WMF with its activities is helping the development of the Strategic Program for the City of Mostar to establish a set of rules and priorities for plan of the reconstruction and development together with the management system.

Mostar in the third millennium should have a useful program of reconstruction and development. Defining such program demands hard work of a large number of experts, which the City Government anticipated and formed teams, which are dealing with aspects of further development of the town.

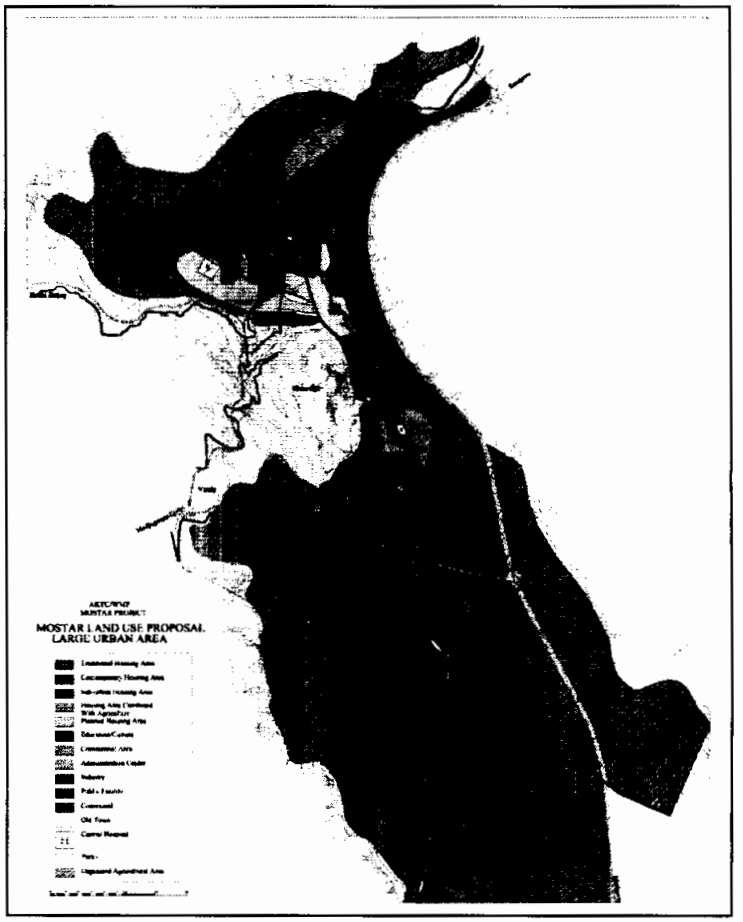
Activities are mostly focused on urban aspects of development with the main cause to preserve and develop the city historic core.

Following activities are in continuous development:

A. Creating a quality database. (Maps of the whole urban zone have been corrected and digitalized, demographic base of data from the historical zone has been prepared, all data on land, objects and infrastructure have been gathered. Also all previous plans for the town have been carefully analyzed).

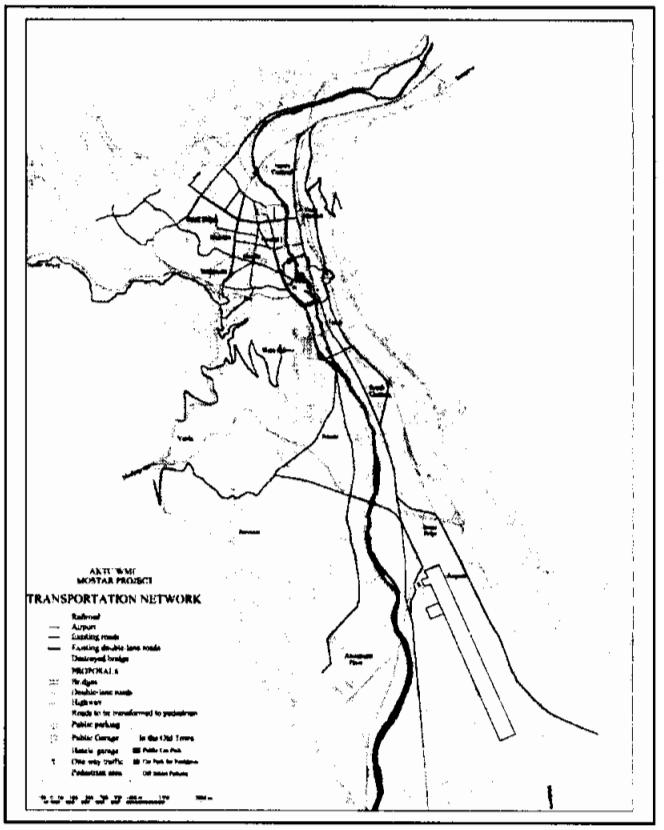
B. Creating the widest possible consensus. It is necessary to have constant consultations with all representatives of the institutions, which are dealing with planning and building, municipality and city institutions, and economy subjects for the purpose of creating high quality base for further development.

C. Defining the strategy for planning and creating the principle directions for interventions in the city zone. Special attention should be paid to the following key sectors:

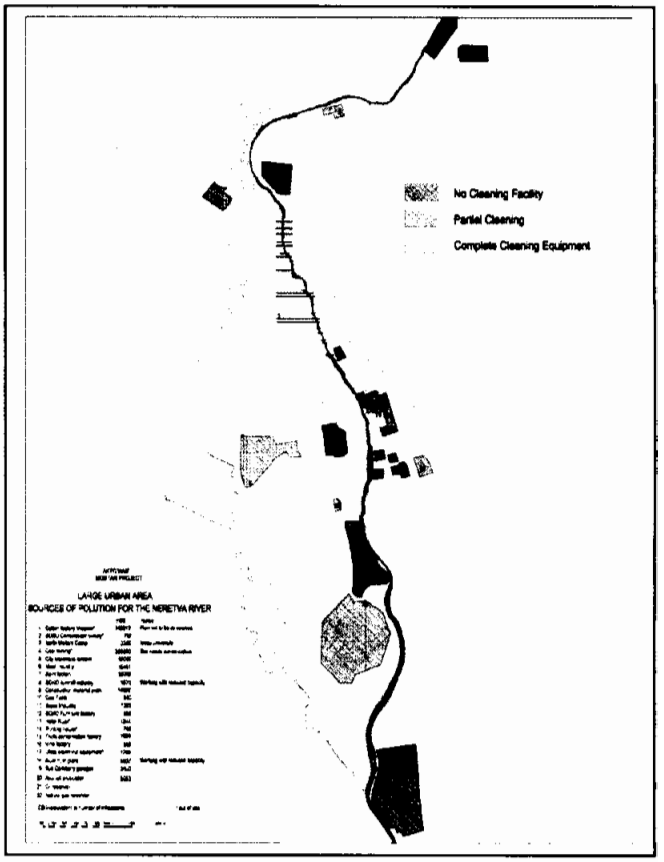


Mostar, larger urban area: Land use proposal

- Transport infrastructure: there is a need for better connection in the direction of east-west within the town (rebuilding of Luka Bridge and building a new bridge above The North Camp, development of the public transport), and the need for better connection into the regional traffic network.
- City infrastructure: key question in this area is building an economically acceptable system of city sewage, which should protect Neretva river from further outlets of wastewater.
- Building in the central district: Having in mind the situation at the moment when there is a lot of building activities taking place most of them without any permission. It is very urgent to introduce some kind of control mechanisms; otherwise the consequences will be very harmful for the whole town.
- Urban planning and the support from the institutions: there is a need to establish contemporary institutions for management, planning, use and control of building activities in the town, to create a set of laws and act according to them and to find direct ways to communicate with the citizens.
- Public uses: it is necessary to work on balancing of distribution of public functions, especially the educational, medical and recreational functions, and to avoid the duplication of these. Special attention goes to re-use of damaged historical objects.
- Housing: it is extremely important to give directions how the housing will be developed, should new settlements be built or to repair the existing ones. These activities demand coordination between economical and political factors in town.



Mostar, larger urban area: Land use proposal



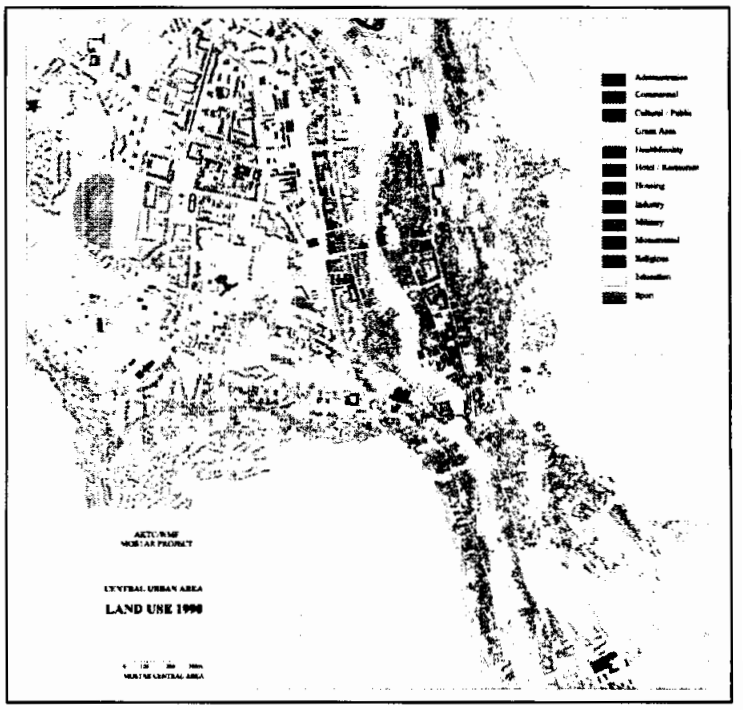
Mostar: Sources of pollution for the Neretva River

D. Determining special zones and plans for the whole area of the historical city in its boundaries from 1918. Within this area it is possible to define three separate zones. Each of these should be specially dealt with according to the quality and integrity of the each zone.

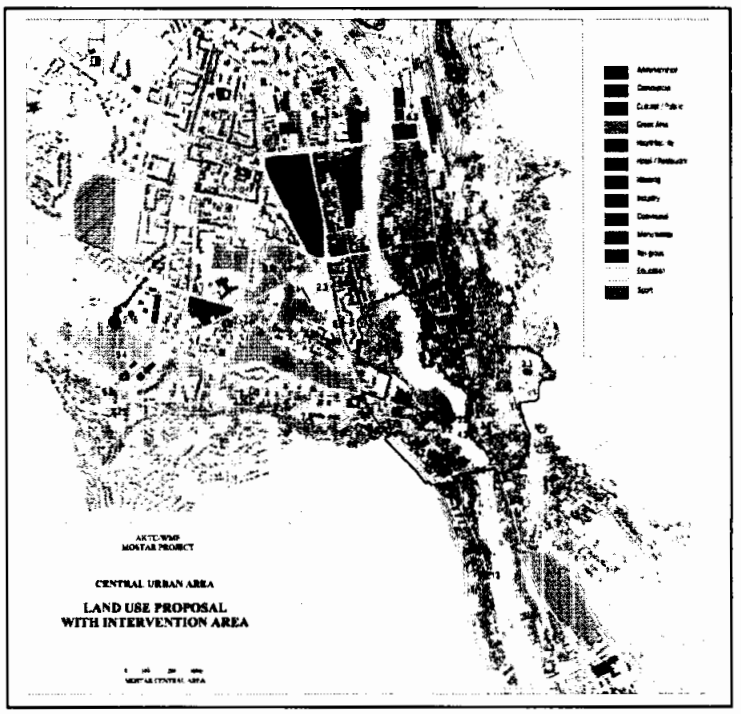
Zone A is part of the town that has preserved its overall integrity and should be subject of strict control. Begging from the summer 1998 for this zone Regulation plan was in preparation and was completed in May 2001.

Zone B covers a part of the town with less urban and architectural integrity, but still is recognized as unique urban system and as such seeks for coordinated interventions. Examples of this are Musala complex (sub-zone B-7) and a group of villas from Austro-Hungarian period along the walkway until Rondo (sub-zone B-4).

In addition of guidelines which are controlling special aspects of existing urban structure, some parts of this zone demand special plans for new development, to resolve the questions regarding the whole town like part of the zone of the railway and bus station (sub-zone B-4) which is foreseen for strong development.



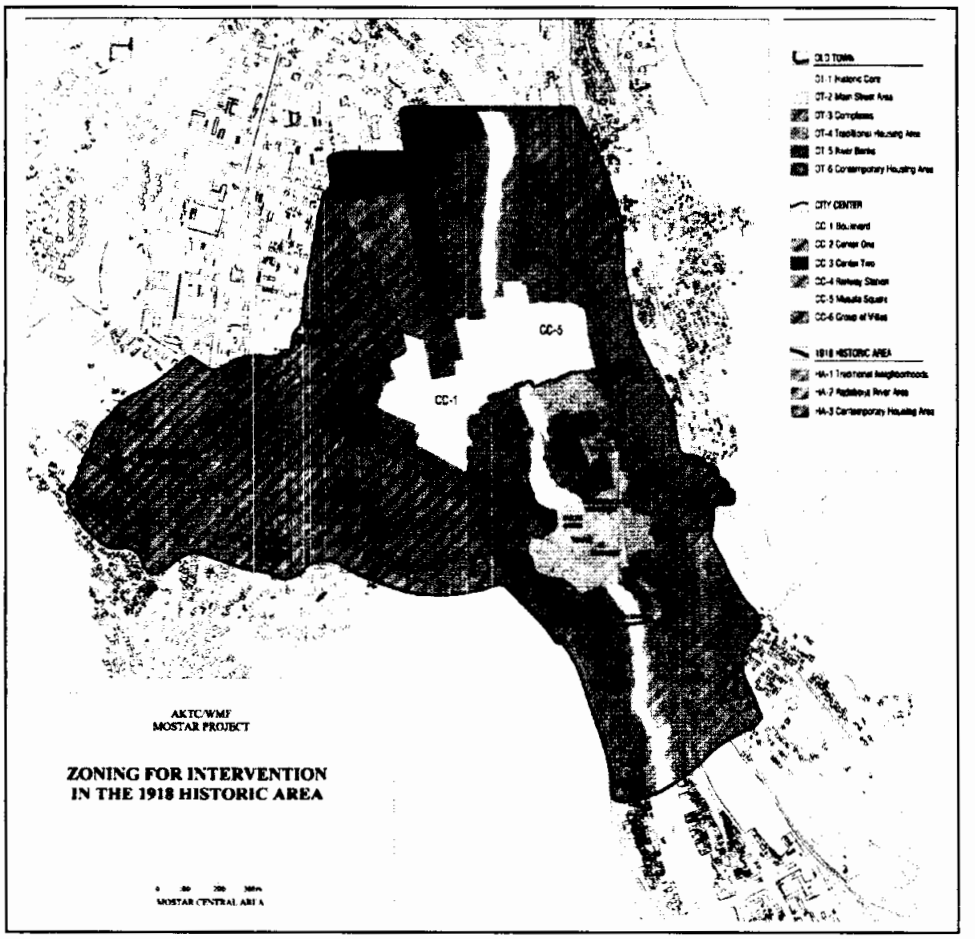
Mostar, central urban area: Land use 1990



Mostar, central urban area: Land use proposalwith intervention areas

Zone C covers the rest of the area within the 1918 boundaries. This zone has already experienced great changes, only keeping a few valuable urban elements. Since this zone represents a boundary around the historic zone, and has a lot of physical and visual contact with it, it is also necessary to establish guidelines for land use, height of the object, streetscape, etc.

At this moment Zone A is the most endangered and especially the historic neighborhoods around the Old Bridge. That is the reason why this Regulation Plan is taking place and the more detail planning was made for the historical neighborhoods.



Mostar, 1918 historic area: zoning for intervention

3.3. MASTER PLAN FOR CONSERVATION AND DEVELOPMENT OF THE OLD TOWN[1]

During preparation of this Plan all existing documentation was used (Regulation Plan 1990, Map of Rehabilitation, UNESCO 1997, Institute for protection of cultural, historical and natural heritage, etc.).

In this project over 130 students were included in different levels starting from July 1998.

The zone includes 1675 units. All data about objects have been stored in digital form. Photo archive contains more than 10 000 digital photographs.

After discussion with local work-groups, on September 15, 2000 there was first discussion about the whole project with participation of professionals, representatives of the City Government and other relevant institutions in municipalities with Bosnian and Croat majorities.

Proposal Plan was put into public discussion on January 12, 2001. This ended in April 6, 2001 when final presentation took place for International Committee of Experts and local professionals from various fields of profession.

Municipality Council of the City Municipality Mostar Stari Grad approved plan on May 10, 2001.

[1] Plan was addopted bz the Citz of Mostar'Stari grad Municipality Council, Mun. Official Gazette 15-05.2001.

Drawing Title: **BOUNDARIES OF THE OLD TOWN IN DIFFERENT PLANNING DOCUMENTS**

Naziv crteža: **GRANICE STAROG GRADA U RAZLIČITIM PLANSKIM DOKUMENTIMA**

BOUNDARY OF OLD TOWN CONSERVATION AND DEVELOPMENT AREA

GRANICA STAROG GRADA

BOUNDARY OF THE OLD TOWN DECLARED THE NATIONAL MONUMENT OF BIH

GRANICA STAROG GRADA PROGLAŠENOG NACIONALNIM SPOMENIKOM BIH

BOUNDARY OF THE OLD TOWN BY THE *URBAN HERITAGE MAP AND REHABILITATION PLAN OF STARI GRAD* (UNESCO 1987)

GRANICA STAROG GRADA PREMA *KARTI URBANOG NASLJEĐA I PLANU REHABILITACIJE STAROG GRADA* (UNESCO 1997)

MASTER PLAN 1990 (PROSTOR)

GRANICA STAROG GRADA PREMA REGULACIONOM PLANU 1990 (J.P.PROSTOR)

BOUNDARY BY THE PRELIMINARY REHABILITATION PROGRAMME (URBAN INSTITUTE 1967)

GRANICA OBRADE PREMA PRELIMINARNOM PROGRAMU OBNOVE STAROG GRADA (URBANISTI ČKI ZAVOD 1967)

BOUNDARY OF HISTORIC CITY CORE - NOMINATED AREA

GRANICA ISTORIJSKOG SUSJEDSTVA - NOMINIRANA ZONA

Contents of the Plan

- The Descriptive Report introduces the Plan and explains its objectives and contents.
- The Planning Regulations contain the legal provisions for conservation and new development in the Old Town. These will regulate the forms and procedures for intervention on private and public buildings, and open areas within the designated Planning Area.
- The Survey Maps offer the background information upon which the Plan is based, while the Plan Maps detail the proposals covering the Old Town Planning Area. These are to be read in conjunction with the Planning Regulations.

The Planning Area

The area covered by the Plan is the so-called "Old Town" representing some 45 hectares located at the very core of the historic city as defined by the 1918 city boundary. The Old Town is the oldest portion of city fabric, dating back to Ottoman times. More than any other part of the historic city, it has maintained its traditional fabric and overall integrity and which will be subjected to stricter conservation controls. Several distinct sub-zones can be identified within this area:
- the Old Bridge complex, comprising the towers of the bridge and the adjoining commercial structures on both sides of the river;
- the Jusovina-Splile sub-zone, on the western side of the historic area, including the residential structures along Ulica Jusovina and the Kriva Ćuprija and Oručevića Ćuprija bridges spanning the Radabolja, the Neretva's tributary;
- the complex formed by Ramić and Čemalović streets between the Ulica Maršala Tita and the eastern bank of the Neretva;
- the residential complex, today in ruins, overlooking the western bank of the Neretva, at the confluence between the Neretva and the Radabolja rivers;
- the street frontages and buildings along Maršala Tita where there is a need to put in place special guidelines such as street frontage and setback controls, signage, use of homogeneous building materials and typical details, etc.
- the undeveloped land along the river where strict controls should be established in order to preserve its current recreational use as well as its natural features and environmental qualities.

Purpose of the Plan

The aims of the Plan and accompanying regulations are to:

- indicate the authority responsible for implementing and monitoring the Plan as well as for future detailed planning and periodic revisions to the Plan;
- define the Plan's units of intervention, comprising both buildings and areas, together with the procedures to be followed in the granting of building and planning permits.
- specify the allowable uses of land and buildings in the Planning Area;
- indicate the forms of intervention applicable to all buildings within the Planning Area with regard to the architectural and typological character of each structure and the level of protection to be achieved for each;
- define the organisation of vehicular traffic, parking and pedestrian circulation within the Planning Area;

- identify priority structures and urban zones earmarked for detailed planning, with an indication of the norms to be applied to the rehabilitation and reorganization of individual buildings and areas.

The Survey

This entire planning area was studied in detail as part of the present planning effort in order to gain as complete as possible an understanding of existing conditions of both individual buildings and their surrounding context. The results present a mixed picture: the area retains much of its traditional quality and many of its components are intact. But, at the same time, the ongoing process of transformation and many of the prevailing trends in building and re-building pose a serious threat to the survival of this irreplaceable part of Mostar's architectural and cultural heritage.

All investigations were conducted on a plot-by-plot basis with three survey forms filled in concurrently. These included a building survey form, a streetscape inventory and a building condition form. The information recorded was subsequently transferred onto the newly revised and digitized base map and entered into a specially created database for further analysis.

The new database contains a record for each plot/building within the historic area, including information on use and ownership, materials and construction, condition, typology, architectural significance, as well as any distinguishing architectural features. These records can be updated periodically in order that timely information on all plots and buildings continues to be available. The digitized map and new database thus provide an essential tool for the planning and future management of the historic area.

Description of the Plan

The Plan addresses some of the most pressing conservation and development issues in the historic areas through two distinct but complementary courses of action. The first entails the setting up of a *general planning framework, which* provides the broad policies necessary to coordinate the general organization of the historic area and regulate its building activities. This includes policies for the use and development of land and buildings, which are designed to encourage uses that are in keeping with the town's traditional structure. These land use policies are complemented by specific measures for the intervention on individual buildings. The planning framework also includes an outline of the general measures and actions to be taken to improve the infrastructure, public services, as well as traffic circulation and parking in the historic area.

The second course of action consists of detailed planning proposals for selected *Zones Subject to Detailed Planning.* These correspond to the most critical areas of the Old Town, which are suffering from conflicting pressures and are in need of urgent comprehensive planning and, above all, require an integrated approach. Improvements in these areas include upgrading infrastructure, addressing traffic problems and in some cases providing new structures and expanding land uses.

The following sections outline the main features of the Plan and relate to the five Plan maps

entitled: Boundary Plan and Detailed Planning Zones (P1); Proposed land and Building Uses (P2); Forms of Intervention Applicable to Buildings (P3); Traffic and Parking (P4); and Infrastructure Improvements (P5).

1. Proposed Land and Building Uses

The purpose of land use policies in the Old Town is to maintain and protect the traditional uses by reinforcing the close correlation between activities and buildings as well as the existing mix of uses in this key sector of the town. In all cases where buildings have a clear commercial purpose, such as those lining the main bazaar streets, the land use policies seek to confirm and reinforce this function through the rehabilitation of vacant or underused structures. Similarly, rehabilitation of buildings to be used as housing is recommended in all cases where the original function of the structures was clearly residential.

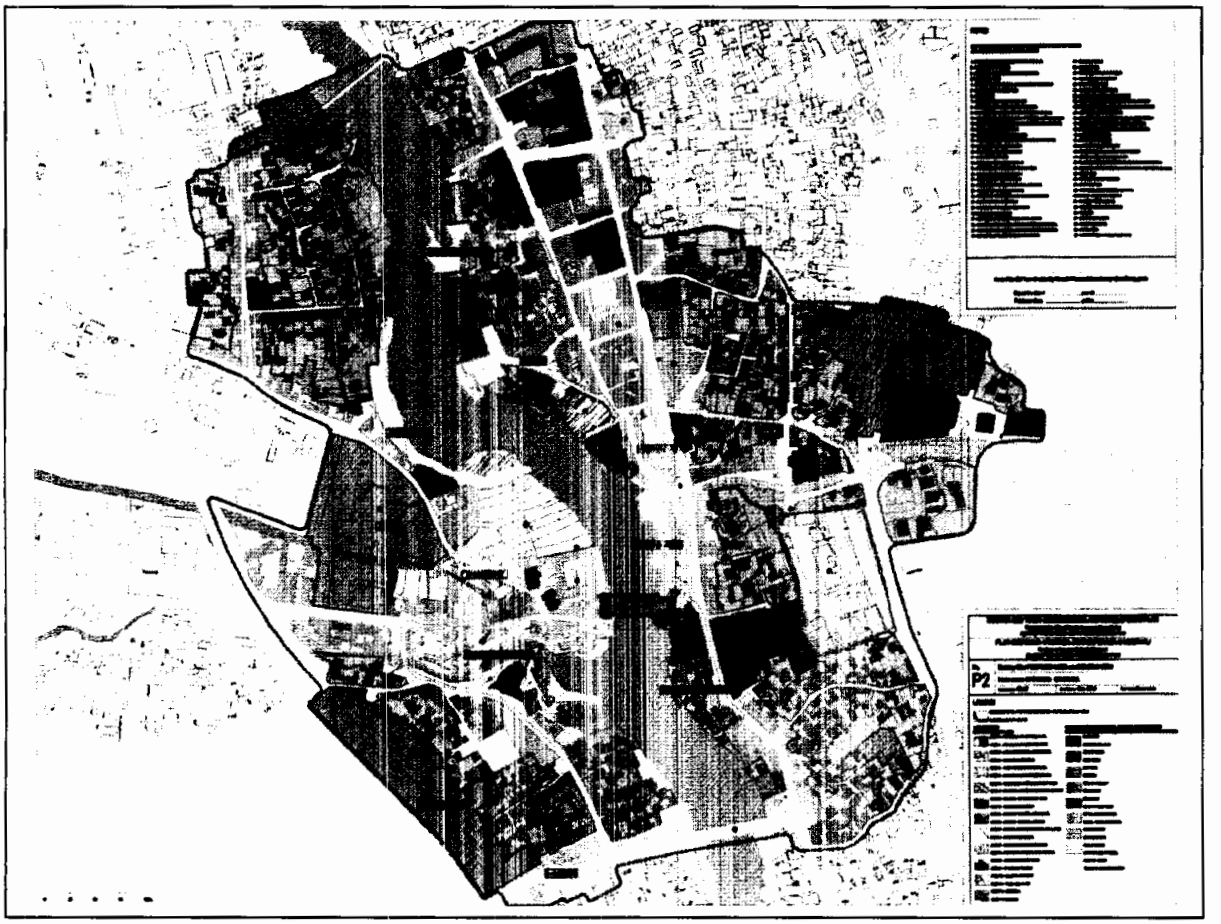
The recommended land uses do not preclude other existing uses or the development of new activities that are compatible with the traditional urban fabric. However, in a number of cases, the policies contain measures to discourage or altogether ban certain land uses, particularly those that introduce activities that conflict or that will lead to the radical transformation of the character and environmental quality of the historic neighborhoods. Such measures are recommended so as to avoid wholesale commercialization of the area or its conversion into an exclusively tourism-oriented district. To the contrary, a continued strong residential presence is recognized as an essential factor in reinforcing the lively and wholly urban character of the historic area, one that will need to be safeguarded in future.

Ten zones of land and building use have been designated, including: Zone 1 – Predominantly Residential; Zone 2 – Mixed residential/commercial; Zone 3 – Predominantly commercial; Zone 4 – Commercial Redevelopment Area; Zone 5 – Housing Development Area; Zone 6 – Parking Terminal and Hostel; Zone 7 – Sports and Recreational Facilities; Zone 8 – Neretva Riverbank Protected Area; Zone 9 – Outdoor Market Area; Zone 10 – Military Precinct.

2. Forms of Intervention Applicable to Buildings

The land use policies are complemented by the definition of intervention criteria to be applied to individual structures within the planning area, as shown in Map P3. These criteria clarify the type and form of intervention that are appropriate for each building according to whether the structure is historic, traditional or contemporary, and in response to each building's specific condition, cultural and architectural significance, state of integrity and/or alteration, as well as the long-term planning objectives for the area as a whole.

In most cases, the proposed intervention criteria aim at preserving or re-establishing the architectural and urban integrity of individual buildings and the historic fabric at large. The proposed categories are presented below in sequence, moving from simpler to progressively more complex interventions.



Preservation and Restoration are the forms of intervention that apply to buildings of monumental character and outstanding architectural value for which no change of use is envisaged. The introduction of limited sanitary and technological improvements connected with the contemporary use of these monuments may be envisaged, however these types of intervention must be reversible and carried out in a manner that is respectful of the structure's architectural integrity. "Preservation" is the best course of action for significant structures generally in a state of disrepair, but whose overall integrity is intact. "Restoration" implies the restitution of a monument as it appeared at a particular point in time through the selected removal of elements added and the replacement of missing components. As such, restoration is applied in all cases where there is a structure of special architectural significance that has been altered in ways that are considered inappropriate and harmful.

Rehabilitation is the form of intervention that applies to the majority of cases, particularly residential structures, where there is a need to re-establish the original function of an historic structure and, at the same time, introduce modern utilities through special repairs and alterations. Rehabilitation is the type of intervention that allows contemporary use of an historic building without substantially altering its traditional features or compromising its architectural, social and cultural significance.

Reconstruction is envisaged by the plan in cases where there is sufficient documentation to allow for the creation of an exact reproduction, or "strict reconstruction" of a ruined structure, in part or in full. The collapsed portions of mosques that have been or are in the process of being reconstructed are an example of this treatment. Where the documentation

for an individual building is insufficient, but there is enough knowledge of the particular building type to allow for a partial or total reconstruction, the plan advocates "typological reconstruction." This type of intervention calls for construction that is in line with the characteristics of a particular building type, and allows for the consolidation of the formerly homogeneous city fabric with the re-integration of missing buildings.

New Construction is envisaged within the planning area in a few cases where new development is needed to consolidate larger sections of historic fabric and replace buildings of no historic or architectural value that have been demolished. In these instances, the plan calls for the construction of new buildings that are physically and visually compatible with the surrounding historical context, both in terms of scale, proportion and massing and in the choice of compatible details and building materials.

Map P3 also identifies fourteen *Zones Subject to Detailed Planning.* These are: Z-1 Stari Most; Z-2 Historic Neighborhoods East; Z-3 Historic Neighborhoods West; Z-4 Stari Pazar; Z-5 South Boulevard; Z-6 Ruža; Z-7 Baščine Street; Z-8 Cernica Ploča; Z-9 Cernica; Z-10 Biščević Street Neighborhood; Z-11 Mejdan; Z-12 Han Mala Tepa; Z-13 Terasa Labirinta; Z-14 Upper Brankovac.

3. Traffic and Parking

The overall aim of these proposals is to create a safer, quieter and more efficient system of transport and traffic that is compatible with the special character of the historic area. This is best achieved by reducing the number of cars entering and passing through the center, and by encouraging pedestrian traffic. The Plan provides an integrated system of roads, parking areas and public transport to facilitate the achievement of the above-mentioned objectives.

Motorized Traffic The existing roads outside and within the historic area have been classified by level of importance into Arterial Roads, Main Roads within the Old Town and Secondary Roads Within the Old Town. Both two-way and one-way streets are identified as well as those open to motorized traffic for deliveries and residents' access only. The maximum weight of any vehicle permitted to enter access-only roads in order to make deliveries will be two tons. Signs will be located at the relevant road junctions indicating this restriction. Bollards and other movable barriers may be positioned by the Authority to impede motorized access to pedestrian areas. It is expected that, in order to reduce the speed of motorized traffic and encourage safe driving in the Planning Area, the Authority, in coordination with the Traffic Police, may institute traffic-calming devices such as lights, signs, speed bumps and other controls at selected locations on the roads.

Public transport The traffic and parking regulations are designed to work in conjunction with a public transport loop around the Old Town, connecting the principal locations and various car parks. New bus stops have been instituted as well as taxi ranks at specific locations.

Parking Car parking has been rationalized to provide more space than is presently used for this purpose. Parking areas have been distributed around the Old Town in order to facilitate access by commuters and visitors who will be able to leave their cars and reach any point of the center within a short walking distance from the parking area. Two types of public parking are provided: off-street, short term parking and larger longer-term car parks. The parking of

motorcars, taxis and buses is allowed in public parking areas specifically designated for this purpose, while private parking by residents will be allowed at various locations identified for the first time near or within the neighborhood areas.

Pedestrian Circulation Map P.5 shows the streets designated for pedestrian circulation only. These streets will be re-paved with quality pavements and may be earmarked for special streetscape improvement schemes.

These proposals should be instituted gradually to allow both the public and the authorities charged with enforcing these measures to learn and adapt to the new rules and regulations. Implementation will require a public education campaign with guidelines issued by the Planning Authority and a special enforcement-training program for traffic police. In addition, it is expected that the Planning Authority, in consultation with the Traffic Police and other relevant public bodies, may issue periodic circulars detailing specific regulations for private and public transport, parking and access, as well as other measures that may be deemed necessary. The relevant Map will be amended periodically in accordance with such provisions.

4. Infrastructure Improvements

The rehabilitation and proper functioning of the various infrastructure networks has considerable bearing on the general condition of the Old Town. Special attention was focused on analyzing the current installations for water, sewage disposal and storm water drainage, and proposing the necessary improvements. The Plan calls for the rehabilitation and recommissioning of the existing networks, and foresees selected improvements through the installation of new water mains and sewers at critical locations.

It should be noted that sewage is currently disposed of directly into the river. In the past, the construction of a single treatment plant south of Mostar was discussed as a possible solution to the problem. However, the cost of constructing and especially maintaining a new plant is prohibitive. A more affordable and sustainable solution is the creation of a number of smaller treatment facilities spaced along the river at regular intervals, each treating a corresponding section of the city. This solution has been envisaged in the present plan with the creation of a number of small treatment facilities within the Planning Area. This conservative approach is the most appropriate means of improving services without incurring the vast expense and major upheaval that large new installations would entail.

Additional provisions have been included to regulate the Radobolja River. The plan proposes that water be pumped from the Neretva River above the Baščine garden and redistributed during the summer when water is short, thus regulating the flow and quality of its water supply throughout the year. The existing water channels would be re-opened, and the flow of water automatically regulated through eight small locks. In addition, six of the nineteen original water mills would be re-activated with the Buka water mill serving as a cleaning station. Finally, the plan foresees the consolidation of the riverbank and its use for recreation and sporting events such as swimming and kayaking.

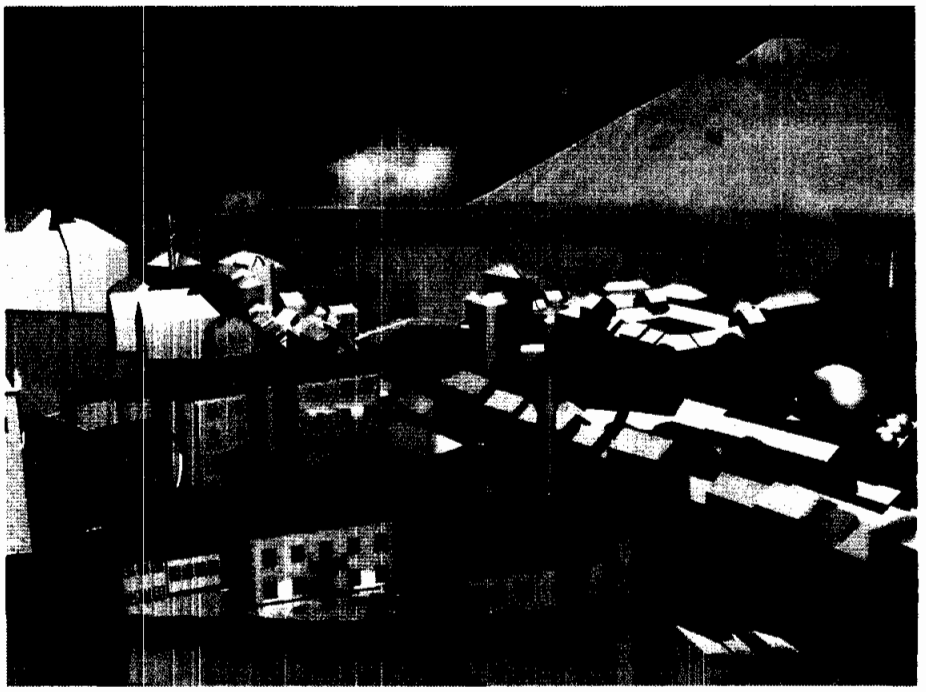
(IN APPENDIX IS ENCLOSED A COMPLETE MASTER PLAN DOCUMENT IN ENGLISH LANGUAGE. ODLUKA O DONOŠENJU I PROVOĐENJU REGULACIONOG PLANA STAROG GRADA, SLUŽBENI GLASNIK GRADSKE OPĆINE MOSTAR-STARI GRAD, BROJ 1. OD 15.05.2001)

3.4. STUDIES OF SPECIAL ASPECTS OF THE PLAN

Integrated part of the AKTC/WMF Mostar project is studying of special aspects of the Old Town area. More than 50 young researchers were involved in this project through graduate programs in many countries.

Here, we like to mention five studies directly focused from a different point of view on the historical city core of Mostar.

First one (3.4.1.) was completed in 1999 by Pelin Ozilkiz at Istanbul Technical University, and four others were completed in 2003 at the Faculty of Architecture at Sarajevo University, by Aida Idrizbegović (3.4.2.), Maida Karahasanović (3.4.3.), Senada Demirović (3.4.4.) and Lejla Tuzlak (3.4.5.)



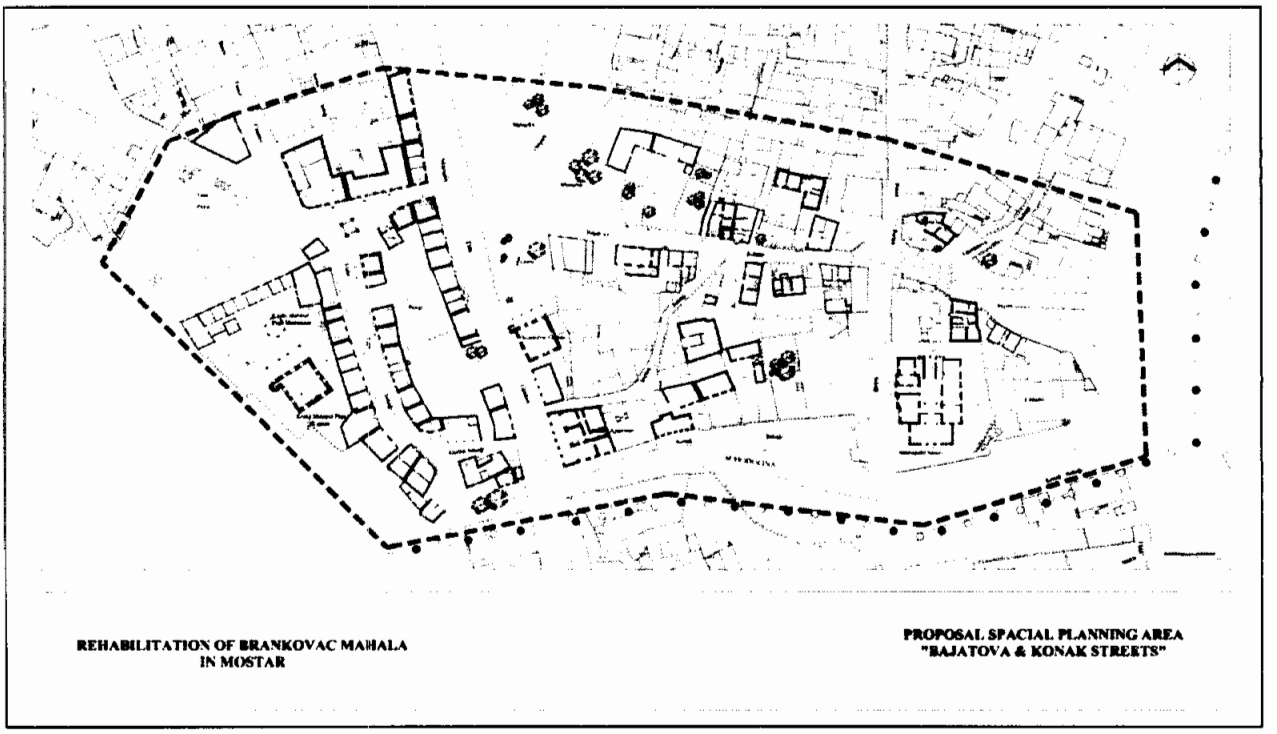
3D modeling of the Historic core of Mostar

3.4.1. Rehabilitation of the Brankovac neighborhood

Brankovac is located 100 meters away from the Old Bridge, which contained all characteristics of the Old Town: part of the bazaar, housing complexes, and significant religious, cultural and administrative buildings built during the period of last five centuries. The district shows the architectural and urban features of the Ottoman and Austro-Hungarian periods.

This neighborhood is chosen as 'case study' for the town, which displays *genius loci* of Mostar with its variety in demographic structure and in the traditional urban fabric. In the survey done in 1997, and 1998 267 buildings were documented in the area covering approximately 25.000m2.

The eastern part of the area displays the traditional Ottoman pattern with its organic street network and houses with courtyards surrounded with high walls. The western part is influenced more with the Austro-Hungarian pattern and has larger buildings in orthogonal street shame.



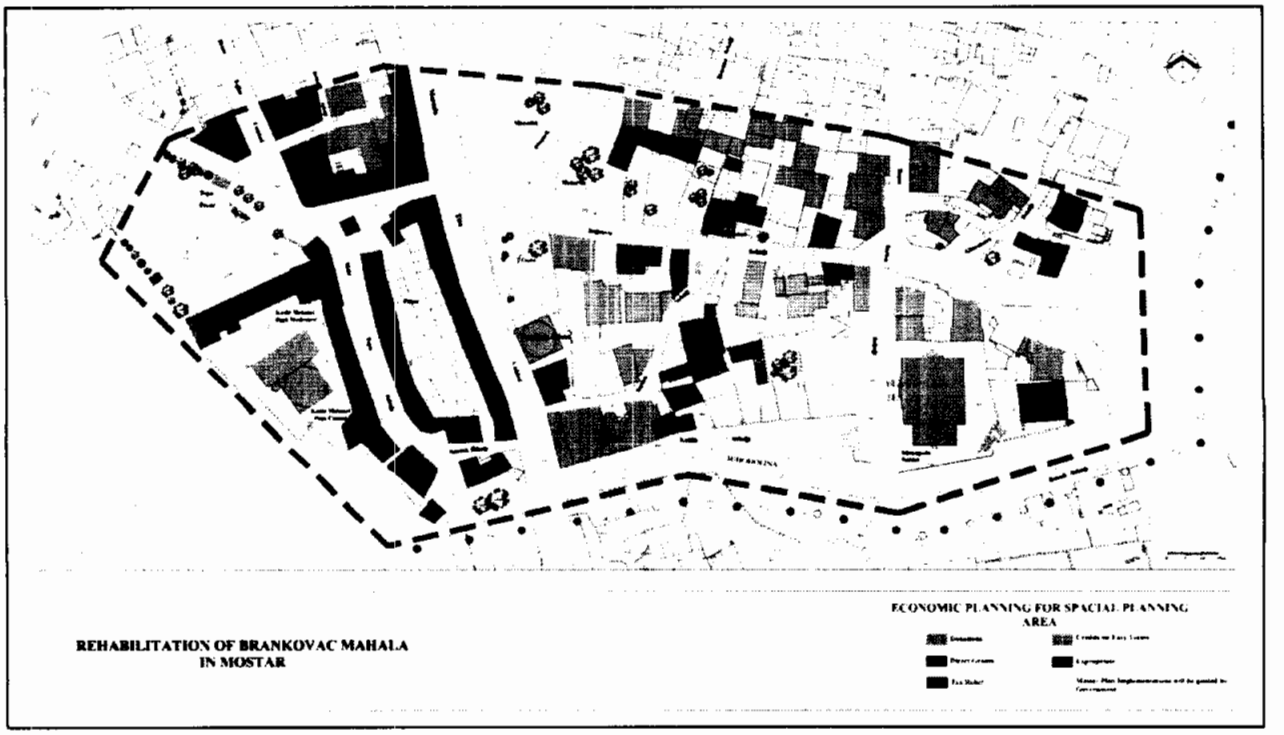
Brankovac, proposal for rehabilitation, first floor plan

Many significant buildings were built in the area: Vučjaković mosque (1518), Koski Mehmed paša mosque (1617), Clock Tower (1664), Orthodox church complex (between 1883 and 1873), Metropilitan palace (1910), Public theater (1949).

This area has several important open spaces Mejdan square (formed around 1470), the Šehitluk cemetery in front of the Vučjaković mosque, a park in front of Metropolit palace and the open market place Tepa (1934).

According to the surveys of 267 selected buildings the residential function is mostly on the eastern part with a percentage of 51 %, commercial buildings are located moreover in the western site, next to the bazaar area of Old Town. 98 buildings were recorded with traditional value. Masonry as the most common construction system is 59 %, the concrete frame buildings is 39 %. Two storey height is 58 % and % 23 of them have only one floor height.
25 % of the recorded buildings do not have sufficient living conditions.

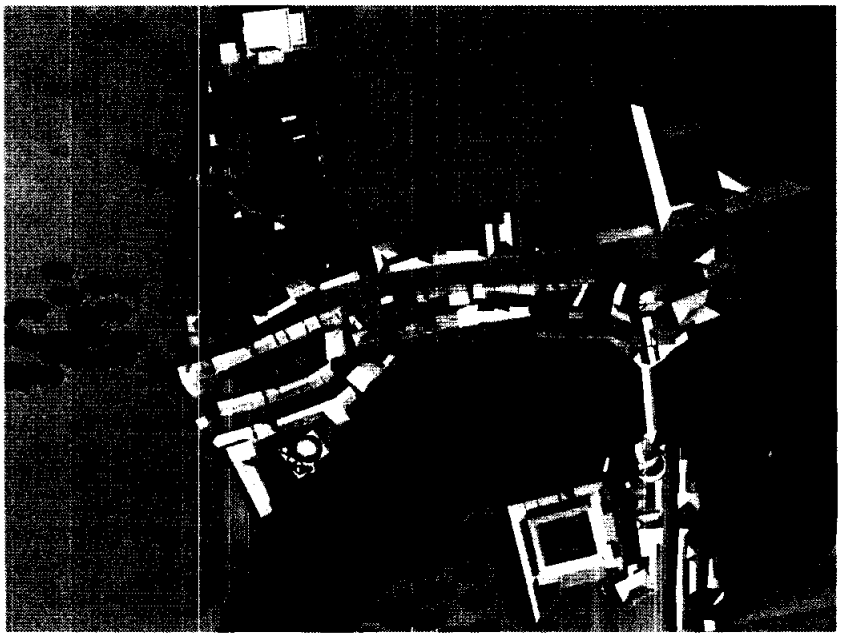
After the analyses studies rehabilitation proposals were prepared with guidlines for all kind of interventions to the traditional buildings and new constructions. Besides physical interventions as monumental building restoration, preservation rehabilitation and design in context. Also economic models as donations for the monumental buildings, tax relief and other models following with a new arragement of legal structure are proposed.



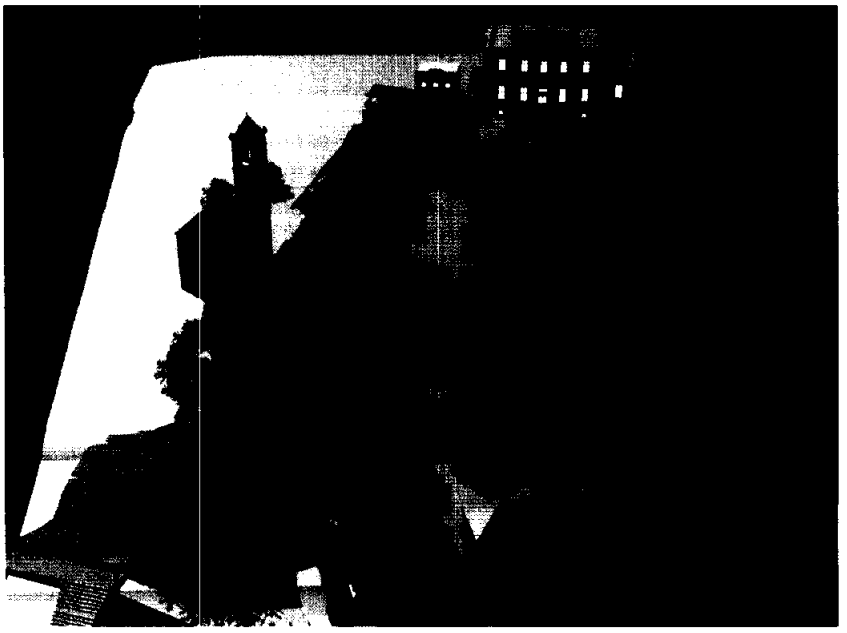
Brankovac: the proposal for economic modes for rehabilitation (donations, tax reliefs, direct grants, credit on easy terms)

After determination of intervention types, aims and economic models, proposals are defined for the area at the building and public space levels. The Konak apartment proposed to serve as an hotel and the adjacent buildings will have additional functions. Restoration of the monumental buildings are part of the rehabilitation project.

The basic aim of rehabilitation project is evaluate the district as a developing and lively area which will share the density of the Old Town and develop on the self-financing economic basis. This project can be a model for rehabilitation and revitalization of a historic area of post-war city based on the preservation principles, the demands of the inhabitants, includes residential, administrative, cultural and commercial functions.



Brankovac in relation with a bazaar



3D modeling of the area between Bajatova and Konak streets

3.4.2. Architectural Guidelines for Interventions in the Old Town

The Guidelines provide information about the historical features of buildings, and the approaches for interventions in the historical city core.

The Old Town. The town is formed according to the usual Ottoman-town pattern, with business district (čaršija) and the residential districts (mahale).

The key structures in shaping up the town were the Old Bridge with fortification towers and city walls. The structures in the historic core are simple, logic and functional, and yet they seem spontaneous with a unique relation to its ambient.

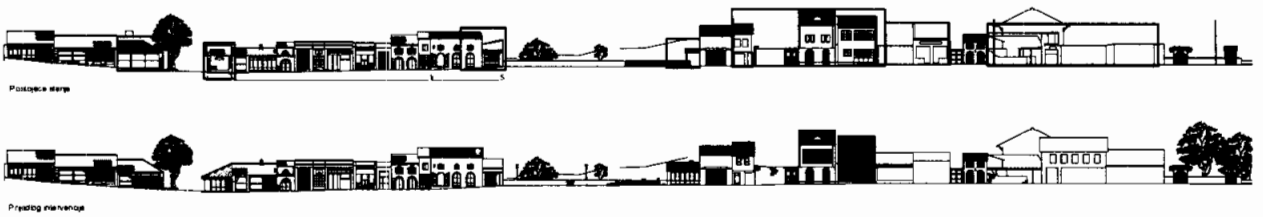
Interventions and Transformation. During its long history the structures have been altered and adapted for new uses. Transformation of the historic core is constant and necessary since it keeps the area connected to the city functions. In the second half of the XX century, the transformation is intense very often with negative impact. Every time when a transformation occurs (positive or negative outcome) it means that we have forever lost a piece of authentic tissue, even in order to save the structure.

The main message of the Guidelines is that any contemporary intervention (from preservation, restoration to rehabilitation or even reconstruction or a new building) must be integrated into the authentic structure, but *it must be distinguished from the original not falsify its historical or architectural value.* If the intervention is carried out properly it becomes part of the authenticity and integrity of the object or an ensemble.

Even though the main focus is on physical aspects of renovation, the structure itself cannot provide revival unless it is accompanied by a strong and proper function.

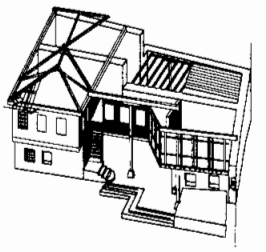
DEGREES OF INTERVENTIONS ACCORDING TO THE STATE OF THE OBJECT		
Ist degree of interventions Existing buildings that preserved its integrity	**IInddegree of interventions** Existing buildings modified or with low level of integrity	**IIIrd degree of interventions** Ruins or empty plots
Preservation (applicable to monuments and buildings of high architectural quality)	Restoration (applicable to monuments and buildings of high architectural quality)	Exact Reconstruction (applicable to ruinous or disappeared buildings whose former appearance is known through photographs and other documentation)
Rehabilitation Type A (applicable to traditional structures which have not been significantly altered)	Rehabilitation Type C (applicable to traditional structures which have been irreversibly altered)	Typological Reconstruction (applicable to applicable to ruinous or disappeared buildings whose general character is known, but not their exact appearance)
Rehabilitation Type B (applicable to traditional structures which have been altered in reversible ways)	Rehabilitation Type D (applicable to contemporary structures which do not fit into the ambient)	New Construction (in compatible forms to fill in urban gaps or/and provide needed facilities and additional housing)

Onesćukova Street is the main street on the left bank in the Old City. It is characterized by a strong authentic image just next to the Old Bridge Complex, and the less valuable mixed area in the buffer zone. It provides a huge potential for revitalization for the entire area.

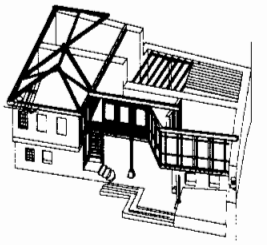


Example of interventions in one of the main streets of the Old Town (Onešćukova).

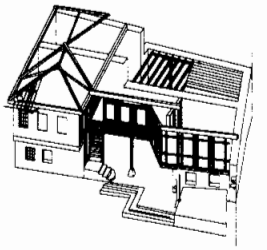
Guidelines: Materials, Construction systems and Architectural features. It consists of an analysis of the traditional design and features, and then examples of contemporary work and interventions.
For each item separately, we seek the most suitable solution, weather it is making the traditional design or an interpretation of it.



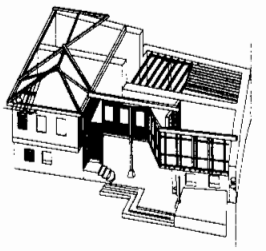
Materials: The most used material is stone (tenelija, miljevina, travertine, hard lime stone, breccias) which is used in all structures. Wood (oak, pine, fir and beech tree) is used for upper floors, roofs, floor construction and joinery. Cast iron is used for reinforcement (like cramps), then window bars, fences and so on.



Construction systems: There are two main types; structures made from stone completely (with travertine vaults) and combined stone and wood structures where walls are always thick stone, combined with light wood walls on upper floors and wooden roof construction.



Architectural features: Volume and scale are two most important features to be respected. If the building is built in traditional materials with proper spatial relations, the next step would be to fill up this basic skeleton with appropriate details (windows, gates, doors) that will correspond with contemporary use.



Degree of intervention	**Zone A** (historic core)	**Zone B** (contact zone)	**Zone C** (contact zone)
Ist	Recommended preservation and rehabilitation with traditional techniques only.	Maintenance and rehabilitation in traditional manner with adaptation.	Maintenance and rehabilitation in traditional manner with adaptation.
IInd	Use traditional materials and details for interventions.	Use traditional materials and details, but they could be combined with interpretations	Traditional materials and details, combine with contemporary interpretations
IIIrd	In rebuilding use traditional elements, simplify design and decorations.	Could be a traditional structure with contemporary elements.	Can be contemporary structure with ambiental values and traditional elements.

It is most important that we inherit the main principle of traditional craftsmen: it is to use elements and details that have proved their function and aesthetic ambient features and transform them for contemporary needs, rather then just purely produce copies of it.

3.4.3. Preservation and revitalization of Main Streets in Mostar

The Maršal Tito Street has preserved its unique character, structure and key position in the central urban area of Mostar. This study focuses on one section of the street in particular, ranging from the Lučki bridge on the south to the former department store "Razvitak" on the north, enclosed on the east side by the traditional *"mahala"* neighborhoods Bjelušina, Brankovac and Mazoljice.

Street facade along this street is one of the sub-zones in the historic city core, the rehabilitation of which requires a set of separate, special instructions. Such manner of intervening is convenient for all the structures of the urban city tissue that are not necessarily in monumental character, but nevertheless contribute to the historical ambience of the zone.

All such interventions are intended to preserve and renovate the existing traditional forms, as well as to introduce all the improvements necessary for the contemporary lifestyle, without substantially changing the traditional and autochthonous characteristic in the process.

It still represents the main traffic road for the whole town (for all types of traffic – motorized traffic – private and public city transport, pedestrian and service traffic). It's the fundamental component of the Old Town and commercial district at the east side of Neretva River.

The Austro-Hungarian period is the most dominant one in Tito street, and therefore examined in most detail in this paper in comparison to other historical periods, which, indeed, are present, but to a much lesser extent and represented by less significant buildings of artistic or documentary value. Even though a lot of buildings preserved their authenticity until the beginning of war in 1992, now they are in a rather poor condition, in particular the buildings of greater importance that have been declared real property under protection, representing the cultural, historical and natural heritage,[2] and they are: The Alajbegović House, Serb Elementary School, former Girls' High School, the Konak complex, Land Bank, the Municipality building, the Public Theatre and other business and residential facilities, in total 15 buildings located in this street only. Such mixture of different historical architectural styles adds to the memorial value, not just of the street but also of the entire Old Town zone.

[2] Official Gazette of the Mostar Town Municipality – Stari Grad, No. 1-2001, articles 1 and 2, May 15, 2001.

The general analyses of street development through history, of its structure and nature of its functions, indicate what is the governing concept and framework, at two different levels: the first is the level of activities and functions, while the second includes specific physical changes that would support the activities from the first level. Some of these activities need to be reaffirmed, some adjusted, and some of them should be completely changed and relocated, because the degradation of urban environment is caused by the very collisions and contradictions between these activities.

Therefore, on the first level it is important to create a sustainable urban environment by renewing the most important city functions, which could be the potential holders of the economic development. In addition to the existing functions of administration, education and culture, introduction of new functions is also preferred, such as commercial and recreational functions related to culture and education. As a main commercial district and the economic-business zone in the historical city core, Tito Street is the central interest sphere for commercial and service activities, with a selected and targeted group of consumers.

General definitions of types of interventions can further be concretized in relation to the value and type of objects, according to their historical and stylistic background and in relation to the type of damage and the required functions. This is given through examples of structures in the street, including the framework for future design (leveling volume of buildings, proportions and rhythm of the openings, final façade design, used materials and details). Interventions and corrections on open public spaces, green areas with all accompanying elements, design of street furniture and all types of traffic, as a significant and unavoidable element of future development and improvement of street life, are processed and defined in the same manner.

Fejica Street. Upon the historical fact of urban development, as well as based on the strategy of future development of the city, Fejić Street has a great role concerning both city scale and Old city core scale. In the triangle formed by Old Bridge, Musala and Rondo, Fejić Street is main connection. Regarding that fact, this street that looks like 'no man's land', has to be redesigned by the regulations asked by regulation plan as well as by the concrete project for this area.

Urban aspect issues take a great place in further project development. The state in which is this street today is not in context of what are the needs of people that lives in Mostar. In this chapter are named all necessary categories of interventions that can ameliorate the image of the street and gives appropriate look that one pedestrian area needs to have.

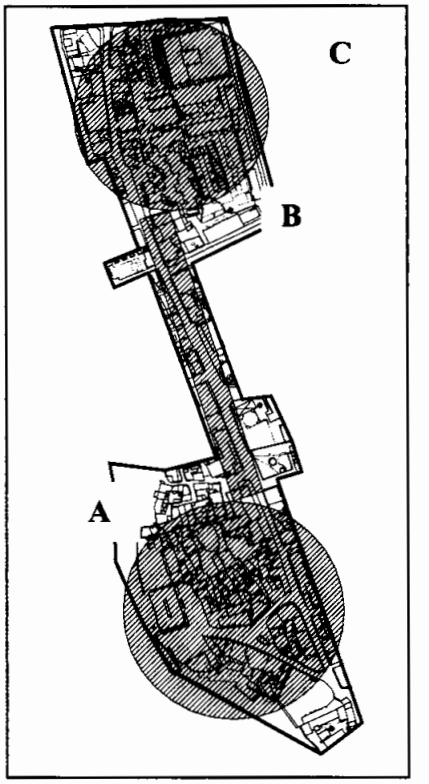
Architectural aspect task was to go through existing physical structures and the existing condition of it. Through the analyses made upon existing situation there are three categories of interventions on the architectural level that has to be done. Final result is fully redesigned street facade.

The study examined three sub-zones of Fejić Street:

A. The old neighborhood Mejdan-Bišćević;

B. Street within open spaces and concrete objects taken as an example of proper use of above named interventions;

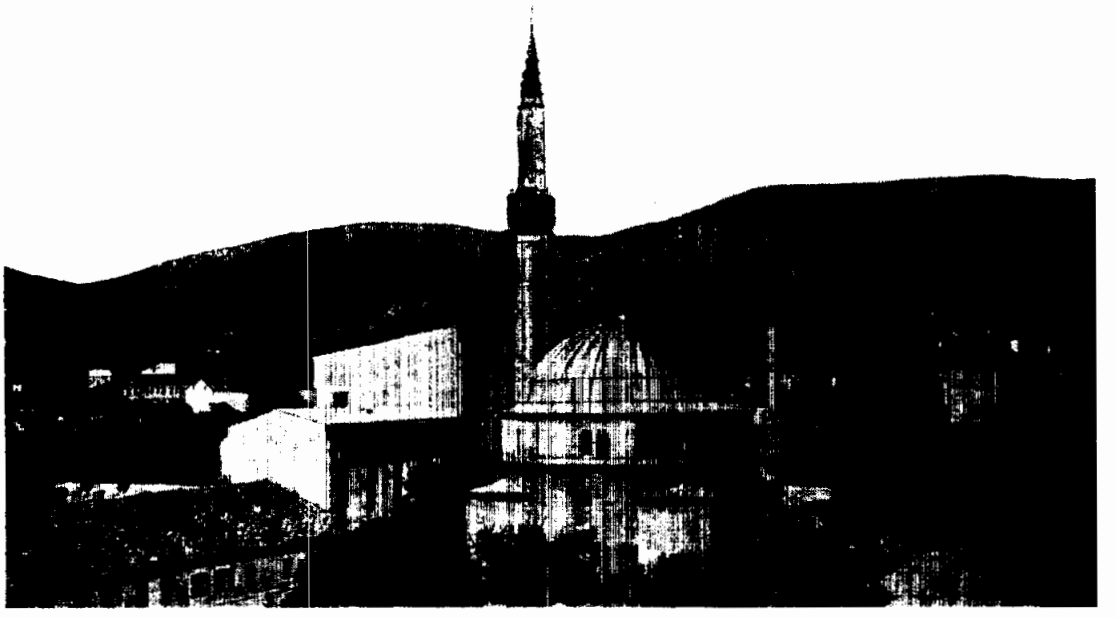
C. New neighborhood - former department store 'Razvitak'.



For all three zones this thesis provided guidelines as well as certain solutions based on already formed list of interventions.

This issue presents possibility of sustainable development that is possible to be achieved based on urbanistic and architectural interventions. The old city neighborhood Mejdan-Bišćević is taken as an example in the street of how it is possible to realize this aspect.

Finally, There are two approaches when we speak about redesign of the old urban structures. One of two is based on the scholastic idea of forming the 'model' that will serve as well conserved site that after a while can become an 'alive' archaeological site, that serves more to tourist than to local people. The other approach is the one that permit to all people to feel good in space that they use and to enjoy into all that they can get there, or give to.
The Fejić Street project is based on this second approach that would give the street remarkable image and make of it pedestrian zone that city such as Mostar is, needs to have.



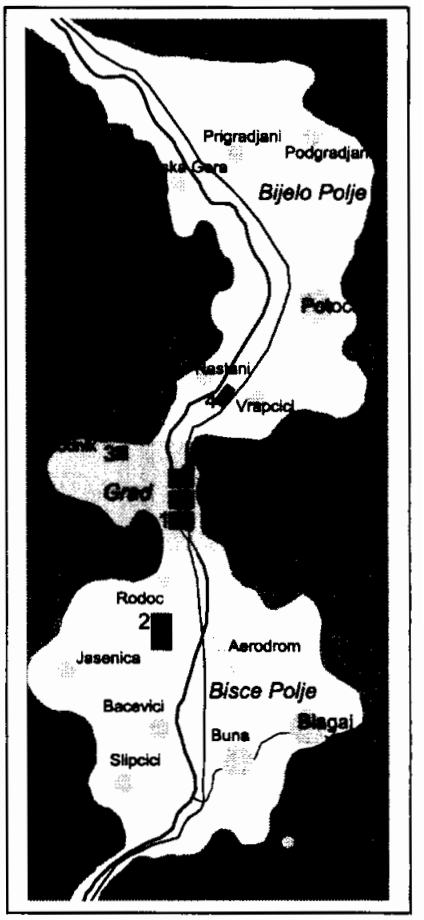
3.4.4. Commercial Structures in Mostar - Historical Review and Development Strategy

Goals of this work were to research on establishment and development of commercial activities and structures in the city of Mostar, and to propose a development strategy as a part of the integrated process of economic and urban development of the city of Mostar, taking into consideration preservation of valuable components related to different historical periods.

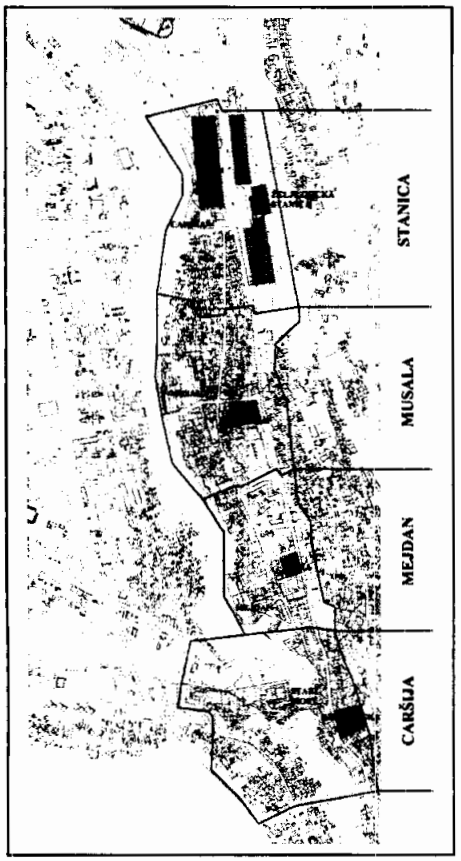
The research is focused on the city center, as the topic of our interest in this work and reviews the current Mostar conservation and development project.

The part of the study gives current development trends in the city, as the result of detailed review of the existing commercial structures in the larger urban area and the city center. In the city center three areas are especially elaborated a) Center 1, and two development directions: b) Stanica (Train station) – Rudnik, and c) Čaršija (Bazaar) – Stanica (Train station).

The focus is placed to the commercial city center, located between the Old Bridge complex and the Station area.



Three valleys of Mostar
Positions of commercial centers



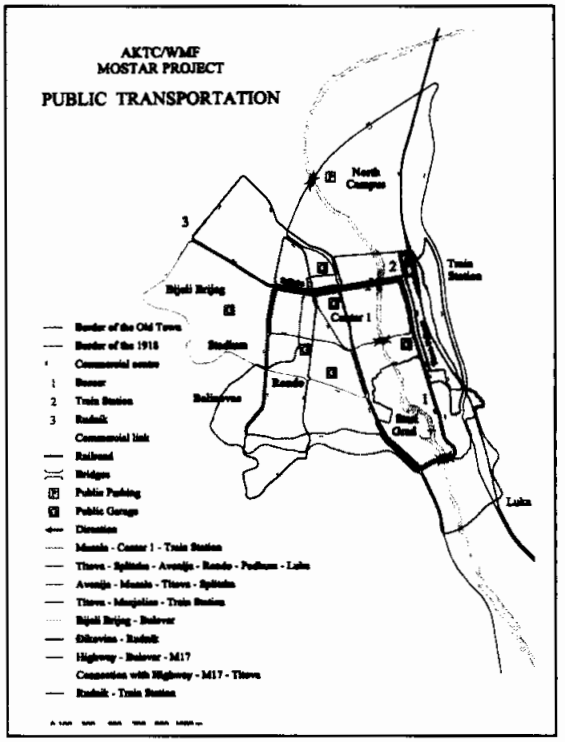
Four sub-zones are examined:

- the bazaar;
- the area between the bazaar and the Musala square;
- the Carina sub-zone; and
- the Stanica sub-zone (the area around the train and bus station).

The proposal on development of commercial activities and commercial structures in the city center focuses on specific values of each sub-zone: the bazaar as a carrier of specific functions of the city center; development potential of dominant structures in the zone (a former Girls High school, the municipality building with department store *Na-Ma*, and the former department store *Razvitak*). A special attention is given to the sub-zone Stanica, because it has the biggest development potential.

This proposal is supplemented with an optimization scheme of the traffic in the city center.

The focus was on the Old City of Mostar. The main goal is to preserve balance between traditional activities and contemporary needs, especially related to the tourism.



Public transportation proposal

In this area the Old Bridge represents the main point of interest, and together with traditional arts and crafts, cultural activities, entertainments, restaurants and cafes, water sports is giving unique offer to citizens and guests.

Commercial activities have a task to generate life in the area.

Commercial structures should preserved traditional elements, but they must use advanced technology to answer to contemporary requests.

Today, in the bazaar is functioning around 200 small units, and in near future it is possible to have 50 more.

They all together have around 6000m2 of space, what is equivalent to the modest modern shopping mall, but taking into consideration architectural, urban and natural value, the value is much higher of any modern complex (Rudnik or Rodoč area).

The main regulator of the business activates in the bazaar should be economic program which is taking into consideration preservation of the environmental value of the area and architectural value of every individual structure. Traditional activities, which are giving specific character to the town, should have permanent benefits: low fees and tax relieves. Basic postulate defined in the 1990 Master plan is still applicable: profitable activities (e.g. café bar) should cover non-profitable activities (e.g. old crafts), and to keep the total income in the area unchangeable.

Master Plan of Old Town in Mostar
adopted on May 10th 2001

Based on the Article 110. of The Legislation of Spatial Planning (Official Gazette S SR BiH nr.9/87, 23/88, 24/89, 10/90, 14/90, 15/90, 14/91; Official Gazette RBiH nr. 25/94);Decision of the Council of the City Minicipality Mostar – Old Town nr. 01-363-4245/98 from 22.06.1998; Protocol of Cooperation between the City of Mostar and the Aga Khan Trust for Culture and World Monuments Fund nr. 01-565/00 signed on May 26, 2000. The Council of the City Minicipality Mostar – Old Town on the session held on 10.05.2001 agreed to adopt:

DECISION
ABOUT MAKING AND IMPLEMENTING
THE MASTER PLAN OF OLD TOWN IN MOSTAR

Article 1- GENERAL STATEMENTS

1.1 With this decision Master Plan of the Old Town in Mostar is accepted, and stating the conditions, ways and procedures for its implementation.

1.2 Master Plan (Plan in further text) of Old Town in Mostar is set, with pre - requisite conditions, methods and mechanisms of its execution during the following five years.

1.3 The Plan specifies and recommends the conditions for conservation, restoration, reconstruction, new building, regular maintenance in The Old Town. It defines also the use of space, reviving The Old Town area in whole as well as its parts for the purpose of keeping the genuine historical and architectural values of this zone, so it can be used for development of tourist, cultural, economic and recreation needs of the citizens.

ARTICLE 2- CONTENTS, PURPOSE AND DEFINITION

2.1 The Mostar Old Town Conservation and Development Plan (hereafter called the Plan) comprises a Descriptive Report and Building Regulations (the Regulations) and the Analysis and Planning Maps listed below:

1. 1 Analysis Maps

- A.1 Base Map of the Old Town with Boundaries
- A.3 Existing Building Use (Ground floor)
- A.3 Existing Building Use (First floor)
- A.4 Ownership
- A.5 Condition of Buildings
- A.6 Type of Construction
- A.7 Building Height
- A.8 Historical Classification of Buildings
- A.9 Architectural and Environmental Significance

1. 2 Planning Maps

P.1 Boundary Plan and Detailed Planning Zones
P.2 Proposed Land and Building Uses
P.3 Forms of Intervention Applicable to Buildings
P.4 Traffic and Parking
P.5 Infrastructure Improvements

2.2 - BOUNDARY OF THE PLANNING AREA

The area to which the Plan applies, the Conservation and Development Planning Area (the Planning Area), is indicated with a red boundary line on Map P.1 (Boundary Plan and Detailed Planning Zones).

This boundary comprises on the left bank of the Neretva River:

- Kresina and Huse Maslica streets
- Lucki Most (Luka Bridge) and Gase Ilica Street
- the first row of buildings along Marsala Tita Street, starting from H. Maslica Street and encompassing the Orthodox Church complex
- the M-17 road to G. Ilica Street, and, on the right bank of the Neretva River:
- extension of the Lucki Most to the junction with the main highway South
- the highway extension of the Boulevard to the Radobolja River North Channel
- the Radobolja River Channel, Husnije Rebca Street and Rade Bitange Street
- the western row of buildings in Adema Buca Street and the new pedestrian bridge across the Neretva River to the North.

The urban fabric of this area is of historical and architectural value and will be regulated by the special norms contained in this Plan.

2.3- PURPOSE

The aims of the Plan and accompanying regulations are to:

_ indicate the authority responsible for implementing and monitoring the Plan as well as for future detailed planning and periodic revisions to the Plan;
_ define the Plan's units of intervention, comprising both buildings and areas, together with the procedures to be followed in the granting of building and planning permits;
_ indicate the forms of intervention applicable to all buildings within the Planning Area with regard to the architectural and typological character of each structure and the level of protection to be

achieved for each;

- specify the allowable uses of land and buildings in the Planning Area;
- define the organisation of vehicular traffic, parking and pedestrian circulation within the Planning Area;
- identify priority structures and urban zones earmarked for detailed planning, with an indication of the norms to be applied to the rehabilitation and reorganisation of individual buildings and areas.

Article 3 – IMPLEMENTATION MODALITIES AND THE AUTHORITY RESPONSIBLE

3. 1 The authority designated to implement the Plan is hereafter called the Planning Authority.

3. 2 The Planning Authority is established in conjunction with the formal adoption of this Plan as an executive body charged with the planning, implementation, monitoring and management of conservation and development activities within the designated Planning Area.

3. 3 The Planning Authority shall carry out its mandate under the supervision of the Old Town Mayor's Office, which shall appoint for this purpose, in consultation with the City Mayor's Office, an *ad hoc* Steering and Monitoring Committee. The Planning Authority will co-ordinate its activities with the City Planning Office and other relevant public institutions and agencies.

3. 4 In carrying out its mandate, the Planning Authority will enforce the provisions contained in these Building Regulations, and shall be responsible for the approval and monitoring of all private construction works and public interventions within the Planning Area.

Article 4-ECONOMIC ASPECTS

4.1 Economically vital structure capable for *the self-financing rehabilitation* of the conservation area should be the main goal of the rehabilitation program. Realization of this goal should be done by the Agency.

4.2 Economic framework should provide self-financing rehabilitation handled by Agency on behalf of governmental authority, tenants and owners.

4.3 The Foundation through Agency is undertaking to finance on behalf of city the wholesale reconstruction and renewal of infrastructure in the Old town area.

4.4 The city should elect to reimburse the foundation for this undertaking by granting it development rights in the area.

4.5 Criteria for the evaluation of the commercial spaces has the aim of introducing of criteria is that to arrive to nearly realistic market value of rent of commercial spaces in the zone of the Old Town, and also these be instrument of preservation demanded by the structure of use.

ARTICLE 5– DIRECT AND INDIRECT INTERVENTIONS

5. 1 The implementation of conservation, rehabilitation, demolition and new construction activities within the designated Planning Area will take place by means of direct and indirect interventions.

5. 2 *Direct interventions* apply to the vast majority of the structures in the Planning Area and are those interventions that can be carried out within each building unit, whether in part or in full, directly by the owners concerned. Planning and building permits will be granted by the Authority based on the owners' compliance with the implementation modalities described in the Forms of Intervention detailed in Map P. 3 and already mentioned existing legislative.

5. 3 *Indirect interventions* apply to those individual buildings, groups of buildings and open spaces identified in Map P.1 and Article 10. These ensembles, although they may be made up of a number of distinct building units and spaces, form a coherent and recognisable whole and are therefore subject to co-ordinated planning. In these cases, partial or full interventions will be permitted by the Planning Authority only after a detailed plan for the entire ensemble has been formulated in accordance with the implementation modalities described in already mentioned existing legislative.

5.4 Any kind of construction or craft works (on ground or underground) in the Old Town area can be executed only after a permission of the authority in charge.
Permission is necessary not only for building but also for reconstruction, restoration works, current maintenance or conversion of function.

5.5 Conservation and current maintenance also mean all works done in interior, facades and all kinds of plastering.

5.6 Authority in charge of the Old Town issues a confirmation that the work done on the site is according to the Plan. The confirmation also holds the part of graphical appendix of the Plan and conditions for architectural design.
The same service gives permission /confirmation that technical documentation (main project) is made according to urbanistical conditions and permission issued before.

5.7 Responsible authority is obligated to respond to all requests for any interventions within 7 days from the date of appliance and proceed the request to the Agency for the Old Town so they could apply the provisions of the previous article.

5.8 Agency for managing the Old Town directly approves interventions on maintenance and conservation.

5.9 Supervision of implementation of the Plan and inspection jobs are entrusted to the local municipality or the Agency for managing Old Town.

5.10 In commission for technical supervision of finished object and spaces in the Old town area there should be authorized representative of the Old Town Agency.

Article 6- LAND USE PROVISIONS

6.1 - GENERAL

The use of all land and buildings shall be in accordance with the Proposed Land and Building Uses Map (P. 2). The specified use applies to the ground floor as well as the storeys above. The use of any storey above the ground floor level for residential purposes is permitted without prior approval from the Authority.

No land or building situated in any zone shown on Map P. 2 shall be put to any use other than that approved by the Authority in accordance with the Plan. The use of land or buildings for uses other than those specified in the Plan will be at the discretion and approval of the Authority.

If, at the time this Plan comes into force, any land or building is being put to a use other than that prescribed for the zone in which it is situated, it may continue to be put to such use only until further development of the land or building occurs, at which time the new development must conform to these Regulations.

ARTICLE 6.2 - ZONE 1 / PREDOMINANTLY RESIDENTIAL

The predominant use in this zone shall be residential. Religious establishments as well as private garages, residential annexes and gardens are also permitted. A limited amount of retail activity may be allowed on the ground floor, subject to a maximum of 25 percent of the gross floor area per residential unit.

ARTICLE 6.3 - ZONE 2 / MIXED RESIDENTIAL/COMMERCIAL

The predominant use in this zone will be mixed residential and commercial. Land and building uses specified for ZONE 1 will be permitted, as well as commercial and administrative establishments, educational and cultural activities, workshops and guesthouses, provided that these uses are compatible with the historical and typological character of the buildings and the forms of intervention specified in these Regulations**.** Discotheques, bars, pubs and other entertainment activities are considered inappropriate uses in an area of mixed residential/commercial use, and will not be permitted.

ARTICLE 6.4 - ZONE 3 / PREDOMINANTLY COMMERCIAL

The predominant use in this zone will be commercial, including hotels, provided that these uses are compatible with the historical and typological character of the buildings and the forms of intervention specified in these Regulations. Land and building uses specified for ZONE 2 will also be permitted. Discotheques, bars, pubs and other entertainment activities will be permitted in ZONE 3 subject to the restrictions regarding safety, noise and times of operation specified by the Authority and other relevant Municipal agencies.

ARTICLE 6.5 - ZONE 4 / COMMERCIAL REDEVELOPMENT AREA

This zone is designated as a Detailed Planning Zone on Map P. 1. The area is being reserved for public vehicular parking and for the expansion of business activities. As such, permitted land and building uses will be mainly hotels, commercial and mixed-use activities. Future development in this zone is subject to the planning measures in Article 10.1 Z-6 (Ruza) of these Regulations.

ARTICLE 6.6 - ZONE 5 / HOUSING DEVELOPMENT AREA

This zone is designated as a Detailed Planning Zone on Map P. 1. The area is reserved for the expansion of residential activities and, as such, the permitted land and building use will be primarily residential. Commercial and retail activities will be permitted along South Boulevard. All future development in this zone will be subject to planning measures described in Article 10.1 (South Boulevard) of these Regulations.

ARTICLE 6.7 - ZONE 6 / PARKING TERMINAL AND HOSTEL

This zone is designated as a Detailed Planning Zone on Map P. 1. The area is reserved for public vehicular parking and the expansion of visitor and student accommodation. All future development in this zone will be subject to planning measures described in Article 10.1 (Upper Brankovac) of these

Regulations.

ARTICLE 6.8 - ZONE 7 / SPORTS AND RECREATIONAL FACILITIES

These areas are designated as Detailed Planning Zones on Map P. 1 and are reserved for the expansion of sports and recreational facilities in ways that are respectful of the surrounding natural and environmental features. All future development will be subject to the planning restrictions described in Article 10.1,Z-8 (Cernica) and Z-13 (Labirint Terrace) of these Regulations.

ARTICLE 6.9 - ZONE 8 / RIVERBANK PROTECTED AREA

Land in this zone shall be kept open for public use and its environmental qualities protected. No other land uses will be permitted. Development in these areas, including the erection of permanent or temporary structures, will not be permitted except in order to improve the landscape and infrastructure in ways that are respectful and in keeping with the riverbank's natural features.

ARTICLE 6.10 - ZONE 9 / OUTDOOR MARKET AREA

This area is designated as a Detailed Planning Zone on Map P. 1 and is reserved for the reorganisation of the outdoor public market area in its traditional location. No other activities will be permitted. All future development in this zone will be subject to planning measures described in Article 10.1 (Mejdan) of these Regulations.

ARTICLE 6.11 - ZONE 10 / MILITARY PRECINCT

This zone is a military precinct and reserved for related activities only.

ARTICLE 6.12 - ZONE 11 / CULTURAL

These functions are located in assemblies and individual objects within the Old Town zone, designated for Detail Planning according to the Map P.1: The most important complex is the Old Bridge with the Towers, all according to the regulations given in the Article 10.3.1- (Z-1) of this text, than the complex of Hamam (S-1), Kapetanovina (S-2), Kajtaz House
(S-13), all according to the regulations given in the Article 10.2.

Special attention should be paid to preservation of the City Walls in historic neighbourhood of the Old Bridge (Z-2) and (Z-3), and around the militarz complex in Pasinovac.

Museum of Hercegovina in Bajatova street, represents a well restorated architectural assembly dating from the beginning of the 20TH century.

Building of the former Officer's House built in the same historic period, with extraordinary spatial potential demands careful restoration and choice of functions.

The kindergarten in Fejic street built in the sixties, and restored in its original form in 1995, represents an initial object for children care centre which can be realised by extension of complex into surrounding objects built in various historic period.

The theater made after the second World War in social-realistic style, represents one of the biggest regional generators of cultural activities.

ARTICLE 6.13 -ZONE 12/ DESIGNATED USES FOR INDIVIDUAL BUILDINGS AND OPEN AREAS

The schedule of designated public uses for individual buildings and open areas is shown in Appendix Map P.2 of these Regulations.

Article 7- FORMS OF INTERVENTION

7.1 – GENERAL

All interventions within the Planning Area must be carried out in ways that are in harmony with the surrounding historical context. This aim is best achieved through routine maintenance and preservation of the original fabric. When new development is envisaged, this should aim at the re-introduction of building types, building materials, construction techniques and details that are in keeping with the local building tradition.

7.2 - NORMS APPLICABLE TO ALL BUILDING INTERVENTIONS

The forms of intervention for each of the buildings falling within the Planning Area shall be in accordance with the Map indicating the Forms of Intervention Applicable to Buildings (Map P. 3).

The following prescriptions are generally valid and applicable to all building interventions provided these are not in conflict with any of the provisions contained in article 7:

- exterior fittings such as doors, windows and gates must follow traditional designs and be made of natural wood or metal. Fittings made of stainless steel, aluminium or plastic are not allowed;
- exterior finishes must conform with traditional patterns and techniques, in particular cut stone embedded in lime mortar or exterior plastering made of lime and finished with a lime wash. Only traditional colours will be allowed on facades. Finishes made of synthetic paints and resins will not be allowed. Surviving traces of significant wall decorations and finishes will be preserved;
- cornices as well as door and window surrounds will be restored and/or reinstated using the

same materials and forms;

- drain pipes and gutters will be positioned externally and be made of copper or tin; the underside of roof overhangs made of wooden beams and planks will be left exposed;
- roofs will follow traditional solutions (hipped or gabled) at an incline ranging from 25 percent to 30 percent and covered with local slate;
- lead and copper shall be employed as roof coverings for domed structures;
- floor to floor heights in existing traditional buildings will be maintained, even in cases where they may differ from the applicable national building codes and regulations. In cases of restaurants, cafes and other public spaces with floor to floor heights below 2.8 metres, the installation of mechanical ventilation systems will be required.

7.3 - PRESERVATION

This form of intervention is applicable to monuments and buildings of particular historical value and architectural integrity, in various states of disrepair, which have not been altered in any substantial way. For these structures, preservation will comprise the actions necessary to preserve, through repairs and replacement of worn and broken parts, the existing form, materials and details of the historical structure without altering its appearance, structure, or existing historical and architectural features.

The introduction of permitted new uses or sanitary and technological improvements connected with the present-day use of the structure in question should be carried out in ways that are respectful and compatible with the building's architectural quality and typological character.

7.4- RESTORATION

This form of intervention is applicable to monuments and buildings of particular historical value and architectural integrity that have been altered in ways that are inappropriate, harmful or that impede a full appreciation of their architectural quality. For monuments and buildings in this condition, the intervention implies the restitution of the structure as it appeared at a particular point in time through the selected removal of incompatible elements and harmful additions in order to reinstate the original form, materials and details of the historical structure.

The introduction of new permitted uses and sanitary and technological improvements connected with present-day use of the structure should be done in ways that are respectful and compatible with the building's architectural quality and typological character.

7.5 - REHABILITATION (TYPES A, B, C)

This form of intervention is applicable to traditional structures, primarily residential, which do not

have monumental or historical value, but which individually contribute to the character of the historic area. In general, rehabilitation will be aimed at preserving and repairing the existing traditional features of a building and introducing modern conveniences and utilities without substantially altering its traditional features or compromising its architectural, social and cultural significance. As detailed in paragraphs below, these Regulations distinguish three cases of rehabilitation applicable to buildings in different states of integrity and transformation.

Type A Rehabilitation defines strict rehabilitative actions applicable to buildings whose integrity is fully intact. These actions are carried out with the aim of repairing the structure and introducing the changes necessary for present-day use, while preserving the structural elements and traditional features of the buildings in question.

Type B Rehabilitation defines remedial rehabilitation actions carried out on buildings that have been reversibly altered with the introduction of incongruous elements. In these cases, the incongruous elements will be eliminated, the buildings repaired and modern facilities introduced, thus re-establishing the full integrity and functionality of the structures.

Type C Rehabilitation defines the radical rehabilitation actions and extensive remodelling applicable to historic structures that have been irreversibly altered. The object of this form of intervention is to preserve any surviving historical elements and introduce the changes needed to harmonise the building with its surrounding context, both in terms of form and materials, and ensure its continued use, rather than choosing demolition and reconstruction.

7.6 - FULL OR PARTIAL DEMOLITION

Demolition includes the removal of incongruous accretions or transformations carried out as part of a restoration or rehabilitation programme, as well as the removal of entire structures, either temporary or permanent, for the purpose of eliminating harmful, obsolete or inappropriate structures of no historic or architectural value. The demolition of entire structures should normally be part of a full redevelopment programme for which detailed plans have been formulated and where the subsequent use of the area cleared is specified.

7.7 - RECONSTRUCTION

This form of intervention is envisaged in cases requiring partial or total reconstruction of a vanished structure. A *strict reconstruction* is applicable to those structures where there is sufficient documentation to allow for the creation of an exact reproduction. Such reconstruction is applicable in particular in cases of well-known monuments or historic structures. In all other cases, a *typological*

reconstruction will be carried out, where documentation on the individual building may be insufficient, but where there is enough knowledge of a particular type to allow for a reconstruction in line with the characteristics of a particular family of buildings. Typological reconstruction allows for the re-integration of missing buildings within homogeneous sections of the historic city fabric.

7.8 - NEW CONSTRUCTION

This form of intervention is applicable within the Planning Area in all cases where the construction of individual new structures or extensive new development is required, and where such construction or development does not require demolition or alteration of any existing structures or city fabric that are of architectural or historical significance. New construction will be subject to careful review by the Planning Authority to ensure that proposed new development is physically and visually compatible with the surrounding historical context, both in terms of scale, proportion and massing and in the choice of compatible details and building materials.

Compatibility will be achieved by establishing similarities in scale and texture between the old and the new. Scale can be controlled by creating similarities in the overall mass and proportions of the new development vis-à-vis the surrounding context. This applies to the proportions of individual openings, and the relationship between solids and voids on a facade. Similarities in texture can be obtained through the use of traditional building materials and finishes that have light-reflective qualities similar to ones prevailing in the historic area.

In all cases, sites for new construction must be of an appropriate size, location and sitting, and will be subject to approval by the Planning Authority. New construction is not permitted in public or private green areas, streets and squares, or any other public open space.

A plot may be subdivided only with the approval of the Planning Authority.

No building may be built beyond its plot boundary. In addition, any new building or addition shall be sited so that walls and facades facing onto streets are in line with the adjacent building lines. This applies to the ground floor and as well as all upper storeys. Canopies and roof overhangs may be built beyond the building lines to a maximum of one metre. Steps may be built beyond the building line to a maximum of 0.4 metres and commercial panels no more than 0.5m. If a new development is replacing a collapsed building, it should generally follow the previous building line. The Planning Authority may recommend a new building line, if in doing so the streetscape will be improved.

The Authority will review all applications with respect to the proper sitting of new buildings to allow enough space for light and ventilation with respect to adjacent buildings. The Planning Authority may stipulate additional requirements in the sitting of a new building in response to the specific conditions

of a given site.

The maximum height of any new building may not exceed the maximum height of the adjacent buildings to either side, and, in any case, may not exceed three storeys.

Article 8 - TRAFFIC, PARKING AND PEDESTRIAN CIRCULATION PROVISIONS

8.1 - GENERAL

The Regulations applicable to the Planning Area are outlined on the Traffic and Parking Map (P.4) and cover motorised vehicular traffic, parking and pedestrian circulation. These are only general provisions. The Planning Authority, in consultation with the Traffic Police and other relevant public bodies, may issue periodic circulars detailing specific regulations for private and public transport, parking and access, as well as other measures that may be deemed necessary. Map P.4 will be amended periodically in accordance with such provisions.

8.2- MOTORISED TRAFFIC

Only those streets indicated on Map P. 4 as vehicular routes may be used for motorised traffic. Both two-way and one-way streets are identified as well as those open to motorised traffic for deliveries and residents' access only. All other streets within the Planning Area are closed to vehicular traffic.

The maximum weight of any vehicle permitted to enter access-only roads to make deliveries will be two tonnes. Signs will be located at the relevant road junctions indicating this restriction.

To reduce the speed of motorised traffic and encourage safe driving in the Planning Area, the Authority, in co-ordination with the Traffic Police, may institute traffic-calming devices such as lights, signs, speed bumps and other controls at selected locations. These are shown in Map P.4 and may be instituted further as found necessary.

Bollards and other movable barriers may be positioned by the Authority to impede motorised access to pedestrian areas.

Traffic signs and other public notices should be compatible in form, design, and scale with the historical environment.

8.3 – CAR PARKING FOR RESIDENTS AND GARAGES

The parking of motorcars, taxis and buses is only allowed in public parking areas specifically designated for such purposes on Map P. 4.
Private parking by residents may be allowed in areas specifically designated for this purpose by the Planning Authority. The creation of private underground parking areas is not allowed except in cases where these areas have been expressly designated by the Plan. In order to increase the availability of private parking, 35 percent of the spaces available in underground public parking areas shall be reserved for residents. The modalities of acquisition and use of such spaces by residents shall be defined upon preparation and approval of detailed construction plans.

The construction of free-standing private garages in the Planning Area shall not be permitted, nor is the creation of access ramps on public streets and the opening of vehicular passages in existing buildings. In cases of new construction, the realisation of private garages is allowed at ground floor level, but only in areas where motorised access is permitted and where the technical conditions for vehicular passage are conducive.

8.4 - AREAS RESERVED FOR PEDESTRIAN CIRCULATION

Map P. 4 shows the streets designated for pedestrian circulation only. These streets will be re-paved with quality pavements and may be earmarked for special streetscape improvement schemes by the Planning Authority in keeping with the provisions contained in Article 9 of these Regulations.

Article 9– INFRASTRUCTURE, LAND PREPARATION AND ENVIRONMENTAL IMPOVEMENTS

9.1-LAND PREPARATIONS

Land preparations are conducted according to the program given by the Plan.

In the area covered by the Plan construction takes place only on prepared building land.
Prepared building land means equipped land with all installations and finished soil work.

Investors of the objects who behave according to the rules of the Plan are free of paying for the land preparation phase.

The allotment plan of building estate with pre-defined functional arrangement and lot proportions should be respected, as well as the building line up and height indicators.

9.2- INFRASTRUCTURE IMPROVEMENTS

The measures applicable to the Planning Area are outlined in the Infrastructure Improvement Map (P. 5) and cover sewage, and the supply of water and electricity. If deemed necessary, the Planning Authority, in consultation with relevant authorities and agencies, may issue specific instructions regarding the technical specification and implementation modalities of the planned improvements. Map P. 5 will be modified and amended periodically in accordance with such provisions.

- INSTALLATION OF CITY INFRASTRUCTURE AND EXCAVATION WORK

All city infrastructure, including cables, water pipes and sewers shall be installed underground. All excavation work related to the provision and repair of infrastructure shall be implemented with the approval and under the supervision of the Planning Authority. The Authority may require that excavations be carried out manually in cases where there is concern regarding the structural and physical integrity of the buildings in the historic area and the damage that could result from mechanised excavations.

- NEW PIPE WORK

Where new pipes are laid, flexible joints between connections shall be used, particularly where they enter the buildings and penetrate existing walls.

- CABLES AND STREET LIGHTING

Cables and wires must be installed underground. In cases where these are exposed, they should be mounted on the walls of buildings or hung between buildings in an organised, safe and sympathetic manner, with special regard to minimising their visual impact on the surrounding historical environment. All light fixtures and fittings, including free-standing lampposts, must have the prior approval of the Planning Authority.

Any special lighting to be installed on monuments, historic buildings, significant streetscapes and notable environmental features should be planned and carried out as part of a co-ordinated lighting initiative under the technical supervision of relevant advisors designated by the Planning Authority.

- STREET PAVING

All pavements, curbs, steps and related joints and construction details must be approved by the Planning Authority. Street surfaces, materials and construction shall be in keeping with the existing traditional paving found within the Planning Area. The use of local stone and river cobbles, *kaldrma*, is required in all cases except where otherwise specified by the Authority.

Any damage resulting from the excavation or removal of existing street paving while installing public utilities or infrastructure will be repaired as new by the individual or agency responsible for the works.

9.3 - RUBBISH DISPOSAL

All rubbish shall be disposed of in special containers or left for collection in designated places and at designated times indicated by the relevant municipal services. Businesses and residents are required to take rubbish to collection points in an effort to maintain a high standard of cleanliness in the Old Town.

All streets and riverbanks must be kept clean and clear of rubbish at all times. Any person found dumping rubbish informally in any public space, in particular along the rivers, shall be prosecuted in the manner prescribed by the Authority and in accordance with the civil law of the country and other relevant local and municipal legislation.

9.4 - HISTORIC STREETSCAPE ELEMENTS

All notable historic streetscape elements and furniture, whether in public or private ownership, are protected by the Plan. A list of these elements, including fountains, archaeological remains, tombs, gates, decorative stonework and ironwork, street lamps, benches, etc. will be prepared by the Planning Authority. Changes to protected streetscape features will not be allowed except to preserve or restore the original design. All such preservation or restoration works shall be carried out under the supervision of the Planning Authority.

9.5- NEW STREET FURNITURE

Any new street furniture shall be designed and installed in keeping with the existing historical and architectural character of the Old Town. These must be approved by the Planning Authority.

9.6 – SHOP FRONTS, SIGNS AND ADVERTISEMENTS

Historical signs and commercial shop fronts are protected by the Plan. A list of protected signs and shop fronts will be prepared by the Planning Authority. Future changes to protected signs and shop fronts will not be allowed except to preserve and/or restore original designs, and shall be carried out under the supervision of the Planning Authority.

New shop fronts should be in harmony with the historical environment and the building facades of which they are part. A design showing the proposed shop front in relation to its immediate context must be presented to the Planning Authority for review. Authorisation may be granted following the

same procedures as for building applications outlined in Part II of these Regulations.

In general, shop fronts, fascia boards and signs should be appropriate to the design and scale of the building and should be contained within the dimensions of the shop itself. Shop signs should not exceed the ground floor level nor project beyond the building line, except in the case of canopies, roof overhangs and small traditional signs which may project up to a maximum of one metre. Exterior frames should follow traditional designs and be made of natural wood or painted metal. Fittings made of plastic and unpainted steel and aluminium are not allowed.
Signboards and signs should be compatible in form, design and scale with the historical environment. The use of large projecting signs, free-standing signboards, fluorescent signs and boards made of plastic materials will not be permitted.
In lighting shop fronts and shop signs, building/shop owners must use direct, warm lighting and avoid harsh flood and florescent lighting. All lighting types and fixtures are subject to approval by the Planning Authority. The development of new shop lighting technologies may necessitate periodic revision of this regulation.

9.7-INTERIOR DESIGN

Interior design and equipment of the space can be done in contemporary way and with more freedom depending on its use, but it still has to respect basic ambient rules and has to keep all existing elements like timber constructions, window niche.
Contemporary technical equipment can be introduced to the interior but in a way that would keep the ambient spirit.

9.8 - FENCING AND BOUNDARY WALLS

Existing fences and boundary walls built according to traditional designs and construction methods should be preserved, repaired and maintained. Their demolition and substitution with new fences shall not be permitted.

The design and construction of new fences and garden walls will be subject to the approval of the Planning Authority and shall be in keeping with the local building tradition. Only durable, traditional materials may be used for their construction. New fences made of reinforced concrete, brickwork, metal, barbed wire or corrugated iron sheeting are not permitted.

9.9 - PROTECTION OF THE RADOBOLJA RIVER AND CANAL SYSTEM

The existing water channels and the connected system of dams, locks, chambers and water mills around the Radobolja River shall be protected and restored as a unique example of pre-industrial

engineering.

9.10 - TREATMENT OF PRIVATE GREEN SPACES AND OPEN AREAS

Private open and green spaces make a significant contribution to the urban environment, and are protected as such. These include interior courtyards, gardens, significant trees, orchards, passageways, paved areas, etc., all of which should be considered an integral part of their relative building units. In such cases, building applications should make adequate provisions for their preservation and rehabilitation, including the care of vegetation and the reinstatement of original paving materials, boundary walls and other significant interior features.

9.11 - TECHNICAL INSTALLATIONS

Within the Planning Area, the installation of air-conditioning units, ventilation and heating devices, television antennae and parabolic dishes should be disguised in order to minimise the visual impact of such installations upon the historical environment.

Article 10 – PLANNING BRIEFS FOR PRIORITY BUILDINGS AND AREAS SUBJECT TO DETAILED PLANNING

10.1– GENERAL

The buildings and zones detailed in the Descriptive Briefs in article 10 identified in Map P. 1, Boundary Plan and Detailed Planning Zones. Prior to implementation, the exact boundaries of each intervention as well as other planning requirements indicated in the following Descriptive Briefs may be revised to allow for adjustments and variations resulting from the completion of detailed designs for the buildings or zones in question. The general scope, objectives and technical requirements of each intervention shall however remain unchanged.

The documentation accompanying applications for intervention on any of the Priority Buildings presented in Article 10 shall contain the following elements:

- archival and historical documentation showing the original configuration and past uses of the building in question;
- a detailed architectural survey of the structure and its immediate context, documenting the building’s level of integrity, including structural and building conditions as found;
- the proposed functional programme with a detailed schedule of uses in keeping with the assumptions for re-use contained in the Descriptive Brief. In cases where the re-use plan is different from the one indicated in the Descriptive Brief, the application should demonstrate that the proposed uses are compatible with the building in question and that the proposed change of use will not damage its historical or architectural integrity;

- a justification of the form of intervention to be applied with a clear indication of the building elements to be maintained and the proposed alterations to be carried out, particularly in cases where a change of use is envisaged, indicating how the proposed alterations will be reconciled with the preservation of the original fabric;
- the intervention proposal, including architectural drawings, a description of the conservation and repair techniques to be employed, schedules of materials and equipment, as well as detailed plans for parking, installation of utilities, landscaping and treatment of any exterior spaces pertaining to the building in question;
- a cost assessment, financing plan and proposed phasing and time frame for implementation of the construction work.

The documentation accompanying applications for intervention on any of the Detailed Planning Zones presented in Article 51 shall contain drawings, written materials, and any other information necessary to clarify in detail the following elements:

- vehicular and pedestrian circulation and parking facilities. Plans must show how the proposed intervention will be integrated within the existing context and in line with the requirements contained in the Descriptive Brief for the zone in question;
- infrastructure, including water, sewage, electricity and public lighting. Plans must show the technical measures proposed to repair, improve or replace the existing networks;
- any proposed re-organisation of land use for the intervention zone. Plans must include a detailed functional programme for all proposed new construction. In case of public facilities, educational buildings, commercial structures or hotels, the documentation shall demonstrate that the plans comply with national space standards and other official requirements;
- the architectural character and decorative elements, building heights and alignments, construction coefficients, building materials, schedules, and other technical data regarding the proposed new construction and rehabilitation works, showing how the intervention will be integrated within the existing fabric in line with these Regulations and the requirements contained in the Descriptive Brief for the zone in question;
- street furniture and lighting fixtures as well as technical specifications and any other element necessary to understand the proposed landscape treatments and open space improvements. Plans must show how the intervention will be integrated within the existing fabric and environmental features, in line with these Regulations and the requirements contained in the Descriptive Brief for the zone in question;
- cost assessment, financing plan, and the phasing and implementation schedule proposed for the construction work.

ARTICLE 10.2– DESCRIPTIVE BRIEFS FOR PRIORITY BUILDINGS

10.2.1 CEJVAN BEG HAMAM (S-1)

Historical background and significance

The *hamam*, or bath, is a late sixteenth century Ottoman structure established by Cejvan Beg, a local steward who founded several charitable foundations in Mostar and nearby Blagaj. The exact date of construction is not known, but according to *waqf* records it must have been built after 1554.

The Cejvan Beg Hamam lost its dressing hall section, located at the southern flank, at an unknown date. The *frigidarium* section was still intact in 1881, but later was lost. The stone-vaulted roof of the *tepidarium* was also destroyed at an unknown date. Once it had lost its function as a bath, the building came to be used as a warehouse. It was severely damaged before, during, and after the hostilities of 1992 - 1994. The bath now belongs to the Islamic Community of Mostar.

Since 1994, no efforts towards its stabilisation or repair have been made, despite the fact that it is one of the oldest Ottoman structures in the Old Town. Today, the Cejvan Beg Hamam is in a very poor state of preservation and urgent intervention is required.

Assumptions for re-use

The Cejvan Beg Hamam should remain in public use. The possibility of restoring the building to its former use for residents and visitors should be explored. Alternatively it could serve as an exhibition space and interpretative centre.

Proposed intervention

The building should be restored and partially reconstructed. The extent and modalities of the proposed intervention will be determined during the detailed planning phase.

10.2.2 KAPETANOVICA HOUSING COMPLEX (S-2)

Historical background and present condition

This complex was built in the middle of the sixteenth century as part of the city's fortifications, of which the city's western gate was also a piece. The establishment of the housing complex was related closely to the Vucjakovic family, who for more than a century were the captains of the regional gendarmerie. The complex and the street alongside it take their name, Kapetanovina (Captain's place), from the hereditary title.

Over time, the buildings changed hands as well as physical appearance, although a large portion of the western city wall is preserved. Today, the complex is divided into three two-storey houses and a large garden along an internal street. Although the present configuration of the complex has remained unchanged for the last twenty years, there is increasing evidence of disrepair calling for urgent intervention.

Assumptions for re-use

This complex could serve as housing or, given its large garden, be adapted for use as an educational or social facility (e.g. pre-school, library, centre for the elderly).

Proposed intervention

The complex should be rehabilitated. The extent and modalities of the proposed intervention will be determined during the detailed planning phase.

10.2.3 THE SERBIAN PRIMARY SCHOOL (S-3)

Historical background and significance

The Serbian Primary School was constructed in 1909 by architect Dorde Knezic in the then fashionable Art Nouveau style; its wood and stone decoration reflect the period's characteristic floral motifs. The building has two floors and a basement; the main entrance faces Marsal Tito Street. The School is a load-bearing masonry and brick structure.

The structure was built as a primary school for the Serbian Community in 1909 and sold to the Municipality in 1938. In 1980, when a new school was opened in Mazoljice, the function of this building changed. At that time, the Soko Engineering Company restored the building as its administrative headquarters. It was partially destroyed during the hostilities in 1992.

Located along a main commercial and pedestrian axis, this building originally served the special educational needs of the Serbian Orthodox community and contributed to the diverse social infrastructure for which the city was renown. When this function was eclipsed in the late Socialist period, the building found a new use in the commercial sector due to its favourable location and amenable floor plan.

Assumptions for re-use

The building should retain its educational function, which addresses a chronic shortage of teaching and training facilities in the eastern part of the city. The courtyard would provide an ideal space for open-air performances.

Proposed intervention

The damaged roof and floor need to be reconstructed according to the documentation of the previous survey. Damaged or lost elements like the staircase and ornaments must be reconstructed according to data obtained from surviving pieces and historical documents. The missing windows and doors must be replaced. The exact extent and modalities of the proposed intervention will be determined during the detailed planning phase.

10.2.4 THE ALAJBEGOVIC HOUSE (S-4)

Historical background and significance

Built in the seventeenth century, the Alajbegovic House is an elegant, traditional two-level timber and masonry building. The surviving portion of the house is the *selamluk*, the men's quarters in an Ottoman house, once connected with adjacent houses that stretched the length of the street. It has an L-shaped plan, and is entered, not from the main commercial artery of M. Tito, but by way of a large wooden portal (*kapija*) on the smaller Alajbegovic Street. The door opens onto an outer courtyard, paved in patterns of river stone and shaded by an arbour.

The Alajbegovic House is a precious and extremely rare example of a traditional Ottoman dwelling with shops on the ground floor and residential space above.

Assumptions for re-use

As originally designed, the building should retain its commercial activities at the street level with residential space above.

Proposed intervention

Practically no protective roof exists over the house and this has to be entirely reconstructed. Slate must be used to cover the roof. Chimneys need to be repaired or reconstructed according to evidence provided by old photographs. All timber elements should be inspected carefully and the damaged ones replaced. The deteriorated timber must be changed or grafted with new pieces. The damaged parts of the floor have to be removed and new timber beams and planks of the same type and size should be used for the restoration. The ceilings can be restored following the available documentation and by looking at samples from similar houses in Mostar. All window frames need to be repaired and painted. The lost ones will be replaced with identical windows. The plaster on the façade is cracked and will need to be renovated, and the original finishes reinstated. The shop fronts need extensive renovation. The exact modalities of intervention will be determined during the detailed planning phase.

10.2.5 THE WAKUF PALACE (S-5)

Historical background and significance

The Wakuf Palace was built in 1894 by the Mehmed Karadjozbeg Waqf on the site of a former caravanserai associated with the sixteenth century complex of the Karadjozbeg Mosque. The first floor was rented to support maintenance and the activities of the mosque. The palace also housed a library and an Islamic cultural centre. During the political reforms of the early twentieth century, all *Waqf* property became the property of the Islamic Community. The building was nationalised after World War II, and served, among other things, as the headquarters of the Urban Planning Institute of Mostar, from the 1960s until its destruction in 1992.

This distinctive building, with his Renaissance massing and Islamic decoration, is an important example of the Bosnian Orientalist style which flourished during the Austro-Hungarian period. Mostar's Gymnasium and Sarajevo's National Library are other examples of this style.

Assumptions for re-use

This three-storey building is earmarked to serve as an exhibit space and café on the ground floor, and office space above.

Proposed intervention

The building should be restored and partially reconstructed. The condition of the floors and walls should be carefully examined to determine the best means of consolidating the structure. The quality of workmanship required for the reconstruction of this building will be very high. The original architectural features and decoration will need to be replicated, particularly on the east and north façades, which are the most outstanding as well as the most damaged, in 1993. The exact modalities of intervention will be determined during the detailed planning phase.

10.2.6 KARADJOZBEG MOSQUE (S-6)

Historical background and significance

The Karadjozbeg Mosque complex was built in 1557 within the immediate vicinity of the bazaar and near the main road. The complex includes a mosque, *madrasa*, *mekteb*, *han* and *imaret*. The mosque is of the simple domed type, with a porch under three small cupolas, a second porch and a minaret. It takes its name from Karadjozbeg, brother of the Grand Vizier Rustem-Pasa, who built it as a memorial and religious foundation. It is attributed to the famous Ottoman architect Mimar Sinan. Athough damaged during the hostilities of 1992-1994, the mosque has been in use continuously since its construction. The mosque is one of the best preserved Ottoman buildings in Mostar and together with its ancillary structures -- cemetery, garden and open yards -- merits restoration of the highest standard.

Assumptions for re-use

The building and surrounding complex will continue to be used for religious purposes.

Proposed intervention

The mosque and surrounding complex should be restored and the damaged elements carefully re-integrated. The exact modalities of intervention to be determined during the detailed planning phase.

10.2.6 THE MUNICIPAL BUILDING (S-7)

Historical background and significance

The Municipal Building, with its monumental mass and rusticated ground floor, is Mostar's outstanding example of Neo-Classical architecture. Josip Vancas, the famous turn-of-the-century architect from Sarajevo, designed this building as well as the Landbank. Construction began in 1898 and was finished around 1900. Initially used as the military headquarters, the Municipal Building later housed shops, a restaurant, a cinema (in the northeast part of the ground floor from 1936 to 1957), a school for teachers, and a primary school. After World War II, the first floor spaces were transformed into the Na-Ma Department Store, for several decades the largest shopping centre in the area. In the 1970s, the northern portion of the upper floors was transformed into a series of halls for the Mostar City Council, while at the northwest corner of the building a new staircase was added. At this same time, the open courtyard was enclosed from the west with a single-storey insertion serving as a reception area for visitors. The building was severely damaged during the 1992-94 war.

Assumptions for re-use

The building should continue to function as an administration and office building for the municipality.

Proposed intervention

The building was severely damaged; some of its walls are missing, as are most of the floors and the entire roof. The building's present structural condition will need to be ascertained before initiating any consolidation work. The intact portions of the floor may possibly be kept, if approved by the structural engineer. Unstable portions that are at risk of collapse should be documented and carefully removed. The missing parts of the outer wall should be carefully reconstructed, using similar construction techniques and by establishing strong bonding with the existing masonry and the new floors. The façades were richly decorated and original pieces should be carefully preserved; broken or loose pieces can be removed and re-used. Missing stone blocks should be replaced with new blocks dressed in the same manner. Cracks should be stitched or the blocks replaced. Repairs and partial re-integration of the stone can be carried out for blocks with only superficial losses. The original colour scheme should be preserved. Finely carved details should be carefully repaired. Replicas of missing pieces can be made. During restoration of the roof, old drawings may help in rebuilding the missing finials. The modern addition to the building on the western side and the tall chimney should be removed. The exact modalities of intervention will be determined during the detailed planning phase.

10.2.8 THE LAND BANK BUILDING (S-7)

Historical background and significance

Architect Josip Vancas designed the Land Bank in 1910. It functioned as a bank until the 1980s when the building was converted into the headquarters of the local Communist party. At this time, some additions were made to the northern section of the building, near the courtyard, and garages were

constructed in the courtyard itself. The Land Bank building was damaged at the beginning of 1992, but it should be possible to restore most of the building's architectural features to their original appearance. The Land Bank's design and decoration were influenced by the Secessionist movement, Austria's variation of the Art Nouveau style, which may be seen in the intertwined organic forms crowning the windows and cornices. The striking entrance, also inspired by Secessionist motifs, makes the Landbank one of Mostar's most distinctive buildings.

Assumptions for re-use

The building would return to its original use as a private bank and credit institution.

Proposed intervention

There is ample evidence of the substantial damage to the building during the recent war on the roof and inside the building. A structural engineer must assess the present condition of the floors and walls, and any unsafe elements documented and removed. The historic staircase should be restored. The floors and the roof will need to be reconstructed. The roof details should repeat the same lines, and suitable materials should be used for the finishes. The outer shell is relatively intact but will need to be stabilised. The rich Jugendstil decoration at the entrance and on the front façade must be treated very carefully. The fine details, such as the iron railing, need cleaning and protective coating. The exterior plaster and the window jambs and surrounds need minor repairs. Window frames and doors should be studied and reconstructed following the original details. The missing bas-relief decoration should be restored in order to re-establish the building's stylistic integrity. The original colour scheme of the façade should be retained and the chimneys preserved. Modern additions in the backyard should be removed. The precise modalities of intervention will be determined during the detailed planning phase.

10.2.9 THE KONAK APARTMENTS (S-8)

Historical background and significance

The Konak Apartments was constructed at the beginning of the twentieth century as an apartment building with rental units and a large shop at street level. The three shareholders, Messrs. Dokic, Bilic and Pesko, were members of the most important Serbian merchant families in Mostar from the mid-nineteenth to the mid-twentieth centuries. The apartment building was carefully sited near the main access road to the Orthodox Church, with a clear view of the Stari Most and historic Mostar. The building was designed in the Neo-classical tradition, and is one of the best examples of mixed residential and commercial architecture from the period of economic expansion that followed the establishment of Austro-Hungarian rule in Mostar. There is no other known prototype in Mostar of the enormous setback of the residential floors from the street. The building was badly damaged during shelling in the recent war.

Assumptions for re-use

The Konak Apartments, with its ample commercial space, upper floors full of sunlight, and excellent views of the Old Town is to be preserved and adapted as a small hotel for visitors to the city.

Proposed intervention

The walls, floors and the roof were damaged, and an assessment of the structural system by a structural engineer will be the first essential step. Decisions as to which measures are to be taken in stabilising and repairing the bearing walls and the vaulting system will depend on the engineers' findings. The building's general configuration, original architectural details, doors and window frames should all be preserved as much as possible. The precise modalities of intervention will be determined during the detailed planning phase.

10.2.10 THE ORTHODOX CHURCH COMPLEX (S-9)

Historical background and significance

In 1833, the Orthodox community built the Holy Virgin Mary Church, replacing an older building that had been used for religious purposes up until that time. This church was the first of a series of buildings that developed into the Orthodox Church complex over the next eighty years. The second building was a school built in 1856, again following the regional architectural style, a mixture of Pre-Ottoman, Islamic-Ottoman and Mediterranean elements. In 1873, the Holy Trinity Church, a Neo-Byzantine structure designed by Andrija Damjanov, was added. It was to be the most important structure in the complex, and, until it was blown up in 1992, the largest Orthodox Church in Bosnia and Herzegovina

Assumptions for re-use

The complex will continue to be used for religious and related purposes.

Proposed intervention

The Orthodox Church complex was largely destroyed during the war. As much as possible of the remaining pieces of the complex should be carefully restored and integrated with a careful reconstruction of the rest.

10.2.11 THE GIRLS' HIGH SCHOOL (S-10)

Historical background and significance

This structure was built in 1893 by a Bosnian philanthropist, Mujaga Komadina, and subsequently sold to the Municipality. The building has a history of use as an educational and institutional facility, having at different times housed a school for the mentally handicapped, an economics and business school, a crafts school, a government road construction and maintenance company, and various municipal offices. The gymnasium at the back of the courtyard was called the Sokol (Hawk) Sports Complex from 1918 until World War II, and was later renamed the Partisan Sports Complex. The ground floor has always been used for commercial activities. Alterations made in the 1920s were documented with a plan, elevation, and section drawn during this period. The building was burned by the Serbian Army during its occupation of the Eastern side of Mostar in May and June of 1992. The Croatian Army shelled the school during the second phase of hostilities. The Girls' High School, together with the Municipal Building, is one of the best examples of Neo-Classical architecture in Mostar. It has potential as a multi-purpose complex, given its considerable size and generous interior courtyard.

Assumptions for re-use

In 1997, UNESCO identified the Girls' High School as a priority building for future restoration and adaptive re-use. It was recommended for development as an educational and civic facility in Mostar. The building's 10,000 m^2 make it one of the largest in Mostar, and certainly the largest in Stari Grad, calling for a mixed programme of re-use. The multiple entrances at different levels would facilitate dividing the building into various areas serving different functions. Possible future uses include parking in the underground level, commercial tenants along the street frontage and the ground level of the interior courtyard, and a hotel on the upper floors. Part of the structure could also accommodate institutional and office space, as well as cultural activities. The new uses should not conflict with the original strong architectural character of the building, which in fact should be carefully preserved. In particular, the imposing facade along Marsala Tito and Kalhanska streets and the well-preserved interior, including the Great Hall and the vaulted ground floor spaces, are worthy of careful treatment.

Proposed intervention

The floors and the roof are missing. Temporary shoring has been installed in some areas to stabilise the structure. An engineer must assess the present condition of the structural system, before any decisions regarding the preservation of walls and floors can be taken. The I-beams, which are incorporated in the construction of the Prussian vaults, walls and windows, must be inspected and the sound ones preserved *in situ*. The balcony, which is at risk of collapse, must be reinforced to keep it in position. The chimneys must be preserved. No original material should be removed from the site. The window surrounds and frames and the shop windows should be restored with original details and materials. The exact modalities of intervention will be determined during the detailed planning phase.

10.2.12 KAJTAZ HOUSE (S-11)

Historical background and significance

The complex, located in the Bjeluina mahalla on the slope of the Stolac hill near the military quarter at Painovac, was built in the seventeenth century in the Balkan Ottoman domestic style that was typical of the region. Kajtaz House is the largest of the surviving residential complexes built in Mostar during the Ottoman period. Its two-level arrangement connected with three stairs, one in the kitchen, is typical of this residential tradition. The house is divided into two parts: the *selamluk* where male guests were received and the *haremluk*, the private part of the house reserved for the women and family life. Originally, the *haremluk* and *selamluk* were connected by a door (later bricked up) set in a thick wall. The larger complex, typically, is made up of a courtyard and a garden and various outbuildings, including a summer kitchen and a stable.

The *haremluk* is well preserved, but the *selamluk* has been poorly maintained by the various owners and tenants. The *haremluk* portion of the house contains excellent and well-preserved examples of traditional cabinetry; every room features a functioning *musandera* and elaborately carved ceilings.

Assumptions for re-use

The house has been in continuous family possession since its construction and will retain its original residential function. In addition, portions of the house once it has been restored, could be opened to visitors as a 'house museum' dedicated to exhibiting an outstanding example of the local domestic building tradition.

Proposed intervention

The poor condition of the *selamluk* portion of the house calls for a full restoration, while the *haremluk* requires intensive maintenance. The valuable interior decorative surfaces will need special care and attention. A more general restoration of the grounds and auxiliary buildings would return the complex to its former distinction and create a highly attractive setting for visitors interested in Bosnia's domestic architecture.

10.2.13 THE METROPOLITAN'S PALACE (S-12)

Historical background and significance

The Metropolitan's Palace was built in 1903 atop one of the highest points of Mostar's east bank for the Serbian Orthodox Bishop. Rich, elegant and monumental, this palace is a landmark in every sense. More important still, the palace is a symbol of the city's religious pluralism.

Assumptions for re-use

The palace will continue to be used for religious and related purposes by the Serb Orthodox community.

Proposed intervention

The Metropolitan's Palace will have to be examined carefully by a structural engineer, before planning its restoration. The roof and all the floors are missing, but significant portions of the walls are still standing. Skilled artisans will be needed to repair the masonry and recreate the decorative elements where missing or damaged. Careful treatment is also called for in restoring the richly decorated façades, the stair and the balustrade, the bas-reliefs and the coat-of-arms. The missing obelisk at the top should be replaced. The precise modalities of intervention will be determined during the detailed planning phase.

10.3– DESCRIPTIVE BRIEFS FOR THE DETAILED PLANNING ZONES

10.3.1 STARI MOST/THE OLD BRIDGE AND TOWERS (Z-1)

Objective

The aim is to reconstruct the bridge with the same materials and technology as were used in building the original bridge in the sixteenth century. In addition, the Plan foresees the full restoration of the bridge's towers, the Sultan Selim Mesjid and the other buildings in the Old Bridge complex, in keeping with traditional technology and materials.

Technical requirements and implementation modalities

In carrying out this programme, the Municipality will follow the technical standards of the UNESCO International Committee of Experts and the implementation modalities of the World Bank.

10.3.2HISTORIC NEIGHBOURHOOD – EAST (Z-2)

Objectives

The main objectives in this section are to rehabilitate the existing structures, improve the urban environment and infrastructure, and redress inappropriate new construction.

Technical requirements and implementation modalities

Technical requirements and implementation modalities will be in keeping with the detailed plans presented in *Rehabilitation of the Historic Neighbourhoods* prepared by AKTC/WMF in September 2000.

10.3.3 HISTORIC NEIGHBOURHOOD – WEST (Z-3)

Objectives

The main objective is the revitalisation of the neighbourhood. This aim is to be reached through the rehabilitation of existing structures and the reconstruction of missing or ruined buildings that constitute a significant gap in the fabric of the area. In addition, the Plan calls for improvements to the urban environment and infrastructure. Finally, inappropriate new construction should be rectified.

Technical requirements and implementation modalities

Technical requirements and implementation modalities will be in keeping with the detailed plans presented in *Rehabilitation of the Historic Neighbourhoods*, prepared by AKTC/WMF in September 2000.

10.3.4 STARI PAZAR (Z-4)

Objectives

The objectives are to rehabilitate the buildings along the road connecting South Boulevard with Gojka Vukovica Street, introduce commercial facilities to serve both residents and visitors to the area, and generally improve public open areas.

Design pre-conditions

The reconstruction of the Luka Bridge has been planned to take place during 2001 and 2002. It is important that this project be considered part of the general reconstruction programme, both during the design and the implementation phases, given the bridge's importance for the east-west connection.

Technical requirements

The Planning Authority must approve all designs according to the following requirements:

- in rehabilitating existing buildings, an effort should be made to use similar architectural treatments and materials, such as hip roofs and tile roofing. Conflicting uses should be changed, or, failing this, an effort should be made to resolve resulting inappropriate conditions through physical interventions.
- the Plan calls for the construction of a series of row buildings (attached mixed commercial/residential properties) along the southern side of the road connection. These buildings

would be 3 1/2 storeys high -- basement plus ground floor plus two upper floors -- with underground garages.

- a bus stop should be located on the southern side of the road connection.
- the disposition of new buildings should respect property lines building alignments along Stari Pazar.
- the construction co-efficient shall be: (total constructed m^2/plot area) = 2.5 (1250/500).

Implementation modalities

A public/private partnership should be formed between the Municipality and private entities for the implementation of construction works. The Municipality, in consultation with the Planning Authority, will be responsible for the improvements of the public spaces comprised within this area and the costs involved will be recovered through public revenue and from taxes imposed on new development.

10.3.5 SOUTH BOULEVARD (Z-5)

Objectives

The general objective is to enhance the urban character of the area and strengthen the local economy. More particularly, the Plan calls for improvements to pedestrian circulation in the area and mitigation of the negative impact of the heavy traffic along South Boulevard. Further, the foot of Hum hill should be re-landscaped and housing conditions within existing buildings improved. Specific objectives are to:

- repair existing houses, including facades, stairs, fences, canopies, etc.
- repair sidewalks and introduce curbs and street furniture where appropriate
- re-organise informal advertising along roadside
- facilitate private commercial development along South Boulevard
- create new housing
- create commercial kiosk structures along the South Boulevard
- re-landscape the portion of Hum Hill that lies adjacent to the road
- place a new ‘protective belt’ between the Boulevard and the houses
- place a system of road signs along the road to regulate speed of vehicular traffic.

Technical requirements

The Planning Authority must approve all designs according to the following requirements:

- new sidewalk pavement should be made of concrete blocks. Placement of a line of trees and an iron balustrade are recommended between the roadbed and the sidewalk;
- ‘kiosks’ must be built according to the following guidelines: all must be of equal height (3 m) and materials to be used are wood and stone. Kiosks should be designed and realised as removable

constructions. Also, all signs and advertising titles must be placed in the same position on the front of the kiosk;

- re-landscaping plans call for native and Mediterranean plants, such as fig trees, vines and pomegranate trees, as well as different kinds of stone found in the Mostar area;
- the 'protective belt' should be made of traditional materials, such as stone masonry or green fences, and it should maintain the same height (approximately 2.5 m). Along this 'protective belt' it will be possible to place advertising panels. These panels should be placed above a height of 2,10 m, and follow a standard size (200 cm x 50 cm). These can be used as a source of revenue or to convey public messages, including traffic related information.

Implementation modalities

The Municipality, in consultation with the Planning Authority, will be responsible for the improvements of the public spaces comprised within this area (landscaping, placement of a system of signs along the road, improvement of the road drainage system, sidewalk improvements, etc.). The costs involved will be recovered through public revenue and from taxes imposed on new development. All works related to private residential plots will be implemented by private owners/developers under the control and supervision of the Planning Authority. The proposed housing development will follow the designs and standards approved by the Planning Authority.

10.3.6 RUZA (Z-6)

Objectives

Overall the aim is to develop tourism through improvements to facilities and vehicular and pedestrian access. Specific objectives include:

- the reconstruction of the Ruza Hotel. This is to be followed by a second phase with the construction of a covered swimming pool and retail shops along the street frontages, in the location of the former printing house.
- improvement of circulation and the introduction of a one-way route following Onescukova and H. Repca streets, The infrastructure of these streets is to be upgraded, and a pedestrian pathway created along the Radobolja river channel.
- extension of parking facilities with the construction of a semi-open parking garage.

Design pre-conditions

The builder of the hotel and its grounds will be required to follow the original design developed by the Sarajevo architect Zlatko Ugljen, All further architectural work is to be reviewed and approved by the Planning Authority.

Technical requirements

The Planning Authority must approve all designs according to the following requirements:

- in restoring and reconstructing the Hotel Ruza the addition of one floor will be permitted;
- during the second phase, the construction of additional hotel facilities is foreseen, including a covered pool, retail shops and a parking garage in the basement level. The permitted maximum building height is five storeys, including a basement, a ground floor and three upper floors. The construction co-efficient (total constructed m^2/plot area m^2) is 2.5 (8300m^2/3430 m^2);
- the capacity of the planned parking garage is 140 cars on two levels: an open lot at street level and a covered underground level. Access is from the north;
- the surrounding streets are to be covered in asphalt, sidewalks to be of regular cut stone. Area street furniture and similar exterior elements of the hotel complex (street lighting, etc.) should be complementary.

Implementation modalities

The Municipality, in consultation with the Planning Authority, will be responsible for the improvements of the public spaces comprised within this area and the costs involved will be recovered through public revenue and from taxes imposed on new development. All works related to the hotel development will be implemented by private owners/developers under the supervision of the Planning Authority.

10.3.7 BASCINE STREET (Z-7)

Objectives

The main objectives are to enhance the urban character of the street, re-open the water channels and protect the existing gardens and the traces of the former city walls. Gaps in the fabric to be 'infilled' in order to maintain the traditional character of the street and the surrounding neighbourhood.

Technical requirements

The Planning Authority must approve all designs according to the following requirements:

- when 'infilling' new buildings between the existing buildings along the western side of the street, private owners and developers must respect the traditional architectural character and maintain the established setbacks, street alignments and existing building heights up to a maximum of two floors;
- along the eastern side of the street, the Plan calls for construction of a boundary wall along the gardens fronted by a row of kiosks. The boundary wall should be built with local stone;

- the size of a kiosk will depend on the length of the individual garden frontages, but should not exceed one third of the length of the frontage. The height of any kiosk is limited to a single storey with a traditional roof covered in slate;
- city walls need to be partially reconstructed where missing, while existing portions need to be restored.
- the street should be paved with cobblestones and the location of the former bazaar gate identified with paving stones of a different colour;
- the open channel along the street should be restored, with light connecting bridges introduced to provide access to the buildings.

Implementation modalities

The Municipality, in consultation with the Planning Authority, will be responsible for the improvements of the public spaces comprised within this area and the costs involved will be recovered through public revenue and from taxes imposed on new development. All private works will be implemented by owners/developers under the supervision of the Planning Authority and in compliance with these Regulations.

10.3.8 CERNICA RIVERBANK (Z-8)

Objectives

The broad aim in this area is to open, improve and enhance the Cernica riverbank for the benefit of residents and visitors.

Technical requirements

The Planning Authority must approve all designs according to the following requirements:

- the approach to the river from the Cernica neighbourhood needs to be improved, including the paving of paths and the placement of signs indicating the direction of the beach. Pedestrian paths along the riverbank should be landscaped and a few entry points to the river beach should be created. Only natural materials such as stone and wood will be allowed for paving and landscaping;
- vegetation should not obscure views of the river with the planting of more fig, pomegranate and locust trees and ivy groundcover along the right side of the riverbank pathway. The riverbank itself is suitable for the planting of willow trees. The Radobolja waterfall should also be visible. Overgrown vegetation should be cut back and plants periodically trimmed;
- special attention is to be given to the point where the pedestrian path widens and leads into the river beach. This point will require special landscaping and appropriate furniture (benches, the

construction of steps into the river, a landing area for kayaks, etc.). The existing concrete platform should be paved with local flagstones;

- the water basin beneath the Radobolja waterfall lends itself well for swimming, but filters should be installed to make sure the water remains clean at all times. If deemed appropriate, some of the larger rocks could be adapted to provide sunbathing areas.

Implementation modalities

The Municipality, in consultation with the Planning Authority, will be responsible for the improvements of the public spaces comprised within this area and the costs involved will be recovered through public revenue and from taxes imposed on new development.

10.3.9 BUNUR AREA (Z-9)

Objectives

The aim of the Plan in this area is to enhance the urban character of the bridge access and complete the pedestrian link into the city centre. The Plan also seeks to relieve the shortage of parking and create additional office space in the central area.

Technical requirements

The Planning Authority must approve all designs according to the following requirements:

- access to the bridge will be enhanced with shops, restaurants and cafés on both sides of the pedestrian street at ground level. The upper floors of the buildings along the north side of the pedestrian street will be residential, while those on the opposite side will contain office space;
- the construction of a new three-storey underground garage is planned, incorporating the site's existing four-metre slope. The parking facility will be entered from A. Buca Street with a total capacity of 283 cars distributed as follows: the first level is at +58.00, with an area of 1,975 m^2 and capacity for 65 cars; the second level is at +56.00, with an area of 2,774 m^2 and capacity for 96 cars.; the third level is at +54.00, with an area of 3,538 m^2 and capacity for 122 cars;
- the Plan foresees the private development of new commercial and office space.

Implementation modalities

The Municipality, in consultation with the Planning Authority, will be responsible for the improvements of the public spaces comprised within this area. The costs involved will be recovered through public revenue and from taxes imposed on new development. The proposed residential, office and commercial development will be implemented by private owners/developers and follow the designs and standards approved by the Planning Authority.

10.3.10 BISCEVICA NEIGHBOURHOOD (Z-10)

Objectives

The larger objective in this neighbourhood is the protection and re-establishment of the traditional elements and character of the *mahalla* and the landscaping of the Neretva River's banks below the Biscevica zone. In particular, the Biscevica river plate and upper riverbank should become an extension of public pedestrian system of walkways from Koski Mehmed Mosque to the Bunur Bridge. The walkways should be equipped with street furniture (benches, wooden platforms, etc.), and all walkways and streets throughout the neighbourhood are to be resurfaced. Access to the neighbourhood should be clearly indicated and the approach to the beach widened. The Plan also calls for increased parking in the area, particularly new resident parking on the upper riverbank, and for improvements in the quality of public open spaces and the urban infrastructure.

Technical requirements

The Planning Authority must approve all designs according to the following requirements:

- the entrance to the neighbourhood is to be indicated with the placement of two low stone parapet walls on either side of the street. Public signs are to be positioned to indicate the direction of the beach and location of other public amenities. Signs shall conform to the design and standards approved by the Planning Authority throughout the Planning Area;
- all private development must conform to the guidelines and construction specifications regarding heights, scale, proportions, roofs and eaves, paving, boundary walls, openings (windows and gates), façade treatment and colours contained in these Regulations and developed for Mostar's neighbourhood areas in *Rehabilitation of the Historic Neighbourhoods* (AKTC/WMF, September 2000);
- courtyard walls must be finished in stone or plastered in lime and painted white. Green, overhanging these walls, should be limited to Mostar’s native species such as fig trees, vines, apple trees, and pomegranate trees;
- the riverbank is to be open to the public. A pedestrian path will follow the river and connect the river plate and the upper riverbank. Vegetation should not obscure views of the river with the planting of more fig, pomegranate, locust trees and ivy groundcover along the riverbank pathway. The riverbank itself is suitable for the planting of willow trees. Only natural materials such as stone and wood will be allowed for paving and landscaping. The natural ground surface of the beach area should be maintained;
- up to 15 parking places are to be placed on the upper riverbank.

Implementation modalities

The Municipality, in consultation with the Planning Authority, will be responsible for the improvements of the public spaces comprised within this area. The costs involved will be recovered

through public revenue and from taxes imposed on new development. All private works will be implemented by private owners and follow the designs and standards approved by the Planning Authority.

10.3.11 MEJDAN (Z-11)

Objectives

The overall aim is to effect a re-organisation of the Mejdan area with a functional redefinition of the area's market and open spaces, improvement of the riverbank, additional resident parking and improved housing. Specific objectives are listed below:

- a redefinition of the allocation of space in the Tepa open market with clearly defined zones for the different activities and the display and selling of different types of produce (vegetables, flowers, souvenirs, cafés, places to enjoy the view);
- establishing a direct connection between the market and the adjacent square; re-paving of the market area and new design for stands and temporary market structures;
- landscaping of the public park near the Archive Building and open space improvement in the Central Square;
- archaeological investigation and interpretative signage to highlight the location the first mosque built in Mostar;
- establishing a continuous pedestrian circuit from Koski Mehmed Pasa mosque to the Bunur Bridge, with views and access to the river banks and beach;
- new underground parking and re-organisation of metered street parking during the afternoon and evening hours (after 16:00) in the area adjacent to the Market;
- a facade improvement scheme for the houses in the Austro-Hungarian block. Improvements are also to be effected in the semi-public courtyards of these structures;
- demolition of the two houses located to the north of this zone and their replacement with a new centre for water sports (see Technical requirements below).

Technical requirements

The Planning Authority must approve all designs according to the following requirements:

- stands at the Tepa market must be removable structures uniform in appearance. Only traditional materials shall be employed with the exclusion of stainless steel, aluminium and plastic. Local flagstones shall be used for the paving of the market area, while the two streets surrounding the market along the side of the river and the Madrasa building should be paved with cobble stones;
- only natural materials are to be used in furnishing and landscaping the public park next to the Archive Building;

- the steps leading to the beach are to be repaired, and a new wooden platform erected on the beach to serve as sunbathing and meeting point during the summer months. All existing, traditional beach furniture is to be repaired. Only natural materials such as stone and wood will be allowed for paving and landscaping of the path and riverbank;
- the new pedestrian path across the riverbank will be in wood with load bearing steel profiles. This same load-bearing construction can be used to mount an elevator to lift sport equipment from the beach, such as kayaks;
- the new underground parking will be entered from the Central Square with a total capacity of 65 cars. This parking facility will cover primarily the needs of the residents of this area;
- inappropriate finishes and details shall be removed from the Austro-Hungarian block; where necessary, the semi-public courtyards are to be re-paved and furnished with benches;
- buildings 25 and 21 are to be demolished and a new structure erected to house a water sports complex containing a water sports club, a youth hostel and commercial space for a restaurant and cafe.

Implementation modalities

The Municipality, in consultation with the Planning Authority, will be responsible for the improvements of the public spaces comprised within this area. The costs involved will be recovered through public revenue and from taxes imposed on new development. All private works will be implemented by private owners and follow the designs and standards approved by the Planning Authority. Special incentives may however be provided to facilitate compliance by market operators and residents in the area.

10.3.12 LABIRINT TERRACE (Z-12)

Objective

In this zone, the aim of the Plan is to redesign the *belvedere* and its elements in keeping with the architectural and natural qualities of the area.

Technical requirements

The Planning Authority must approve all designs according to the following requirements:

- the northern portion of the existing concrete platform should be demolished and two additional steel and wood platforms positioned at the lower levels, facing north;
- the new platforms shall be anchored to the existing riverbank. Columns and other structural supports shall be minimised and interfere as little as possible with the natural configuration of the site. The portion of the concrete terrace that is to remain requires the laying of a new wooden floor;

- all support elements should be screened with planting. Existing vegetation is to be carefully maintained, where appropriate, and complemented with native species. Ivy might be used as rock and ground cover as well as to form natural canopies;
- the design of the various enclosed elements (stairs, balustrades, canopies, restaurant area, etc.) should form an integrated whole, and should be in keeping with the natural and historical setting. Only natural materials shall be allowed for these structures.

Implementation modalities

The initiative is to be developed with private funds and follow the designs and standards approved by the Planning Authority. Special incentives may however be provided to facilitate compliance by the developer.

10.3.13 MALA TEPA HAN (Z-13)

Objectives

The rehabilitation of the existing fabric, the transformation of the existing open market into a covered facility, and the provision of new parking are the main objectives in this zone.

Technical requirements

All designs must be approved by the Planning Authority according to the following requirements:

- all private rehabilitation work shall respect the existing volumes and heights and must conform in the choice of materials and construction details to the requirements of these Regulations and those developed for Mostar's neighbourhood areas in *Rehabilitation of the Historic Neighbourhoods* (AKTC/WMF, September 2000);
- the proposed development shall provide a covered structure to the existing open market and create an adjacent parking lot. The new covered market shall have three entrances: the existing one on the north side, a southern entrance from plot A1-13, and an eastern entrance from building A18-20;
- the total market surface shall be 950 m^2 with an open parking area for 36 cars and vehicular access from M. Tita Street through building A18-20. The parking area may become an additional market space if needed;
- future development on building A18-20 should include a basement, a ground floor plus one upper floor. The building is to be covered with a hipped roof covered with slate stone in keeping with the architectural character of the neighbouring buildings.

Implementation modalities

The Municipality, in consultation with the Planning Authority, will be responsible for the improvements of the public spaces comprised within this area. The costs involved will be recovered

through public revenue and from taxes imposed on new development. The proposed development will be implemented by private owner/developers and follow the designs and standards approved by the Planning Authority. Special incentives may however be provided to facilitate compliance by market operators.

10.3.14 UPPER BRANKOVAC (Z-14)

Objectives

The objectives in Upper Brankovac are to improve the connection between the M-17 road and the eastern side of the city centre by slowing down and easing vehicular traffic and establishing a pedestrian link from the parking plot to M. Tita Street. Further, he Plan calls for the development of a housing complex and more visitor facilities, and for a shuttle-bus connection to the Old Bridge area.

Design pre-conditions

The site of the proposed development is located next to the site of the Orthodox Church of the Holy Trinity, destroyed in 1992. The Plan calls for the historic reconstruction of the church building according to the original plans and existing documentation. Any new designs for this area should be compatible in character and materials with the historical qualities of the monument and its surrounding spaces.

Technical requirements

The Planning Authority must approve all designs according to the following requirements:

- reconstruction and enlargement of the M-17 Road to accommodate three lanes of traffic plus access lanes as required. In addition, pedestrian sidewalks, fencing and street lighting are to be introduced;
- creation of new visitors' facilities is called for on the eastern side of the road. These facilities are to include a three-storey garage with space for 200 cars, a restaurant, shops, and public toilets. Maximum allowable height shall be 11 meters above road level. The existing retaining wall should be preserved with the insertion of new ventilation openings for the new garage space;
- construction of a condominium-type housing complex on the eastern slope containing forty apartments of 80 to 150 m^2 each plus parking, common spaces and facilities. The total umber of storeys is four, consisting of a basement, a ground floor plus two upper floors. Construction coefficient is 4.95 or 10692 m^2/2591m^2 (total construction in m^2/plot area in m^2);
- construction of a row-housing complex along the western side of the road combining apartments and shops below. The total number of storeys planned is four with a basement, ground floor and two upper floors. The construction co-efficient is 1.8 or 3888m^2/2160m^2 (total constructed m^2/plot area m^2);

- establishment of a pedestrian connection totalling 118 metres in length with staircases leading up from either side of the road to the bridge and galleries of the visitors' complex. The construction coefficient is 0.84 or 1743 m^2/2080 m^2 (total constructed m^2/plot area m^2).

Implementation modalities

A public/private partnership should be formed between the Municipality, the Cantonal government and private entities for the implementation of construction works. The Municipality, in consultation with the Planning Authority, will be responsible for the improvements of the public spaces comprised within this area and the costs involved will be recovered through public revenue and from taxes imposed on new development. The Cantonal government should be responsible for the improvement and reconstruction of the M-17 road. The proposed development will be implemented by private owner/developers and follow the designs and standards approved by the Planning Authority.

Article 11 - TRANSITORY AND CONCLUDING REMARKS

11.1 All the interventions within the confines of the Plan must be in consent with the Plan. All the economic and other activities within the confines of the Plan must accord with the appropriate definitions of the Plan.

11.2 During the implementation, the Plan can be revised and altered in order to comply with the achieved objectives of development, consequent needs and prospects of realization in the manner similar to the one used in creating this document.

11.3 No actions and activities, within the confines of the Plan, should come to pass that are contrary to the resolution of this Plan, starting with the date of passing this Ruling.

11.4 This Ruling is empowered by the eighth day from the date when this document is published in the City Official Gazette.

Council of the City Municipality Mostar-Old Town

Number: 01-02-316/01
Date: 10.05.2001

City Council President
Ljiljana Balorda – Pilavdžić s.r.

Chapter Four

IMPLEMENTATION

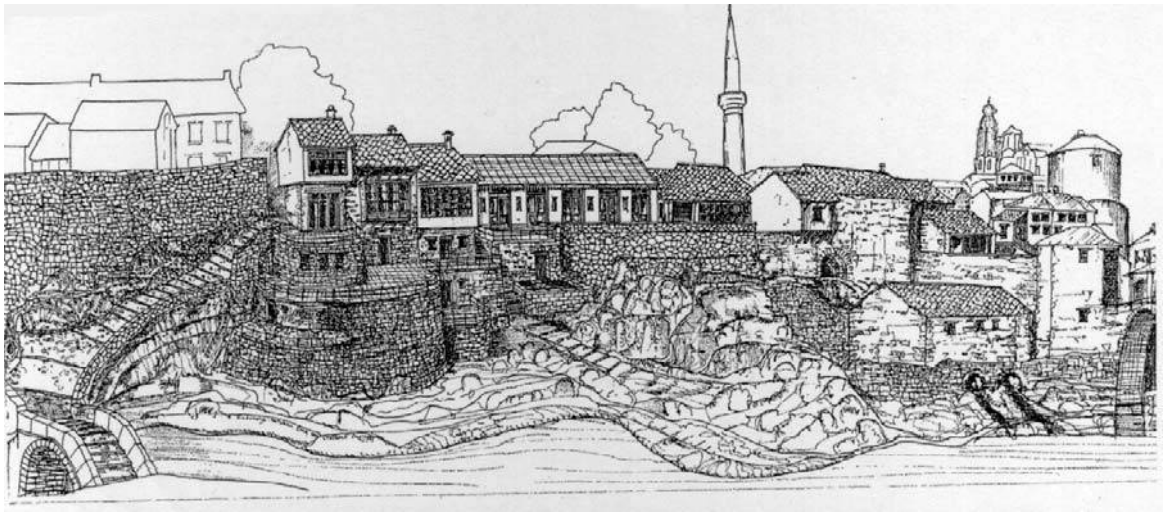
A implementation activities in the managenet plan should be planned in the annual program of the Stari Grad Agency.

Objectives for the year 2005 are:

- *Completion of the Old Bridge Museum*
- *Reconstruction and restoration of the three critical points*
- *Reconstruction and rehabilitation of the structures listed in tables below.*
- *Reconstruction and restoration of priority buildings*

The Old City Of Mostar –Nominated Property

In this area preparation phase was completed in 2004, and implementation can start immediately. The method of establisment of historic nucleus based on analysis building by building, which is resulting in a definition of intervention criteria. Than with pilot interventions initial landmarks were established as carriers of following interventions in the sub-zones.
Structures including monuments, commercial and housing complexes, and communal infrastructure were elaborated both independently and as a part of the zone.
Finance plan (Chapter Two) proposed different financial mechanisms dependent on nature of structures, level of interventions, and type of ownership.



List of needed interventions in the Old City of Mostar

ZONE	*Object*	*TYPE OF INTERVENTION*	*USE*	*VALUE*	*NOTE*
A4	97	Partial reconstruction	Cafe	Negative	Critical point
A5	5	Partial reconstruction	Shops	Neutral	Roof negative (with tiles)
A5	22,23, 24	Partial reconstruction	Restaurant, Residential	Negative	Critical point
	8	Partial reconstruction	Guest Residential	Negative	Critical point
A6	50	Total reconstruction	Restaurant, Residential	Negative	
	51	Total reconstruction	Restaurant, Residential	Negative	
	52	Total reconstruction	Restaurant, Residential	Negative	
	53	Total reconstruction	Restaurant, Residential	Negative	
A8	10,10a	Partial reconstruction	Residential	Negative	
	11	Total reconstruction	Residential		Design prepared
	17a	Total reconstruction	Residential		In construction

In the Old Bridge area several buildings along Kujundžiluk street and in Tabhana are requested urgent interventions on the roofs.

Watermill A4 100, and Tabhana A4 82-86

Buildings next to the Old Bridge A3 67-76

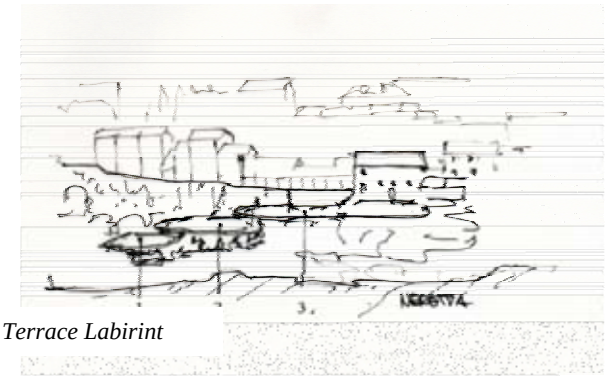
Critical points

In the Old City - nominated area, three buildings asking for radical corrections:

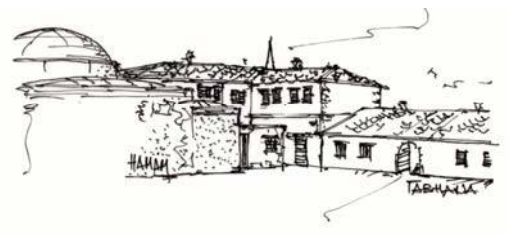
(a) Terrace «Labirint» along the Kujundžiluk Street. This structure is built in 1989, and several elements were added after 1995. In the 2001 Master plan (article10.3.13.) proposal for correction is drafted.

(b) House (A4-73) between Hamam and Tabhana. Building is partials reconstructed with addition of the attic floor in 2000. Originally on this plot was a han, which was replaced with a housing structure in 1938. It is necessary to redesign the complete structure: to eliminate attic floor, to return a volume of the structure to level before 1992, and to use stone slates for the roof covering.

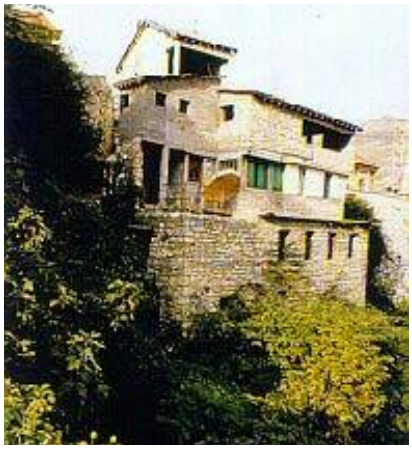
(c) Building A7-34 should be partly demolished and partly reconstructed.



Terrace Labirint



Building A4 -73



Building A7-34t

List of buildings needed interventions in the buffer zone

ZONE	*Object*	*TYPE OF INTERVENTION*	*USE*	*VALUE*	*NOTE*
A4	73	New construction	Residential	Negative	Negative, close to the hamam
A6	60a	Addition of floors	Residential, restaurant	Neutral	In construction
B5	20, 20a	In construction			
B8	25c	New construction	Residential	Negative	Critical point
B10	75	New construction	Residential, Commercial	Negative	Critical point
	87a	Addition	Residential	Neutral	In construction
B12	14	New construction	Commercial	Negative	In construction
	15a	New construction	Residential, Commercial	Negative	Critical point
	17a	Addition	Residential	Neutral	In construction
B2	21	In construction	Residential, Commercial	Negative	Critical points intervention possible
B4	27	New construction	Commercial – Café	Negative	Bel – Ami, critical point
B5	14	Reconstruction	Residential	In construction	Critical point
	16	Total reconstruction	Residential		Design prepared
B9	37, 37a	Historic housing	Residential	Destroyed	
C7	6a, 6b	New construction	Residential	Negative	not finished facade

Restoration of priority buildings

The AKTC&WMF team had elaborated, as a part of the strategic development program programu a list of 100 important structure from all historic periods in the urban area of Mostar. In additional researches 15 buildings with monumental characteristics, but in bad physical conditions, were selected for the priority intervenition list. Later the list was enlarged with 8 additional buildings. The selection includes public buildings and private structures. Together these buildings document the influences and cultures, which contributed to the development of the city over time, and today they represent the endangered legacy of its past.

Girls High School, restoration proposal

These structures are also potential poles of attraction providing important opportunities for economic growth and neighborhood revitalization in the future re-organization of the city.

Here, the occasion to meet and engage in exciting activities in a traditional city neighborhood becomes a powerful opportunity to renew social bonds and bring new life to the community.

The list of priority buildings looking for investors

1	**Landsbank**		920 000	
	Built in 1910 in Session style, designed by Josip Vancaš, represents an extraordinary architectural achievement	No information of construction activities	No investors	
2	**Municipality building**		4 300 000	
	Built in 1900 in Neo/classical style, designed by Josip Vancaš, has a great economic potencial	No information of construction activities	No investors	
3	**Konak house**		1 600 000	
	Built in 1900 represents an extraordinary example of the housing architecture of its time	No information of construction activities	No investors	
4	**New Orthodox church**		3 700 000	
	Built in 1873 in Neo-Bysantine style represents a good example of architectural and urban achievement	No information of constructio n activities	No investors	
5	**Girls High school**		6 500 000	
	Built in 1893 in Neo-classical style, with 15.000m2 has a great economic potential	Implementati on design has prepared	State property No investors	

WHC REGISTRATION
Date 27.01.05
Id N° 946rev
Copy 1 Item 05

DRAFT

Pursuant to Article V para. 4 Annex 8 of the General Framework Agreement for Peace in Bosnia and Herzegovina and Article 39 para. 1 of the Rules of Procedure of the Commission to Preserve National Monuments, at a session held from 6 to 10 July 2004. the Commission adopted a

DECISION

I

The historic urban area of Mostar is hereby designated as a National Monument of Bosnia and Herzegovina (hereinafter: the National Monument).

The protected area of the National Monument consists of a entire area of natural-architectural integrity where, throughout historical changes, were developed authentic townscape, structure and urban form, with concentration of architectural complexes and buildings of extremely large architectural, ambient, historic, documentary or symbolic values. The following borders define the protected area of the National Monument:

- On the left bank of the Neretva River: along Kresina and Huso Maslić streets to the north; the Luka bridge and Gašo Ilić street to the south; the first row of buildings in Marshal Tito street from Huso Maslić street to the east, Braća Brkić, Braća Šarić and Galvan streets to the Orthodox Church complex, and along the M-17 road to Gašo Ilić street;
- On the right bank of the Neretva River: the extension of the Luka bridge, along Stari pazar and Gojko Vuković streets, along the Radobolja channel cadastral plots 5628, 5653, 5655 to Rade Bitanga streets, by the left-hand row of buildings in Adem Bućo street, the area bounded by c.p. 3994 and 3939 as far as the pedestrian bridge over the Neretva River to the north;

The protected area of the National Monument defined in para 2 of this article is located at the Cadastral municipality Mostar, City of Mostar, Federation of Bosnia and Herzegovina, Bosnia and Herzegovina.

The provisions relating to protection and rehabilitation measures set forth by the Law on the Implementation of the Decision of the Commission to Preserve National Monuments, established pursuant to Annex 8 of the General Framework Agreement for Peace in Bosnia and Herzegovina (Official Gazette of the Federation of BiH nos. 2/02, 27/02 and 6/04).

II

The Government of the Federation of Bosnia and Herzegovina (hereinafter: the Government of the Federation) shall be responsible for ensuring and providing the legal, scientific, technical, administrative and financial measures necessary to protect, conserve, display and rehabilitate the National Monument.

The Government of the Federation shall be responsible for ensuring that a program is drawn up for the on-going protection of the historic center of Mostar, and based on that detailed plans of individual protection complexes will be generated, within the protected area.

The Government of the Federation shall be responsible for providing the resources for drawing up and implementing the necessary executive regional planning documentation for the rehabilitation of the historic center of Mostar.

The Commission to Preserve National Monuments of Bosnia and Herzegovina (hereinafter: the Commission) shall determine the technical requirements and secure the funds for preparing and setting up signboards with the basic data on the monument and the Decision to proclaim the property a National Monument.

III

The following measures –three levels in particular shall be implemented on the territory of the protected area:

Protection Level I consists of:

A) Cadastral plots stated within single decisions of Commission on proclamation of buildings and complexes in to protected area of national monuments:
- Historical building – Synagogue in Mostar
- Burial ensemble – Old Orthodox cemetery in Bjelušine district in Mostar
- Burial ensemble – Old Orthodox cemetery in Pašinovac district in Mostar
- Architectural ensemble – Koski Mehmed-pasha mosque and medresa (Islamic secondary school) in Mostar
- Place and remains of historical building – Orthodox Cathedral of the Holy Trinity in Mostar
- Architectural ensemble – Metropolitain (Bishop Palace) in Mostar
- Historical building – Clock Tower in Mostar
- Architectural ensemble – Karadjoz beg mosque in Mostar
- Architectural ensemble - Roznamedji Ibrahim effendi mosque in Mostar
- Architectural ensemble - Nezir-aga Vučjaković mosque in Mostar
- Architectural ensemble – Nesuh-aga Vučjaković mosque in Mostar
- Architectural ensemble – residential complex of Bišćevića-Lakišića in Mostar
- Housing Architectural ensemble of Muslibegović family house in Mostar
- Architectural ensemble - the Old Bridge with towers in Mostar
- Architectural ensemble - the Old Orthodox Church of the Nativity of the Mother of God in Mostar

The measures of protection stated in single decisions apply on above listed buildings.

B) Buildings and assemblies within the area that have high architectural, documentary, ambient and natural values, and are on the Provisional List of national monuments of BiH. ("Official Gazette of BiH" no 33/02), and for which the Commission did not adopted single decisions on designation of national monuments:
- Architectural ensemble of Kujundžiluk
- Architectural ensemble of Priječka market
- Architectural ensemble of Tabačica (Haji Kurt) mosque and Tabhana
- Architectural ensemble of Ćejvan Ćehajina mosque
- Architectural ensemble of Haji Memija Hadžiomerovica mosque in Cernica
- Building of Symphonic orchestra (former Cernica child – mekteb)
- Architectural ensemble Musala Square in Mostar
- Building of Serbian Elementary School
- Building of Girls High School
- Building of Land bank
- Waquf Palace
- Municipality building
- Alajbegović house
- Kajtaz house
- House of Persa Ćorović (birth house of Svetozar Ćorović)
- Konak – housing complex.

Only rehabilitation, conservation, restoration and presentation works on monuments could be executed within above stated complexes, ensembles and buildings, and other kind of action (re-adaptation to new purpose of usage, change of some object parts, interpolation of objects) can be executed only if the Commission, on the ground of individual requests of the owners or other subjects, does approve it. Applicant of claim is obliged, along with submission of application to the Commission, to present documentation of level and kind of

action. The Commission will, on first session after the reception of the request, where the official agenda is not stated in accordance with the operating procedure of the Commission, discuss and make decision on individual requests.

When single decisions on proclamation of national monuments are made for objects stated in point B, the measures stated in such decision will be final and obligatory.

I level of protection consist of area defined by borders stated in article I of this decision, and which is not included by I level of protection.

Detailed executive plans will be created for area included in II level of protection.

Within executive plans it is possible to insure the rehabilitation, conservation, presentation and adaptation of buildings to modern use, and rarely interpolations of new structures, which will not, by its shape, dimensions and external appearance, jeopardize the structure of protected area. In that area it is necessary to preserve entire plan base and restore and horticultural rearrange of open areas.

Minimal content of executive plans has to be:

1. Analysis of current situation of area complex, as follows:
   - Chronological overview and type of style of the existing objects
   - Overview of flooring of the existing objects
   - Overview of applied materials
   - Damages
   - Level of preservation
   - Chronological overview of use purpose of objects
2. Program of urgent and intervention measures
3. Plan of permanent measures of heritage protection and presentation as a part of area, which will include detailed definition of conditions in particular individual cases as follows:
   - Restoration, conversation, designing and presentation of the existing objects and complexes, which have architectural and ambient values;
   - Restoration and reconstruction of historic buildings, shapes and place with which integrity of the Historic Core and recognition of its specifics will be ensured (reconstruction of destroyed objects, restoration of objects or particular architecture elements – horizontal and vertical building outline, proportions, number, size and disposition of openings, architecture details, slab paving, shape and slope of roofs, type of roofing, façade and garden wall treatment;
   - All planned interpolated buildings must: respect construction line of neighboring objects on ground floor and floors, adjust its heights with surroundings and can not reduce visual feature values of specifics of protected area;
   - All applied methods and degrees of intervention must be recognized, their execution is possible only when is based on approved documentation;
   - To give back original use and introduce new non-destructive use suitable to the Historic City Core – restaurants and services of smaller capacity, traditional crafts - which does not pollute environment, as well as culture and education excluding use whose character is opposite to character of Mostar Historic Core, which can make a noise, pollute environment or require bigger changes on structure of buildings or complexes;
   - Noted conditions apply in the case of transformation of objects flooring. 50%of all objects need to keep housing use;
   - New construction is not allowed on the protected green areas, streets, squares or other public spaces;
   - Regulation of pedestrians and traffic circulation;
   - Regulation and arrangement of the central pedestrians zone – public illumination, urban equipment, treatment of pedestrian and traffic surfaces;

- Reconstruction of infrastructure network, specially water supply and sewerage system – as well as solving an issue of wastewater filtering and protection of Neretva riverbed;
- Construction of highway infrastructure and industry objects in the protected area is prohibited.

None of the construction, construction-crafting or handicraft action determinate by Plan of permanent protection and presentation heritage measures can not be executed without permission of Federal Ministry responsible for urban planning and professional supervision of authorities for heritage protection on the level of BiH Federation.

4. Heritage management program within protected area, along with defined holder of program realization;
5. Phase program of the execution plan along with financial index

Area of protected zone of III level consist of the area bordering with the protected zone defined above (part of the city with less urban and architectural integrity, but which can be recognized as unique urban system, and as such requires various forms of coordinated intervention – it regards on the objects and spaces which have small or none or ambient value), falling within the following borders:

- On the left bank of the Neretva: along the Bridge in Musala, Braća Brkić street, and the via Krpina and Braća Lakišić street to the main road, across the main road, via Braća Knežić street to the east to the area comprising the Orthodox Church complex with the cemeteries at Bjelušina and Pašinovac, thence part of the main M-17 road to Novi put street, part of Marshal Tito street, Tekke street, Ružić Brothers street and Demirović street as far as the Neretva to the south;
- On the right bank of the Neretva: a straight line over the Neretva, at right side along Gojko Vuković street, thence along the right side of Gojko Vuković street as far as Onešćuk street and along this street to the Boulevard, the extension of the Boulevard to the northern course of the Radobolja to the west, along the Radobolja channel, along Husnija Rebac and Rado Bitanga streets, beside the left-hand row of buildings in Adem Bućo street as far as Mostar Battalion street and the Bridge at Musala.

Within protective zone it is necessary to ensure preservation of the structure, primary plan ground base, with limitation of flooring, size and building outline of objects, as well as usage of materials, which are in harmony with authentic and traditionally used materials within the protected area.

Within protective zone it is not allowed new construction of highway infrastructure and industrial objects.

IV

All executive and area development planning acts not in accordance with the provisions of this Decision are hereby revoked.

V

Everyone, and in particular the competent authorities of the Federation of Bosnia and Herzegovina, the Canton, and urban and municipal authorities, shall refrain from any action that might damage the National Monument or jeopardize the preservation and rehabilitation thereof.

VI

The Government of the Federation, the Federal Ministry responsible for regional planning, the Federation heritage protection authority, and the Municipal Authorities in

charge of urban planning and land registry affairs, shall be notified of this Decision in order to carry out the measures stipulated in Articles II - V of this Decision, and the Authorized Municipal Court shall be notified for the purposes of registration in the Land Register.

VII

The elucidation and accompanying documentation form an integral part of this Decision, which may be viewed by interested parties on the premises or by accessing the website of the Commission (http://www.aneks8komisija.com.ba)

VIII

Pursuant to Art. V para 4 Annex 8 of the General Framework Agreement for Peace in Bosnia and Herzegovina, decisions of the Commission are final.

IX

This Decision shall enter into force on the date of its adoption and shall be published in the "Official Gazette of BiH".

The following members of the Commission have adopted this Decision: Zeynep Ahunbay, Amra Hadžimuhamedović, Dubravko Lovrenović, Ljiljana Ševo and Tina Wik.

Chairman of the Commission

Dubravko Lovrenović

No.: 08.1-6-1005/03-10
8 July 2004
Sarajevo

E L U C I D A T I O N

I – INTRODUCTION

Pursuant to Article 2, paragraph 1 of the Law on the Implementation of the Decisions of the Commission to Preserve National Monuments, established pursuant to Annex 8 of the General Framework Agreement for Peace in Bosnia and Herzegovina, a "National Monument" is an item of public property proclaimed by the Commission to Preserve National Monuments to be a National Monument pursuant to Articles V and VI of Annex 8 of the General Framework Agreement for Peace in Bosnia and Herzegovina and property entered on the Provisional List of National Monuments of Bosnia and Herzegovina (Official Gazette of BiH no. 33/02) until the Commission reaches a final decision on its status, as to which there is no time limit and regardless of whether a petition for the property in question has been submitted or not.

II – PROCEDURE PRIOR TO DECISION

In the procedure preceding the adoption of a final decision to proclaim the property a national monument, the following documentation was inspected:

- Documentation on the location and current owners and users of the properties
- Details of legal status (protection) of the properties to date
- Data on the current condition and use of the property, including a description and photographs, data of war damage, data on restoration or other works on the property, etc.
- Historical, architectural and other documentary material on the property, as set out in the bibliography forming part of this Decision.

The findings based on the review of the above documentation and the conditions of the site are as follows:

1. Details of the historic urban area

a) Location

The city of Mostar lies 120 km to the south of Sarajevo, in the river Neretva valley, on the main Sarajevo-Ploče road.

As part of Herzegovina, in its natural and anthropographic features Mostar is a specific region of the Adriatic hinterland, between the Primorje coastal area and the highest peaks of the Dinaric Alps. It lies on a wide limestone plateau in which the Neretva valley is a prominent feature. The climate is Mediterranean- Adriatic – the mountain range to the north constituting the boundary beyond which this climatic influence is no longer felt.

The city lies in the Mostar basin, between Huma hill and the Veleža foothills, where the Neretva emerges, dividing the city into right and left banks. With the exception of Bjelušina, Brankovac and the Old Town, the whole of the city lays on level ground along the Neretva banks and its right-bank tributary the Radobolja.

b) Historical information

The Neretva river valley is one of the most important routes on the eastern Adriatic shore and has throughout the ages seen considerable traffic between the interior and the seacoast.

Prehistoric archaeological remains have been found on the site of present-day Mostar. There is a major concentration of prehistoric tumuli dating from the Bronze and Iron Ages on the summits of the surrounding hills above the basin alongside the right bank of the Neretva on both sides of the source of the Radobolja and above the settlements of Cim and Ilići. There are also few remains in this region dating from antique times, and such as there are, are also in Cim on Crkvina and in Vukodol. There, as well as antique (3rd century) and late antique (5th to 6th century) remains; there are also early mediaeval finds (9th to 12th century), indicating a degree of continuity of settlement and burial. In Cim a late antique

basilica has been excavated, around which burials were conducted in early mediaeval times. Judging from the quantity and type of finds, it seems that the antique-era and late antique centre of the wider area around Mostar was in Potoci, where there was a major crossroads in antique times. As regards later mediaeval finds in the city of Mostar, thus far these are limited to stećak tombstones, concentrated around the source of the Radobolja and in Cim (Al 1988, region 24).

The mediaeval district of Hum Land was originally in the basin of the left-bank tributaries of the Neretva, later extending to adjacent areas. There is a reference to the area in the Emperor Constantine Porphyrogenitus' work *De administrando imperio* of 948/949 CE (Pašić, 1989, p. 5. The ancient Zahumlje, the area around Dubrovnik extending as far as the Neretva, formed part of the area, where Porphyrogenitus refers to five towns, including Stagnon (Ston), with two towns further into the interior, Hlum and Bona (Buna). The latter was above the eponymous river, and is identical with old Blagaj above the source of the Buna, where the administrative centre of Hum was located. In his first Charter (c. 1335), the Bosnian ban Stjepan II Kotromanić refers to this as one of the lands under his rule. From then on there are frequent references to Hum as the southern region of Bosnia in the titles of the Bosnian rulers. The Bosnian feudal lord Stjepan Vukčić Kosača took the title of Herceg (Duke) in October 1448, as a result of which the old Hum Land was submerged into the wider Herceg's land, which thus began to be known, in about 1454, as Herzegovina (Šarić, 2001, p. 8). In the fifteenth century, Blagaj became the capital of a more extensive district (Mujezinović, 1998, p. 144). Until Herzegovina came under Ottoman rule, Mostar was an ordinary Herzegovinian hamlet, more recent in date than Bileća, Blagaj, Gacko, Gabela, Konjic, Nevesinje and Počitelj (Ćorović, 1933, p. 5).

Historical evidence of the inner centre of present-day Mostar appears relative late, not before the mid fifteenth century. It is known that the entire area south of the Rama River, north of Čapljina, west of Nevesinje and east of Ljubuški, belonged to the great early mediaeval county of Večerić or Večenike. In the late middle ages the county broke up into several smaller administrative and political units known as districts or counties, one of which retained the old county name of Večerić or Velenike. It is in this district that Mostar lays. In about 1410, the river Neretva was the boundary between the lands of the local rules Hrvoje Vukčić on the right bank and Sandalj Hranić on the left bank (Ćirković, 1964a, 215-217). Later both districts belonged to Kosače. It is not known when exactlz this region finally fell to the rule of Sandalj Hranić. Dinić writes that there are indications that in 1424 Sandalj held the boundary with Cetina that his nephew Stjepan Vukčić-Kosača was to inherit in 1435 (Dinić, 1978, p. 188),

A charter dating from 1408 issued by the Bosnian King Ostoja of the great Radivojević clan refers to the administrative unit (district, county) of Večenike as extending "all the way to the Neretva." As a late mediaeval administrative unit, the county of Večenike or Večerić probably included the area of present-day Mostar on the left (east) bank and Bijelo polje. The reference in the charter to the "county of Večenike all the way to the Neretva) indicates that the county had also extended to the right bank of the Neretva (Anđelić, 1974, 268-2269).

The names of two towns appear in mediaeval historical sources, along with their later mediaeval territories and properties – the towns of Nebojša and Cimski grad.

There are three references to the town of Nebojša on the left (east) bank of the Neretva – in charters of 1444, 1448 and 1454, relating to the holdings of Duke Stjepan Kosača, confirmed as belonging to him by King Alphonse V of Aragon and Naples (Dinić, 1978, p. 207):

- In 1444 there appears the first reference in historical sources to the town of Nebojša in the late mediaeval county known as Večerić or Večenike (Anđelić, 1976, p. 268);
- In 1448 there is reference to the fortified town of Nebojša;
- In 1452, there was an uprising by his sons against Stefan Vukčić Kosača in which there is reference to the insurgents occupying some towns include the towns by the bridge (*Castelli da ponte*);

- In 1454 there is a reference to *Civitate Neboysse cum pertinentiis suis* (the town of Nebojša with its county and properties). The precise location of the town has yet to be identified (Dinić, 1978, pp. 207-210; Anđelić, 1974, p. 269). The substructure of the Herceguša tower by Tara tower on the left bank of the Neretva by the old bridge has been identified as mediaeval (Kreševljaković-Kapadžič, 1954, p. 11; Čelić-Mujezinović, 1969, p. 196; Ratković, 2000, p. 71).

Cimski grad:

- On 6 November 1443, according to one source, Stjepan Vukčić was "at Cimosko", where he relieved his customs officer of his duties;
- In 1444, there is reference in a charter of King Alphonse V to the town of *Chimiacho* with its own district (Dinić, 1978, p. 212; Anđelić, 1974, p. 269;
- In 1454, in a charter of King Alphonse V, there is reference to *civitas Pontis terrae.*

The present-day toponym of Cim on the west bank of the Neretva, and the fact that the only town in the Cim area is the one at the confluence of the Radobolja with the Neretva, led Anđelić to assume that Cimski grad lay on the right (west) bank of the Neretva opposite the town of Nebojša (Anđelić, 1974, p. 269). During the repairs to the Old Bridge, conservators identified the mediaeval substructure of the later-built tower of Halebinka (Halebinovka) dating from Ottoman times. In Cim, a late antique (6th to 7th century) church was excavated with an early mediaeval burial ground alongside it, used from the ninth to the twelfth century. There is a quarter in west Mostar known as Zgonovi, a toponym that suggests there was a mediaeval landholding in the county with a mediaeval town (Anđelić, 1974, p. 269, n. 36).

On this basis, in the early fifteenth century the late mediaeval county of Večenike covered the present-day area of Mostar on the right bank of the Neretva: Zahum, Cim, Ilića, Hraštane and Vojno. It is not certain whether it included the settlements to the south of Mostar: Rodoč, Jasenica and Bačevići. Cimski grad was built prior to 1443 in the centre of this area, which belonged to the Radivojević's in 1408; the town is referred to as Pons (Bridge) (*Civitas Pontis terrae* or *civitate Pontis cum castris et pertinentiis suis*) in the 1454 charter of King Alphonse V, for a bridge had already been erected here. In the early fifteenth century, the county of Večenika probaly extended also to the right bank of the Neretva, but this part did not belong to the Radivojević's. Prior to 1444, the town of Nebojša was built on the left bank of the Neretva, belonging to the late mediaeval county still known as Večenike or Večerić (Anđelić, 1974, pp. 276-278),

For a full century before conquering Herzegovina, the Ottomans made forays into the region, the first in the autumn of 1386, when they reached the Neretva River. Two years later they made another foray, but were roundly defeated near Bileća on 27 August 1388. Their forays became more and more frequent after this, occurring almost every year. Circumstances were in their favour. Local feudal lords brought the Ottomans in as "allies" in their attempts to settle scores with one another, and the Ottomans for their part came to play an ever more significant role in the region as the years went by (Pašić, 1989, p. 5).

The integration of the territory must have begun prior to 1452, when there is reference to *do castelli da Ponte* (two forts by a bridge), and was completed in the early years of Ottoman rule, when there is reference in the first census of Herzegovina, in 1468, to Köpruhisar, literally meaning the Town on the Bridge, consistently referred to in all later Ottoman sources as Mostar.

The Herceg's lands came under Ottoman rule for the most part in 1465. In 1467 they occupied Trebinje, and they also occupied the capital of Blagaj subsequent to 3 June 1466. In early 1470 the Herzegovina sandžak/sancak was constituted from the territories thus occupied. Immediately upon taking possession of new territories, the Ottomans began to develop the settlements they found there and to establish new ones, small kasabas or towns many of which grew into larger urban conglomerations or şehirs. The process of Islamization and the rapid development of trade and crafts also led to physical changes to the settlements. Many new crafts were introduced which, along with the existing ones, were organized into guilds and played an important part in the development of the towns. Vakufs too had a major impact on the development of existing and new settlements. The

framework of all the towns consisted of vakuf endowed buildings, often of considerable architectural value, in which the whole of the town's religious, education, and cultural and economic life was concentrated. Many surviving vakufnamas/vakıfname or deeds of endowment provide information about the system of settlement, the creation of new quarters, the names of streets, the values of buildings, the social structure, the development of institutions and such like (Pašić, 1989, p.10).

The town of Mostar itself dates from the mid fifteenth century (Neidhart, Čelić, 1953, p. 134). Dubrovnik chronicles attribute the founding of Mostar to Gost Radivoj, a nobleman of Duke Stjepan's. Chroniclers cite 1440 as the year when Mostar was founded (Šarić, 2001, p. 10).

The earliest documented reference to the settlement dates from 3 April 1452, when natives of Dubrovnik wrote to their fellow countrymen in the service of Đorđe Branković that Vladislav Hercegović had turned against his father and occupied Blagaj and other places, including "Duo Castelli al ponte de Neretua." (Mujezinović, 1998, p. 144).

In 1468 Mostar too came under Ottoman rule (Mujezinović, 1998, p. 144). The urbanization of the settlement began, following the unwritten oriental rule, with a čaršija – the crafts and commercial centre of the settlement – and mahalas or residential quarters. The existing settlement rapidly took on Oriental features. The first buildings denoting the origin of the settlement were the mosques, alongside which mektebs (primary schools) were built. Close to each mosque, a spiritual and social centre, buildings of a commercial and social nature were built, leading to the formation of residential quarters or mahalas (Bećirbegović, 1974, p. 251).

In 1468 Mostar acquired the name Kepri Hisar, meaning fortress on the water, in the centre of which a group of fifteen houses was added (Regional Planning Institute Mostar, 1982, p. 21). In 1469 Mostar was a market (bazaar) with sixteen households (Hodžić, 2000, p. 80). The settlement is referred to as Mostar in 1474, with the headquarters of Subaša/Subaşı Skender, the lowest-ranking Turkish administrative official; two years later Mostar became the headquarters of a vojvoda (duke or military leader) (Mujezinović, 1998, p. 144).

The earliest reference to Mostar with its present name is in the oldest surviving cadastral document and tax register – a census defter (Tapu tahrir defter in the presidential archives of the Ottoman Empire in Istanbul) dating from 1477 (882 AH). Here it is described as a settlement with nineteen houses (families) and one unmarried inhabitant). All the houses were on the left bank of the Neretva; the right bank was wholly without habitations. There is separate reference to Zahum as a "mezra" of Mostar (Hasandedić, 1980, p. 9). During the sixteenth century Mostar developed rapidly into an urban settlement to become the largest town in Herzegovina, outstripping mediaeval Blagaj, basing its development on trade and various crafts, particularly leather working. The mahalas or residential quarters took shape during the sixteenth to seventeenth century. The layout of the mahalas on the left bank is entirely different from that on the right. While those on the left bank clearly extend over a distance of more than 2 km, the right bank developed east-west along the right bank of the Radobolja, over a distance of about 180m, which is wholly consistent with the way a town takes shape from a radial roads network system and its adaptation to new traffic requirements. It was at this time that the major religious and secdular buildings were constructed, of both indigenous and oriental architectural styles, under the influence of Mediterranean architecture: ramparts and towers, bridges, mosques (both džamija/cami or Friday and ordinary mosques), medresas, kutubhanas/kütüphane or libraries, hamams, hans or hostelries, the tannery, public drinking fountains, fountains, turbe mausolea, and so on. The Ottoman authorities launched a great many projects in Mostar, including the construction of a piped water supply network in 1663. By the end of the seventeenth century Mostar had a population of some 12,000 and had in effect completed its territorial expansion beyond the city ramparts that, at the beginning of the century, had enclosed the homogenous structure of the town. The architecture and urban layout is determined by the čaršija as the trade and crafts centre surrounded by mahalas radiating outwards (Regional Planning Institute Mostar, 1982, pp. 22-23).

During the seventeenth and eighteenth centuries Mostar continued to develop, expanding across the river Neretva. During this period it became a major cultural centre, producing several scholars, poets and authors in oriental languages, making it one of the strongest centres of oriental literacy and scholarship in this part of the world during the Ottoman period. A particularly prominent figure among well-known scholars of the period is Sheikh Jujo – Mustafa Ejubović. According to H. Šabanović he was "the most striking figure, the greatest and most prolific writer in Muslim circles in the intellectual and general cultural life of Bosnia at the turn of the 17th and 18th century" (Mujezinović, 1998, p. 144).

Vakufs are charitable endowments. During the Ottoman period, more than three hundred vakufs were endowed in Mostar, most of them "evladijat vakufi" (awladiyya awqaf – family endowments) the income from which was spent only in part for the purposes of the vakıf with the remainder divided among the vakif's (legator's) heirs. (A vakfija-/vakufnama/vakıfname-deed of endowment is a document recording the endowment of cash and real property for various purposes. Each endowment is known as a vakıf – Bos. vakuf -, and the legator and founder as vakif.) The vakufnamas of the major legators and founders of Mostar have survived - Ćejvan ćehaja, Nesuh-aga Vučjaković, hajji Mehmed-beg Karađoz, Derviš-pasha Bajezidagić, hajji Balija son of Muhamed, Koski Mehmed-pasha, hajji Hasan Sevrija, hajji Ahmed-beg Lakišić, hajji Ibrahim Čevra and Ali-pasha Rizvanbegović. The four oldest – those of Ćejvan ćehaja, Nesuh-aga Vučjaković, hajji Mehmed-beg Karađoz and Derviš-pasha Bajezidagić – were written in Arabic, and the rest in Turkish (Hasandedić, 2000, p. 8).

Mostar took its final shape in the Ottoman period principally in the seventeenth century, around 1670, when the town reached a size that was to remain largely unchanged until the start of Austro-Hungarian rule in 1878. At this time Mostar had a population of more than 10,000, more than thirty mosques, seven medresas and numerous mektebs, two hamams and so forth. By the late seventeenth century, following the Candian War and their unsuccessful second siege of Vienna, the Ottomans moved to the defensive, when the Venetians penetrated as far as Mostar and the Austrians as far as Sarajevo, initiating a period of accelerated fortification of the towns. As a rule, a small, more easily defensible part of the town would be fortified; in the case of Mostar, this was the area around the Old Bridge and towers (Pašić, 1989, pp. 13, 20).

In early 1470 the Herzegovina sandžak was formed from the conquered territories. This sandžak formed part of the Rumelia eyalet from its foundation until 1580; from then on until 1878 it was part of the Bosnian pašaluk/paşalık (Pašić, 1989, p. 6). The seat of the Bosnian pašaluk or beglerbegluk/'beylerbeylık was in Foča, then in Pljevlje, and from 1833 onwards in Mostar. In 1474 Mostar was the seat of a subaša, and in 1476 of a vojvoda (Truhelka, 1911, p. 178). At some date between 1506 and 1519 Mostar became an independent kadiluk/kadilık (Šabanović, 1959, p. 188). From 1522 to 1530 the sandžak beg also resided in Mostar, when the town was temporarily the seat of the Herzegovina sandžak (Hasandedić, 1980, p. 6). During the Ottoman period the town was also the seat of the representative of the sherif (nekibul ešraf/nekibul eşraf), a Janissary commander, the commander of the Buda region, a muhtesib or market superintendent, a baždar/bacdar or customs officer, a šeher-ćehaja/şehir kahyası or mayor, a commissioner of public expenditure (harač/harç), a buildings superintendent, a dizdar or fortress commander, and others (Çelebi, 1996, p. 463). Prior to 1592, Mostar became the headquarters of a mufti (Hasandedić, 1980, p. 6). From the end of the fifteenth century, Mostar was also the headquarters of a kadiluk with sixty-two villages. The kadija/kadı acted as judge and commanded a troop of fifty military police. Until the abolition of the Janissaries in 1826, Mostar was also the headquarters of a Janissary commander or serdar. The spahi alajbeg/sipahi alaybeyi (colonel) had a representative here known as a ćehaja/kehaya, in command of cavalrymen or sipahis. The fortress was commanded by a dizdar until regular army troops were introduced in the mid nineteenth century. At some time between 1700 and 1706 a captaincy was founded in Mostar; it was abolished in 1835. The captaincy and the post of dizdar were hereditary – kapetans were chosen from the Vučjaković family (Pašić, 1989, p. 24). From 1833 to 1866 Mostar was the seat of the Herzegovina eyalet, which was administered by Alija Rizvanbegović until 1851. From late 1875 to February

1877, Mostar was again the seat of the Herzegovina vilayet, which had been formed from part of the Herzegovina sandžak (Šabanović, 1959, pp. 95, 98).

By the eighteenth century at the latest the Orthodox had their own place of worship, and in 1767 Mostar became the residence of the Metropolitan (Hasandedić, 1980, p. 6). To judge from the oldest tombstones that can be precisely dated and those that can be chronologically classificed in the same group in the Orthodox cemeteries of Bjelušine and Pašinovac, these cemeteries were probably founded during the 16th to 17th century. The oldest tombstone in the Bjelušine cemetery dates from 1683; while in the Pašinovac cemetery the oldest surviving dated tombstone dates from 1687 and belonged to one Milutin. From the mid nineteenth century Mostar also became the residence of a Catholic bishop (Hasandedić, 1980, p. 6). The nineteenth century other important edifices were erected for the Christian communities: in Bjelušine an Orthodox church was built (completely rebuilt in 1833), a Serbian school (1856) and the new Cathedral of the Holy Trinity (built by master-builder Andrija Damjanov in 1873); in Vukodol a Catholic Episcopate and Bishop's Palace was built in 1847; and in Pothum the Catholic Church of SS Peter and Paul was erected in 1866 (Pašić, 1989, p. 24).

In 1768, Mostar had twenty-one Catholic households. By 1852 this had risen to 120 Catholic families, and by 1867 (once the Catholic church was in use) the figure had grown to 338; from then on the number of Catholic families continued to rise steeply. The first plan of Mostar on public sale was available in the Paher Kisić bookshop in 1899, written in German. This plan noted that at the time Mostar had "14,370 inhabitants, of whom 6,949 are Muhammadans, 3,877 Orthodox, 3,353 Roman Catholic, 164 Israelites, 24 Evangelicals, and 6 are others." (Hodžić, 2000, p. 87).

Mostar more than once passed through difficult times. In particular, it was ravaged by the plague on four separate occasions (1507, 1689, 1731 and 1813-1818); was flooded in 1713, 1791 and 1780, with tragic consequences; and was swept by fires which destroyed some monuments (Hasandedić, 1970, pp. 117-124). During and after the Candian war, the Venetians penetrated as far as Mostar on four occasions: 1652, 1693, 1694 and, for the last time, in 1717. Their troops set fire to the town and killed its inhabitants, but were never able to cross the Old Bridge to the left bank of the Neretva and occupy the town centre (Kreševljaković, 1954, p. 10; Hasandedić, 1980, p. 10).

In 1867 the streets of Mostar were renamed after a number of prominent figures (Sokak of binbaša/binbaşı Ahmed Puzić) or the families who lived there (Alajbegović sokak, Ćirić sokak etc.) It was then that the houses were first numbered. At the same time, a complete property census was conducted in Mostar and other larger places (emlać, Tur. mülk, emlak) (Hasandecić, 1980, p. 8).

Between 1802 and 1814 two ayans or prominent figures were engaged in a power struggle: the Mostar muteselim/mütesellim Alija Dadić and the leading figure in Blagaj, Alija Voljevica. When the breakdown of law and order was at its worst, the Bosnian valija/vali sent a punitive corps of 30,000 men to deal with Mostar. They entered the town on 1 April 1814, and a court martial sentenced 39 prominent citizens of Mostar to death, a sentence that was carried out: seventeen Orthodox, thirteen Muslims and nine Catholics (Ćorović, 1933, p. 34).

For Bosnia and Herzegovina, the outcome of the Berlin Congress of 1878 was forty years of Austro-Hungarian rule, first as an occupied province under the formal sovereignty of the sultan, and with effect from the 1908 annexation as part of the Dual Monarchy. After coming under Austro-Hungarian rule, the majority of Herzegovina comprised one of the six districts into which the occupied regions were divided. The county of Foča was detached from the old Turkish sandžak of Herzek; Montenegro was separated from the Nikšić area, and so on. The Mostar district that was thus created was divided into ten counties – the urban county of Mostar, the rural county of Mostar, and the counties of Bileća, Gacko, Konjic, Ljubinje, Ljubuški, Nevesinje, Stolac, and Trebinje. For a number of years after 1878 there remained a county office in Počitelj, which was subsequently abandoned. Immediately following the occupation the country was under martial law, but this was later replaced by civilian rule (Peez, 1891, p. 85).

Austro-Hungarian troops, commanded by General Jovanović, entered Mostar on 5 August 1878 (Šarić, 2001, p. 11). During this period (1878-1918) Mostar continued to develop rapidly. The Baedeker guide for 1913 cites Mostar as having a population of16, 400, of whom rather less than half were Muslims, who still had thirty mosques.

After the introduction of Austro-Hungarian rule in 1878, the old principle of living in the mahala and trading in the čaršija was quickly adapted to the central European urban concept. This, plus the interpolation of new buildings between the existing ones, meant that this period has left its mark on the urban structure, with the construction of wholly new quarters (running from the Cernica bridge to Balinovac) with a large number of villas. Another urban feature of this time are the three military camps, built between 1884 and 1912. Economic development led to increased traffic and trade; administrative, educational and municipal buildings were erected, another two bridges were built, as were the Neretva Hotel and the City Baths (1914), mains sewerage was introduced, the streets were regulated, and squares and parks landscaped.

World War I and the period immediately following it led to still more changes and a new stage in the development of the town. There were changes to the number of inhabitants and social and spatial changes. A new style of building was introduced, with two- and three-storey residential buildings (Demirović, 2003, pp. 16-17).

Between the two world wars, the town did not expand beyond its previous limits. A number of buildings and facilities were erected: a thermoelectric plant in Rudnik (1922), a district officer for workers' insurance (1930), a new hospital by the railway station (1930), a Public Health Institute on the High Street (1933), a new concrete bridge replacing the iron bridge at Musala (1935), and the bank building on the High Street (1938) (Tuzlak, 2002, p. 9).

The population census of the Kingdom of Yugoslavia conducted in 1931 revealed that Mostar had "a total of 20,295 inhabitants, of whom 8,844 Muslims, 5,764 Roman Catholics, 5,502 Orthodox, 136 Jews, 32 Protestants, and 17 other Christians" (Hodžić, 2000, p. 89).

Following World War II, the new socialist socio-economic relations and intensive reconstruction and new building characterized the development of Mostar. The steep rise in population numbers (1953: 31,680; 1961: 47,215; 1971: 63,427; 1991: 75,665; 199 [sic]: 71,230) called for new housing and public buildings. Particularly as regards the housing stock, the city expanded into the vacant spaces to the west of the town (Tuzlak, 2002, p. 9).

During this period, new areas and settlements were created: Zgoni, Đikovina, Panjevina, Zalik, Strijelčevina and others. Streets and avenues were asphalted, the railway was built, work continued on landscaping the city's parks and sports and recreation centres. From the 1970s on, with further architectural and town-planning interventions Mostar acquired the outlines of a modern city (Demirović, 2003, p. 18).

Housing starts strove to keep up with the steep rise in population numbers at this time, with two types of housing: collective (blocks of flats) and individual units. In the case of the former, a number of distinct stages can be identified. In the 1950s, blocks of flats were built within the urban fabric – the blocks at the corner of Marshal Tito and Huso Maslić street – or at the edge of the urban area – Boulevard of the People's Revolution, Sava Kovačević street, Aleksa Šantić street etc. – using the existing infrastructure (Tuzlak, 2002, p. 10).

This process of building lasted until 1992, when war broke out and the town was subjected for four years to urbicide, the destruction of the cultural heritage, the demolition of religious and countless other edifices and structures. As well as huge numbers of casualties, the entire economy was destroyed, and as if this were not enough more than 70% of the housing stock was also destroyed.

Following the war the international community conferred on the European Union the role of administering Mostar. At the Rome Conference held on 18 February 1996 the city was divided administratively into six municipalities and the central urban district.

Today's plans for the reconstruction of the city, and in particular of its historic centre, are being developed through projects drawn up jointly by the Aga Khan Trust for Culture (AKTC) and the World Monuments Fund (WMF).

In 2002, two major projects were carried out with an international presence: the reconstruction of the Old Bridge, and the construction of a unified mains water system. Both projects were sponsored by the World Bank (Tuzlak, 2002, p. 10).

2. Description of the historic area

URBAN PLANNING AND ARCHITECTURE

Much has been written about Mostar and its cultural monuments. Literary and scholarly works, both past and present, provide much valuable material for the study of Mostar and its past. The Turkish geographer Hajji Kalfa and the 17th century travel chroniclers Evliya Çelebi and the Frenchman Paullet, provide important information on the appearance of the town and the Old Bridge in their day. A number of surviving vakufnamas and sidžils/sicils (records) of Mostar's kadijas also provide valuable material for a study of the city's past. Many natives of Dubrovnik have left records of Mostar from various periods – 1452, Mateja Gundulić in 1674, and Nikola Bunić in 1710. Important accounts surviving from the 19th century are those of the priests Pamučina and Ćokorilo. In 1857the Russian Giljferding visited Mostar and described the town and its inhabitants. In 1875 Arthur Evans, the English scholar, also visited the town briefly, discovering Roman and Byzantine styles in the architecture of Mostar. In 1891 Karl Peez, who gives much important information, conducted a scholarly analysis of Mostar. Others who have provided more or less valuable information on the history of Mostar include Robert Mihael, V. Radimski, K. Pač, Lj. Stjepanović, Ćiro Truhelka, K. Jiriček, Hasan Nametak, and Alija Nametak.

A number of works are of particular value, including two in German. Works in the local language have been written by Vladimir Ćorović, *Mostar i njegova srpska pravoslavna opština* (Mostar and its Serbian Orthodox community); Hamdija Kreševljaković, *Esnafi i obrti u Bosni i Hercegovini* (Guilds and crafts in BiH); Hivzija Hasandedić, *Spomenici kulture turskog doba u Mostaru* (Monuments from the Turkish period in Mostar); Luka Grđić Bjelokosić, *Mostar nekad i sad* (Mostar past and present): Two works in German are: Karl Peez, *Mostar und sein Kulturkreis* and Robert Mihel, Mostar. (Hasandedić, 1980, p. 11; Pašić, 1989, p. 3).

According to Peez, in 1891 Mostar looked like a friendly town that had developed on the left and right banks of the Neretva:

"The east or left bank is generally regarded as the healthier. The wealthy section of the population resides here. Here was built the old Turkish court or Konak, here are the family houses of Muslim landowners and Orthodox merchants. Here too is the majority of the administration, and here too is the commercial quarter, here civil servants and officers live in mainly rented accommodation, and here too much of the history of Mostar was played out.

"If the east bank belongs to the past and present of Mostar, it is on the west side of the Neretva that the future of the town lies. Here there is ample space for the erection of residential buildings and edifices. To the west, among other things, a railway station, a new hospital, and a Catholic cathedral have been built. On this bank there are fine private gardens and large, dignified cemeteries full of trees and shrubs. Here there are state plantations, and gardens with cafés attract one with the aroma of mocha, and during Ramadan with a travelling theatre for those of all confessions, particularly Muslims. There are gypsies, too, living in dilapidated houses and clad in the rhythms of the left bank.

"Above these mahalas, towards the hillsides, are fields of maize and tobacco, where water dries up in summer and the earth languishes in thirst. Hard up against the hill on e then sees the residence of the Catholic Bishop, Vukodo. This is the extreme limit of the western side of the town, while on the other side the Metropolitan's apartments above the Orthodox Church is the extreme eastern limit." (Peez, 1891, p. 8).

The Old Town

The Old Town is the oldest part of the urban fabric, dating from the fifteenth century. It was the Ottoman period (15th to 19th century), with its typical architectural and town planning features, that left the most powerful stamp on this part of the town. During this period, some of the most imposing and architecturally most significant edifices in the town

were built. Its residential quarters or mahalas, groups around the trading and commercial zone of the čaršija and the Old Bridge also particularly marked the development of the town.

The cultural and historical value of old Mostar is its urban agglomeration, which took shape in the 16th century, at the height of power of the Ottoman Empire, around the area of the Old Bridge. The entire area reveals a perfect harmony between the built spaces and the natural features of the river Neretva, so that the Old Town is the outcome of the interaction between a natural phenomenon and human creativity over a long period of historical evolution. This agglomeration was added to an enriched with the architectural and visual attainments of successive generations, particularly in the late 19th and early 20th century following the establishment of Austro-Hungarian rule and the influence of central European architecture.

In the oldest part of the urban ensemble, its built structure, it is its geomorphologic features that form the dominant influence on the formation of residential quarters (mahalas), the banks of the Neretva gorge and the irregular street layout, giving the town its specific and recognizable shape. The town appears almost to have grown up out of the river. The use of limestone, cubist forms in building up the volumes of the physical structure, and optical effects – the play of light and shadow – create the spatially uniform mood and appearance of the old part of Mostar. The volumes of individual buildings are appropriate to the system of proportions applied to the entire town. The individual architectural accents of the Clock Tower, minarets and towers by the bridge dominate the town.

The street layout is a fully integral part of the urban system of the old town. The entire urban street system may be divided into various levels: roads, streets, paths and culs de sac. The widening of streets gave rise to squares (mejdans) or market squares (pazars). The residential quarters were linked to the commercial and trade centre of the čaršija by a large number of streets, making the čaršija itself a traffic hub from which a network of narrow streets expanded outwards in all directions. Open, inbuilt spaces appear as the constant companions of this network of streets. Functionally speaking, the area of the square or čaršija itself was the centre of trade, exchange and communication. In parallel with the squares, there also appear the open spaces of the musala (an open space for congregational prayers). There are also burial grounds or harems to be found, both freestanding or as parts of a group around a religious edifice. These were a kind of oasis, with various types of Mediterranean vegetation.

This differentiation of street levels is also to be observed within the mahals, where streets of a public nature may be identified as level one: public areas solely for daily use and affairs within the mahalas; this area is located between the approach road and the residential complex. The next level begins at the entrance gateways to the residential complex; communication continues within the area of the enclosed courtyard wall, first in the areas of the selamluk (semi-public area), as an inter-zone, and concluding with the haremluk (protected, private area), as the basic unit of Islamic society. This system of individual enclosed spaces, together protecting the integrity of respect for the basic social units, also reflects the compact structure of the town itself as a whole.

The greater part of present-day Mostar dates from the forty years of Austro-Hungarian rule (1878-1918), built in the new central European style around the existing structure. A number of edifices in the specific style of the Austro-Hungarian period were erected – size of building, decorative features and exotic façades. During this period, the construction of new buildings led to a certain discord with the existing features of the town. This architecture had no regard for the environmental and architectural values of the old town, particularly as regards residential buildings, the sitting of buildings, and building density.

Following the 1878 Berlin Congress, there were changes to the street layout, and indeed to the entire organization of life in the city as a whole. The Austro-Hungarian authorities renovated and increased the roads layout. It was at this time, too, that communications between Sarajevo and the sea, via Mostar, were established, as part of which the new railway station was built in 1885. The reconstruction of the roads network was carried out under western European influence.

The greater part of present-day Mostar, which took shape during the forty years of Austro-Hungarian rule (1878-1919), was built in the new central European style around the existing structure. Quite a number of buildings were erected which stand out from the older built environment in size, decorative features and exotic façades. The building of new edifices at this time created a certain discord with the existing features. This new architecture disregarded the existing townscape and architectural values, particularly as regards residential building, the sitting of buildings and building density.

During the early years following annexation, most attention was paid to adapting existing buildings or repairing major ones to be used by the new authorities and military. These projects were also the first instances of revitalization of old buildings in Mostar, and in BiH as a whole, as well as the first examples of buildings of which the architects and builders were known and recorded. Building in the commercial areas of the town was stepped up. By the early 1880s, the traditional image of the čaršija with its shops and storehouses was already beginning to change. Residential buildings predominated, and in these early years of Austro-Hungarian administration they continued to rely mainly on traditional features and forms – low buildings, with porches, verandas, divanhanas (spacious upper floor corridors), courtyards and gardens, sited according to the still prevailing idea of the right to a view. Neo-Gothic and neo-Renaissance styles began to appear, as the earliest forms of historicism, representing the European style and taste proper to the Territorial Government and its architects and builders.

The Moorish style came about as a result of the need to ensure that the mainly Muslim inhabitants would more readily accept the new authorities. Among of the most typical buildings in this style are the Hotel Neretva and Gymnasium high school in Mostar. This style dominated in the 1890s. The influence of the neo-Renaissance in Mostar is to be seen in the construction of administrative buildings, but also in the streets, promenades, the Rondo and the bridges designed by Miloš Komadina. With their size and form, and particularly their location in the town, these buildings became points of reference in the urban fabric (Krzović, 1987, pp. 9-32, 124-130).

In the period immediately following World War II, many buildings in the Old Town were pulled down, leading, by 1949, to the formation of a specialist institution for the protection of the cultural and historical heritage, and the establishment, in 1977, of an agency that continued until 1992 successfully to oversee the preservation and development of the Old Town – Mostar Municipality set up a labour organization called Stari Grad. As well as conducting a detailed architectural survey and completing urban planning documentation for the entire historic centre of the Old Town, a Regulatory Plan was also drawn up for the whole area, and more than fifty interventions were carried out for the reconstruction, restoration and rehabilitation of various buildings (the Koski Mehmed-pasha medresa, the Tabhana, and rows of shops in the Priječka čaršija). In 1987 the organization won the Aga Khan Award for Architecture for its archievements with this restoration and conservation project (Idrizbegović, 2003, p. 10; Tuzlak, 2002, p. 31).

During the 1992-1995 war in Bosnia and Herzegovina, the entire urban centre of Mostar was damaged and left ruinous. During the post-war period of reconstruction, between 1995 and 2004, the urban structure of the Old Town has undergone a major transformation, as a result of the weaknesses of heritage protection mechanisms and prevailing circumstances. In particular, the mahalas have lost their original fabric and character, as a result of inappropriate construction. The Old Town currently serves mainly tourist purposes and as such does not form an integral part of daily life, while the mahalas have been transformed more in the physical than the functional sense – they have retained their residential character.

Since 1998, the reconstruction of the historic centre has begun. That same year, Bosnia and Herzegovina nominated Mostar's Old Town for inclusion on the World Heritage List. Since then there has been considerable activity on the reconstruction of the historic centre and of individual monuments of the architectural heritage throughout the city. In 1999 the Government of Bosnia and Herzegovina, the City of Mostar and the World Bank, setting out a project for the reconstruction of the Old Bridge and the Old Town, agreed a key document in Washington. Pursuant to this agreement, UNESCO is providing scientific

oversight of the works to reconstruct the complex of the Old Bridge through its International Commission of Experts, while the Aga Khan Trust for Culture & World Monuments Fund (AKTC&WMF) is managing the improvement of the neighbourhood, providing technical documentation for the component of reconstruction of monuments, and providing planning services for the historic city, as well as helping to strengthen essential institutions in Mostar (City of Mostar, 2001, p. 2).

City walls

A chronogram survives in a Mostar record (medžmui/mecmu) now kept in the Oriental Institute in Sarajevo, which relates the construction of the Mostar fortresses. The year of construction is given as 1108 AH (1696) (Mujezinović, 1998, p. 154).

There were the following towers on the city walls surrounding the part of Mostar on the left bank of the Neretva: one by the Neretva beside the entrance from Mala tepa to Kujundžiluk, one below Suhodolina by Puzić sokak, two on Suhodolina above the Ali pasha serai (konak), one in Bjelušine by the former Ćurći Ahmed mosque, one on Velika Tepa by Ramić sokak, one beside the Neretva at the bottom of Ramić sokak and one in Luka outside the former Kanber-aga mosque.

The earliest reference to the tower by Puzić sokak is in Ćejvan's endowment dating from 1554. By this time the tower by Ramić sokak on Velika Tepa had also been built. These two towers stood not far from the Old Bridge guarding the entrance to the bridge. Both were two-storeyed with passageways below with large gateways through which the main road ran.

Prior to 1700, a tabija (bastion) was built below the konak on Suhodolina. High ramparts with embrasures surrounded it. There were also cannon here, and the police headquarters (zaptija) was located here. This was also the home of a gendarmerie, which ran the prison (haps). A cannon was fired and a flag rose on the bastion every Friday, for the Bajram (Eid) festivals and on the Sultan's birthday. The cannon continued to be fired for a while even after 1878, but since the powerful detonation disturbed the inhabitants of the neighbourhood, the military command of the day transferred the cannon to Hum, where it continued to be fired until 1918. The Regional Museum of Herzegovina has several pieces of cannon shells (kumbara) from the Turkish period, found on the bastion (Hasandedić, 1980, p. 123).

Following the 1699 Treaty of Karlowitz much of Mostar town on the right bank of the Neretva was surrounded by ramparts with towers. One of these towers stood close to the Tabačica mosque, on the road leading from Cernica to the Old Bridge, and was known as Šaranpov, from the fosse outside it. From this tower the ramparts ran behind the Ćejvan-ćehaja hamam and tannery to the right bank of the Neretva where the other tower stood. On the other side, the rampart ran via Vakuf and the Radobolja, joining Šaranpov with the tower at Šemovac.

The tower at Šemovac was known as the Šabić tower. It had two storeys and a large gateway through which the main road ran. After 1878, the tower was used for a while for residential purposes.

One tower was in Ričina by Podharem sokak, one in Liska Street and one in Zahum above the Ali-beg Lafo mosque.

From the Šabić tower, the rampart led behind Kapetanovina, joining it with the tower in Tikvina sokak. From this tower, which had two storeys, it led through gardens to the Neretva, where there was another tower. There were also two towers in Predhum: one by Ašiković sokak and one above Čekrk at the bottom of Predhum mahala.

There was a tall stone tower dating from the Ottoman period on the slopes of Huma hill. The main purpose of this tower was to keep the approach to the bridge from the west – which throughout the Ottoman period was the main danger – under observation.

These towers were mainly erected on roads; with a passageway about three metres wide and one and a half times head height beneath them. A guard stood in this passageway, and in the tower itself did the duty officer occupy the office. There were solid gates at the entrances beneath the towers, built into the vault, and closed every day at dusk

and reopened in the morning. There were fosses with drawbridges outside the two towers on Velika Tepa, Puzić and Ramić sokaks and the two gates on the Old Bridge.

There were another two side gates without towers on the city ramparts on the right of the Neretva: one in Vakuf, on the road leading from Podhum to the Old Bridge, and the other not far from the former Nezir aga mosque on the road leading via the Curved Bridge.

All these towers were linked by ramparts, which were about three metres in height, with embrasures, and wide enough at the top to enable one to walk along them without difficulty. The Mostar city ramparts were still in existence in 1840, but in a ruinous state, with numerous gaps through which dogs would sneak at night (Hasandedić, 1980, p. 125).

All these towers with the exception of Herceguša were strategically sited for the defence of the town. The keys were held by families living in the immediate vicinity of each tower, and handed down from generation to generation. It is known that the Dizdar Lakišić's served as dizdars or commanders of the Mostar fortress from the earliest days of the Ottoman administration, and that they held the keys to the towers around the Old Bridge in this way (Peez, 1891, p. 15).

The Austro-Hungarians found all the towers in a ruinous state. Three have survived to this day, but the rest were pulled down soon after 1878. Parts of the ramparts that surrounded the town can still be seen in Ramić Street, Suhodolina, Kujundžiluk, Kapetanovina, and along the Radobolja west of the Curved Bridge.

Mustaf Glavinić was the last keyholder, locking the gate of the Old Bridge every evening and opening it in the morning until 1878, since when there has been no gate on the gatehouse of the Old Bridge.

The parts of Mostar on the left and right banks of the Neretva that were surrounded by ramparts and towers constituted urban fortifications centred on the towers by the Old Bridge. Here the dizdar resided, and the entire garrison was stationed, to be deployed from there to be on duty at the town's towers. The part of the fortifications on the left bank is referred to in the sources as Stari Grad (old town – kalai atik), as this part of Mostar is still officially known. The part on the right bank, dating from after the 1699 Treaty of Karlowitz, is referred to in the sources as Novi Grad (new town – kalai cedid).

The numbers of men constituting the garrison of the Mostar fortifications varied at different times. In 1520 it consisted of a dizdar, ćehaja, imam and 42 soldiers mustahfiza. At the time Evliya Çelebi visited the area, there were 160 soldiers. In 1731 the garrison numbered 535, and in 1780 there were 565 men.

The garrison of the fortifications was chiefly engaged in defending the town from foreign attacks, mainly carried out by Uskoks from Dalmatia.

There were barns around the towers in the hendek or fosse around the Old Bridge, used to store state grain reserves (Hasandedić, 1980, p. 126).

According to Peez, "There were once fifteen towers in Mostar, three in Predhulje (two of which are in ruins and the third is used for the treasury), two in Zahulmje, three in Cernica, two on Velika Tepa, three above Konak and two on the Neretva.

"The latter were evidently the bridgehead on the Old Bridge. They had solid gates the keys of which were hereditarily held by the Dizdar Lakišić family, which lived very close by.

"All the old fortress system was linked by ramparts. The section to the south of the city was particularly well reinforced. If one imagines in addition a few detachments in Hum and Podveležje in trenches, the blockade of the valley is complete.

"The konak was the heart of the system, and when warmongering had not yet reached its present levels, it must have been invincible. The strong ramparts of the town foiled many attacks by the war-hardened Venetians. Every evening the gates were closed.

"Today Mostar is not fortified, true, but it is still protected by thirteen forts and four permanent batteries built since the occupation in the city and its immediate environs." (Peez, 1891, p. 9).

The area of the ramparts around the Konak on Suhodolina is now used as a military complex.

The ramparts are built of roughly dressed stone laid in lime mortar. All that has survived to this day is a small section of the former ramparts by the Curved Bridge on the

right bank and Ramić street on the left bank of the Neretva. The section of the ramparts that has survived by the Curved Bridge is about 71 m long and has an average height of between 3 and 7 m. The remains of the ramparts in Ramić street follows the lie of the land on the bank of the Neretva and is about 78 m in length, with a height of 4 to 6 m. There are little-used footpaths alongside both surviving sections of the ramparts. AKTC/WMF plans to restore the remains of the ramparts and turn the footpaths into a more extensively used pedestrian zone (Rehabilitation of the Historic Neighbourhoods, 2001, p. 66).

The čaršija

The čaršija is one of the most important features of an Ottoman town, its commercial centre, and the area in which most business activity is conducted. In Mostar, the bridge over the river Neretva, the fortifications alongside it and a few mosques are the nucleus around which, by the mid sixteenth century, a number of streets had taken shape with rows of shops and a smaller number of storehouses. This was the genesis of the Mostar čaršija, the manufacturing, market and social centre of the town. The Mostar čaršija is an outstanding unified architectural and town planning composition.

The čaršija developed on both banks of the Neretva, beginning with the left bank, where it occupied the area from above the Tara and Herceguša towers to the south as far as the Clock Tower to the east and Hafiz hojja's mosque and the Koski Mehmed pasha han to the north. The part of the čaršija on the High Street was called Velika Tepa; the part parallel to it alongside the Koski Mehmed pasha mosque was called Mala Tepa; and where it extended towards the Old Bridge was Kujundžiluk. On the right bank, from the bridge up to the Tabačica mosque, was the Priječka or Prička čaršija and the Tabhana or tannery, where the leather workers carried out their craft. Between them, on the Radobolja River and its channels, there were a great many water mills (Pašić, 1989, p. 42).

The čaršija extended from the Old Bridge to the Sinan pasha mosque and from the Clock tower to below the Ćejvan ćehaja mosque, and consisted of the following features:

Left bank:

- Upper čaršija – the present-day Velika Tepa or Marshal Tito street,
- Lower čaršija – the present-day Mala Tepa, consisting of the area around the Koska or čaršija mosque and Kujundžiluk
- Za Kulom čaršija – extending from the Tower, i.e.the Ćejvan ćehaja mosque, to Kamberaga mahala (Luka),

Right bank: the Priječka čaršija – extending from the Old Bridge to beyond the Tabačka mosque; three vakuf had some sixty shops (Hodžić, 2000, p. 84). Until after 1878 the right bank was of secondary importance, with the main part of the čaršija located on the left bank, as the name Prijeko indicates. This was a name commonly used in BiH for lesser or insignificant parts of towns on two banks of a river. Alongside the Priječka čaršija on the right bank of the Neretva by the Radobolja there were leather processing workshops or tabhanas, mills, stamping mills and several mahalas. Prijeko's importance grew with the construction of the railway bridge (1882), the Sarajevo-Metković railway line (1891), the Gymnasium high school (1901-1903) and the opening of the colliery (1918) (Kreševljaković II, 1991, p. 232).

The čaršija acquired its features between 1550 and 1570. Several legators, among whom the most significant were Zaim Hajji Mehmed-beg Karađoz-beg (58 shops around his vakuf), Ćejvan-ćehaja (67 shops abutting onto the foundations of the Upper čaršija and Kujundžiluk) and Nesuh-aga Vučjaković (who built 26 shops under Lipa, extending the Upper čaršija), built more than 200 shops and several other useful buildings. Evliya Çelebi, who visited Mostar in 1774, described the čaršija and Pazar (market, bazaar): "It has 350 solidly built shops." (Hodžić, 2000, pp.. 84-86).

During the Ottoman period the main central market square was in the imperial čaršija (Suki sultani on Velika Tepa). Here all the orders that came from the central authorities in Istanbul (firmans) were proclaimed to the people. Here too, the town criers were used to conduct auctions and sell movable and real property, summon soldiers to the flag, and so on. On state and religious holidays, people gathered in the čaršija for revelry

(šenluk/şenlık) and to hold various sporting events such as putting the shot, jumping into the dačj, wrestling and the like (Hasandedić, 1980, p. 8).

There were about thirty different crafts in Mostar. In 1762 there were 11 guilds (esnaf): ekmekčijski (bakers), terzijski (tailors), bašmakčijski (cobblers), painters and plasterers, ćurćijski (leather workers), ćebedžijski (blanket makers), kujundžijski (goldsmiths), timurdžijski (blacksmiths), nail-makers, locksmiths, swordsmiths, gunsmiths, tabački (tanners), berberski (barbers) and unđerski (builders). In 1875 Mostar had 11 crafts in 122 shops with 199 master-craftsmen and 563 labourers. Commercial activities and crafts manufacturing were pursued through esnaf or producers' guilds, largely grouped by street in the čaršija.

Three crafts only had their own separate section of town: the Tabhana (leather tanning), the Kujundžiluk (copper and iron workers) and silk weavers, around the Clock Tower.

The most highly developed was the tanners' guild. Their shops were the most solidly built, with the north wall of the complex forming part of the town ramparts. The tanners moved into the Janissaries' residence (the residence of the Janissaries' detachment) towards the end of the sixteenth century, because the building they had previously been using, at the confluence of the Radobolja with the Neretva, was not safe from flooding. The tanners' guild was the only one in the čaršija to have its own mosque. The tanners of Mostar were known throughout the Empire for producing the leather known as red sahtiyan (Pašić, 1989, p. 46).

As Evliya Çelebi says, the tabhanas (tanneries) in Mostar is like nowhere else: its building is like a fortress, it has iron windows, and in the centre is a large pool (Çelebi, 1996, p. 474).

Almost without exception, commercial activity was centred on the shops and storehouses, which were built in rows along the ten streets of the Mostar čaršija, surrounding the mosque complex, hans and hamma. The shops were used for both the production and the sale of goods, while the storehouses were mainly used for storage and only rarely for selling. In Kujundžiluk – the centre of the goldsmiths' trade – one sees combined shops and storehouses, with both the accessibility of the classic shop and the security of a storehouse.

The shops were small, single-storey, wood-built buildings, with a structure of wooden pillars and beams resting on the sidewalls, which were stone-built, and with a stone roof cladding. They ran along both sides of the street and were usually raised above street level. They were open on the street side, and were closed by two wooden flaps forming the ćepenak. The lower flap, when the shop was open, was used for working or as a seat. As a rule there would be a storehouse behind the shop, which was then called a shop with storehouse. All the shops were small enough for everything to be within arm's reach; the smallest shops were about 1.50 m. wide and at least 0.50 m above street level. People did not enter the shop, but did their trade seated on the ćepenaks. The shops usually had carvings on the pillars of the porch, beams and corbels, which as a rule consisted of mouldings on the angles (Tuzlak, 2002, p. 22; Idrizbegović, 2003, pp. 30, 81).

The storehouses were solid buildings with thick stone or stone-and-unbaked-brick walls. They were erected in Mostar from 1830 on, modelled on the shops in Dubrovnik. The sales area would be in the ground floor, with the storage space above. To secure them from burglary and fire, the windows were fitted with iron bars and shutters (with geometric and floral decoration) and the doors were of wrought iron. The basic structure consisted of thick stonewalls with a tuff vault as ceiling, and the floor separating the two storeys consisted of close-set wooden beams with a thick packing of loam. The stairway was very narrow, 0.50 – 0.60, and ladders were used to reach the basement and the upper floor. The storehouses had iron bars and shutters on the windows and doors, which were usually decorated, as was the upper stone cornice. Most of the buildings in the Mostar čaršija had a basement area (Pašić, 1989, p-. 47). In the mid 19th century several storehouses resembling those in Dubrovnik were built in Mostar – these had no shop in front, but combined shop and storehouse in one. Storerooms of this kind were a transition to modern shops (Kreševljaković II, 1991, p. 237).

The mills are architecturally very similar to the storehouses, consisting of simple stone-built one-room structures built along the Radobolja. Local stone was used, with a stone roof cladding. Inside the mills are two or more millstones powered by water, directed along channels with a steep fall to the millwheel paddles. In Mostar, as well as the mills on the river Radobolja and its channels, several stamping mills and vats for rolling fabric. There were nineteen mills in the čaršija itself, and five along the upper course of the Radobolja in Ilići. The mills have long since fallen into disuse and for the most part have not been preserved – only a few still remain in good condition, at the confluence of the Radobolja with the Neretva, now in use as catering premises because of their attractive location, while the others along the Radobolja are in a ruinous condition. The remains of another four or five mills are still visible, and one of them – Buka mill – was renovated in 2001 (Idrizbegović, 2003, p. 34).

The mosques, hans and hamams that dominated the čaršija were built of more finely dressed stone and were considerably larger in size, so that they stood out from the rows of buildings that were built following the lie of the land.

VELIKA AND MALA TEPA – the Velika Tepa occupied the central area of the former Ćejvan-ćehaja mahala, not far from the Old Bridge, and Mala Tepa occupied the upper part of the former Sinan pasha mahala. The word "tepa" is of Turkish origin, and means top, hillock, summit, height. Velika Tepa acquired its name in relation to Hendek by the Old Bridge, and Mala Tepa in relation to Mejdan. Settlement, and the erection of houses and shops on the Tepas, began in the early years of Turkish rule. Mala Tepa or Tepa is now a synonym for the main Mostar market. This part of Tepe was inhabited until 1931, with several houses with oriel windows facing the Neretva, and Balta's (later Popović's) han, which was demolished in 1931.

TABHANA – in H. Kreševljaković's view, the old Mostar tannery was built in the mid 16th century and stood by the confluence of the Radobolja with the Neretva. It is not known who built it. The earliest reference to this trade is to be found in Mehmed Karađoz' 1570 deed of endowment, which states that the legator had built sixteen tanners' shops by his imaret (public kitchen), which was close to his mosque. These shops did not constitute either the Lower or the Upper Tabhana, which stood on the opposite side of the Neretva, some 600 m downstream. At some time prior to 1664 a flood damaged the Lower Tabhana, and the tanners moved into the premises of the present-day Tabhana, which had until then housed the Janissaries. Unlike the old Lower Tabhana, this one was called the Upper or Big Tabhana. Evliya Çelebi describes it as a building constructed like a fortress, with iron windows, and a large pool in the centre (Çelebi, 1996, p. 468). In 1713 Mostar suffered major flooding, when the Neretva flooded the Tabhana and three shops were completely destroyed. A small building was built onto the left hand wall of the Tabačica mosque, in which there was a stamping mill at the time the tanners' shops were built. The stamping mill was used for pounding gallnut and sumach, and was powered by the Radobolja waters, which flow below the mosque. This building was erected either at the same time or perhaps earlier than the mosque. With time it fell into ruins, and in 1954 the Institute for the Protection of Monuments reconstructed it on the same site.

OLD KANARA (ABATTOIR) – this stood between the Old Bridge and the confluence of the Radobolja with the Neretva, right by the right bank, and was erected in the early years of Turkish administration. In the late 19th century it was relocated to Bišće polje, where it remains to this day. The earliest known reference to this building dates from 1714. Until 1878 all the butchers' shops stood along the Radobolja, from the Tabhana to the former Ruža café. The main reason for locating them along the Radobolja was the proximity of large quantities of clean water and of the tannery for the sale and processing of hides. We learn from the Mostar court that in 1762 there were fourteen butchers (kasapa) in Mostar, and in 1828 there were ten.

TEPICA or CAFÉ LUFT – until 1931, a small building stood between Mala Tepa, Marshal Tito street and the road leading to Kujundžiluk, known by this name. The building consisted of four masonry pillars with a hipped, stone-clad roof. The foreigners, who began, after 1878, to visit Mostar as tourists, gave the name to it. The Tepica was built by a certain Čorda, who required the tenant to clean the šadrvan fountain outside the Koski Mehmed

pasha mosque twice a year, from which it may be deduced that the building dates from later than 1781, the year the fountain was erected. There was a chronogram on Tepica that noted the year it was built, but it disappeared when the building was destroyed. In his Travelogue, Henrik Rener describes Tepica as a "Café Luft" – a small pavilion open on all four sides, with benches set around and a hearth for preparing coffee to one side. The tradespeople from the market by Tepica on the Kujundžiluk side used to keep their goods in Tepica overnight or when it rained. In 1971 the market authority rebuilt Tepica on the same site and to the same dimensions; today it houses a drugstore.

KONAK or PASHA SERAI – in 1833 the Herzegovinian vezir Alija Rizvanbegović built several buildings, some large and some small, on Suhodolina. These were known as the Paša-saraj or Žuti-saraj or Konak or Dvorac (palace). They were erected on the large open spaces of the upper bastion, which the blanket-makers' guild had until then used for drying wool. The complex consisted of three large and several smaller buildings, in the largest of which (the dvorac) were the men's quarters (selamluk/selamlık, baškaluk/başklalık) where the pasha held audience, receiving parties and sundry delegations. The military authorities promptly moved into this building lock stock and barrel, as did the court and several offices, remaining there until after 1878. There was another building by this one, in which the women's quarters were located (haremluk/haremlık). Here Alija's wives and all the female servants lived, and here too were the kitchen, pantry and other ancillary premises. The third large building housed the stables and hayloft, and a large barracks for the military. Alija built several konaks or hostels and ramparts linking two towers used for the security of the serai. Various alterations have been made to these buildings, as a result of which they have completely lost their original appearance (Hasandedić, 1980, pp. 177, 185).

With the arrival of the Austro-Hungarians, the traditional crafts method of manufacture gradually gave way to industrial methods, and the need for commercial sales premises rose day by day. The classic arrangement of the čaršija gradually gave way to new components, usually in newly built buildings along the larger streets. Empty areas in the new urban zones, particularly by the railway station, made it possible to apply European ideas of building.

Between the two world wars the most significant intervention to the Old Town was arranging the open town market, popularly known as Tepa, which opened in 1934. After the 1922 fire, several shops were built in the area of the Priječka čaršija close to the Tabačica mosque, which were entirely different in nature (height, shape of doors and windows, and flat roofs) from the existing buldings.

Between 1945 and 1992 there were several interventions to the čaršija area. One was the demolition of 49 shops on the eastern side of the High Street, north of the Vučjaković mosque, in order to widen the street. The first interventions designed to revitalize the Old Town, undertaken in the 1950s, called for the reconstruction of a row of buildings in Kujundžiluk with the idea of creating a cultural centre where artists would live and work (Tuzlak, 2002, pp. 27-31).

In 1978, shops and storehouses in the Priječka čaršija were renovated. The wooden shops in Kujundžiluk were again rebuilt in 2001; all that had survived was part of the stone structure and traces of the wooden components (Idrizbegović, 2003, p. 30).

Onešćuk Street

This street was the main artery on the west bank of the Neretva, linking the Old Bridge with the Boulevard (one of the main roads in the town). Over the centuries buildings were erected along this street, making it a cross-sectio of the urban history of the town.

The western part of the street consists of buildings dating from the 1980s, and the close one gets to the Old Bridge the narrower the street becomes as it leads one back into the Austro-Hungarian and then into the Ottoman period.

Until 195. The street known today as Onešćuk Street retained its original name of Priječka or Prička čaršija. Part of the street, from the western gatehouse on the Old Bridge to Kriva Ćuprija street (leading to the Curved Bridge over the Radobolja) was in the town ramparts surrounding the čaršija, with the street continuing towards Šemovac, where the

next crossing over the Radobolja stood. The street also linked the fortified complex of the Old Bridge with the Janissary quarters to the west, which was later turned into the tannery and is now known as Tabhana. The part of the street closest to the bridge consisted of buildings typical of the Ottoman period – shops and storehouses.

The eastern section of Onešćuk Street, from the Old Bridge to the first Austro-Hungarian buildings, has retained its original integrity, scale and appearance. The greatest losses are to its traditional details – new using inappropriate materials and techniques have clumsily replaced dilapidated features, particularly over the past ten years. The western part of the street is to a large extent devastated, with buildings of a temporary nature and of very poor quality. A few Austro-Hungarian buildings survive here that have retained their integrity (Idrizbegović, 2003, p. 96).

Historic neighbourhoods

Historic neighbourhoods occupy the zone in the immediate vicinity of the Old Bridge on both banks of the Neretva. Four sub-zones may be distinguished here: the complex of the Old Bridge with its towers and commercial buildings on both sides of the Neretva; the Jusovina-Spile sub-zone to the west of the historic complex, including residential buildings along Jusovina street, Kriva Ćuprija and Oručević bridge on the Radobolja; the complex that took shape around Ramić and Ćemalović streets, the area between Marshal Tito street and the east bank of the Neretva; the residential complex, now in a ruinous state, above the west bank of the Neretva at the confluence of the Radobolja with the Neretva.

Historic neighbourhoods – east – the main aim in these neighbourhoods is the rehabilitation of existing buildings, the improvement of the urban environment and infrastructure, and the redesign of more recent, inappropriate buildings.

Historic neighbourhoods – west – the main aim are the revitalization of the residential zone. This can be achieved by the rehabilitation of existing buildings and the reconstruction of demolished or damaged buildings that have left gaps in the area. The plan also provides for the improvement of the urban structure and infrastructure and the rectification of inappropriate new buildings. (Regulatory plan for the preservation and development of the Old Town in Mostar, 2001, p. 25).

Historic neighbourhoods in Mostar are constantly undergoing change as the result of interventions by the owners of the buildings who, in the course renovating those buildings that were demolished or damaged during the 1992-1994 war, modified or increased them in size. As a result, traditional elements have been almost completely lost.

So far, of the planned works, the reconstruction of the Nezir aga mosque, the Hindo han, two mills in Jusovina, and the Ramić sokak (residential complex) has been carried out.

Marshal Tito and Braća Fejić streets

On the east bank of the Neretva, open spaces – streets, crossroads, squares, cul-de-sacs – follow the lie of the land. There are two main streets parallel to the river and shorter side streets at right angles to them, often so steep that steps have had to be built along them. The areas thus created were of key importance for the location and shaping of the buildings and had a significant impact on the development and shaping of the physical structure.

The two streets parallel to the river that were central to the development of this area are Marshal Tito Street and Fejić Brothers Street. Tito Street, which runs where the valley meets the hill to the east, has always been the main road linking Bosnia with the Adriatic Sea, and ever since the town began to take shape it has also been the high street. The other, Fejić street, runs parallel to Tito street and begins with Kujundžiluk, running from the eastern gatehouse of the Old Bridge northwards, crossing Mala Tepa and continuing as far as Mejdan square, where it acquires a new name, Mladen Balorda street. Over the centuries, the town's most important buildings have been erected along these two street and the basic urban functions have taken shape (Karahasanović, 2003, p. 23).

Marshal Tito Street

This street occupies the zone from the former Razvitak department store, i.e. the crossroads leading from Musala bridge to Marshal Tito street, to the Luka bridge, the southern boundary of the Old Town area, a total distance of about 1 km.

Over the years, Tito street was reshaped, acquiring its spatial dominance, creating a new, monumental scenography, and becoming the centre of new urban functions – the Ćejvan-ćehaja mosque and medresa, the Senior Girls' School, the National Bank, the Paher-Kisić bookshop in a row of commercial buildings, the Municipal Building, the Serbian Primary School and so on. Side streets cross Tito Street at several points, creating blocks of several buildings and joining it with Fejić Street. The most important of these is the street joining Tito Street with Musala.

Following the introduction of Austro-Hungarian rule, much of public and social life took place on the left bank of the Neretva in Tito and Fejić streets (then known as Sauerwald street). Major town planning and architectural interventions took place during this period, with new styles of conducting business and of building being introduced. Regulations were introduced governing streets and building lines. The architectural expression reflected the new styles brought in from Europe in the second half of the 19th century – neo-Renaissance, neo-Romantic and neo-Gothick, forms of romanticism, secession – and distinct styles emerged (pseudo-Moorish, Bosnian style). The new architecture clashed in dimensions and stylistic expression with the existing oriental architecture. This is the prevailing period in Tito Street. Although quite a few buildings had retained their authentic appearance up to the outbreak of war in 1992, they are currently in quite poor condition, particularly the major buildings that were classified as protected as part of the cultural and historical heritage, such as the Alajbegović house, the Serbian primary school, the former Senior Girls' School, the Konak complex, the National Bank, the Municipality Building, the National Theatre and so on – a total of fifteen in this street.

Later periods of history left no significant mark on the street and the shaping of space on it. There are just a few major buildings from the post-Austro-Hungarian and socialist periods, most of them of no architectural or townscape value.

The character of Tito Street is determined by its role as the main road axis and by its existing functions and the scale of its buildings. Until 1992 its basic functions were administration, education and culture, with buildings of typical scale. As well as these, there were rows of buildings with commercial premises on the ground floor and flats on the upper floors. Although it was the main traffic-bearing street in town, this part was also a busy pedestrian street, forming a single pedestrian zone together with Fejić Street. It is still the main traffic-bearing road for the entire town, as well as the main component of the Old City and of the entire commercial district on the eastern bank of the Neretva (Karahasanović, 2003, pp. 24-28).

Although this street has an overall uniform urban identity, within it a number of zones that differ in character and scale can still be differentiated, starting from the Razvitak building, typical of the socialist period with its functionalist, international expression and which wrecked the urban fabric of this part of the town and of the entire block, together with a large housing block alongside the department store. South of this zone, towards the Old Bridge, the physical structure becomes smaller in scale and ever more dense and compact. This is also true as it continues on to Luka Bridge itself.

Depending on which period of history they belong to, the buildings differ in number of storeys and volume, ranging from socialist buildings consisting of a ground floor and seven or four upper storeys, via Austro-Hungarian buildings with ground and three or two upper floors, to high single-storey and small single-storey buildings of various periods. Except for the northern zone around Razvitak, where there is a group of large buildings erected without regard for the existing environment and dominating in size, height and architectural expression, the street is largely uniform in scale. Proceeding southwards, the architecture becomes smaller-scale and the density increases as it merges into the area around the Old Bridge.

Very few buildings dating from the Ottoman period have survived in the Tito street zone, and those that have are mainly houses or religious buildings, of which the most

important are the Alajbegović house and the Nesuh-aga Vučjaković mosque. The materials used in these buildings were stone and timber frames with unbaked brick infill, with hipped or three-sloped roofs clad with stone slabs (or, in the case of the mosque, a lead-clad dome). Windows and doors took the form of traditional wooden windows and entrances. The type and colour of the finish on the façades were a combination of whitewashed lime mortar and stone.

Buildings from the Austro-Hungarian period are the most numerous and the most important in this area, with various functions, form and proportions and still in relatively good condition. For the most part they are buildings of the kind typically to be seen on western European streets, planned and orderly, facing this major commercial street, which was a new, European urban strategy in Mostar's town planning. These elegant two- and three-storey masonry buildings are of mixed use: the parterre was open to the public, with commercial premises on the ground floor, while the upper floors were for private, residential use. A number of buildings of this period stand out in scale and form, such as the National Bank building, the Konak and the Serbian primary school. The building materials used were stone and steel load bearing beams, with baked brick infill and timber roof frames. The roofs were usually hipped or gabled, and tile-clad. There were a number of basic typical window and door shapes, with stone frames, wooden windows and steel shutters and entrance doors. The finish of the façades took the form of stone facings, stucco in various colours, or combinations of the two. The main street façades are simple, some of them decorated merely with floral or geometric designs framing the window. Pilasters and cornices are typical 19th century decorative features and figure on the buildings along Tito Street. During the war many of the buildings were damaged or destroyed, and there are visible signs of flawed post-war interventions in the shape of alterations to the proportions of the windows and the replacement of wooden window frames with plastic. The buildings are not the same in colour.

The period between the two world wars has left no significant mark on the architectural expression or shaping of space in this zone. The few buildings that were erected during this period are adapted to and fit in with the environment in scale, proportions, the rhythm of windows and doors and the materials used (Islamic community building), while more monumental public buildings were influenced by the international style and did not fit into the environment (the former SDK building, the National Theatre).

The socialist period introduced the functionalist expression in architecture, the outcome of the international style of the preceding period. This functionalist, socialist style introduced a new, austere architecture expression, with broad-span construction, universal modules, prefabs, visible materials and light structures, which influenced the shape taken by administrative and commercial buildings. The most striking examples of this architecture are the Razvitak department store building and the housing block close by. The National Theatre, built after World War II in the social realist architectural style, is in tradition and spatial technical possibilities one of the major regional generators of cultural development.

During the 1992-1995 war, the whole of Tito Street suffered major damage. During the post-war period, interventions have been carried out on damaged and devastated buildings to stabilize them and prevent further deterioration. All the major buildings are still in ruins, and interventions carried out on smaller buildings are an example of unplanned and inappropriate interventions as regards the materials used and the architectural expression (Karahasanović, 2003, pp. 35-50).

OLD BAZAAR

This was the site of the market until the construction of the Luka Bridge in 1917.

It is now an extensive area by the bridge and, according to the Plan, should play a significant part, along with the renovation of the Luka Bridge, as the southern access to the town and tourist point. This part of the town has lost much of its Ottoman character (Idrizbegović, 2003, p. 23).

Braća Fejić street

The urban zone of Fejić street took shape between 1470 and 1620. The present-day name of the street dates from post World War II. Originally, the street served to link the

mahalas with the čaršija that had grown up around the Old Bridge between the High Street and the river Neretva. Northwards, Fejić Street runs parallel with the High Street to the east. The first mahala to take shape was the Sinan pasha mahala, later known as Atik (Old) mahala, close by the čaršija. The centre of this mahal was Mejdan square, around which several public buildings were erected: the governor's residence, the mehkeme (courthouse), the Sinan pasha mosque (1474), and the hamam. The square was organized as an administrative centre, represented by the governor's residence and court.

The mid sixteenth century was notable for the striking development of the Ottoman town, when a hundred new shops were built in the Mostar čaršija, around the Old Bridge. It was then that Karađoz-beg erected the largest mosque complex in Mostar. The final urban planning disposition of this street was in the 1610s, when two new mahalas were completed in the area between the Karađoz-beg mahala and Musala with the construction of new centres – the Roznamedžija mosque (probably c. 1610) and the Kjose Jahjia-hojja mosque (prior to 1620). The side streets running east and west linked the street with the residential areas. The houses along the street had no ground-floor windows, and had projecting corners for a better view. A map of the town dating from 1881 shows that the street had taken on the appearance of a longitudinal mahala, with the street façades consisting of the high walls of the buildings, courtyards or gardens separating the residential quarters from the street. The urban layout and architectural structure formed in the mid 17th century remained intact for the next hundred years or so.

During the Austro-Hungarian period (1878-1918), Fejić Street took on its present-day appearance, something that was then wholly new and unknown in the way streets were conceived, as a result of a reorganization of its functions. It ceased to serve merely as a link between the mahala and the čaršija. The existing structures were altered by new construction to a different scale, with different materials and use of decorative elements. Where there had formerly been gardens or buildings that had been pulled down, new buildings were erected to give the street a new appearance, very different from the way space was organized in the Ottoman fashion. Work was no longer kept strictly separate from the residential zone in the physical sense – the two functions came together in a single building, with the ground floor used for commercial purposes and the upper floors for residential, altering the urban layout of the entire area. In 1879 the Thonhauser pharmacy was built, with flats on the upper floors, in the area around Mejdan Square, where the Hotel Orient was also erected. It was now (1884) that the hamam adjacent to the Sinan pasha mosque was demolished. Once the Musala was linked to the right bank of the town by the bridge built in 1882 on behalf of the Emperor Franz Joseph, and a few years later by New Street and the High Street, the new main town square took shape. The creation of a shortcut between the čaršija and the new town centre contributed to the commercial development of the street, which was known as Sauerwald Street at that time. A number of public buildings erected at this time constituted the urban points of reference, along with the previous mosque buildings – the Police Headquarters (1893), the Vakıf Hall (1884) on the site of the former Karađoz-beg han, the Wecel pharmacy with flats (1904), and the Ukraine Cinema (1911).

During World War II, the area around Mejdan suffered extensive damage from the bombing in 1944. In 1948, the authorities demolished the Sinan pasha mosque.

A second wave of changes took place in this area between 1960 and 1980. Two new buildings were erected on either side of Biščević street: the social insurance building and another mixed-use block with the Razvitak department store on the ground floor and a nine-storey building above, dating from 1970. The old urban structure between Fejić Brothers Street, Tito Street, Hasan Brkić Street and Huso Maslić Street was demolished to make way for new buildings. The space was packed to the maximum with commercial and residential buildings with several hundred flats. The infrastructure was not dealt with, however, particular traffic and parking areas, which remains the case to this day.

The whole of Fejić Street suffered extensive war damage during the 1992-1995 wars. There is visible damage, not only to individual buildings, but to the entire urban fabric. The process of renovation is currently under way at various levels, pursuant to the

Regulatory Plan for Mostar Old Town, adopted at a session of Mostar Stari Grad council on 10 May 2001 (Demirović, 2003, pp. 19-28).

Fejić Street as a whole may be divided into a number of sub-zones:

MEJDAN – the first mahala to be formed in Mostar with the arrival of the Turks was the Sinan pasha mahala, comprising the area around the former Sinan pasha mosque. Turkish official documents refer to this mahala and its mosque as "atik" (old). From the early days of the Turkish administration, there was a square here, as the name "mejdan" suggests, the earliest reference to which dates from 1478 (Hasandedić, 2000, p. 106).

During the Ottoman period, in addition to the mosques there were also rows of shops here, a mehćema/mehkeme (courthouse), the kadija's house and a hamam, surrounded by houses. During the Austro-Hungarian period, changes were made with the interpolation of new buildings and features. Many of these buildings survive to this day (Demirović, 2003, p. 50). As these buildings went up, the square increasingly became a small centre in its own right. Until the new hospital was built in 1888, there was a hospital to the north of the square. To the west of the Officers' casino at the entrance to the square, on the southern corner, the first pharmacist, Julije Thonhauser, built a tall two-storey house with the pharmacy on the ground floor. Now a large building with a fine park adorns the southern side of the square. In 1894 the District Authority building on Mejdan was completed. Mejdan was later known as Rudolf-platz and Trg 1 maja (First of May Square). (Miletić, 1997, p. 49).

During World War II certain buildings disappeared completely, and new ones were erected on the same sites. Mejdan is one of the few open spaces with a direct view of the Neretva. Another feature of this area is that within very small space Ottoman-period buildings with entrance courtyards and gardens can be found along with Austro-Hungarian ones with inner courtyards. A third section has modern apartment-block housing and catering facilities of no specific architectural expression. In the neighbourhood of Biščević is a mahala dating from the 17th century, which was to reach its acme in the late 18th and early 19th century. Seen as a whole, this mahala has retained the features of the old mahalas, with narrow streets or sokaks leading to the gates of courtyards surrounded by high walls (Demirović, 2003, p. 50).

This is now a run-down open space used as a parking lot, where all that has survived, in part at least, is a complex of residential buildings.

It is vital to reorganize Mejdan properly, redefining the functions of market and open spaces, upgrading the riverbank, providing additional space for the inhabitants and upgrading the residential function. As part of these, it is also essential to conduct archaeological investigations and mark the site where the oldest mosque in Mostar – the Sinan pasha mosque – once stood (Regulatory Plan for the preservation and development of Mostar Old Town, 2001, p. 31).

PEDESTRIAN ZONE IN THE STREET ITSELF. Fejić Street has a number of open areas that play an important part in the townscape. The park by the Karađoz-beg mosque is part of the mosque complex that is more readily accessible to the public, and was created in the 1950s on the site where there had previously been a number of housing complexes. The park beside the Roznamedžija mosque is part of the mosque complex where the medrese once stood. All that survives of the medrese is the foundations. These areas require separate treatment in any future interventions. In addition to these open spaces, particular attention should be paid to the street fronts – conduct a detailed study to identify the complexity of the Fejić street front and draw up a detailed plan for interventions designed to preserve the character of the street

PUBLIC BUILDINGS

Public buildings are constructed of stone, and are of monumental character, with many domes, vaults and richly ornate features. The construction of domed buildings is the pinnacle of achievement in the use of materials and building techniques. The architecture

of domed mosques and other domed and vaulted buildings of similar spatial treatment dating from the 16th century is very similar in the materials used, building techniques and construction to those of similar edifices in Asia Minor and Turkey. The basic building materials are stone and baked brick, with local building influences evident in the way they are used. The façades of mosques in Bosnia and Herzegovina were not given a polychromatic treatment, but were merely of stone. Over time this art, usually Ottoman in form and coastal in treatment, acquired its own regional features in BiH. Façades were sometimes stuccoed and whitewashed from the start. However, in this part of the world tromps were more commonly used than pedantries in the treatment of the transition when building the domes of mosques. The domes themselves were relatively low in proportion to the overall height of the mosque, and sometimes had shallow calottes, but were always of much greater dimension than the domes of mediaeval edifices. Mosques without domes generally retained all the other features of domed mosques, with the roof structure and roof cladding identical with that of houses in the same region. The materials used reflect local availability, with materials from the nearest local source being used. This leads to distinct variations from area to area in the materials used, with timber-built buildings mainly in mountainous areas and stone predominant in the southern regions (Pašić, 1989, p. 137).

RELIGIOUS EDIFICES

Buildings dating from the Ottoman period

During the Ottoman period, members of four confessions lived in Mostar and its environs, all of them with the exception of the Jews with their own places of worship. There are references to Catholics, Orthodox and Muslims from the earliest years of Ottoman rule, while Jews are known to have settled in Mostar only in the 19th century (Kreševljaković, 1951, p. 72).

By 1878, thirty-seven mosques, three tekkes, two Orthodox and one Catholic church had been built in Mostar.

Only three of Mostar's mosques are domed; the rest have ordinary roofs. The three are the Karađoz-beg mosque, the Nesuh-aga Vučjaković mosque, and the Mehmed Koski pasha mosque (Hasandedić, 2000, pp. 13-18).

In the 15th century the Turks had already introduced to these parts all their skills and treatments of new kinds of domed places of worship as well as other typically oriental edifices – medresas, hamams, bezistans or covered markets, and caravanserais. All these buildings bear the stamp of the Bursa and early Istanbul style. Austerity of decoration and space in which everything is static are what chiefly characterize this style. The masonry techniques and use of materials were borrowed from Byzantium. Local builders trained in Byzantium had a major role in building these edifices. Four basic types of these monumental buildings may reliably be distinguished: single-space domed mosques with three smaller domes over the portico, single-space domed mosques with a two-domed portico, multi-space domed mosques with an elongated ground plan, and domed mosques of hexagonal and octagonal plan. In the 16th century the most common type was the single-space domed mosque with three smaller domes over the portico and a minaret abutting onto the central body of the building. This type was used equally throughout the Balkan areas under Ottoman rule.

Single-space domed mosques constructed of the pure geometric volumes of the cube; hemisphere, cylinder, prism and cone circumscribe a simple space for people. The enclosed space is private, intimate, and so arranged as to encourage absolute concentration of thought and perfect peace and calm. Every part of the interior is of equal value, with only the mihrab – the niche for the imam leading the prayers – slightly emphasized. The mihrab also has a symbolic meaning, denoting the direction of Mecca, towards which believers must face when performing their prayers. All the other interior fittings (mimber, ćurs, mahfil) are such that the interior would lose none of its value if they were removed. A mimber or pulpit is to be found in Friday mosques. The imam gave his hutba or sermon standing to the right of the mihrab or on it, particularly on Fridays and at Eid.

Decorative sculptural features in the mosques are usually of stone, or rarely of stucco or marble, and appear on the exterior on the surface of the minaret, capitals and bases of pillars, ancillary mihrabs, portals, windows, and fountains; in the interior they take the form of bas-relief ornamentation in stone adorning the mihrab, mimber and mahfil. The usual motif of stone ornamentation is the stalactite, a combination of prismatic and pyramidal forms combining into a geometric relief, an arabesque in space. Stone decorations are often painted (Pašić, 1989, pp. 27, 28, 157).

Zaim Hajji Mehmed-beg Karađoz mosque

This is the largest mosque in Mostar, and indeed in the whole of Herzegovina, standing on the corner of the eponymous street and Fejić Brothers (Central) street.

The complex of the Karađoz-beg mosque was built in 1557 close to the bazaar and main road, and consisted of a mosque, medresa, mekteb, han and imaret (Regulatory Plan for the preservation and development of Mostar Old Town, 2001, p. 18).

More detailed information about the building may be found in the Decision to designate the **Architectural ensemble of the Karađoz-beg mosque in Mostar** as a national monument.

Koski Mehmed-pasha mosque

The Koski Mehmed-pasha mosque stands on the left bank of the Neretva, between the river and Kujundžiluk Street, about twenty metres south of Mala Tepa. It is surrounded to the east and north by shops and the market, and to the west and south, where the Neretva flows, it has an open view. The finest view of this mosque is from the Old Bridge.

This mosque is one of the finest of Mostar's monuments. Its affiliations are with the early Istanbul style of Ottoman architecture, with the following features: the main dome over the prayer space, three smaller domes over the hajat (portico), and a minaret abutting onto the right of the building (Zvonić, 2003, p. 183).

More detailed information on the building may be found in the Decision to designate the **Architectural ensemble of the Koski Mehmed-pasha mosque in Mostar** as a national monument.

Nesuh-aga Vučjaković mosque

This is the third mosque in Mostar with a domed roof; architecturally, it differs in certain details from the other two.

The Nesuh-aga Vučijaković mosque or mosque "Pod lipom" (under the lime) stands on the left bank of the Neretva at the corner of Tito street and the Clock Tower. It gained its name of Pod limpom from an old lime tree that was planted outside it many years ago (Hasandedić, 2000, p. 25). In architectural details, this mosque is a unique example of the Mediterranean-Dalmatian school of building.

More detailed information on the building can be found in the Decision to designate the **Architectural ensemble of the Nesuh-aga Vučijaković mosque in Mostar** as a national monument.

Mosques without domes, with hipped roofs and flat wooden ceilings, were built from the start of Ottoman rule, in the classical period, which extends from the last eight decades of the sixteenth century on. This type of mosque is numerically the most prevalent. Usually, such mosques are of modest dimensions, but there are also some more substantial ones (the Sulejmanija in Travnik). A distinct type of mosque is that with a wooden dome within a pitched roof, such as the Šarić, Roznamedžija and Tabačica mosques in Mostar, or with a wooden barrel vault (the Magribija mosque in Sarajevo). The finest mosque in this group is the Roznamedžija mosque in Mostar, with an unusually fine minaret (Pašić, 1989, p. 32).

Ćejvan-ćehaja mosque

The Ćejvan-ćehaja mosque is hard by the left bank of the Neretva, about fifty metres to the east of the Old Bridge, by the Herceguša tower. It has been repaired on many

occasions and has consequently lost much of its original appearance. It is known for being the only mosque in Mostar with the minaret on the left hand side of the building.

More detailed information on the building can be found in the Decision to designate the **Architectural ensemble of the Čejvan-ćehaja mosque in Mostar** as a national monument.

Roznamedžija Ibrahim efendi mosque

This mosque stands at the corner of Kreso and Fejić Brothers streets, not far from the left bank of the Neretva, and is one of the most important monuments of Islamic architecture in Mostar.

More detailed information on the building may be found in the Decision to designate the Architectural ensemble of the Roznamedži Ibrahim efendi mosque in Mostar as a national monument.

Nezir aga mosque

The Nezir aga mosque or mosque in Spile (Šemovac) stood on the plateau above the Curved Bridge, not far from the Old Bridge. This site is dominated by the lower section of the Radobolja valley and is one of the most picturesque areas of the old part of the town. Stylistically, the Nezir aga mosque is affiliated to the architectural group of Mostar mosques known as "pločar" (from ploča = slab, plaque, sheet, board, plate), such as the Šarić, Lakišić, and Ćejvan-ćehaja mosques.

More detailed information on the building may be found in the Decision to designate the **Site and remains of the architectural ensemble of the Nezir-aga mosque in Mostar** as a national monument.

Hajji Kurt (Tabačica) mosque

Every one of Mostar's 36 mosques bears the name of its founder except the Tabačica. It stands in the Priječka čaršija on the right bank of the Neretva, about 100 m. west of the Old Bridge. It was erected on a branch of the Radobolja with two stone arches vaulting it, and is thus also known as the mosque in which the imam is in the dry and the congregation in the wet (Hasandedić, 2000, p. 115).

It is one of the finest monuments of Islamic architecture in Mostar, and differs architecturally in certain details from Mostar's other mosques. The main reason for its distinctiveness is the site and environment in which it was built.

More detailed information on this building may be found in the Decision to designate the **Historic monument of the Hajji Kurt (Tabačica) mosque in Mostar** as a national monument.

Hajji Memija Hadžiomerović mosque in Cernica

The Hajji Memija mosque stands on the corner of Hadžiomerović street aqnd the former Mujaga Komadina Street in Cernica. It had a hipped roof clad with stone slabs, and an octagonal stone minaret about 15 m high.

More detailed information on this building may be found in the Decision to designate the **Architectural ensemble of the Hajji Mimija Hadžiomerović mosque in Cernica in Mostar** as a national monument.

Buildings no longer in existence

Sinan pasha mosque

The Sinan pasha mosque stood on Mejdan square, about fifty metres from the left bank of the Neretva and about 300 m north of the Old Bridge. It was known as the Atik (Old) mosque, which leads to the assumption that it was the oldest mosque in Mostar. It was bult in 878 AH (1473/74) and was one of the most spacious in the town. It was demolished on 30 December 1949. The mosque underwent several alterations, the first in 913 AH (1507/1508), as recorded on an inscription that has not survived. Funds from the Sinan pasha vakuf were also used to build a hamam close to his mosque, which was demolished in 1884 (Mujezinović, 1998, p. 146).

The travel writer Evliya Çelebi, who passed through Mostar in 1664, writes in his travelogue that the old mosque in Mostar was built in 878 AH (1473). He also referred to an inscription from the mosque, now located over the door to the Vučjaković mosque. Turkish official documents note that in 1478 Mostar had one imam, the leading official in a mosque. This mosque was probably built by the Herzegovina sandžak beg Sinan-beg, who ruled Herzegovina from 1474 to 1475 (Hasandedić, 2000, p. 107).

In its original form, the mosque was a small building with no minaret or any exterior or interior decoration, but it was later adapted and extended, and a minaret was built in 1507 by the second Herzegovina sandžak beg, Sinan pasha Borovinić. The earliest information about this mosque is to be found in the deed of endowmen tof Murtaga, son of Abdurahman, dating from 1572.

The Sinan pasha mosque was a very valuable example of religious architecture in Mostar. It was built of cut stone and had a hipped roof clad with slabs. Alongside it stood a tall, solidly built stone minaret entered from the *sofas*. It was reckoned to be the most spacious mosque in Mostar (Hasandedić, 2000, p. 109).

The deed of endowment for the mosque has not survived, so nothing is known about what the legator bequeathed for its maintenance. When the land registry was drawn up in 1890, the vakuf of this mosque owned three gardens (2 *bašče* and one *vrt*), and four building sites. In 1895 three shops were erected in the Priječka čaršija on behalf of this vakuf from voluntary contributions by prominent Muslims from Mostar to provide for the maintenance of the mosque.

The mosque underwent several alterations. In 1887, donations from the local inhabitants supplemented by funds from the Territorial Government were used to alter the roof of the mosque, removing the slabs and replacing them with tiles, and the minaret was entirely rebuilt (Miletić, 1997, p. 50). The last time it underwent major repairs was in 1906, when the roof was replaced by a new one (Archive of the Vakuf Commission in Mostar, doc.no.199/1908). It was demolished on 30 December 1949. The mosque is registered in the land registry of c.m. Mostar no. 3149, c.p.27/41, and together with its antechamber and courtyard occupies an area of 760 sq.m.

During the Ottoman period, other buildings erected on Mejdan in addition to the mosque were the mehćema (courthouse), hamam and houses for the shari'a judges to live in (Hasandedić, 2000, p. 110).

MEHĆEMA – from 1473 onwards, a naib or deputy of the Foča kadija had his headquarters in Mostar, which became a kadiluk between 1506 and 1519. The first court building was built in Mostar on Mejdan close to the Sinan pasha mosque in the early years of Ottoman rule. It continued to be used for its original purpose until 1833, when Ali pasha Rizvanbegović built his konak at Suhodolina and transferred the court and some other institutions there. From then until the beginning of the 20th century the mehćema on Mejdan was used to house the Vakuf Commission. The building still stands, and has undergone several alterations. It is now used as a private residence.

SHARI'A JUDGES' RESIDENTIAL BUILDING – The Mostar scholar and mufti Mustafa Ejubović (Sheikh Jujo, 1651-1707) erected a house for the shari'a judges to live in on Mejdan right by the Sinan pasha mosque and the mehkeme. During the rule of Ali pasha Rizvanbegović, the house came into his possession, and he repaired it and endowed it for the same purpose, as recorded on an inscription incised on a plaque on the building to the right of the main entrance. Between 1878 and 1888 the building housed the city hospital (Archive of the Vakuf Commission of Mostar, minute dated 17 April 1888). The building underwent major repairs in 1960 by the Institute for the Protection of Cultural Monuments Mostar. It is currently used as a private residence (Hasandedić, 2000, p. 111).

By 1631, six mosques had been built in Mostar, the founders of which were ulema or members of the intelligentsia of the day: the Ali Havadža (hojja) mosque in Riljevina by the left bank of the Radobolja (destroyed by fire in 1922; in 1935 its minaret was taken to Jablanica and rebuilt alongside the mosque there), the Bajezid Havadža mosque (destroyed during the war), the Hafiz Havadža mosque in Brankovac (demolished in 1932; a building was erected on the site that now houses the Islamic Community Board, and the minaret

was taken to Čapljina in 1932 and rebuilt alongside the mosque there), the Čoša Jahja Havadža, the Husein Havadža (demolished in 1947, although it was in good condition) and the Memi Havadža in Carina (demolished in 1951, although it was in good condition). All had fine stone minarets except the Bajezid Hojja mosque, which had a small minaret. The only one that still survives is the Čoše Jahja Hojja mosque on Musalli (Hasandedić, 2000, p. 88).

MASJIDS – in Bosnia and Herzegovina mosques with no minaret and usually without a mimber are known as masjids. They are small single-storey buildings with a portico, slab roof and no exterior or interior decoration. As far as is known, there were eleven in Mostar, of which four – the Kamber aga, Bajezid hojja, Hajji Velija and Husein Kotlo masjids – had small minarets and the others had none. Of these four, the only one to retain its small minaret is the Kotlevina masjid in Luka, which was one of a kind not only in Mostar but also in Herzegovina as a whole (Hasandedić, 2000, p. 149).

Sultan Selim Javuz masjid

There was a small masjid right by the Old Bridge, built during the reign of Sultan Selim Javuz I (1512-1520), primarily for the use of the troops guarding the bridge. The masjid had no minaret; the azaan was called from a stone set on top of the Old Bridge by the parapet on the southern side of the bridge.

More detailed information on the building may be found in the Decision designating the **Architectural ensemble of the Old Bridge and towers in Mostar** as a national monument.

Serbian Orthodox Church complex

A firman dating from late Rajab 1248 AH (December 1832), granting approval for repairs to the old Orthodox church in Mostar, reveals that the entire area above the church where the Orthodox cemetery is now located was formerly owned by the Hajji Balija vakuf (Hasandedić, 2000, p. 76).

The old Orthodox church of the Nativity of the Mother of God in Mostar is located to the east of the town centre, in the area known as Bjelušine, on an elevation above the remains of the Orthodox Cathedral and old Orthodox school.

Until 1832 there was an older church on the site of the present Old Orthodox church; when this older church was built and what it looked like is not known (Hasandedić, 1980, p. 67). It is known to have been in existence in the 18th century. However, tombstones of priests buried in the cemeteries in Suhodolina, Bjelušine and Pašinovac, dating from the late 17th century, are solid evidence that the church was in existence even before then.

More detailed information on the Orthodox church may be found in the Decision designating the **Architectural ensemble of the old Orthodox church of the Nativity of the Mother of God in Mostar** as a national monument.

In 1873 Andrija Damjanov built the Orthodox Cathedral of the Holy Trinity in Mostar in the neo-Byzantine style to a design. It was erected in Perkovina, very close to the old church. Works on the church took ten years and were completed in the autumn (31 October) of 1773 on St Luke's day.

More detailed information on the building of the Orthodox Cathedral may be found in the Decision designating the **Site and remains of the historic building of the Orthodox Cathedral of the Holy Trinity in Mostar** as a national monument.

Jewish synagogue

According to a Jewish almanach for 1928/29 and statistics on Judaism of the Kingdom of Serbs, Croats and Slovenes, there was a synagogue in Mostar as early as 1889. Adapting a building that had previously been used for storing hay created the synagogue. The plot on which the place of worship stood lay along the former Mukić street (Šarić Brothers street). The premises were small, and with the growing needs of the Jews

of Mostar it became necessary to build a larger synagogue. A record of the construction of the synagogue was drawn up on 7 June 1904 with full documentation.

More detailed information on the building is to be found in the Decision to designate the **Historic building of the Synagogue in Mostar** as a national monument.

BRIDGES

Complex of the Old Bridge and Towers

The Old Bridge complex is the city's most important cultural and historical feature, and indeed is one of the most important historical features in BiH as a whole.

Part of the entire urban ensemble forming a unique conglomeration and cultural and historical entity was formed around the site of the Old Bridge prior to its construction, but most of it is of later date than the Old Bridge, mainly from the 16th to 19th century. It consists of the bridge itself, two towers (the Tara Hucegoša and the Halebija-Halebnik-Ćelovina), the mosque of Sultan Selim Javuz, mills, store rooms and the deep, rocky bed of the Neretva.

More detailed information on the complex may be found in the Decision designating the **Architectural ensemble of the Old Bridge and towers in Mostar** as a national monument.

Kriva Ćuprija or Curved Bridge on the Radobolja (in the Priječka čaršija)

About 100 metres upstream from its confluence with the Neretva, there is a small single-arched stone bridge over the Radobolja, known as the Curved Bridge. The earliest reference to the bridge is in Ćejvan ćehaja's deed of endowment of 4 October 1558.

The bridge on the Radobolja, the Sultan Selim masjid and the Ćejvan ćehaja mosque are the oldest surviving structures (Hasandedić, 2000, p. 45).

More detailed information on the structure may be found in the Decision designating the **Kriva Ćuprija on the Radobolja in Mostar** as a national monument.

Oručević bridge

A small single-arched stone bridge stood about a hundred metres below the Curved Bridge, and was known as the Oručević Bridge. There is an attractive drawing of the bridge in Henrik Rener's travelogue *Durch Bosnien und die Hercegovina*, clearly showing that the bridge had a single arch and a parapet at the sides. Available sources provide no further information on this bridge (Hasandedić, 1980, p. 117).

The assumption is that the bridge was built after the Old Bridge.. In 1893 the bridge was badly damaged by a flash flood (Miletić, 1997, p. 19). In 1894 it was struck by lightning, which brought the bridge down completely. The former Mostar municipality erected a new one on the same site in 1895 (Hasandedić, 1980, p. 117). The old bridge was replaced by steel one designed by Miloš Komadina in 1896 (Miletić, 1997, p. 19). The bridge was 2.95 m wide and 10.70 m long. Limestone was used to pave the roadway, in the same way as the Old Bridge, while the structure of the bridge was of tenelija. The arch of the bridge was a regular semicircle made of regular cut stone blocks. The spandrel walls, parapet and barrier were of regular cut blocks of stone. The approach roads were cobbled, like the other streets in the čaršija (Rehabilitation of the Historic Neighborhoods, 2001, p. 68).

Bridge at Luka

After the construction of the new bridge at Musala and as a consequence of the rapid development of the town, it became increasingly necessary to build a third bridge over the Neretva linking Čekrk and Luka. The first public call for this came as early as 1891.

The final site for the bridge was chosen in 1907. On the left bank, it was necessary to demolish the Kamber-aga masjid and some shops, while on the right the exit from the bridge went through the Great Bazaar. The ensuing years went by accompanied by clashes between certain city councillors, so that the project was not implemented until 1910, when Mayor Mujaga Komadina entered the stage. That same year he commissioned eng.

Miloš Komadina to draw up a design for the bridge, which was completed by February 1911.

The plan envisaged the construction of a single-span reinforced concrete bridge, and included all the necessary elevations and a drawing of the bridge and the approach roads on both banks; it was subsequently followed for the construction of the bridge. In addition to this design, the city authorities received another three designs for the bridge in 1911 and 1912, of which one was for a new bridge of steel grid construction. However, by decision of the authorities work began on building the bridge in late June and early July 1912, when the water level was at its lowest, using Miloš Komadina's design.

Two rectangular concrete piers were built in the narrower part of the bed, in the river Neretva itself, right up by the left and right banks, longitudinally to the course of the Neretva. On each of these concrete piers, vertical wooden scaffolding was erected, each with four poles arranged fan-wise.

In June 1913 a design to alter the parapet of the bridge was drawn up, based on which the lampposts and the parapet itself were constructed.

In late June 1913 the bridge was opened and it was resolved to name it the Mujaga Komadina bridge (Miletić, 1983, pp. 235-250)

MEMORIALS, MAUSOLEA (TURBES), BURIAL GROUNDS

Buildings erected in the Ottoman period

The land registry reveals that at the start of the Austro-Hungarian period, 1878, there were about fifty burial grounds and cemeteries in Mostar, associated with every mosque and in every quarter of the town.

The burial grounds alongside mosques were opened at the time the mosques were built. During the exhumation of graves in two large burial grounds in Carina, other older graves were found at a depth of about two metres, evidence that burials were conducted here in mediaeval times and perhaps even earlier.

Mostar's burial grounds were named for the founders of the mosques alongside which they stood or the place in which they were. The oldest tombstones, the so-called šehitski nišani or shahids'/martyrs' tombstones, were made of hard white limestone and were prismatic or flat in shape. They bore no epitaphs, but some had incised rosettes or floral ornamentation, and a few had swords. In the burial ground by the Karađoz beg mosque there are three such tombstones, dating from the earliest years of Turkish rule. In their prismatic form without any decoration but merely a small hollow in the centre of the top of the slab they represent a transitional form from the stećak tombstone to the later elongated nišan tombstone.

Exhumation of burial grounds and the demolition of tombstones began with the start of Austro-Hungarian rule:

- Until 1884 the site of the old railway station had been the big Lakišić burial ground, covering an area of 19 dunums. After the railway station was built the nišan tombstones were exhumed and transfered to Kantarevac, where a new burial ground had been made, and built into the wall around it. In 1949 this burial ground was turned into a park and all the nišans in and around it were destroyed;
- When the railway line was laid through mostar in 1884 another burial ground, this one in Podhum, was destroyed - the Jabandžijski or bećarski harem, where foreign bachelors who had been working and living in the tannery were buried;
- In about 1885 a road was laid through the Šarić harem immediately below the mosque. This, the largest burial ground in Mostar, was thus divided into two and many nišan tombstones with decorations and epitaphs were destroyed in the process;
- Between 1918 and 1945 many burial grounds were exhumed and many nišan tombstones destroyed (Hasandedić, 1980, pp. 187, 190).

Muslim tombstones and sepulchres constitute a very large number of monuments of Ottoman architecture. As a rule, they were snow-white stone nišan or bašluk tombstones, and there were also stone sepulchres and turbes or mausolea. The beauty of these monuments lies in their elegant forms and stonemasonry technique combined with

ornamentation and calligraphy. They gain a further value from the particular way in which they are placed alongside mosques, busy streets and even houses. At first glance they are very simple. However, a closer inspection reveals whether they mark the grave of a man or a woman, as well as the deceased's profession. Local craftsmen usually made them from local stone. In some areas the influence of the stećak tombstones is more pronounced. Sepulchres are prismatic sarcophaguses with a wider base and the top open. Nišan tombstones are set at the ends of the upper surface, and the sides are decorated. They are made of finely dressed stone.

Notables and the powerful erected Turbes for themselves or others, usually a person of high religious or cultural standing, although this was contrary to Islamic religious precepts. Turbes were built to ensure isolation and absolute peace. In the architectural evolution of the turbe all the features to be observed in the evolution from the tent to the masonry dome are present. Their similarity with mosques is considerable. The most valuable are masonry structures with a dome, octagonal or hexagonal in ground plan (turbe of Gazi Husref-beg and Murat-beg in Sarajevo, and the Ferhad pasha turbe in Banja Luka). Another type of turbe has four columns bearing a baldaquin-like dome (two turbes in Alifakovac and one by the Sinan tekke in Sarajevo). Some mausoleums have a dome made of iron mesh, merely suggesting a domed space, instead of a masonry dome on columns (turbe of the poet Sheikh Jujo in Mostar and turbes in Travnik). A third type is the covered mausoleum with perforated walls and bars similar to those of the walls surrounding mosques, with a terminal cornice on the wall and, instead of a roof, the spreading crown of a tree planted beside the grave within the walls (the trunk and crown forming part of the architecture). Turbes are quite often of austere appearance – a simple small house with a gabled or hipped roof, made of local materials: stone, unbaked brick or wood (Pašić, 1989, p. 35).

During the Turkish period, seven turbes were built in Mostar, in various quarters of the town. Three still survive, the others have been demolished: Sheikh Mahmud Baba, Mustafa Ejubović (Sheikh Jujo), Sheikh Derviš Ishak, Mehmed-aga Kreho, Sheikh Ismail Opijač, Sheikh Mustafa Jusufović, and Nura hanuma's turbes (Hasandedić, 1980, p. 99).

Sheikh Mehmed-baba turbe

This turbe stands on Mala Tepa, and is of simple workmanship and medium size. It had a small open hajat outside the door, supported by four slender wooden ppillars. The turbe itself had a slab roof in the form of a four-sided pyramid. In early 1951 the roof of the turbe and the hjat outside the entrance door collapsed. The turbe was reconstructed in 1991, and is now in good condition. Sheikh Mahmud baba's grave was in the centre of the turbe – a medium-sized sarcophagus with two nišan tombstones.

The turbe was built of quarry stone and roofed with slabs. It had a small hayat some 60 cm above ground level with its roof supported by four slender wooden pillars. Mahmud's grave is in the centre of the turbe, a sarcophagus made of stone slabs with two nišan tombstones, the headstone of the shape used for the ulema (Hasandedić, 1980, pp. 31,99).

The epitaph on Mahmud-baba's nišan in his turbe is incised in Turkish on all four sides of the headstone with its turban, using fine naskh script. The epitaph gives the year of his death as 980 AH (1572). The stone plaque with an inscription recording the renovation of the turbe in Turkish verse is written in fine nasta'liq script. The plaque is split across the middle and the letters are damaged in places. The year of renovation of the turbe is given as 1293 AH (1876) (Mujezinović, 1998, pp. 274, 275)

Sheikh Dervić Ishak turbe

Sheikh Ishak's turbe was originally in the Mala Carina harem, but when the burial ground was exhumed in 1965 to build the railway station, it was transferred to the courtyard of the Koski Mehmed pasha mosque, where it still stands.

More detailed information on this turbe may be found in the Decision designating the **Architectural ensemble of the Koski Mehmed-pasha mosque in Mostar** as a national monument.

Mehmed aga Kreho turbe

Until 1937, there stood in the courtyard to the right of the Kjosa Jahja Hojja mosque the double turbe of Mehmed-aga Kreho (his wife was buried in the second grave) dating from 1174 AH (1760). In that year all the graves outside the mosque and in the harem to the right of it were exhumed, and shops were built on the site (in 1938, using funds from Hasan-beg Lakišić's vakuf, a representative building was erected on the harem to the right of the mosque; it was destroyed during the 1992-95 war). During the exhumation the turbe was dismantled and stacked beside the mosque (a few unexhumed graves with their nišan tombstones remained outside the mihrab of the mosque; all that now remain are the tombstones of Hajji Abdulah-aga Bećar, son of Ahmed-aga, who died in 1290 AH (1873).

The turbe stood on eight columns with oval stone arches. Mehmed-aga is said to have originated from Travnik and to have been extremely wealthy. He had extensive holdings and two halls built of cut stone in Krehin Grac, from which this site acquired its name. The turbe was recently reerected in the courtyard of the Nesuh-aga Vučjaković mosque (Hasandedić, 2000, p. 91).

Mausoleum of Osman Đikić

Osman Đikić was born in Mostar in 1879. He was known as a man of letters, a poet and publicist, a prominent politician and worker for culture and education. He died in Mostar in 1912 and was buried in the large harem in Carina where the railway station and bus station now stand. In 1936 his bones were transferred from the Carina harem and reinterred in the small harem opposite the Karađoz-beg mosque. A stone slab sarcophagus was then erected over his grave, and a turbe was built of bricks.

More detailed information on this mausoleum may be found in the Decision designating the **Architectural ensemble of the Karađoz-beg mosque in Mostar** as a national monument.

Old Orthodox cemeteries

The old Orthodox cemetery at Pašinovac is in the north-east area of Mostar, about 350 m from the cemetery in Bjelušine, very close to the remains of the Orthodox Cathedral, old Orthodox church and old Orthodox school. The cemetery is on a slope facing the town, i.e. southwest.

Among the people of Mostar there is a belief that the Bjelušine burial ground is the oldest Orthodox cemetery in Mostar and that the Pašinovac cemetery is much newer.

More detailed information on this monument is to be found in the Decision to designate the **Historic site of the old Orthodox cemetery at Pašinovac in Mostar** as a national monument.

Another old Orthodox cemetery in the northeastern part of Mostar stands in the quarter known as Bjelušine, on Stolac elevation, very close to the remains of the Orthodox Cathedral, old Orthodox Church and old Orthodox school. The torrential Suhodolina stream flows alolngside the western edge of the cemetery, which covers an area of 1 ha of approximately rectangular shape. The cemetery faces southwest.

Certain data indicate that the old Orthodox cemetery at Bjelušine is older than suggested by the epitaphs on the tombstones. By analogy, the cemetery can be dated to the 16th century.

More detailed information on this monument is to be found in the Decision to designate the **Historic site of the old Orthodox cemetery at Bjelušine in Mostar** as a national monument.

Šehitluci

In the past, there was a burial ground known by this name in Brankovac, opposite the Vučjaković mosque. By tradition, it acquired the name because shahids (martyrs) were buried here who had died of the plague or, according to another tradition, which fell in battle when Mostar was conquered in 1468. In or around 1955 the burial ground was turned into

a park and all the nišan tombstones that had stood there were destroyed (Hasandedić, 1980, p. 188). During the 1992-95 war, burials again took place in this burial ground.

More detailed information on this complex may be found in the Decision designating the **Architectural ensemble of the Nesuh-aga Vučijaković mosque in Mostar** as a national monument.

EDUCATIONAL BUILDINGS

Buildings dating from the Ottoman period

Until the end of the 18th century, only two kinds of educational facilities were in use in Mostar: mektebs and medresas. Mektebs were primary religious schools providing basic religious knowledge, while medresas roughly corresponded to the modern secondary school and provided their graduates with secondary and higher religious education (Hasandedić, 1980, p. 73).

MEKTEBS

The first buildings denoting the start of construction of a given settlement were mosques with mektebs built alongside them. Mektebs were built in every settlement from the earliest days of Turkish rule in the mid 15th century, and are between the first and most numerous examples of Islamic architecture in this part of the world.

All educational buildings, including both mektebs and medresas, originated as the endowment of an individual, and almost every mahala or village had its own mekteb. These were primary schools for the religious and moral education and upbringing of children and mastering the Arabic script. According to the law of the day, mektebs had four grades, and were for boys, girls or mixed. In terms of their foundation and maintenance, they could be vakuf mektebs, national mektebs or temporary.

If built as a separate building, a mekteb would have one large room for the pupils. They were single-storey or two-storey buildings, with the mekteb occupying only one floor in the majority of cases. Each would have to have a single large classroom ranging from 3.0 x 4.0 m to 7.5 x 12.0 m, and varying in ceiling height from 2.1 to 2.6 m. The classroom would have no furniture other than a built-in dolaf or wall cupboard in some cases. They were built by local craftsmen and relied largely on house-building techniques. Every mekteb had a flat wooden ceiling with wooden rafters and a roof cladding of tiles, shingles or stone slabs, depending on the region. The buildings themselves would be of stone, unbaked brick or post and pan construction. Most of the mektebs in Herzegovina were stone-built with stone slab roofs (Bećirbegović, 1974, pp. 251-267).

The first reference to a mekteb in Mostar is to be found in Ćejvan's deed of endowment dating from 1554. This was certainly not the first mekteb to be built in Mostar, however, for it is inconceivable that the town had been without a single mekteb for more than eighty years.

It is not known exactly how many mektebs were built in Mostar up to 1878. Based on deeds of endowment and other documents, it is clear that by that date the following mektebs had been founded: Ćejvan-ćehaja's, Karađoz-beg's, Nesuh-aga Vučjaković's, Hajji Balija's, Derviš-pasha Bajezidagić's, Hajji Ibrahim-aga Šarić's, Hajji Ahmed-aga Lakišić's, Hajji Ahmed-aga Pitić's, and Hajji Muhamed-aga Spahić's mektebs, the mekteb by the Hajji Memija mosque in Cernica, the mekteb in Memina (Cernica) mahala, the mekteb in Buka medrese, the mekteb in the Koski Mehmed-pasha medresa, and the Čišić mekteb. (Hasandedić, 1980, p. 73)

Mekteb by the Hajji Memija mosque in Cernica

This mekteb is a typical example of the single-roomed mekteb. The mosque was built in the 17th century, but it is not known if the mekteb is of the same date. It was built in the mosque courtyard and consisted only of a classroom measuring 4.0 x 5.0 with a ceiling height of 2.5 m. A niche in the wall in the form of a dolaf was used to store books. The building was of quarry stone with a wooden ceiling and wooden rafters clad with stone slabs (Bećirbegović, 1974, p. 257; Zvonić, 2000, p. 151).

Mekteb by the Nezir aga mosque

In the early 19th century, the Hajji Muhamed-aga Spahić mekteb was built close to Nezir aga's mosque, to the west. It remained in use until 1901, when it was turned into a private house, and in 1951 was pulled down and earthed over, as was the mosque.

More detailed information on this complex may be found in the Decision designating the **Site and remains of the architectural ensemble of the Nezir-aga mosque in Mostar** as a national monument.

Symphony orchestra (former Cernica sibjan-mekteb)

The building is in the old town centre, close to the Old Bridge, by the river Neretva, in Cernica. The site on which it stands has an area of about 900 sq.m. and is designated in the cadastre as c.p. 5666, c.m. Mostar II. The building lies north-east/south-west.

It was built of stone with loadbearing walls 50 cm thick and partition walls of brick 12 cm thick. The floor structure dividing the storeys was wooden, and a stone staircase led to the upper floor the roof was wooden, covered with sheet metal. The windows and doors were wooden.

The building was erected in 1898 in the pseudo-Moorish style. The ground floor front façade was decorated with rectangular fields with simple geometric motifs. Small arched windows pierced the roof cornice area. It was used by various institutions between its construction and its demolition: the Cernica sibjan mekteb, the mekteb ibtidaija/mekteb-i iptidai, the mufti's office, the vakuf commission, the primary school and the symphony orchestra.

In 1992 the building was shelled and set on fire. In 1997 a facsimile reconstruction of the building was carried out, with the interior arranged to revive the activities of diplomatic offices in Mostar (City Institute for the Protection of the Cultural, Historical and Natural Heritage of Mostar).

Karađoz beg mekteb

This mekteb was located close to the eponymous mosque at the corner of Central (Fejić Brothers) and Solaković streets. It was built prior to 1570, as revealed by Karađoz beg's deed of endowment, in which he orders that a mualim be installed in the mekteb with a daily wage of five dirhams. The mekteb was demolished in 1892, and on the site, and that of the former Karađoz beg han and imaret, a large two-storey building was erected in 1894, known as the Vakuf Palace (Hasandedić, 2000, p. 14).

More detailed information on this building may be found in the Decision designating the **Architectural ensemble of the Karađoz-beg mosque in Mostar** as a national monument.

MEDRESAS

Well-developed settlements in this part of the world acquired medresas during the Ottoman period; a medresa was essential for every sizeable settlement, and as is well known, one was built in all of BiH's larger towns from the early 16th century. According to available evidence, by the end of the 16th century at least ten had been built, with 46 built in the 17th century and another fifty in the 18th and 19th centuries.

Medresas were secondary and higher schools providing religious and shari'a law education and teaching oriental languages. They were well-organized boarding schools. They were built, as were mektebs, on the initiative of individuals as vakufs, and as a result vakufnamas are the most important documents providing details of medreses. A study of the enacting provisions of these documents reveals that the following types of medresa were built in BiH: enclosed, with an inner courtyard; U-shaped medresas; L-shaped medresas; elongated medresas; and dershana medresas (dershana: classroom, lecture room).

In Mostar there were nine medresas for which certain facts are known:

- The Karađoz beg medresa, bult between 1557 and 1570;
- The Koski Mehmed pasha medresa, built around 1620;
- The Ćejvan beg (Ćejvan-ćehaja) medresa, built after 1558;

- The Roznamedži Ibrahim efendi medresa, built around 1612;
- The Derviš pasha Bajezidagić medresa, built around 1601;
- The Hajji Balija medresa, built after 1612, rebuilt in the 19th century;
- The Mostarac (Darusseade) Ahmed aga medresa, built before 1654;
- The Hajji Velija (Deli) medresa, built before 1648;
- The Buka medresa, probably built in the late 16th century;
- The Hanikah medresa of Sheikh Ismail Opijač, built in 1668

The only one of the nine that has survived is the Karađoz beg medresa, but the reconstruction of the ground plan for the Roznamedži medresa is known (Bećirbegović, 1974, pp. 251-283).

With the exception of the Buka medresa, common to all these medresas is that they were built right beside a mosque. All were built of cut stone and had gabled roofs clad with slabs, with the exception of the Karađoz beg medresa, with characteristic tall chimneys. In front of each medresa was a porch with its roof formed by an extension of the main roof, resting on several slender pillars. Outside was a spacious courtyard (Kasumović, 1999, p. 187).

All the medresas of Mostar for which details are known were small buildings with between four and ten small rooms and one large one, the lecture room or dershana. The smaller rooms were used to house the pupils and the larger ones for classes. In some medresas one room, usually larger than the pupils' rooms, was set-aside as a library (kutubhana). By 1918 all the medresas had ceased to be used as such. Some of them were demolished and some of them were used, after World War II, as housing for the poor (Stanić, Sandžaktar, 1967, p. 87).

Some of the medresas in Mostar were vaulted and were probably clad in sheet lead, like the Karađoz beg medresa, which was probably removed for the needs of war. Instead of sheet lead, the medresas were roofed with stone slabs on a gabled roof, with rubble spread on the exterior vault to level the roof. One of the features typical of Mostar's medresas is their tall chimney over almost every room. The walls of the medresas were built mainly of finely dressed pointed sandstone and tenelija limestone, and the vaults of a combination of dripstone and tenelija. There is no specific information available about who built them, but they can be assumed to be local craftsmen (Stanić, Sandžaktar,, 1967, p. 90).

Karađoz beg medresa

The medresa was built on the left hand side in the courtyard of the eponymous mosque in such a way as to appear to have its own courtyard with a šadrvan fountain, but in fact forming a single architectural complex with the fountain shared between the two buildings (Kasumović, 1999, p. 189).

More detailed information on this building may be found in the Decision designating the **Architectural ensemble of the Karađoz-beg mosque in Mostar** as a national monument.

- Wholly new feature by comparison with other medresas built in Herzegovina);

Koski Mehmed pasha medresa

Until February 1951, a hanikah medresa of the same vakif stood immediately facing the mosque some ten metres to the north. The exact year when the hanikah medresa was built is not known, but it was certainly built after the completion of the mosque in 1617. (Hasandedić, 2000, pp. 22, 27, 28).

More detailed information may be found in the Decision designating the **Architectural ensemble of the Koski Mehmed-pasha mosque in Mostar** as a national monument.

Ćejvan beg (Ćejvan-ćehaja) medresa

This was one of the oldest medresas in Mostar, and was built with funds from the Ćejvan-ćehaja vakuf. It stood on Velika Tepa to the right of the Ćejvan-ćehaja mosque, hard by the left bank of the Neretva (Kasumović, 1999, p. 187).

More detailed information on the building may be found in the Decision designating the **Architectural ensemble of the Ćejvan-ćehaja mosque in Mostar** as a national monument.

Roznamedži Ibrahim efendi medresa

The largest medresa in Mostar was the Roznamedži Ibrahim efendi or Kreso medresa, which stood opposite the eponymous mosque, not far from the left bank of the Neretva.

More detailed information on this complex may be found in the Decision designating the **Architectural ensemble of the Rozmamedži Ibrahim efendi mosque in Mostar** as a national monument.

Serbian primary school

There is evidence that there was a Serbian school in Mostar as long ago as the late 18th century. In 1850 there was a two-roomed Serbian school right by the old church on Suhodolina, known as the Old Mostar School, which had 150 pupils that year; the teacher was Jovan Miličević (Hasandedić, 1980, p. 87). This building was the Serbian girls' school, built by the Russian Empress Maria Feodorovna, who sent 400 roubles (120 ducats) for its maintenance every year until 1878. The school was in Suhodolina below the new Orthodox Church, and had a courtyard surrounded by a high wall, and a garden. When a new school building was erected in Carina in 1910, pupils from the old school moved into the new building and the one in Suhodolina was closed (Hasandedić, 1980, p. 88).

The foundations of the Serbian primary school building were laid on 23 May 1855, and the school was completed on 15 April 1856. It stood in Suhodolina below the old Orthodox Church and was reckoned to be one of the most attractive buildings in Mostar at that time. It was a two-storey building with four large classrooms and several ancillary premises. It was attended by every generation of Orthodox children educated in Mostar in the second half of the 19th century (Ćorović, 1933, p. 60).

From the time it was first opened, the teaching staff in this school consisted of qualified people, and as a result if was regarded as one of the best Serbian primary school in Bosnia and Herzegovina. In 1908 it merged with the national primary school and the pupils moved into the newly built school building in Luka. Before the war the Serbian school building in Suhodolina was used for residential purposes (Hasandedić, 1980, p. 87).

A Serbian primary school was built in Marshal Tito and Alica Ruzalika streets in Mostar to a 1909 design by Đorđe Knežić, in the then modern Art Nouveau style (Krzović, 1987, p. 220). The building has two storeys and a basement, with its main entrance on Tito street. The structural system of the building is of stone and brick. The architectural decoration of wood and stone reflects typical Art Nouveau floral motifs. The original owner of the building, the Serbian Orthodox Community, sold the building to the Municipality of Mostar in 1938. It continued to be used as a school until 1980, when a new school in Mezoljice was opened. The building was then turned into offices for Soko Engineering. During the 1992-95 war the building was badly damaged by shelling. Given its spatial possibilities and spacious courtyard, the building could be used for any public purpose.

The damaged roof and ceilings should be reconstructed in accordance with available documentation. Damaged or missing parts, such as the stairway or ornamentation, must be reconstructed in accordance with data obtained from surviving original features in situ or from available documentation (Regulatory Plan for the preservation and development of Old Town Mostar, 2001, pp. 16-17).

The two Serbian primary schools, in Luka and Carina, are the finest examples of floral secessionist decoration in Mostar and also the finest works by Đorđe Knežić (Krzović, 1987, p. 130).

Senior girls' school

One of the largest buildings to be erected in the 19th century was built on the High Street opposite the Ćejvan ćehaja mosque to the order of Mustafa Komadina on the site of the former Kalhan han, which was demolished in 1891 (Miletić, 1997, p. 47).

The building was erected between 1893 and 1901 by the businessman, later Mayor of Mostar, Mujaga Komadina, and later sold to the Municipality. The construction works were divided into four stages: the first was the construction of the main building of the girls' school on the corner of High Street and Kalhan street; the second was to extend it along High Street; the third entailed bulding a wing at right angles along Kalhan street; an dfinally a sports hall and playground were made, linked to the upper school courtyard.

The building was always used for educational and institutional purposes, and has housed a school for the mentally handicapped, an economics and business school, a crafts school, a government road construction and maintenance company and other municipal offices. The hall in the upper courtyard was built for the gymnasts' society in the early 20th century and was in constant use. The ground floor along Tito street was always used for commercila purposes. Certain alterations carried out in 1920 are documented: drawings of the ground plan, cross section and façades from that time have been preserved. This building and the municipality building are the finest examples of neo-classical architecture in Mostar. Given its spatial and architectural concept, the building could be used for many different purposes (Karahasanović, 2003, p. 43).

"The Girls' High School presents one of the best examples of Neo-Classical Architecture in Mostar. It lacks the more ponderous monumentality of the Municipality Building but retains the dignity and impressiveness of the style. An ashlar ground floor with arched openings and large cut stones distinguishes the commercial spaces of the street level from the classrooms of the upper levels. The upper floors are more closely related to Northern European prototypes of the 19th century, through the use of smooth painted stucco walls with neat ashlar quoining on the corners. The painted stucco walls lighten the effect of the building as a whole, and give it a less intimidating, more residential flavor in keeping with its function. The classicizing ornament in the corbel volutes and deep cornices over the second story windows, however, continue the Neo-classical theme, so that the dignity, historical authority, and official nature of the building are maintained. Like a Renaissance Palace, the Girl's High School presents a massive, opaque façade to the street, but is organized around an interior courtyard within. The construction of the building integrates local and imported techniques. The building has masonry bearing walls of miljevina stone; the ground floor is ashlar with tooled finished stones and the upper walls are stuccoed over a rubble base with cut stone quoins, mouldings and ornamentation. Most of the interior walls are bearing walls. The construction includes a variety of vaulting types in unison with I-beam construction: brick barrel vaults are inserted between the I-beams in the floor construction, and groin vaults and large arched openings provide support between rooms. In the only room in which interior finishes have survived, decorative plaster moldings and stenciled patterns are visible." (AKTC&WMF, 1999, p. 53).

In 1900, boarding premises with accommodation for thirty pupils was built alongside the senior girls' school (Papić, 1972, p. 143).

At the end of World War I the school was reorganized, and instead of the senior girls' school a girls' state school was opened there. This, along with a boys' state school, continued in use until 1929 as a separate school, when it was merged with the state co-ed school (Papić, 1984, p. 670.

During the 1992-95 war the building was burned and shelled, and suffered major damage. The roof was destroyed and the floors have collapsed. Temporary shoring has been installed in some areas for stabilization. In 1997 the UNESCO rehabilitation master plan listed the building in the priority group for restoration and adaptation for further use. It was recommended that it be used for educational and public purposes for the city of Mostar. "The size of the building (at 10,000 m 2 one of the largest in Mostar, and certainly within Stari Grad) makes a mixed use program appropriate and practical. The multiple entrances on different levels facilitate the separation of the building into areas serving different functions." "Designs for ground floor reuse ought to incorporate commercial space, an

underground garage, and a semi-public open space." The commercial space would be both on the street front and in the inner courtyard. There could be a hotel and offices on the upper floors and sports and recreational facilities at the upper courtyard level. "Significant parts of the building ought to be retained because of their stylistic and historical importance: the façades on Marsala Tita and Kalhanska Street; the entrances on each of the different levels; the general building configuration around an interior courtyard; the well-preserved interior spaces including the Great Hall, and the vaulted ground floor spaces." (AKFC ibid; Regulatory Plan for the preservation and conservation of the Old Town in Mostar, 2001, pp. 22-23).

The design for the extension of this building is the work of architect Miloš Komadina and dates from 1895 (Krzović, 1987, p. 117).

The documentation for the rehabilitation of the building has been prepared and work is expected to begin in 2003.

SECULAR BUILDINGS

Buildings dating from the Ottoman period

WATER SUPPLY FACILITIES – it is not known when exactly Mostar acquired its first water main, but it was certainly before 1610. Until then, the inhabitants took their water direct from the Neretva and Radobolja, which until the introduction of mains sewers were clean.

Until the water mains and drinking fountains were installed, some legators ordered special officials to be appointed whose job was to bring water to fill the kegs in the courtyards of the mosques throughout the day. This water was used solely for abdest, the ritual ablutions before prayer.

Based on surviving deeds of endowment, the vakufs of Ćejvan and Nesuh Vučjaković, founded in the mid 16th century, had such officials. The service continued to be provided even after 1610 when Mostar acquired piped water.

Kegs – some legators left small legacies for special officials to be appointed to bring water in kegs to the busiest parts of the čaršija;

Đerizi (channels) – a whole network of channels developed very early in the western part of Mostar between Zahum and the Neretva. A dense network of channels flowing through the courtyards of many houses and gardens and discharging into the Neretva formerly crisscrossed Cernica. Until piped water was introduced, the water from these channels was used for the needs of the household.

Cisterns – until the water main was built, and even afterwards, in some quarters of Mostar cisterns were built from which the inhabitants drew their water. It is not known exactly how many were built prior to 1878 nor where they were located. It is known that there were cisterns in the courtyards of several mosques: the Husein hojja, Bajezid hojja, Hajji Velija, Čurći Ahmed and Hajji Salih Temim mosques. These cisterns were demolished and filled in at the same time as the mosques to which they belonged. There is a cistern by the Muslibegović house in Brankovac, built at the same time as the house in 1876. This is not only the most recent cistern dating from the Ottoman period, but also the only one in the town to have survived. It was constructed so that water could be extracted from it with a bucket and also flow through a tap set below the cistern in the basement of the building (Hasandedić, 1980, pp. 129-131).

Water mains – during the Ottoman period, two water mains were built in Mostar. One ran from Bakšim to Ilići, and the other from Djevojačka voda to Carina. The first had about sixty outlets and supplied the entire western part of Mostar and part of the eastern area with water. The second had only fifteen outlets and supplied Carina to Mejdan with water (Peez, 1891, p. 45). The water main ran through pinewood pipes about 1.20 m long, which were cut in Borci above Konjic. The water main from Djevojačka voda also supplied three šadrvan fountains and twelve drinking fountains outside mosques in Carina and at crossroads. In 1885 the Austro-Hungarian authorities built a new water main from the source of the Radobolja, which initially had 53 outlets. With the arrival of the Austro-Hungarians the water main in Carina was neglected and abandoned and ceased working

(Hasandedić, 1980, p. 132). The new water main was built according to the pressure system (Peez, 1891, p. 19).

Šadrvan fountains – these were built only in the courtyards of mosques, medresas, tekkes and hamams. They were designed not only to provide water for abdest before prayer but also to adorn these courtyards. Mostar's šadrvans were similar to others built prior to 1878 in this part of the world, consisting of a small basin from which the water overflowed into a larger, from which in turn it emerged through six or eight pipes. All Mostar's šadrvans had pyramidal slab-covered roofs resting on six or eight stone columns linked by arches. There were five well-known šadrvans in Mostar: outside the Karađoz beg, Koski Mehmed pasha, Ćejvan ćehaja and Hafiz hojja mosques, and outside the Roznamedži Ibrahim efendi medresa, which was the largest and most beautiful in Mostar. The only ones to survive now are those outside the Karađoz beg and Koski Mehmed pasha mosques, where they are still in use (Hasandedić, 1980, p. 135). All these šadrvans are on the left bank of the Neretva, and except for the Ćejvan ćehaja and Koski Mehmed pasha šadrvans, were supplied with water from the pipe running from Djevojačka voda to Carina. There were also šadrvans in the Sinan pasha and Ćejvan ćehaja hamams and in the tanner by the Old Bridge. These šadrvans were of the enclosed type and were used only by visitors to the baths and by the tanners working in the tannery.

Sebilj – these are charitable public fountains constructed in the form of a small square kiosk from which water is drawn by copper ladles. Their name derives from the fact that they stand alongside public ways (sabil is Arabic for road), and their water was usually primarily by chance travellers. Mostar is one of the few places in BiH that had such facilities. Mostar's sebilj differed from those of other places in not being located in a purpose-built building and not having water piped from a spring but brought from the Neretva in kegs. The inventory of the sebilj consisted of kegs and ladles. Prior to 1732, Osman, son of Husein, built a sebilj in the ground floor section of the minaret of the Kanber aga mosque i Luka, which was fed by water from the Neretva with the help of a winch alongside the Neretva not far from the mosque. It is not known exactly when it ceased being used, but it was demolished in 1916 at the same time as the mosque (Hasandedić, 1980, pp. 139, 140).

Česme or drinking fountains – just before World War II more than sixty public drinking fountains were in use in Mostar. In 1913 a public convenience was bult on the main street in Velika Tepa at the very top where it forks towards the Old Bridge, to a design by Dragutin Kohler. This was demolished after World War II and metal kiosks now occupy the spot. On the east wall at the very edge of the outer pavement a fountain was installed which was dismantled in the 1960s when the public conveniences were demolished (Miletić, 1997, pp. 86, 92).

Česmanski vakuf – during the Turkish period, Mostar had a functioning "česmanski vakuf", an institution that is not found anywhere else in BiH. It is not known when it was first established and by whom; only that several people endowed funds the income from which was used to repair the mains water system. The vakuf was abolished in the late 19th century and all its assets transferred to the Karađoz beg vakuf (Hasandedić, 1980, p. 141).

HAMAMS

Many larger towns in BiH had public baths during the Ottoman period. Mostar was fourth in number of baths, after Sarajevo, Foča and Travnik, with two hamams, one by the old Sinan pasha mosque quite close to the right bank of the Neretva and the other somewhat further away from the left bank, right by the tannery and Tabačka mosque. The first hamam belonged to Sinan pasha's vakuf and the second to that of Ćejvan ćehaja. Both were unisex, and were thus used ad different times of day, or on different days, by men and by women. The Mostar hamams were substantial buildings of cut stone with domed roofs (Kreševljaković III, 1991, pp. 63,20).

Only one of these two baths still exists. They were founded prior to 1664, when they are first referred to by Evliya Çelebi (Çelebi, 1996, p. 467). Both were unisex, so men and women could not use them at the same time. One belonged to the Sinan pasha vakuf on

Mejdan by the eponymous mosque, and the other to Ćejvan ćehaja's vakuf, by the tannery (Hasandedić. 1980, p. 143).

Public baths were major public buildings connected to the water main. A hamam would always include:

- A šadrvan (an area with a fountain in the centre, a waiting area and a cloakroom – apodyterium).
- Kapaluk/kapalik – the medium-heat area or tepidarium for resting after bathing.
- Halvat – the caldarium for bathing.
- Hazna or water reservoir.
- ćulhan/külhani – the furnace room or hypocaustum, with the praefurnium in front from which the furnace was stoked.

Every hamam had one or two latrines, usually entered from the kapaluk. Every hamam also had a fairly large courtyard with a wood shed (Kreševljaković, 1991, p. 20-23).

Ćejvan beg hamam

The Ćejvan beg hamam is on the right bank of the Neretva very close to the tannery and Tabačica mosque. It is not known exactly when it was built or when it fell into disuse. It was built later than 1558, for there is no mention of it in Ćejvan beg's deed of endowment; and earlier than 1664, when Evliya Çelebi mentions it in his travelogue (Kreševljaković III, 1991, p. 65; Hasandedić, 2000, p. 47).

More detailed information on this building may be found in the Decision designating the **Historic building of the Ćejvan-ćehaja hamam in Mostar** as a national monument.

Sahat-kula or Clock Tower

The legator Fatima Kaduna Šarić built the clock tower in Mostar before 1636, at the edge of the čaršija on an elevation, enabling it to be seen from most of the town. It is 16,0 m high and has five storeys. The old clock remained in use until 1926, and from 1981 the building was in use, fully restored and with a new clock installed (Pašić, 1989, p. 54).

More detailed information on the tower may be found in the Decision designating the **Historic monument of the Clock Tower in Mostar** as a national monument.

HANS AND CARAVANSERAIS

Hans were built in or very close to the čaršija. There are also instances where a han stood at the very entrance to a town. Hans were primarily used as resting places and overnight hostels for kiridžija/kiracı or travelling merchants with horses and their caravans, but also for doing business. When the custom of drinking coffee and providing alcoholic drinks in the hans took hold in this part of the world, the hans turned into cafés and inns, and local people would come there to drink coffee and chat.

As well as hans, towns, villages and roadsides would have musafirhanes, often-charitable institutions where travellers could not only spend the night but also receive food for themselves and their horses at no charge.

Both han and caravanserai are words taken from the Persian. Han (khan) means a building where travellers could spend the night, which is the same as the meaning of caravanserai. The difference between a han and a caravanserai was that in a han travellers paid for their overnight stay and for heating in winter, while overnight stay in a caravanserai was free, and travellers had to provide their own food and heating. In addition, there was at least some basic furniture in a han, but none in a caravanserai. (Kreševljaković III, 1991, pp. 255-269).

The erection of hans in Mostar dates from the earliest days of the town's development. Mostar's hans were built to the same pattern as other hans in this part of t he world, consisting of a ground floor with stabling for horses and an upper floor with rows of rooms for travellers to spend the night. All had a spacious courtyard, usually with a drinking fountain, which was entered from the street. Known hans were the Ćejvan ćehaja, Karađoz beg, Koski Mehmed pasha, Džinović, Kalhan, Ševo, Hindo and Ćirić hans and the Hotel Europa. All of them, except the latter, were closed soon after the arrival of the Austro-

Hungarians, and either demolished or converted into housing by the end of the 19th century (Hasandedić, 1980, p. 157).

They are a distinct type of residential building, used to accommodate travellers and caravans, and those of larger size were built along main roads. The oldest hans were single-storey structures of elongated ground plan with a wide entrance on the longer side and a raised podium with a number of fireplaces along the walls on the inside. Travellers used the raised podium along the walls and the horses remained at ground level. Later, hans were built with an upper floor, stabling, storerooms for goods, frequently a café, and several rooms on the upper floor. The most advanced type of han was a two-storey building forming an iner courtyard.. Only large hans were stone-built with vaults; smaller ones were timber and brick-built and had wooden rafters.

The oldest han in Mostar was built by Ćejvan ćehaja prior to 1558, and was under the cliff in Kujundžiluk. Others were the Karađoz beg han (before 1570) opposite his mosque, the Koski Mehmed pasha han or caravanserai, the Džinović (Kalhana) han, the Ševo han, the Hindo han, the han in Kulluk, the Ćirić han, the Čadro han, the Lelek han, the Balto han and the han of the Orthodox parish. Trade was conducted in most of the hans in Mostar. All were closed soon afer the Austro-Hungarian occupiation, and demolished or converted by the end of the 19th century (Pašić, 1989, p. 57).

Caravanserais (representative hans) in major trade centres were always two-storey, and had an inner courtyard similar to a square atrium. There were porches around the atrium on all four sides. The ground floor had storerooms for goods and stabling for horses, and the upper floor rooms for sleeping and a café. Koski Mehmed pasha's han was the largest in Mostar, and had many of the features of a caravanserai.

With the arrival of the Austro-Hungarians, all the hans in town were closed. The buildings were later destroyed, and new ones with different architectural features and used for different purposes were built on the sites (Tuzlak, 2002, p. 24).

The only surviving han is the Europa, at the start of Kujundžiluk, while the Hindo han on the bank of the Radobolje by the Small Bridge has been reconstructed (Idrizbegović, 2003, p. 33).

Koski Mehmed pasha caravanserai (Čardagija han)

During the demolition of some dilapidated buildings to erect two apartment blocks, in the autumn of 1954, the remains of a vast old building were discovered, the original purpose of which it was hard to determine. The demolition of three storehouses in former Đuro Pucar Street revealed a large gable wall of cut stone, with three round windows in the upper part set symmetrically to form a triangle. All three had round frames of carefully dressed stone with mouldings, and the windows themselves were fitted with perforated stone screens, one of which was preserved intact. When these were made, the usual motifs of Turkish architecture were used – six-pointed stars and hexagons. A little further along, in the former Radulović basement, four imposing columns were discovered, made of carefully cut stone, which from their dimensions and workmanship must have belonged to some architecturally important and substantial building. The columns were round in cross section, and all four had different capitals, with stalactite motifs. A new concrete base buried the bases of the columns. Further clearance revealed a large entrance door to the south with an arched stone frame, and the ground plan outlines of this building were finally determined. It covered an area of about 400 sq.m, with the ratio of the sides roughly 1:3 and the shorter sides facing east and west. The round windows are not a feature of Turkish architecture, but are typical of Romanesque, from which the transition is made to Gothic – that is, they are features of Italian Dalmatian architecture, introduced to these parts by Dalmatian craftsmen. However, there can be no doubt that the windows that had been discovered dated from the Turkish period, in the light of the perforated stone screens, which are explicitly of Turkish origin. A curious feature is the gabled wall, since all major buildings of that period were either domed or had hipped roofs. A comparative analysis of the typical ground plan of Turkish architectural monuments led to the conclusion that these were the remains of a han. Given the materials used and the large size of the building, it can only have dated from the mid 16th to mid 17th century, when Mostar was at its height and was the

most powerful town in Herzegovina. Based on a Turkish epic sung by Hajji Derviš softa from Mostar, it was deduced that the building dated from 1017 AH (16508/09). The verses also relate that the han was built by the high defterdar Mehmed with the help of his brother Mahmud efendi, and that the han was tall and comparable in construction with the Masjid al Khayf at Mina near Mecca. It seems possible that the defterdar in question was Koski Mehmed pasha (Čelić, Mujić, 1956, pp. 261-264).

A transcript of the chonogram on the han of defterdar Mehmed survives in a manuscript codex in the Oriental Institute in Sarajevo (inv.no. 524). Here the year of construction is not written in numerals, but in the last two words of the chronogram. When the numerical values of the letters are added together, they give 1017 AH (1608/09). The transcript of this chronogram reveals that this is the epic of Hajji Derviš softa from Mostar (Mujezinović, 1998, p. 279).

Hindo han

This building is a good example of a smaller han. It was built in the 17th century and destroyed during the 1960s. It stands at the end of the bazaar below the Nezir aga mosque in Josovina, 100 m southwest of the Old Bridge, on the bank of the Radobolja. It was a two-storey building with a stone-built ground floor and half-timbered upper floor. The stone ground floor with small windows was used for storing goods and for stabling. The upper floor, with a view of the Neretva, was used as overnight accommodation for guests. The building had a hipped roof clad with stone slabs. It was reconstructed as part of the Rehabilitation of the Historic Neighborhoods project led by AKTC/WMF. The building had townscape value, with its major quality the location with a view of the Old Bridge and the Neretva (Rehabilitation of the Historic Neighborhoods, 2001, p. 58).

Karađoz-beg han

Hajji Mehmed-beg Karađoz erected a han opposite his mosque, at the corner of Srednja (Braća Fejić) and Solaković streets. All that is known is that it was built prior to 1570, since it is mentioned in his deed of endowment.

More detailed information on this building may be found in the Decision designating the **Architectural ensemble of the Karađoz-beg mosque in Mostar** as a national monument.

Hotel Europa han

This building stands on Kuluk Street in Kujundžiluk. It had two rooms on the upper floor and three shops on the ground floor. The main entrance to the han was from Marshal Tito street and the side entrance from Kuluk street. It was given the name Hotel Europe after 1878. It is the only han building dating from the Ottoman period to survive. In about 1950 major conservation and restoration works were carried out on the building, when it was turned into a café. (Hasandedić, 1980, p. 161).

Following a series of alterations in recent times, the building lost its architectural value, and in the first stage of works, regardless of what the intended final use may be, the building must be reconstructed, structurally repaired and renovated in the architectural forms that it can be determined, by analogy, to have had originally. Initial observations have already shown that it is a very specific building, with the entire ground floor in the form of a portico open to the street, and a single large room on the first floor, divided into two levels. When looking for analogies with other buildings, the only one that can to some extent compare is the Turkish courthouse in Livno. Based on that analogy, the building was perhaps a courthouse (mehćema), and according to some records there was a mehćema in this part of town. The open portico facing the street must have been inspired by the urban loggias of the Dalmatian-Mediterranean cultural region. The idea is mainly to serve over the counter on the ground floor, with seating room upstairs. Sanitary facilities are in one third of the basement level, and the rest of the area is used to store plant. The basement was created when the ground floor was used for shops, in other words it did not exist in the building as originally conceived (Čelić, 1965, p. 50).

Buildings dating from the Austro-Hungarian period

National Bank

The architect Josip Vancaš erected the branch of the National Bank in Tito Street, Mostar, in 1910 to a design. It is in the secessionist style, and the design was the start of this architect's interest in this theme (Krzović, 1987, p. 129). It stands in Tito Street in Mostar. In 1958, another floor was built on the terrace above the ground floor of the building to the east, which in architecture and the use of materials fits perfectly with the existing structure. The building was used as a bank until 1980, when it was turned into the local League of Communists' headquarters. A certain number of alterations and extensions were then made to the northern part of the building, by the courtyard. The building was damaged in early 1992 but it should be possible to restore the majority of its architectural forms. The design and decoration on the National Bank were inspired by the secessionist movement, the Austrian variant of Art Nouveau, the influence of which is visible in the organic forms around the windows and eaves. The striking entrance is also inspired by secessionist motifs, and makes the bank one of the most recognizable buildings in Mostar. It should be restored to its original use of financial services.

The treatment of the façade of the building is neo-Renaissance on the ground floor, with oval terminal forms and abstract floral motifs as decoration on the upper floors (Karahasanović, 2003, p. 43).

The war damage to the building is quite noticeable. An assessment of the current structural condition of the floor and walls must be made and all unstable elements removed. The historic staircase must be restored, and the floors and roof must be reconstructed. Details on the roof should follow the same line and use appropriate materials for the final layer. The exterior walls are relatively well preserved but should be stabilized. The rich Jugenstil decoration on the entrance and front façade must be carefully treated. Fine iron details need cleaning and a protective coat applied. The exterior layer of mortar and the window frames need minor repairs. The window and doorframes should be reconstructed following the original details. Missing high relief that is missing should be restored to achieve the stylistic integrity of the building. The original colours of the façade must be restored and the chimneys retained. Modern additions in the courtyard should be removed (Regulatory Plan for the preservation and development of Mostar Old Town, 2001, p. 20).

Municipality building

The design for the alteration of the mayor's house for the needs of the municipality in Tito Street, Mostar, was by Josip Vancaš, and is in the secessionist style (Krzović, 1987, p. 129).

One of the examples of monumental architecture from the Austro-Hungarian period that created a different street front in Tito Street is the municipality building (Karahasanović, 2003, p. 26). In 1898 work began on a large commercial building on the High Street to a design by Josip Vancaš, on the site of the former Džinović han, which burned down in 1896. the owner of the building, Mujaga Komadina, rented the building out to the Austro-Hungarian army. The ground floor was later used for commercial purposes. During the Kingdom of Yugoslavia, the well-known firms of Tivar and Bata had shops there, and in 1936 the Korzo cinema was opened there on the northeastern corner. The cinema remained open until 1957, and the design for the alteration of the building was by Miroslav Loose. The upper floors of the building were used for educational purposes, with the teacher training college and primary school located there, and other schools as well for a time. For many years, until 1992, the Mostar municipality administration was housed there. The building was destroyed in May and June 1992 (Miletić, 1997, p. 53).

With its monumental volume and rusticated ground floor, the municipality building is an outstanding example of neo-classicist architecture. Josip Vancaš, a Sarajevo-based architect, designed the building, on which work began in 1899 and was finished a year later. The building was first used as residential and business premises, then as the military command HQ, and for shops, restaurants, a cinema (in the north wing of the ground floor, from 1936 to 1957), a teacher training college and a primary school. After World War II the ground floor was turned into the Na-MA department store, which for a long time remained

the largest trade centre in the region. In 1970 the northern part of the upper floors was turned into administrative offices for the Ensemble of Mostar Municipality, while the a new block was added on the north-west with conference rooms. At the same time, the open courtyard was enclosed to the west by a single-storey building that was used as the reception area for visitors.

The bulding was badly damaged during the 1992-95 war, with some of the walls, the majority of the floors and the entire roof missing.

The building must be made safe before any consolidation works begin. It is essential to restore the building to its original appearance. Before they were damaged, the façades were richly decorated, and the original parts must be preserved, as must the original colour scheme of the building, and the carved elements carefully renovated. If any parts are missing, replicas must be made of them. The possibility of building a small carpark beneath the courtyard should be considered. (Regulatory Plan for the preservation and development of Mostar Old Town, 2001, p.19).

The building should continue to be used for administrative and office purposes, with business premises on the lower floors.

Vakuf Palace

This unique building was unusual in uniting two different predominant styles in the architecture of the Austro-Hungarian period in Mostar. At first glance it is a large masonry building divided into three blocks and three storeys representing a typical example of the neo-classicist style. The ground floor is rusticated, with rectangular windows arranged in the manner of the municipality building, but a more detailed inspection reveals the ornamental scheme that is not so classical.

The ornamental motifs used on this building have been borrowed from Spanish Islamic, Moroccan and Mamluk architecture. The street façade has double horseshoe arches within a single pointed (Islamic) arch (Spanish-Islamic architecture). Even the original balconies, made by local craftsmen in accordance with long tradition, include ornamental motifs that are more closely related to the Moroccan tradition than to the Bosnian decorative tradition of wood with the appearance of certain elements of the Austrian tradition.

This combination of the Renaissance solidity of the building with Islamized ornamentation is an original local variant of the Bosnian oriental style, to be seen also on the Gymnasium building in Mostar and the Town Hall in Sarajevo. The building dominates this part of Fejić Brothers street both in size and in its lively exterior decoration (AKTC&WMF, 1998, p. 103).

The Vakuf Palace was built in 1894 by the Mehmed Karađoz beg vakuf on the site of the former caravanserai which was part of the complex of the eponymous mosque. The design for the building was by the architect Hans Niemczek. The first floor was rented out so that the income could be used for the maintenance of the mosque. Within the hall was a library and Islamic cultural centre. Allied bombing on 14 January 1944 damaged the building (Miletić, 1997, p. 51). During the political reforms of the early 20th century, all vakuf property became the property of the Islamic Community. The building was nationalized after World War II and was used for various purposes including the Town Planning Institute of Mostar from 1960 to its destruction in 1992. This striking building with its Renaissance proportions and Islamic decorations is an important example of the Bosnian orientalist style, which flourished during the Austro-Hungarian period.

The building is a three-storey structure with a ground floor, three upper floors and basement, and occupies an area of about 430 sq.m. The gabled timber roof structure extended over the entire building. The structural system was massive stonewalls, vaulted between the storeys, and steel I beams to build the staircase.

The building's irregular rectangle extends along Fejić Brothers Street with the façade 44.33 m long. The part of the building to the south, which abuts onto the neighbouring building, is 17 m long. The north façade is 12.76 m long and the west façade 37.20 m. On the north façade there are only two windows at ground floor level. It is not possible to access the ground floor and foundations, so no details can be given about them. The

interior walls are plastered, and the most important façades, the most highly decorated east and north façades are of stone blocks without plaster. The ceilings are vaulted on the first and second floors. On the third floor the ceiling is more modern, being constructed of reinforced concrete. The treatment of the floors is ceramic and mosaic with tiles measuring 30 x 30 cm on the ground floor and mosaic on the first floor. Inside the building are two stone staircases borne on steel beams. The thickness of the stonewalls is 75, 80 and 85 cm on the ground floor and 65 and 70 cm on the upper floor, with a rubble and mortar infill.

It is vital to conduct an analysis of the structural stability of the building and to reconstruct it using original materials and building techniques.

Possible new uses include a café on the ground floor and business premises on the upper floors. The building needs restoration and part reconstruction. The state of the floors and walls should be carefully checked to ascertain the best way to consolidate the structure. The original architectural features and decoration must be replicated, particularly on the east and north façades, which are outstanding, but also suffered the greatest damage i 1993. The precise method of intervention will be determined during the state of detailed design and planning (Regulatory Plan for the preservation and development of Mostar Old City, 2001, p. 18).

In 1992 the building was damaged by arson. Shelling in 1993 completely destroyed the roof structure and floors, and left large holes on the façades, which weakened them so that in 1994 the east façade of the building collapsed completely. In 1996 the building was cleared of rubble and protected from further damage and the effects of the elements under the EUAM Demolition project (City Institute for the Protection of the Cultural, Historical and Natural Heritage of Mostar).

World Bank, PCU, WMF/AKTC – preparations are in hand for the start of works – multifunctional building, completion 2004.

Bishop's Palace – Metropolitan's residence

The Metropolitan's residence was built in 1903 for the Orthodox bishop on one of the highest points on the east side of Mostar, so that it is visible from almost every major point in the town. It is an excellent example of the manifestation of multicultural life in Mostar at the beginning of the 20th century, and an elegant symbol of Mostar's pluralism. Rich, elegant and monumental, the palace is also significant as a symbol of urban religious pluralism. It should continue to be used for religious and similar purposes by the owner, the Serbian Orthodox community. The Serbian Orthodox Church of the Zahum Herzegovina province owns it.

More detailed information on this building may be found in the Decision designating the **Architectural ensemble of the Bishop's Palace or Metropolitan's residence in Mostar** as a national monument.

RESIDENTIAL BUILDINGS

Mahalas – residential complexes

Mahalas were residential zones with their own mosque, shops, school and other local institutions. Every mahala had its own diligently preserved administrative and social system of security that contributed to the identity of the mahala itself and its high degree of internal cohesiveness. Poorer inhabitants were always under the patronage of rich families from the neighbourhood, which meant that there were no extreme social differences.

In Mostar, unlike the čaršija, which developed as densely concentrated by the Old Bridge over a short space of time, residential quarters arose freely outside that context over a longer period. As the town grew, so too the number of mahalas increased. The first residential microregion emerged not far from the Old Bridge, around Mejdan square, where the provincial governor Sinan pasha built a mosque in 1474. Three years later, as recorded in the Tapu tahri defter, Mostar had 19 houses.

The greatest population growth occurred in the mid 16th century, in line with the rapid economic growth of the town. In 1566 Mostar had a few mahalas on the left bank with their own masjids and four Friday mosques. In 1633, it had 24 mahals (sidžil of the Mostar kadija no. 1, in the Oriental Institute in Sarajevo), and by 1670 had reached population

numbers that would barely increase until the Austro-Hungarian occupation (Pašić, 1989, p. 73).

It may be deduced from the number of mosques that Mostar had 32 mahalas at the end of the 18th century. The mahalas on the left bank of the Neretva are:

- Sinan pasha (878/79 AH – 1473/74) extending from the Sinan pasha mosque towards the Old Bridge to below Kula/Tower
- Brankovac (Vučjaković mosque, 1518)
- Ćejvan ćehaja (959/60 AH – 1552/53) extending from the eponymous mosque to Luka, i.e.. Kamber aga mahala
- Karađoz beg (965 AH – 1557/58) extending from the eponymous mosque towards Sinan pasha mahala
- Mehmed ćehaja (1592) close to the Hotel Neretva upstream north of the hotel
- Bajazit Hojja (before 1612) around a masjid, at the corner of Šarić Brothers and Bajat Brothers streets (above the Clock Tower)
- Hajji Balija (before 1612) around a mosque on the plateau of Šarić and Čišić Brothers streets and Sirkina sokak in Brankovac
- Ibrahim efendi Roznamedžija (before 1620) on the corner of Fejić Brothers and Kreso streets
- Kjose Jahja hojja (before 1620) on Musalla
- Tere Hajji Jahja (before 1620) around a mosque on the corner of M Balorda and Hakal streets in Carina
- Memi Havadža (before 1632) around a mosque on the corner of M Balorda and Krpo Brothers streets in Carina at the top of Vejzović street on the site of the A & E clinic
- Fatima Kadun (before 1633) around a mosque, in Cernica on the corner of M Tito and Demirović streets south of the Public Health Institute, now a parking lot
- Hafiz Havadža (before 1633) around a mosque at the corner of M Tito and Risto Miličević streets
- Husein Havadža (before 1633) around a mosque at the corner of M Tito and Huso Maslić streets by the old municipality building behind the Workers' Hall, in the park
- Ibrahim aga Šarić (1637) around the eponymous mosque
- Kamber aga, with a masjid (before 1648) in Luka, right by the Komadina (Luka) bridge
- Hajji Velija, with a masjid (before 1648)
- Ahmed Čurći, with a masjid (before 1650) in Bjelušine about 50 m south of the south-east tower of Divizija
- Kotlevina, with a masjid (before 1651) in Luka, on the corner of Čelebić street and Šarić mahala
- Hajji Husein Kotlo (before 1760) around a mosque in the southernmost part of Luka, close to the Hajjis' sofa, opposite the present day Medical School
- Ali pasha Rizvanbegović, with a masjid (before 1847)

The mahalas on the right bank of the Neretva are:

- Nezir aga (before 1550) around the eponymous mosque, in Šemovac above the Radobolja by the Curved Bridge
- Derviš pasha (1592) around the eponymous mosque, in Podhum close to the Catholic church
- Jahja Esfel, with a masjid (before 1620) around the masjid, about 200 m south of Komadina (Luka) bridge on the right bank of the Neretva, in the Predhum quarter
- Sevre Hajji Hasan (before 1621) around the eponymous mosque, in Predhum in Donja (Lower) Mahala, opposite the Ibrahim aga Šarić mosque
- Hajji Ali beg Lafo (before 1633) around a mosque at Raskršće, corner of P Drapšin and M Gupac streets
- Baba Bešir (before 1633)
- Hajji Memija – Cernica (before 1650) around the mosque in Cernica

- Ali Havadža - Raljevina (before 1633) around a mosque, right by the left bank of a branch of the Radobolja
- Hajji Ahmet beg Lakišić – Ričina (1650) around a mosque
- Ziraja (Aršinović) with a masjid (before 1651) at the start of the Predhum quarter by the road leading to Komadina (Luka) bridge in Ograda
- Čevro, with a masjid (before 1686)
- Zahum – covering present day Zahum (Hodžić, 2000,p. 82-84)

The town developed first on the left bank right by the čaršija, after which it extended southwards and northwards along that bank, then crossed to the right bank by Hum hill on the right bank of the Radobolja; it was not until the mid 17th century that it extended also to the left bank of the Radobolja. With the arrival of the Austro-Hungarians, the town expanded on the right bank of the Neretva northwards, where there was ample space for building both public buildings and private houses. Here the railway station and hospital were built. At this time the town was divided into eight zones: Carina, Brankovac, Bjelušine, Old Town, Luka, Cernica, Podhum and Zahum (Pašić, 1989, p. 77).

According to Peez: "The city of Mostar is now divided into eight mahalas, of which five are on the east bank of the Neretva. Carina (the customs post) is the northernmost area. Luka is at the extreme south. The two mahalas constitute the longitudinal axis of the town. To the southeast, Brankovac marches with Carina and ascends to Stoca hill. The southern extension of Brankovac is Bjelušine (named after the white limestone that appears there), an old Serb mahala, and further south still ascends steeply up the cliffs of Old Citiy. On the west bank, further to the north is Cernica, at the very south is Predhumlje, and Zahumlje extends westward. This is the new part of town. In the old days Mostar was divided into 33 mahalas" (Peez, 1891, p. 9).

Because the features of their natural and social environment that influenced them were the same in so many ways, Muslim and Christian houses built in Mostar have many elements in common. Muslim houses were strictly isolated from the street, whereas Christian ones were more open to the street. This, however, is the only real difference to be sense in the urban layout of the streets between the Muslim and Christian parts of the mahalas. A good example of this is the streets in Bjelušine. In their arrangement of space inside the house, Christian houses differed somewhat from Muslim ones, but retained to a large extent all the formal elements of the latter. The cult of the neighbourhood was one of the basic principles influencing the evolution of people's private way of life in this part of the world. The philosophy of this type of building was deeply social and deeply humanist (Pašić, 1989, p. 81).

The current state of Mostar's mahalas is one of dilapidation of the housing fund and an obsolete municipal infrastructure. As a result, only four mahalas have survived, and within them all that has survived is the urban matrix and the odd house, structure or feature from the Ottoman period. The major surviving mahalas are:

- Bjelušine and Brankovac – arising from the merger of several smaller mahalas in the early 17th century. It has about 150 housing units and a few examples of traditional residential architure, one of them being the Muslibegović house
- Cerica – one of the oldest mahalas, dating from before 1650. This mahala now has about 220 housing units, with only fragmentary elements of traditional architecture surviving (In Rudinčeva street)
- Luka – dating from before 1768, and containing about 250 housing units; to the south it joins Tekke (residential area). This mahala, too, has lost most of its features, but the area on the slope has retained part of the value of the mahala. Here stands Kajtaz house, one of the finest examples of residential architecture of the Ottoman period in BiH;
- Bišević sokak – a group of residential buildings in the very centre of town that has retained a large part of its authenticity, in which the most important is the Biščević-Lakišić residential complex right on the bank of the Neretva (Idrizbegović, 2003, p. 26h)

The basic value of the mahalas today is their urban matrix and townscape, as well as their specific social life. Very few buildings and details have managed to retain their

authenticity and, as a result, significant architectural value. The current situation is the result of the position of the mahalas in the urban fabric, formed as they were along the river in the very centre of town, and becoming "captive" in that fabric as the town later developed. The most intensive ravages and changes to the mahalas took place during the past ten years, first as the result of war action and later because of inadequate and illicit building works. This has led to almost irremediable damage to these structures, and the only possible solution is the rehabilitation of individual buildings and repairs to the present condition to prevent future mishaps.

The streets in the mahalas are somewhat narrower than elsewhere, more austere in their formal expression, and have just one basic function – as means of getting from place to place. In structure and function these streets can be compared with Mediterranean mediaeval streets, but they differ from them in the strict separation between commercial and residential quarters, and in the more human scale of the streets. The layout of the streets is purely organic and adapted to the terrain – streets running from the main commercial and pedestrian streets, gradually branching into smaller side streets and sokaks leading through the mahala. The gradation is from primary streets to secondary streets and all the way to cul de sacs. These streets have no urban fixtures. One of their roles is to provide shade (from their walls and greenery) and light (it was the custom to hand a lantern by each courtyard gate) (Idrizbegović, 2003, p. 26).

Four basic types of house can be distinguished:

- Houses that have retained their traditional appearance from the Ottoman period
- Buildings dating from the Austro-Hungarian period
- Buildings erected after the Austro-Hungarian period, between the two World Wars, and right up to the 1960s and 70s
- Buildings dating from the mid 1980s to the present day.

Buildings dating from the Ottoman period

Housing complexes dating from the Ottoman period consist of three levels, as a rule: the HOUSE, in the narrow sense of the word, with its basic single room used for many different purposes. These buildings could be single- or two-storey. The ground floor contained the kitchen (mutvak/mutfak), larder (ćiler/kiler, fr. Latin cellarium), bathroom (hamamdžik/hamamcık), storeroom and corridor (hajat/hayat). The first floor would usually have two, or occasionally three rooms with an antechamber (divanhane), often with a doksat or oriel window facing the street (Hasandedić, 1980, p. 163); a COURTYARD or avlija/avlı, with mutvak, woodshed, ćenifa/kenef (privy), stabling for horses or cows, a storeroom, a bošćaluk/bohçalık or predaharluk or guest room, in the case of better-off families), a water tap, a kapija/kapı or entrance gate, a kapidžik/kapıcık, a trellised bower, a flower garden and a hayloft (samanluk/samanlık). The courtyards were surrounded by high walls and usually planted with flowers and grapevines; a GARDEN or bašča/bahça, with a vegetable plot, fruit trees and lawn, a loggia and perhaps running water (Pašić, 1989, p. 83).

Old houses in Mostar face east and have ample daylight (Hasandedić, 1980, p. 163).

COURTYARD – movement between the street, courtyard, house and garden depends on the differentiation of space. Entrance gates play an important part in the formation of roads because they are physically and visually closed. The walls flanking the gate are thus fairly thick, and usually formed by the sidewalls of outhouses, or the gate is set against an outhouse beneath which one passes to enter the courtyard. There are often gates on both sides isolating the courtyard from the street. These courtyards between two gates were usually used for economic purposes and are known as araluk/aralık. As a rule, above this courtyard there would be a predaharluk or guest room for guests to stay overnight – Mezić, Raljević and Karabeg houses. The separation into the economic and family parts of the house was not so pronounced in Mostar. The economic area or men's courtyard was reduced to a courtyard connecting with the stables or ahar, whereas the private, family part of the house and the women's courtyard was connected to the mutvak or kitchen. Larger housing complexes had a separate economic courtyard or sarać-hana/saraçhane (Kolaković house in Blagaj). In the economic part were the stable with

midden, and a hayloft above, and more rarely a cartshed by the stable (Muslibegovič house, Velagić house in Blagaj).

ENTRANCE GATES – these were a very important feature both functionally and decoratively. The entrance gates to the house courtyard have a double door large enough for a loaded packhorse to pass through, and consist of the bearing frramework built into the wall, a door frame with two or three horizontal crossbars, hinges attached to the frame, and a facing of heartwood boards laid vertically and fixed to the crossbars by wrought iron nails of which the large heads, close-set, also had a decorative function. The gate was both sheltered and emphasized by wooden eaves with two rows of stone slabs. On the inner side of the gate, the inner side of the door with no lock usually had a carved wooden upright emphasizing the centre of the gate. Metal rings on the doors added a further decorative feature and served as doorknockers. The latch was arranged so the door closed automatically. The finest gates are those of the Zmiro house and Džabić tower in Suhi do. The gate through which the garden was entered was called the kapidžik and can be seen in the houses along the rivers Buna and Radobolja.

COURTYARD KITCHEN or summer mutvak (safety house) was a small room with or without a hearth and chimney, and an appropriate number of shelves and chests for storage. The mutvak would have its own larder and sometimes a storeroom as well (Pašić, 1989, p. 88)

PREDAHARLUK or guest room was a separate large room, or sometimes two, over the passage way from the entrance gate. A staircase leading from the first, normally small courtyard entered it. One window of the guest room overlooked the street, so that everyone entering could be seen. Here the host would normally sit and receive guests (musafir/misafir), his serfs and all the men related to the family. The room was therefore also known as the musafirhana/misafirhane. Until the war, the Kajtaz and Ridžanović houses in Luka retained their predaharluks, but they had long since ceased to be used for their original purpose (Hasandedić, 1980, p. 163).

WATER TAP – usually set between the mutvak and the privy so that the same water could be used for cooking and washing and dirty water would flow away through the privy and flush it. Sometimes the entrance gate was placed so that it separated the tap from the privy. The ćenifa or privy was typically oriental, designed so one squatted on the floorboards or stone floor over a pit; it also contained an ibrik or ewer with water for washing, kept in a wall niche. In the absence of mains sewers, the privy was close to the garden, but if there was water on the street side it and the water tap would be beside each other there.

GARDEN – the cult of the garden had a powerful influence on all kinds of decorative arts in Islam. Wherever possible, gardens had running water.. In Mostar the two opposite sites of town had the possibility of leading running water into and thus landscaping their gardens. The western part by the Radobolja is rich in water, which was used in large quantities, while the eastern part on the slopes of the hills used water from čatrnje or cisterns.

HOUSE – hugging the terrain horizontally, using zohipse for roads, respecting the neighbours' right to a view, and with a view down the street to other houses or groups of houses, surrounded by greenery, respecting the neighbours' right to privacy, or view of a mosque complex with its minaret. Houses were not built where there were no trees, and efforts were made to save every tree, while seeking the best possible orientation and benefit of the sun. Most houses in Mostar thus have their hayat and attic facing south, but where this was not possible the house would face east or west: never north. If there was water nearby it would have access to it and if possible lead it into the garden (gardens alongside the Radobolja) or even into the house (Velagić house in Blagaj).

The house spread into the exterior and included indoor and semi-indoor rooms. The row of windows enabled features of the exterior to form the decoration of the rooms – nature becomes part of the architectural composition (Pašić, 1989, p. 93).

With their conquest of the Balkan lands, the Ottomans introduced their own influences on house building and the formation of settlements. The non-Muslim part of the population also made a significant contribution to the evolution of the house in every region, particularly as the result of the great involvement of local craftsmen. In the 18th and 19th

centuries regional characteristics became strongly emphasized in certain places. These differences in the formation of various types of residential building also arose from the use of local materials, weather conditions and the assimilation of existing local customs.

The Islamic oriental house of the Ottoman period is shaped by two basic elements: the rooms, and the central chamber both separating and linking the rooms, known as the hajat. As well as providing a means of getting about the house, the hajat also served as a room where members of the household could come together, and seating was provided out of the way of the passage where people walked. As it evolved the seating area acquired various forms. The rooms were separate units designed to fulfil the basic functions of the house – each room was used for sleeping, working and eating. Each room required its own appropriate service area. The rooms increased in number, creating the basic layout of the Ottoman house. The main feature common to the different types of house is their layout. The Turkish house usually has only one upper floor, though there are cases of houses with more than one storey, though never more than one main storey. The other floors were usually used for ancillary purposes. The main living area was always on the upper floor. When the building had only one storey, it would always be raised above ground level to protect it from damp; pillars were used for this purposes, and the space beneath left empty.

The division of the house into the haremluk/haremlık (the private family quarters or women's quarters) and the selamluk/selamlık (the business or men's quarters) derived from the desire to separate the interior of the Ottoman house from the outside world. In layout, in larger buildings the haremluk and selamluk were separate, though interconnected houses. In smaller buildings the men's quarters occupied one or two rooms, which did not alter the layout, because the division was only in the use of the rooms.. In other cases, two or more standard-type houses would be interconnected in a specific way. The result of this was to increase the number of hajats (Pašić, 1989, p. 96).

The most important elements of the layout for a study of the typology of the buildings are the rooms, corridors and stairways. The combination of these led to different types of layout:

- Without a corridor – the most primitive type, consisting of a room or several rooms in a row, entered from the pavement or courtyard. These were mainly found in the southern regions and were not widely used;
- With exterior corridor – this is the first stage in the evolution of the layout. A covered corridor linked the rooms. This was inherited from the Hittites and Greeks. The corridor was open-sided, with pillars instead of a wall. This type of open corridor is still to be found as a gallery in warmer regions. There are many sub-types, depending on the number of rooms and whether there are oriel windows or other additions to the corridor;
- With interior corridor – this is a further stage in the evolution of the layout, and is the most common in Ottoman Turkey. It is also known as a two-sided layout, because it arose by adding another row of rooms on the outer side of an exterior corridor. In earlier variations of this type, the corridor is merely a roofed area with two open sides, the roof supported by pillars. In later variants, these openings were encloed by glass panes. The corridor is often fitted with seating at both ends. Eyvans, as an addition to the corridor, are sometimes found in this type of house. Sometimes they are set between two rooms, with the doors to the rooms facing them to provide a quieter atmosphere in the corridor. Staircases were set in these eyvans or in the corridor, to one side. Variants could include having an additional corridor, one or two eyvans, an angled corridor, various numbers of the different elements, closed or open walls to the corridor, and the disposition of the staircase
- With central corridor – this is the final stage in the evolution of the layout. The corridor is in the centre and the rooms on all four sides. This made the corridor the least exposed area to outside influences. Variants of this type depend on whether the corridor was enclosed on all four sides, with stairways in eyvans between the rooms, with two or three eyvans, a layout with elongated corridor, two staircases one at each end of the corridor, and the differing contours of the corridor (Pašić, 1989, p. 97).

Most houses from the Ottoman period were two-storeyed – with a ground and a first floor. The heart of all the buildings studied was a room with a part-open antechamber or hajat, repeated on the upper floor with a room or chamber above the ground floor room and an attic above the hayat. The next stage in the evolution was a symmetrical ground plan: room-hajat-room, or on the upper floor chamber-attic-chamber. The layout does not have to be symmetrical, depending on the site on which the building was erected. In the next stage, the ground plan consists of four parts arranged in a square, of which one is the hajat and the others are three rooms. Off the hajat is a smaller room, the width of the door, than the one set at diagonally, so that one can enter the second. The room set an an angle to the hajat was usually the kitchen. Above this room, on the upper floor, was a gallery for drying fruit and meat. A somewhat further evolved type had a larder (ćiler, hudžera/hücre) between the room and the mutvak, to the side of the hajat. Further evolution led to the hajat being enclossed on the third side by another room. A more complex variant of this type is when the larder was behind the hajat (Pašić, 1989, p. 109).

A separate stage in the evolution of the house was the duplication of the basic room-hajat-room, producing a deep hajat with two rooms on each side, the attic space facing the courtyard used as a jazluk or kamerija/kameriye (a summer dayroom). A specific type is the house where part of the ground floor was used as an araluk/aralık (an area between two entrance gates).

Larger houses consisted of a repetition of the same units and did not divide the rooms according to their function. The difference between the rich and the poor was in the wealth of treatment of the same elements (dividing rooms into larger and smaller, dividing the house into summer and winter quarters, into family quarters and guest quarters, but never into different residential functions).

Members of different generations and marital status lived in the same house, which led to attempts to ensure that the layout of the house could be easily divided, by making every room multifunctional. Ground floor rooms and upper floor chambers were used both day and night, facilitated by the appropriate fitted furniture (musandera/musandıra or built-in cupboards, sećija/seki or built-in seating around the walls). This arrangement, where one slept on the floor and sat on the seats, called for the windows to be low-set so as not to block the view. The rooms were also quite low ceilinged, usually about 210-230 cm, which led to the entrance doors also being low. Rooms on the upper floor were usually higher ceilinged and larger. The low ceilings also made the rooms appear more spacious.

The sećijas were set along two or sometimes three walls of the room, and were 80-90 cm wide and 10-30 cm high. They consisted of a wooden chest, which was also called sećija, with a minder or padded seat over it and over that again a šilta/şılte or thick woollen cover, topped by a makat of finer fabric wide enough to cover the wooden chest as well. Cushions were provided to lean against. To decorate the sećija, the makat and the top of the cushions were provided with jambezi or antimacassars of fine white fabric with decorative borders). The materials used to cover the sećija were always very decorative.

The musandera is an item of built-in furniture along the entrance door of the wall opposite the windows, with the door to the room attached to it; the space by the door, separated from the room by an arched lintel, was known as the between-door, and the arch was called ojma. By this between-door space there was usually a dolaf or wall cupboard with a single door, used to store small items. By the dolaf was a dušekluk/döşeklık, used for storing bedlinen during the day. In the corner of the musandera was its most important feature, the hamamdžik/hamamcık or bathroom, separated from the room by doors that did not reach to the ceiling. The floor of the bathroom was wooden or stone, with a slight fall towards a pipe that led the water outside the house. Right by the bathroom was the stove that heated the room. The boiler for the water was built into the stove on the bathroom side, and the water was ladled into a ewer and used for washing. There was a bathroom in every room in the house occupied by a married couple. In the between-door part of the musandera by the dolaf, in almost every case there were shelves where dishes were put at mealtimes. Beneath the dušekluk and dolaf there was a larder space with doors in the musandera, beneath the door or the between-door space.

The hearth or fireplace was an important feature of the room. It would be made of stone, with attractive but modest combinations. Later, particularly in colder regions, masonry stoves known as lončarice were built into the rooms alongside the bathroom so as to heat the water for bathing.

The chimneys leading from the fireplace and stoves had not only a functional but also an aesthetic value for the exterior appearance of the building, and reflect all the featurues of regional architecture.

A raf was a bracket shelf on which decorative ware was placed and where fruit was dried in winter. There was a raf in every room, at the same height and given the same form and decorative treatment. The raf was the upper face of the musander, 20-30 cm from the ceiling.

There were almost always dolafs or small wall-recessed cupboards in the rooms, usually several of different sizes but made of the same wood, with decorations matching the rest of the fittings in the room.

An abdestluk for ritual ablutions was built into every Muslim house, since ablutions were mandatory before each of the five daily prayers. The simplest form was a rectangular wooden plank forming part of the balustrade of the hajat, but in quite a few buildings it took the form of a recess in the wall and projected outside the house. Taking water from an ibrik performed the ablutions or ewer, with the water that had been used poured onto a slanted stone slab or wooden board about 70-80 cm above floor level so it could run off outside the building. All the surviving abdestluks are in the attic area (Pašić, 1989, pp. 114-118).

The built-in features of the rooms, where they have survived, are now used only partly for their original purposes. The hamamdžiks have been fitted with modern water supply and drainage to make modern shower cabinets within the musandera.

HAJAT – the common area in the house linking the rooms was known as the hajat on the ground floor and tavan (attic) on the upper floor. The hajat and tavan were connected by basamaci or steps, usually set against the wall opposite the open part of the hajat. It was a less satisfactory solution to set them on the side wall. Above the staircase, almost every house had a wooden tahtopeš or tahtapoš/tahtapuş between the stair rail and the wall, which might be on two levels (as in the Karabeg house), used to store the most valuable vessels. The hajat and tavan were corridors leading from room to room but also served as a place where all the members of the family could meet together. Part of the tavan, raised to the level of the staircase or above the floor level of the tavan, known as the jazluk or kamerija, was isolated from the area where people usually walked and was used for repose and leisure. On the side facing outwards the jazluk was enclosed by mušebak/muşabak, a lattice of thin wooden slats laid diagonally. The jazluk was equivalent, in fact, to a kiosk in the garden. One of its basic functions was to provide a few of the surrounding landscape. In Mostar, larger, wealthier buildings had a jazluk. In several cases it has subsequently been enclosed on the outside wall (čatma/çatma) by a row of windows. There are also quite a few instances of hajats that have been enclosed by a wall with doors and windows (Pašić, 1989, p. 126).

There were other kinds of houses in Mostar apart from those occupied by a single family – the dual house, two complete apartments on one floor with a shared room, or individual houses in a row of three apartments under one roof with the third achieved by converting a dual house. All had the same layout as a one-family house and used the same materials, construction and interior features, so that although they date from various periods they appear to have been built at the same time. They were particularly common in Mostar in the second half of the 19th century.

Another specific type of house is the residences of representatives of the Ottoman authorities (Konak in Pašinovac above the čaršija, Saraj Ali pasha Rizvanbegović in Buna). As well as their residential use, these buildings were also used for government purposes. The Konak in Mostar was adapted under Austro-Hungarian rule.

The Ejubović house on Mejdan could also be treated as belonging to this group of specific residential buildings in that part of it was the home of the kadi and the rest was the courthouse (mehćema). This latter part is now used for residential purposes (Pašić, , 1989, p. 133).

The construction of two-storey houses was simple: walls above walls, rooms above rooms, with the ground floor repeated on the first floor. The house usually had a solidly built ground floor and a much lighter upper floor. In the late 19th century, with other alterations, people began digging out basements and using the space beneath the roof, a departure from the previously usual type of house with ground and one upper floor. A great many different but mutually harmonious materials were used to build the house. All the materials were local, from the nearest building site – stone of various types from the immediate neighbourhood or even in the town itself, and wood from eastern Herzegovina.

The structural approach was simple: the structure was divided into loadbearing (solid ground floor walls, solid and half-timbered upper floor walls, beams in the roof space), weight-bearing floors, and the roof.

The foundations were of quarry stone, at least 50cm deep, with lime mortar as bonding.

The walls of the ground floor were usually of stone, 50-80 cm thick, with lime mortar as bonding. If the stone was quarry stone, they were plastered and whitewashed. If it was more finely dressed, the larger flat surfaces would be pointed. Both plastering and pointing might be combined in the treatment of the façade. Cut stone was rarely used for houses, and when it was it was almost always for details such as the quoins, window frames and door arches. Most Ottoman-period buildings were plastered and even the interior fittings were whitewashed. Stone was used only for structural purposes.

Wood, on the other hand, invariably retained its natural appearance and structure, both when used as a structural element and when forming part of the architectural décor. Wooden beams known as hatule were used to give extra rigidity to the walls, set in the walls as they were built with two joined together at the same height. They were also placed over the windows and doors if some other method was not used. Beams over the windows were laid over the full depth, but another treatment was a stone half-dome over the window with a finish of moulded plaster. A frame of double beams was set on the ground floor walls between which the floor beams were fitted. The weight bearing capacity of this structure depended greatly on the accuracy of execution. If the beams were not laid on the wall or if the span was too large, it was reduced by introducing a pillar with a corbel (for example the barleysugar pillar in the centre of the hajat of the Kolaković house). The ceilings over the ground floor were usually made of wooden beams often packed between with šašavac wedges. The outer, thicker side of the šašavac was called the arka and the thinner inner side the knife. These were wedges cut from pine, beech or juniper wood, 2.5 to 4 cm thick, 10-15 cm wide, and 70-100 cm long, depending on the gap between the floor beams, and were wedged into a groove cut into the beams and jammed hard against each other so that all that could be seen from below was the arka. They thus took part of the tension of the beams, which made it possible to use smaller-diameter beams. The floor of the upper storey was made of planks 15-20 cm wide placed at right angles to the beams. If šašavci were not used, the beams would be much larger and would be covered on the underside by planks 10-15 cm wide. Sometimes moulded slats were used on the ceilings to make them more decorative. In this case there would be a carved wooden central boss, the ortaluk/ortalık. (Kolaković house, Ćemalović house, Kajtaz house).

Basamaci were the staircase connecting the hajat to the tavan, usually consisting of a single flight and made of load-bearing beams or obraza into which triangular notches were cut where the treads were fitted. There would also be a railing of a row of wooden uprights and a handrail. This was called trabozani/tırabzan. Sometimes the top of the staircase would be closed by a horizontal trapdoor which, when open, lay against the wall.

The ćošak or doksat – oriel window – fitted into the framework of the building, with its loadbearing elements consisting of extensions of the beams between the floors. It was usually a single row longitudinal and transversal loadbearing structure, the two generally joined by struts.

The walls of the upper floor were almost always identical to those of the ground floor, being stone-built, 50-80 cm thick, and laid direct on the ground floor walls. Partition walls were thinner, with a wooden frame or čatma (birkatica). The structure of such walls was a combination of uprights and struts with various infills. The wooden frame was

properly functional in the case of oriel windows, because it was by nature self-supporting. The wooden frame of the hajat and tavan was quite simple, consisting of thin uprights or one more substantial pillar with a corbel and the beams it supported, the ends of which rested on the walls. Smaller beams were laid at right angles over this one, on which the tavan floor was laid.

The ceiling above the first floor was the same as the one over the ground floor, without šašavci, but had no floor above unless the roof area was in use.

The windows of the upper façade do not generally match in appearance or arrangement those of the ground floor, which are smaller, in the stone wall, with flat lintels on the outside and niches on the inside. Those on the upper floor are larger and often arched. Depending on the type of wall they belong to, the windows may be lower and sparser (stone walls) or larger and more numerous (wood frame). The window frames are wooden and consist of the frame and the čerćive into which the glass is set. These are scored, grooved, stoppered and given appropriate mouldings. The wooden mouldings or čerćive are slightly thicker and wider, and very light. The windows are usually single-sash, with stone usually set flush with the wall, but if they are fitted with lattice or bars they are set in. They open casement-style if in a stonewall, and horizontally in thinner woodframe walls, with the lower section movable and lifted upwards. Ground floor windows are fitting with demiri, cast-iron bars, set into the wall or into the wooden frame. The upper floor windows often have lattice or wooden shutters to keep the sun out. There are two kinds of shutters, exterior, which are double, and interior, which slide horizontally (Pašić, 1989, pp. 137-152).

The windows on the façades were equal in size, with four or six small panes of glass. In traditional Ottoman architecture they have substantial frames. As a rule they would have a single thin glass pane and would thus have a thinner frame and a crossbar within the sash. These crossbars would be no more than 2cm or so thick, while the frame would be 6-8 cm thick. The beam above the window was often left visible as a decorative feature. The windows terminated in moulded cornices 5-7 cm thick. All the fittings were mat black wrought iron, and the windows were closed by rotating latches top and bottom (Idrizbegović, 2003, p. 77).

The doors were also set in massive frames, and the doors themselves were usually very solid. In larger, wealthier houses they would be carved or at least decorated with moulded slats. They were made of high quality types of wood. They were usually simple single doors, but there were also richly carved double doors. Most of these formed part of a musandera.

The roof structure consisted of beams, rafters and purlines, posts and struts, if the roof cladding was neglected. The struts rested on beams over the windows of the upper floor. The roof cladding was limestone slabs, 30-80 cm in size and ideally 2-5 cm thick, laid on close-set laths or rafters. Lime mortar was spread between the slabs, which were laid diagonally to facilitate rainwater flowing off the roof. It was difficult to handle the ridge, which led to simpler roofs being chosen, usually gable roofs "na lastavicu", or hipped on larger buildings. The ridge is covered with a grooved stone or samari. The rafters around the valley being laid fan-wise clothed the roof valley and the valley rounded. A stone cladding is heavy and lies inert on the roof timbers. The pitch of the roof is shallow, so the space under the roof is not used. Where necessary, a stone-clad roof would have dormer windows, constructed by displacing a few slabs, which are held up by stone to allow smoke to escape through the gap. The main façade of the house would usually have projecting eaves supported by struts. The projecting eaves and shallow pitch of the roof made guttering unnecessary (Pašić, 1989, p. 149).

Houses were richly decorated, with carvings on doors and windows and highly ornate ceilings, dolafs, musanderas, šiša ceilings, wall panelling, chests and so on. All the furniture was also richly carved – items such as sinija/sini (low round tables used for eating from) and peškun/peşkun (low round tables used for seating). Various kinds of wood were used (beech, walnut, lime, maple, deal) with stylized floral, geometric and calligraphic motifs in repetitive, intertwining, symmetrical patterns (Idrizbegović, 2003, p. 81).

The principle of carved applique on a base of close-fitting boards was much used on musanderas. All the doors of the musandera, of various sizes, the upper and lower

pedestals, decorative arches over the stove and around the door into the room, and the shelves below the ceiling, all linked and extended onto the other walls, were richly carved. A very significant area for woodcarving was the ceiling in wealthier houses. Boards usually covered the wooden beams, and the central area was given particular emphasis (Čelić, 1976, p. 116).

Alajbegović house

Built in the 17th century, the Alajbegović house is a traditional two-storey stone and wood built house. The Alajbegović house is a valuable and very rare example of traditional Ottoman architecture with shops on the ground floor and residential quarters on the upper floor.

More detailed information on the building may be found in the Decision designating the **Architectural ensemble of the Alajbegović house in** Mostar as a national monument.

Kajtaz house

The building is in Gašo Ilić Street and was built at the end of the 18th century. The selamluk or men's quarters have a ground and an upper floor. The house is one of the largest surviving Ottoman period residential ensembles in Mostar.

More detailed information on the building may be found in the Decision designating the **Architectural ensemble of the Kajtaz house in** Mostar as a national monument.

Bišćević-Lakišić House

This building stands in Bišćević Street very close to the left by of the Neretva, and was built in the late 18th/early 19th century. The entire complex evolved gradually from the 17th century on. It is an example of local architecture of Balkan Ottoman expression, and one of the most important housing complexes of that period in Mostar.
The entire complex consists of two parts: the selamluk and public courtyard, represented by the Bišćević house, and the haremluk or private quarters, represented by part of the Lakišić house.

More detailed information on the building may be found in the Decision designating the **Architectural ensemble of the Biščević-Lakišić house in** Mostar as a national monument.

Muslibegović house – petition (Tadžudin Muslibegović, Mostar)

This house stands on Osman Đikić street in Brankovac and is one of the last Turkish-period houses in Mostar; it is also the largest and most monumental residential building to have survived to this day from the Ottoman period.

More detailed information on the building may be found in the Decision designating the **Architectural ensemble of the Muslibegović house in** Mostar as a national monument.

Sheikh Jujo's house on Mejdan

In the late 17th century the Mostar muderis and mufti Mustafa Ejubović (Jujo) built a two-storey house on Mejdan close by the former Sinan pasha mosque and courthouse (mehćema), pledging it as the residence of the kadije serving in Mostar. During the rule of Alija Rizvanbegović, the house came into his hands, and he repaired it and pledged it for the same purpose, as revealed by the inscription incised on a plaque in the wall to the right of the entrance to the building.

Between 1878 and 1888 the building housed the municipal hospital. In 1960, the Institute for the Protection of Cultural Monuments of Mostar carried out the necessary conservation works on the building, when it was registered as a cultural monument. It is now used as a private dwelling (Hasandedić, 1980, p. 166).

Sheikh Jujo's house on Mejdan bears a long chronogram in Turkish verse encised on a stone plaque measuring 42 x 72 cm. Frequent whitewashing has made the inscription almost illegible. The year the house was built is given as 1309 AH (1891/92). The inscription refers to kadija Hafiz Hasan Hadžiefendić, who was kadija in Mostar at the end of

the 19th century. According to H Hasandedić, the inscription was composed by Hamza Sulejman ef Puzić, muderis and epigraphist (Mujezinović, 1998, p. 277).

The house of Persa Čorović

This house is the birthplace of Svetozar Ćorović, and stands on the left bank of the Neretva, very close to the Mujaga Komadina or Luka Bridge.

The interior of the building consists of a ground floor with an entrance hall and a single flight of wooden stairs leading to the first floor, a WC and one large room, and four rooms on each of the first and second floors, which are connected by a wooden double flight of stairs, and an attic.

The total net area of the building (usable space) is 225 sq.m. The exterior load bearing walls and the partition central load-bearing wall on the ground floor are made of limestone and are 65 cm thick. All the other partition walls between the rooms, on both floors, are half-timbered. The roof cladding was asbestos tiles. The entrance façade was of cut limestone (City Institute for the Protection of the Cultural, Historical and Natural Heritage of Mostar).

The house of Svetozar Ćorović (1875-1919) is an interesting example of the new architectural expression influenced by the Mediterranean Dalmatian school of the early 19th [sic] century. It was built of cut stone, with three storeys, the main façade facing the street, and biforate upper windows, making it entirely different from other houses of the Ottoman period and more reminiscent of Venetian architecture with a marked influence from the Dubrovnik school (Karahasanović, 20003, p. 44).

The building is also well known for its most famous occupation, the poet Aleksa Šantić, who spent the last days of his life here and died in the house. After his death, the house was turned into a museum where his manuscripts and the books from his library are kept.

During the war, from May 1992 to March 1994, the building was hit by many artillery projectiles of various calibres, causing heavy damage to the roof structure, parts of the façade and the partition walls inside, as well as damage to the walls and ceilings of the rooms.

In the second half of 1999 a facsimile reconstruction of the façade, roof structure and cladding and part of the interior (ground floor) was carried out. (City Institute for the Protection of the Cultural, Historical and Natural Heritage of Mostar).

Konak – residential complex

The Konak apartments were built in the early 20th century as a residential building with apartments to let and a large shop on the ground floor. The building was carefully sited by the main access facing the Serbian Orthodox church, with a good view of the Old Bridge and the historic centre of Mostar. It is one of the finest examples of mixed residential and business use from the period of economic expansion that followed the Austro-Hungarian occupation of the town. There is no prototype building from that period where the residential quarters are so strictly divided above street level. (Regulatory Plan for the preservation and development of Mostar Old Town, 2001, pp. 20-21).

The Konak complex consists of two large buildings with a ground and two upper floors in the neo-classicist style in about 1900, and four single storey buildings of somewhat more recent date with no great cultural or historical value. All were used for residential purposes until damaged during the recent war, when they suffered significant damage to the structure and façades.

The building was constructed with flats to let and large commercial premises at street level, suitable for all kinds of trade. The three owners, the Đokić, Bilić and Pešto families, were the leading Serb families in Mostar from the mid 19th to the mid 20th century. At first the residential quarters of the building belonged to the Đokić family, with the business premises jointly owned by all three. Ownership of the building remained unchanged, but the tenants kept changing.

The Konak complex was built in the neo-Renaissance style, with all its typical features: a horizontal division of the façade by string courses and friezes, rusticated corners, windows emphasized by level or arched lintels, the domination of surface over line.

The building combined apartments with rows of large windows, and a massive commercila ground floor. The commercial premises projected beyond the street front of Marshal Tito street in Mostar, while the residential quarters on the upper floors were set back, providing them with some protection from the noise and bustle of the street and ensuring they had sufficient light and air. The articulation of the building fits in well with the square Mostar neo-classicist tradition and space with the large number of buildings erected thanks to capital and investment by the Austro-Hungarian authorities. There is no prototype, however, in Mostar for the way the residential quarters on the upper floors are set back. The design resulted from the genuine existential need for a quality life style and the desire for a better view. As one looks out from the flats, the windows create an almost perfect frame for the view of the Old Bridge and the historical part of town. The building was carefully sited closed to the main route into town and the Orthodox Church, claiming the view of the Old Bridge. Both these buildings were part of the well-known cultural identity of Mostar.

During the 1992-95 war the wall, upper floor and roof structures were badly damaged. It is essential to assess the structural system before embarking on repairs to the walls and floor structures. The façades should be preserved and repaired. The Prussian vaults and arches should be surveyed and stabilized. If it is found that they are beyond repair, the new structure for the upper floors should be appropriate to the structure. Earthquake protection measures should be taken into consideration when consolidating the structure. The windows and doors must be replaced in conformity with the original details. The original layout of the building and all the details (doors and windows) should be preserved wherever possible.

3. Legal status to date

The regional plan of the Republic of Bosnia and Herzegovina to 2002 registered and evaluated the urban ensemble of Mostar as a 0 category (world heritage standard) monument. The urban ensemble of Mostar was taken to be the area from Carina bridge to the tobacco factory in the broad sense, and the area of Potkujundžiluk with the Old Bridge and towers in the narrow sense. Within the ensemble, individual monuments were also subject to protection: a church, monastery, six mosques, one masjid, the hamam, the clock tower, the Old Bridge with its towers, the Curved Bridge, the medresa, the old Serbian school, the bishop's palace, two burial grounds by mosques, a turbe and several residential buildings.

The regional plan of the Republic of Bosnia and Herzegovina to 2002 registered and evaluated the Old Bridge as a 0 category monument.

The regional plan of the Republic of Bosnia and Herzegovina to 2002 registered and evaluated the Karađoz-beg, Koski Mehmed-pasha, Vučjaković, Šarić and Roznamedži mosques, the old Orthodox church, the Cathedral, Sheikh Jujo's turbe, the old Orthodox cemetery in Bjelušine, the old Serbian school, the Karađoz-beg medresa, the Clock Tower, the Curved Bridge, the Baths and the Hotel Neretva as category 1 monuments.

The regional plan of the Republic of Bosnia and Herzegovina to 2002 registered and evaluated the Kotlo masjid, the burial ground by the Karađoz-beg mosque, the Ćejvan-ćehaja hamam, the mekteb by the Hajji Memija mosque in Cernica, the Bišćević, Kajtaz and Muslibegović houses and Musala square as category 2 monuments.

The regional plan of the Republic of Bosnia and Herzegovina to 2002 registered and evaluated the Šarić mosque, and parts of the Roznamedži and Koski Mehmed-pasha medreses as category 3 monuments.

Pursuant to the law, and by Ruling of the Institute for the Protection of Cultural Monuments of BiH in Sarajevo, no. 507/53 of 1953, the Muslibegović house in Brankovac in Mostar was placed under protection as a cultural monument.

The following properties are included on the Provisional List of national monuments of the Commission to Preserve National Monuments:

- As no. 375, old Orthodox church – designated 30 June 1998,
- As no. 376, Tabačica mosque – designated 30 June 1998,
- As no. 377, Old Bridge with towers – designated 30 June 1998,
- As no. 385, Kajtaz house – designated 30 June 1998,
- As no. 389, Kriva ćuprija – designated at the Commission's 11th session in 1999
- As no. 387, remains of the Orthodox Cathedral – designated 1-2 July 1999,
- As no. 407, Roznamedži mosque – designated 22-23 September 1999,
- As no. 408, Roznamedži Ibrahim-efendi medresa – designated 22-23 September 1999,
- As no. 409, Clock tower – designated 22-23 September 1999,
- As no. 410, Symphony orchestra (former mekteb) – designated 22-23 September 1999,
- As no. 411, old Orthdox cemetery in Bjelušine – designated 22-23 September 1999,
- As no. 390, Bišćević house,
- As no. 391, Cernica Sibjan mekteb,
- As no. 392, Ćejvan-ćehaja mekteb,
- As no. 396, Nesuh-age Vučijaković mosque,
- As no. 398, Karađozbeg mosque,
- As no. 399, Karađozbeg medresa,
- As no. 400, Karadozbeg mekteb,
- As no. 402, Koski Mehmed-pasha mosque,
- As no. 403, Koski Mehmed-pasha medresa,
- As no. 404, Kujundžiluk čaršija,
- As no. 406, birthplace of Svetozar Ćorović.

4. Research and conservation and restoration works

Since March 1998 the Aga Khan Trust for Culture and the World Monuments Fund have been developing a number of complementary planning and rehabilitation activities on the historic area of Mostar. The project is based on cooperation with the city authorities in Mostar and involved drafting three key documents:

- Agreement on joint work on the reconstruction of the Old Bridge and Old Town in Mostar, signed by the Government of FBiH, the City of Mostar, the World Bank and UNESCO in Washington on 30 April 1999;
- Agreement on drafting a regulatory plan for the preservation and development of the Old Town in Mostar, dated 26 May 2000;
- Memorandum on the establishment of the Stari Grad Agency for the preservation and development of the historic centre of Mostar, dated 14 July 2000 (regulatory plan for the preservation and development of the Old Town in Mostar, 2001, p. 1)

1952:

- Intervention to the towers of the Old Bridge and minor works to the bridge itself
- Repairs to the lead cladding of the Pod lipom mosque and repairs to top of minaret
- Removal of dilapidated roof of exterior portico of Karađoz-beg mosque
- Replacement of pillars and slabs on portico of Roznamedži mosque
- Works on partial restoration of doksat on Biščević house
- Setting courtyard of Koski Mehmed pasha mosque in order

1953:

- Completion of works on Roznamedži mosque, renovation of portico and repair to roof
- Examination of roof structure on part of storehouse by Old Bridge
- Restoration of large and part repairs to small oriel window on Bišćević konak

- Works to arrange house of Persa Ćorović nee Šantić as memorial museum
- Roof of Tabačica mosque made good

1954:

- Reconstruction of side walls and dome, placing new tuff cornice on hamam

1955:

- Restoration part of shops and storehouses in Potkujundžiluk čaršija
- Minor works to tannery
- Renovation of kanat doors in čaršija
- Renovation of roof structure of Kajtaz house
- New roof slabs on Ćorović house
- Repairs to old Orthodox church
- Restoration of mimber of Vučjaković mosque
- Repairs to lead roof of Koski Mehmed pasha mosque
- Slab covering and adaptation of tower by bridge

1956:

- Repairs to foundations of Old Bridge

1958:

- Continuation of works on old Mostar čaršija, reconstruction of some buildings in Potkujundžiluk
- Leading and injection on Old Bridge
- Arranging Vučjaković mosque as storage for museum holdings
- Works on setting tower on right bank of Neretva in order
- Reconstruction of café on Mala Tepa

1963:

- Repairs to Old Bridge
- Conservation of Karađoz-beg medresa

1966:

- Start of restoration of Curved Bridge, completed 1967

1967:

- Conservation works on Karađoz-beg mosque

1969:

- Conservation works on Karađoz-beg mosque

1970:

- Works to reconstruct portico of Karađoz-beg mosque (Naše starine XIII, 1972, pp. 30-36)

1997:

- Institute for the Protection of the Cultural, Historical and Natural Heritage of Mostar in association with UNESCO drew up a plan for the protection of the entire town of Mostar as a monument and the reconstruction of the historic quarter of the Old Town
- Works on the minaret of Ćejvan-ćehaja mosque under supervision of the Institute in Mostar

1998:

- Rehabilitation of building in Priječka čaršija – collaboration between Institute in Mostar and Aga Khan Trust for Culture and World Monuments Fund (AKTC&WMF)
- Reconstruction of complex of Nezir aga mosque – collaboration between Institute in Mostar and Research Centre for Islamic History, Art and Culture (IRCICA), project documentation drawn up by Institute in Mostar

1999:

- Reconstruction of Koski Mehmed pasha mosque – supervision by Institute in Mostar, investor Ministry of Culture of Republic of Turkey
- Reconstruction of Tabačica mosque – under supervision of Institute in Mostar, project documentation drawn up by Institute in Mostar

2000/2001:

- Reconstruction of Café Europa – supervision by Institute in Mostar, investor Islamic Community

2001:

- Reconstruction of Kriva ćuprija on the Radobolja by Institute in Mostar and UNESCO
- Reconstruction of shops in Kujundžiluk – collaboration between Institute in Mostar and Cultural Heritage without Borders CHwB, project documentation drrawn up by Institute in Mostar
- Consolidation and restoration of Lakišić house – agreement between Institute in Mostar and AKTC&WMF

2002:

- Project to regulate bed of river Radobolja– Institute in Mostar and Ministry of Agriculture, Forestry and Water Resources Management, Herzegovina-Neretva Canton
- Renovation and reconstruction of cultural and historical heritage buildings of Serbian Orthodox parish Mostar – old Orthodox Church – Institute in Mostar
- Regulation of endangered part of bed of river Radobolja on P6 section – Oručević bridge – supervision of works by Institute in Mostar, investor City of Mostar.

5. Current condition of the site

An on site visit in July 2004 ascertained the following:

A project has under way for the renovation of the historic centre and individual monuments since 1988, with completion of the project planned for 2004.

As part of the rehabilitation programme for the historic centre, rehabilitation projects have so far been carried out on the following buildings:

- Koski Mehmed-pasha mosque, Nesuh-aga Vučijaković mosque, Ćejvan-ćehaja mosque, Roznamedži Ibrahim-efendi mosque, Nezir-aga mosque, Hajji-Kurt (Tabačica) mosque, Hajji Memija Hadžiomerović mosque in Cernica, old Orthodox church, Jewish synagogue, Mausoleum of Osman Đikić, Kriva ćuprija on the Radobolja (in Priječka ćaršija), Mekteb by the Hajji-Memija mosque in Cernica, Ćejvan-beg medresa (present-day Karađoz-beg medresa), Koski Mehmed-pasha medresa, Symphony orchestra (former Cernica sibjan-mekteb), Ćejvan-beg hamam, Muslibegović house, Bišćević-Lakišić house, House of Persa Ćorović, Hindo han, Han Hotel Evropa, Tepica (Caffe Luft), shops in Kujundžiluk, Clock Tower – buildings renovated and currently in use for their proper purpose
- Hajji Mehmed-beg Karađoz mosque – all rehabilitation works completed, formal opening planned for 23 July 2004
- Complex of the Old Bridge and towers – all rehabilitation works completed, formal opening planned for 23 July 2004
- Čejvan-beg hamam – all rehabilitation works completed

BUILDINGS NOT YET REHABILITATED:

Buildings for which project documentation for rehabilitation has been drawn up and is expected to be implemented in 2004:

- Bishop's palace and Metropolitan's residence – buildings in a state of ruin and exposed to the elements.

Buildings on the list of 21 priorities for rehabilitation drawn up by the city authorities in Mostar. This list includes the following buildings:

- Serbian primary school, Alajbegović house, National Bank, Konak – residential complex, Cathedral of the Holy Trinity, Senior Girls' School – the buildings are in a state of ruin and no works have been undertaken to rehabilite them since they suffered war damage. They are exposed to the elements that are endangering their structure.

III. CONCLUSION

Applying the Criteria for the adoption of a decision on proclaiming an item of property a national monument (Official Gazette of BiH nos. 33/02 and 15/03), the Commission has enacted the Decision cited above.

The Decision was based on the following criteria:

A. Time frame
B. Historical value
C. Artistic and aesthetic value
C.iii. Proportions
C.iv. Composition
D. Clarity
D.ii. Evidence of historical change
D. iv. Evidence of a particular type, style or regional manner
D. v. evidence of a typical way of life at a specific period
E. Symbolic value
E.iii. Traditional value
E.v. significance for the identity of a group of people
F. Townscape/ Landscape value
F.i. Relation to other elements of the site
F.ii. Meaning in the townscape
F.iii. The building or group of buildings is part of group or site
G. Authenticity
G.i. form and design
G.iii. Use and function
G.v. location and setting
G.vi. Spirit and feeling
H. Rarity and representativity
H.i. unique or rare example of a certain type or style
H.ii. Outstanding work of art or architecture
I. Completeness
I.i. physical coherence
I.ii. Homogeneity

The following documents form an integral part of this Decision:

- Copy of cadastral plan
- Copy of land register entry and proof of title;
- Photodocumentation;
- Drawings

The documentation annexed to the Decision is public and available for view by interested persons on written request to the Commission to Preserve National Monuments of Bosnia and Herzegovina.

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WHC REGISTRATION
Date 27.01.05
Id N° 946 rev
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Bosna i Hercegovina
Komisija/ Povjerenstvo za očuvanje
nacionalnih spomenika

Bosnia and Herzegovina
Commission to Preserve
National Monuments

The Commission to Preserve National Monuments, pursuant to Article 2, paragraph 1, sub paragraph 3 of the Book of Activities of the Commission to Preserve National Monuments concerning international cooperation, adopted by the Presidency of Bosnia and Herzegovina at its 149th session, held on 06 September 2002 (The Official Gazette of BiH no. 29/02), at its session held from 25 to 31 January 2005, adopted a

D E C I S I O N

TO NOMINATE THE HISTORICAL CITY AREA OF MOSTAR FOR THE INCLUSION ON THE UNESCO WORLD HERITAGE LIST

I

The Commission to Preserve National Monuments (Hereinafter: the Commission) made a decision to nominate a national monument of Bosnia and Herzegovina – the historical city area of Mostar for the inclusion on the UNESCO World Heritage List, under the name **«The Old City of Mostar»**.

II

The Commission requests all bodies of authority in the Federation of Bosnia and Herzegovina and the City Administration of Mostar to take all necessary measures and provide conditions for protecting the national monument.

Everyone, and especially the bodies of authority from paragraph 1 of this Item, shall restrain from taking any actions that might damage or devaluate the national monument or bring its protection into question.

III

The Commission to Preserve National Monuments requests the Government of the Federation of Bosnia and Herzegovina and all competent bodies of authority to provide measures for the implementation of the Commission's decisions concerning the protection and rehabilitation of buildings within the nominated area and in the *buffer* zone.

Obala Kulina bana 1, Sarajevo Tel: 276-760 Fax: 276-768 E-mail: aneks8ko@bih.net.ba

IV

In line with its mandate, the Commission shall provide for the monitoring of all activities in relation to the nomination and cooperate with representatives of the UNESCO, World Heritage Committee and ICOMOS, relevant bodies of authorities and institutions in Bosnia and Herzegovina, City Administration of Mostar and team of experts who prepared the text of the nomination.

V

The Decision shall enter into force on the date of its adoption and shall be promulgated in the Official Gazette of BiH.

The Decision was adopted by the following members of the Commission to Preserve National Monuments: Zeynep Ahunbay, Amra Hadzimuhamedovic, Dubravko Lovrenović, Ljiljana Sevo i Tina Wik.

Chairwoman of the Commission

Amra Hadžimuhamedović

Number: 07.1-35-130/04-12
26 January 2005
Sarajevo

Obala Kulina bana 1, Sarajevo Tel: 276-760 Fax: 276-768 E-mail: aneks8ko@bih.net.ba

WHC REGISTRATION
Date 27.01.05
Id N° 946 rev
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BOSNA I HERCEGOVINA
COUNCIL OF MINISTERS
STATE COMMISSION FOR COOPERATION WITH UNESCO

Broj: 02-1/2005
Sarajevo, 18.01.2005.

DECISION

About nomination "The old Town of Mostar" for entering The List of theWorld Cultural-Historical and Natural Heritage under the UNESCO's protection.

The State Commission for Cooperation with UNESCO in the wider group reached, on January 17th 2005. in Sarajevo, a Decision for nomination of The Old Town of Mostar for entering into The List of the World Cultural-Historical and Natural Heritage under the UNESCO's protection.

The State Commission for Cooperation with UNESCO finds the reviewed application, created according to the UNESCO procedure and The World Committee for Protection of Cultural-Historical and Natural Heritage, elaborate and annexes made by the expert team of City Government of Mostar, harmonized with the opinion of the UNESCO experts and The State Committee for Protection of Cultural-Historical and Natural Heritage, entirely meet the conditions and criteria for nomination and acceptance by The World Committee for Protection of Cultural-Historical and Natural Heritage on next seet on July 2005. in Capetown.

President
The State Commission for Cooperation with UNESCO
Dr. sci. Sead Avdić

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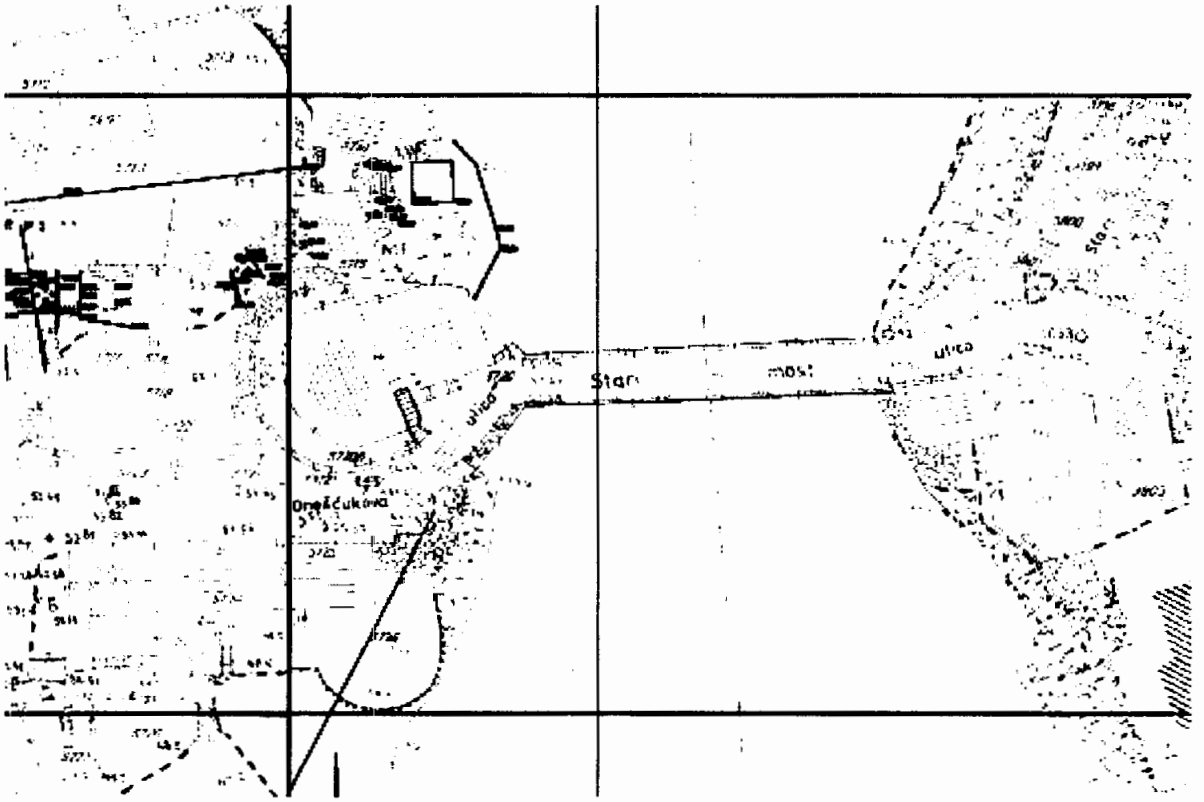


Parts of Studies and Designs prepared for the facsimile reconstruction of the Old Bridge in Mostar during period 1999 - 2004

CONTENTS

- Introduction
- Summary from preliminary tests on the state of the structure before reconstrucion works (CONEX & Yeralti Aramacilik)..... **2**
- Summary from laboratory tests of reconstruction materials (LGA Nurnberg)....**38**
- Parts of Structural Design of the Old Bridge (General engineering, Florence, Italy).....**59**
- Archaeological researches - summary (Omega engineering, Dubrovnik, Croatia).....**146**
- Conclusions from UNESCO ICE sessions **154**
- Comparison of photogrammetry from 1982. in comparioson with the state after reconstruction (PROTON, Mostar).....**174**
- The last received Monitoring Report (LGA, Nurnberg – Germany).....**177**

Introduction

The main task of the material presented in this book was to give the insight into segments of a very detail documentation which have preceded and followed up the course of rehabilitation of the Old bridge complex in Mostar in period 1999.-2004. Since this was a case of the facsimile reconstruction of the structures, renewed with traditional materials and technologies, the idea was to present the cross section through the preliminary works and analyses preceding the reconstruction. Conclusions of UNESCO's expert team (ICE), which had supervised the preparation period and reconstruction works, were also presented, and at the end we have displayed the photogrammetry from 1982. in relation to the geometry of the reconstructed bridge along with the photo-documentation of the complex. Also, there is the short display of archaeological research and the underground archaeological site as the confirmation of the existence of earlier bridges on the very location of the present stone bridge. Reconstruction of this monument, which composes the identity of not only the city of Mostar, but the entire state of Bosnia and Herzegovina, was helped by the efforts of the World Bank and UNESCO along with the many other well known international organizations, which have made the project of such size possible for realization.

Summary from preliminary tests on the condition of the structure before reconstrucion works (CONEX & Yeralti Aramacilik)

CONEX & YERALTI ARAMACILIK - **GEOPHYSICAL INVESTIGATIONS**

We would like to present in the following some of the works on the geophysical investigations conducted on the Old Bridge's remnants.

Extraction from the BOOK N^0 4.2.1.

4. FINAL CONSIDERATIONS AND COMMENTS

The main aim of the investigation works, carried out on the structure of the Old Bridge, consisted in determining the present state of the Old Bridge remains. It was important to find out to what extent the current state should be improved, so that the replica of the arch structure could be built safely later on.
The following investigation works were carried out:

- seismic crosshole method with tomographic interpretation
- seismic sounding (partly with tomographic interpretation)
- ultrasonic testing
- sclerometric examinations

the results of which are included in this Report.

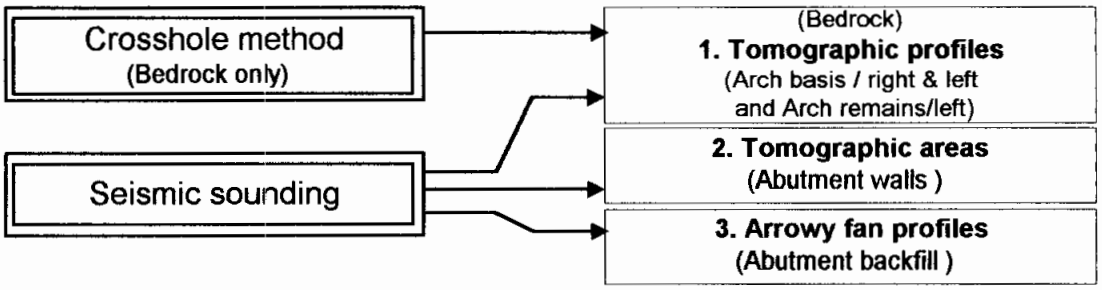
4.1. INVESTIGATIONS

The investigation results included in this Report are classified in three big rounded parts which refer to the main parts of the bridge remains:

1. Bedrock
2. Abutment structure (abutment walls and abutment backfill)
3. Arch remains

Within each of these parts there is another division which in one case refers to the left bank and in the other to the right bank of the river. For each part of the Old Bridge remains defined in such way, there are corresponding investigation methods pointed out and eventually the results of the executed investigations. Systematized and processed investigation results are presented through a series of 51 annexes enclosed at the end of this Report.
In order to get a complete picture of the investigation works executed, two more Tables are enclosed (Table 15 and Table 16). Table 15 refers to all investigation works carried out on the right bank and Table 16 to all investigation works carried out on the left bank of the river Neretva River.

It should be taken into account that data processing and diagrams (account) for crosshole and seismic sounding methods was given the following forms:



Ultrasonic examinations were carried out on some cut-stones (total, 330 stones). The ultrasound across the joints between two cut-stones was also measured (total, 261 joints). Statistic data processing is given in Table 17 and Fig. 11 (for cut-stones), and in Table 18 and Fig. 12 (for joints).

Table 17: ***Statistical data processing of stone block ultrasonic examination***

STATISTICAL INPUT DATA		STATISTICAL OUTPUT DATA	
Range of ultrasonic velocities [m/s]	**No. of entities**	**Statistical property**	**Value**
0 - 500	0	Number of data	330
500 - 1000	4	Mean	2398
1000 - 1500	35	Median	2367
1500 - 2000	18	Minimum	877
2000 - 2500	163	Maximum	5333
2500 - 3000	65	Range	4456
3000 - 3500	17	Lower quartile	2198
3500 - 4000	21	Upper quartile	2667
4000 - 4500	5	Quartile range	469
4500 - 5000	1	Standard deviation	710
5000 - 5500	1	Variance	505444

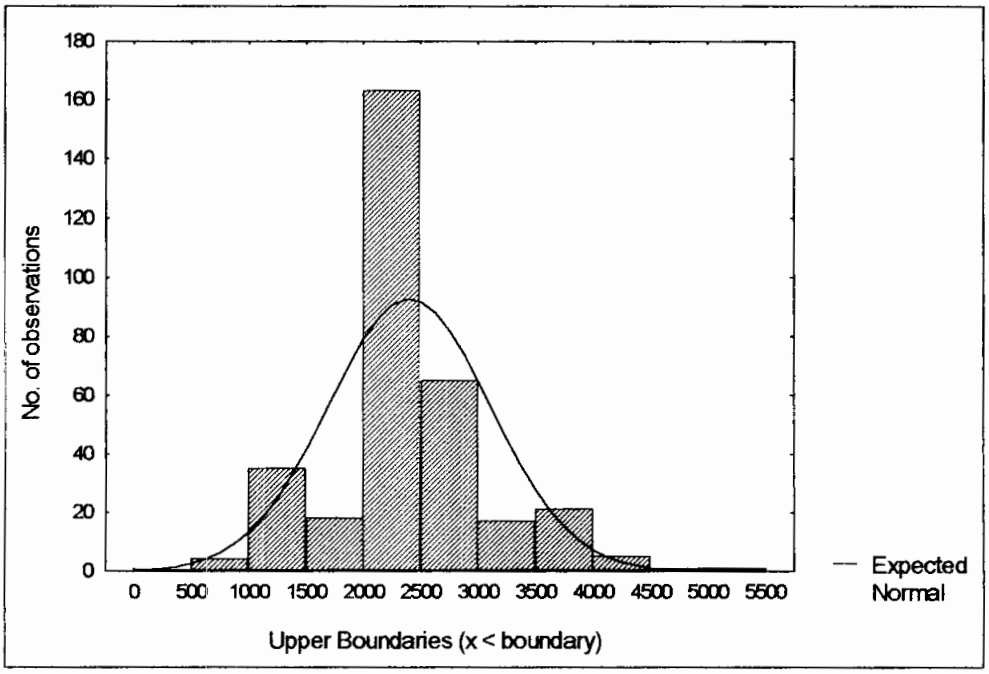


Fig. 11: Results of ultrasonic investigation on stone blocks

Table 18: ***Statistical data processing of inter - stone block joints ultrasonic examination***

STATISTICAL INPUT DATA		STATISTICAL OUTPUT DATA	
Range of ultrasonic velocities [m/s]	**No. of entities**	**Statistical property**	**Value**
0 - 500	0	Number of data	261
500 - 1000	19	Mean	2104
1000 - 1500	42	Median	2260
1500 - 2000	32	Minimum	517
2000 – 2500	100	Maximum	4878
2500 - 3000	50	Range	4361
3000 - 3500	13	Lower quartile	1619
3500 - 4000	2	Upper quartile	2548
4000 - 4500	1	Quartile range	929
4500 - 5000	2	Standard deviation	733
		Variance	537709

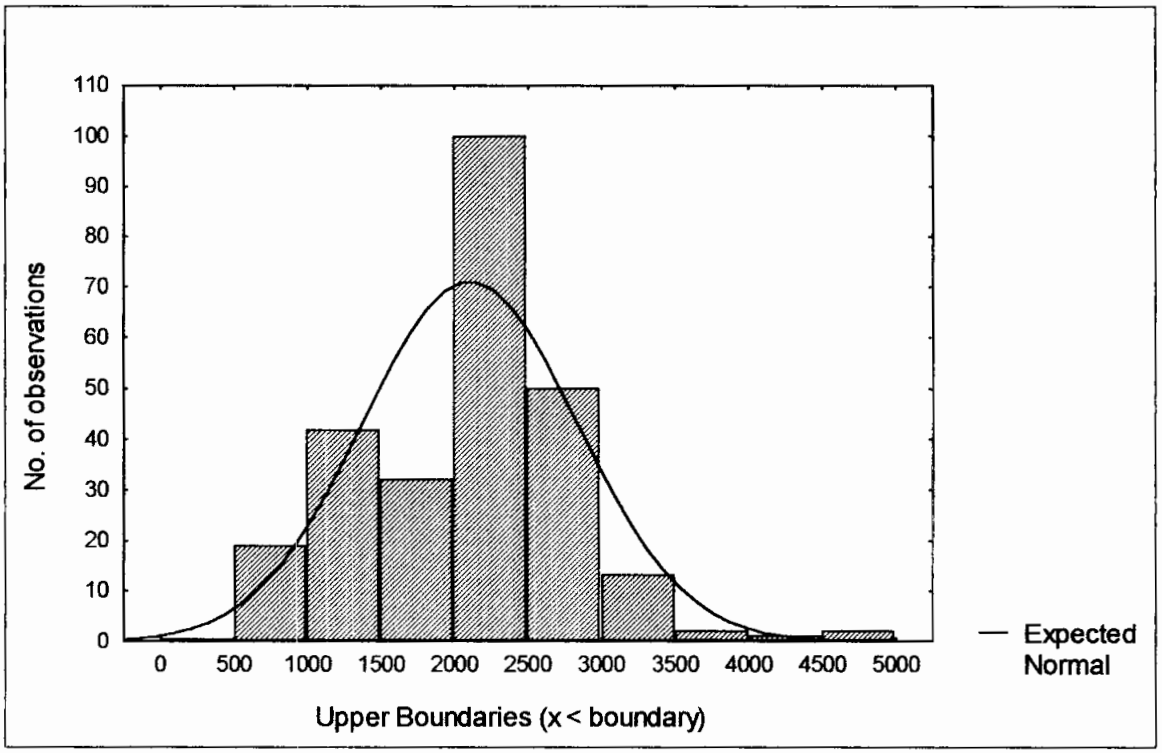


Fig. 12: Results of ultrasonic investigation between stone blocks

Sclerometric examinations referred to only some of the cut-stones (total, 225 pieces). Statistic processing of the sclerometric examinations is given in the Table 19 and Fig. 13.

Table 19: ***Statistical data processing of stone block sclerometric examination***

STATISTICAL INPUT DATA		*STATISTICAL OUTPUT DATA*	
Range of sclerometric rebound	**No. of entities**	**Statistical property**	**Value**
20 - 25	2	Number of data	225
25 – 30	12	Mean	34,9
30 - 35	95	Median	35
35 – 40	90	Minimum	23
40 – 45	19	Maximum	50
45 –50	7	Range	27
		Lower quartile	32
		Upper quartile	38
		Quartile range	6
		Standard deviation	4,4
		Variance	18,8

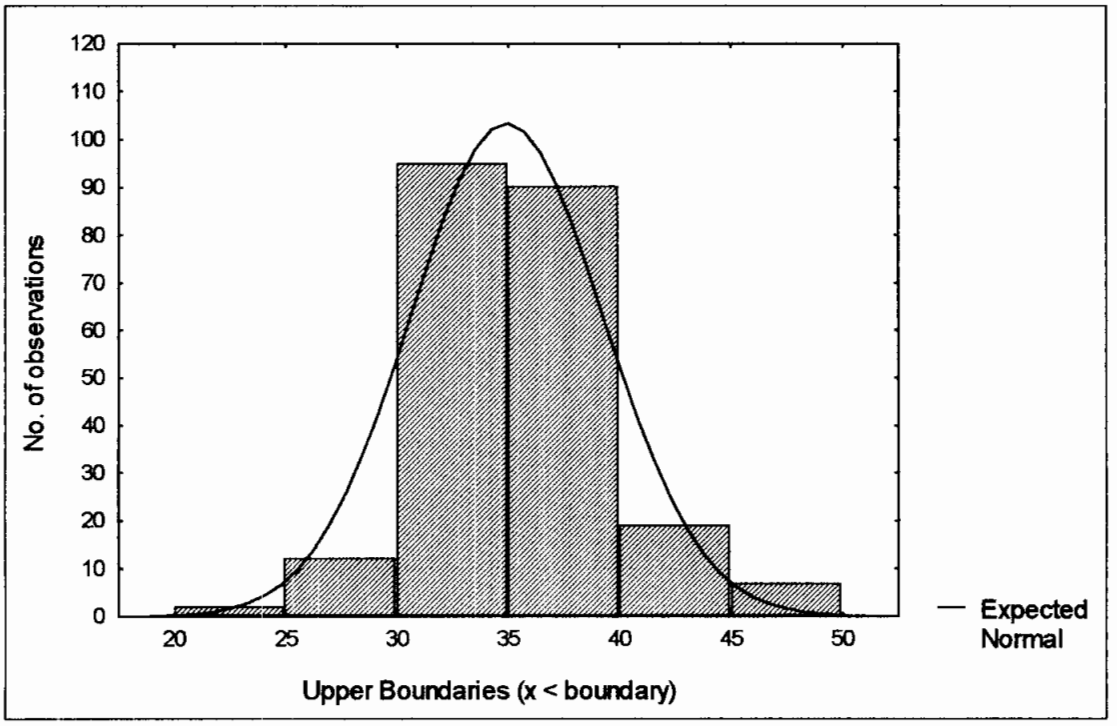


Fig. 13: Results of sclerometric rebound examination

4.2. INVESTIGATION RESULTS

4.2.1. Bedrock

4.2.1.1. RIGHT BANK

4.2.1.1.1. Crosshole Seismic Tomography

The velocity range of seismic waves indicates that the right bank is very heterogenous in a geotechnical sense. Within quarternary deposits the velocity isolines (curves of equal velocity) point to an intensive change of geotechnical properties of rock in the vertical and horizontal direction, being the result of genetic conditions of sediment depositions and also of the post-genetic destructive impacts of water, especially the erosion.

Highly weathered rocks show seismic wave spreading velocities less than 2000 m/s while markedly low velocities point to a possible occurrence of caverns (Annexes 9 and 10). Such caverns are mostly filled with secondary materials. In the Annexes mentioned, there are also other leads suggesting some possible technical solutions to bedrock remedial works.

Within neogene marl a pronounced heterogeneousness of seismic velocities is established as a result of varied jointing of marl, the occurrence of sand streaks and clay marl zones. In a geotechnical interpretation a special attention should be paid to the areas of markedly low velocities in marl, as those are the most important indicators of the need and the way how remedial works in deeper rock parts should be carried out. The weathered marl parts space orientation is given in the Annex 8.

The continous zones of a weathered rock at the near-surface parts of quarternary are represented in the profiles BV-6-BG-8b (Annex 11) and BV-6-BG-5 (Annex 8).
The results of the investigations are shown in the Annexes Nos. 8, 9, 10 and 11 and offer a possibility of the interpretation of space geotechnical relations, of course, in combination with other investigation methods.

4.2.1.2. LEFT BANK

4.2.1.2.1. Crosshole Seismic Tomography

A heterogenousness of quarternary deposits, marked in the value differences of seismic wave spreading velocities, is observed in all profiles. In relation to the right bank, the velocity heterogenousness is less pronounced.
Generally, the velocities of seismis waves at the left bank are considerably lower. It is a consequence of a relatively little presence of hard conglomerates that considerably increase the average velocities of seismic waves. Besides, hard marls also increase the average velocities and they are located below the the zone of investigation at the left bank.
The seismic wave spreading velocities in gravels and sands of the left bank are slightly lower than those at the right bank. The reason of such occurrence are probably somewhat different consolidation conditions of those deposits following sedimentation.
Due to a better consolidation of deposits, the seismic wave velocities increase with depths of deposits.

4.2.2. Abutment structure

4.2.2.1. RIGHT BANK

4.2.2.1.1. Seismic Sounding

4.2.2.1.1.1. Abutment Wall

4.2.2.1.1.1.1. Upstream Wall

The upper part of the wall (area above the elevation 51) shows markedly low values of seismis waves velocities (Annex 16). The reasons of such occurrence are as follows:
i. Large presence of rock face conglomerate blocks with wide joints filled with lime mortar;
ii. Presence of a large vertical fissure, considerably extended just at the upper part of the wall;
iii. Blocks of porous conglomerate exposed to adverse weather conditions for a long time, particularly at the north side, and weathering of stone in consequence.
Below the elevation 51 the seismic wave velocities are substantially higher, pointing to a better quality of that part of the wall. However, great variations of seismic wave velocities show that a good homogeneity of the wall is not present.
A tomographic picture of the seismic velocities provides a space interpretation of the wall condition, therefore, in combination with other investigation methods, it is possible to develop selective technical solutions for the remedial measures on particular parts of the wall.

4.2.2.1.1.1.2. Central Wall

Considering the effect of the joints between the stone blocks, the seismic wave velocities are relatively high, indicating that the central wall condition is comparatively good (Annex 17).
The distinctly high velocities of seismic waves were recorded in the central zone between the elevations 48 and 51.

4.2.2.1.1.1.3. Downstream Wall

Relatively small differences of the seismic wave velocities measured, point to a satisfactory homogeneity of the wall. The quality of that wall is relatively adequate if the impact of joints between the stone blocks is taken into account (Annex 18).
A greater presence of finely dressed stone *tenelija* substantially reduces the impact of joints on the measure-ment results. Therefore, below the elevation 48 greater velocities of seismic waves were recorded there.

4.2.2.1.1.2. Abutment Fill

The velocities of seismic waves through the abutment wall fill vary within a range of 270 -1500 m/s, meaning that a part of the fill is of a poor quality and that the fill is not homogenous (Annex 19).
There is a clear boundary between the abutment walls and fill, being evident in a great difference of seismic wave velocities in those two mediums. The probable reasons of the occurrence are as follows:
i. Way of stone dressing and masonry; Within the abutment wall rough ashlar was laid in lime mortar;
ii. Large presence of limy binder material;
iii. Weathering of limy binder material in the course of time due to water effects.
Some higher seismic waves velocities are recorded in the central part of the fill, therefore, a better quality fill should be expected in that zone.

4.2.2.1.2. Ultrasound And Sclerometry

The values of ultrasonic impulse velocities are indicated for individual stone blocks and they range from 800 - 4400 m/s.
In the zone of the *tenelija* stone, below the elevation 47, at the upstream, central and downstream wall, the ultrasonic impulse velocities of 2200 - 2800 m/s are mostly represented. At the upstream wall this stone class is represented with 78%, at the central wall with 61% and at the downstream wall with 55%. Other stone is mainly of a better quality with the velocities of 3000 - 4000 m/s (Annex 19).
The cracks in stone on the right side of the central wall and the right side of the upstream wall pass through all the stone, for that reason the ultrasonic impulses could not be recorded (Annex 19).
In the measuring of ultrasonic impulse velocities in the *tenelija* ashlar taken out of the Neretva River (ashlar B23) and in a large number of monolithic samples from boreholes, the values of 3800 - 4400 m/s were obtained.

Significantly lower velocities obtained on the walls by the measurements in situ point to the presence of a greater number of micro-cracks on more than 50% of blocks of the *tenelija* stone covered by the measurement. The micro-cracks do not impair substantially the stone quality and in a structural sense their appearance is of a minor importance.
The ultrasonic tests of the upstream and the downstream wall parts show rather weathered conglomerate blocks. Weather conditions produced negative effects on the stone quality, particularly at the upstream, north wall where the majority of stones tested shows the ultrasonic impulse velocities of approx. 1000 m/s. Because of that the appropriate remedial works will be probably required.
The sclerometric investigations of stone blocks indicated a relatively good surface hardness of the stone. By comparing the results obtained on laboratory samples with the measurements made in situ we come to the conclusion that mineralogical chemical changes that occurred on stone surfaces in the course of time have had a positive effect on the stone surface hardness (Annex 20).

4.2.2.2. LEFT BANK

4.2.2.2.1. Seismic Sounding

4.2.2.2.1.1. Abutment Wall

4.2.2.2.1.1.1. Upstream Wall

The biggest differences between seismic wave velocities measured, thus the most distinctive differences in the wall qualities can be observed by the wall diagonals (Annex 3). The velocity of seismis waves along one diagonal ranges from 2000-4000 m/s and along the other between 1000 - 1500 m/s. Keeping in mind the impact of joints and their fills, the highest velocities obtained are indeed beyond expectation.
The seismic wave arrangement along the wall level is indicative. Considerably higher velocities were recorded at the wall top, so a corresponding quality should be expected in that zone (Annex 31).

4.2.2.2.1.1.2. Central Wall

The central part of the abutment wall shows relatively high values of seismic wave velocities. Notwithstanding a certain impact of joints, the seismic wave velocities measured amount to 2000-4000 m/s, indicating positively a satisfactory quality of the central wall built with the *tenelija* stone (Annex 32).
A particularly good quality was indicated on a part of the wall between the elevations 45 and 47, while some lower velocities of seismic waves were recorded in the middle zone of the wall.

4.2.2.2.1.1.3. Downstream Wall

The most part of the downstream wall surface shows the seismic wave velocities of 2000-3000 m/s pointing to a relatively satisfactory quality and homogeneity of the wall (Annex 33).
The zones between the elevations 45 and 46 and the elevations 53 and 54 can be distinguished for their particular quality (Annex 33).

4.2.2.2.1.2. Abutment Fill

The seismic wave velocities through the abutment fill range in the scale of 1200 - 4000 m/s. The highest velocity values should be taken with a qualified acceptance due to the geophone level position and in this connection a partial passing of seismic waves through the bedrock (Annexes 36-48).
The velocities ranging between 1600 - 2100 m/s should be taken as reliable results, corresponding to a medium-quality fill of the abutments.

4.2.2.2.2. Ultrasound And Sclerometry

In the zone of the *tenelija* stone, below the elevation 47, at the upstream, central and downstream walls the ultrasonic impulse velocities in the range of 2200 - 2800 m/s are mostly represented (Annex 34). At the upstream wall this category is represented with 53%, for the central wall it is 61% and for the downstream wall it is 83%. The results indicate that a major part of the stone contains micro-cracks or smaller cracks which do not pass along a whole block.
Such cracks do not impair essentially the quality of the stone and structurally they are of a minor importance.
The ultrasonic tests of conglomerate blocks at the upstream and the downstream wall show a heavy weathering of the stone due to atmospheric agents in the course of time, particularly at the upstream (north) wall. Therefore, the appropriate remedial works will be probably required.
The sclerometric investigations of stone indicated good surface hardness (Annex 35). Mineralogical chemical changes that occurred on stone surfaces in the course of time had no negative effect on its surface hardness.

4.2.3. Arch base

4.2.3.1. RIGHT BANK

4.2.3.1.1. Seismic Sounding

The range of the seismic wave velocities measured amounts from 1000 - 2500 m/s, showing a picture of inhomogenous space (Annex 49).
A part of the arch base, between the elevations 46 and 50 and to a depth of 1.5 m, shows a satisfactory quality, as the seismic wave velocities are mainly higher than 2000 m/s (Annex 49).
The tomographic picture of the central wall indicates that the part of the wall representing a part of the arch base contains a good quality material (Annex 17).
Lower values of seismic wave velocities were recorded deeper in the structure interior and close to the surface between the elevations 51 and 52. At those places the corresponding remedial works shall be probably required (Annex 49).

4.2.3.1.2. Ultrasounding And Sclerometry

In a zone of finely dressed *tenelija* stone, above the elevation 47, at the central part of the wall, the values of the ultrasonic impulse velocities in a range of 2200 - 2800 m/s are mostly represented (85 %). The remaining part of the stone tested shows higher velocities of ultrasonic impulses (Annex 19).
The presence of micro-cracks in that zone resulted in lower values in relation to the monolith samples. In the terms of quality, the stone is ranked to a medium-grade class and shows no impairment essential in the structural sense.
A part of the arch base, above the elevation 49, contains stone with a high degree of cracks. The cracks pass along the whole stone mass, because of that the ultrasonic impulses could not be recorded during the measurement. That part of the arch base requires remedial works.
By the sclerometric measurements of stone blocks rather high values of the surface hardness were confirmed (Annex 20).

4.2.3.2. LEFT BANK

4.2.3.2.1. Seismic Sounding

The range of the seismic wave velocities is 1500 - 2500 m/s. Having in mind the impact of joints, the stone can be classified in a middle category (Annex 50).
Higher velocities of seismic waves are located along the wall surface in the upper half of the profile. This zone extends to the wall interior to approx. 1.5 m.
The range of seismic wave velocities at the arch remains on the left bank is between 1500 - 3500 m/s, pointing to a good quality of the arch remains. Also there are fractured stone blocks found in that zone, that will certainly have be removed, if decided that the arch remains be used for further construction.

4.2.3.2.2. Ultrasound And Sclerometry

For the *tenelija* stone, the zone above the elevation 47, at the central part of the wall, the ultrasonic impulse velocities of a range between 1000 - 2200 m/s are mostly represented (45 %) (Annex 43). The stone class showing the range of the ultrasonic impulse velocities of 2200 - 2800 m/s is represented with 41 %.
The upper quarter of the central wall surface investigated shows a dominant velocity category of the ultrasonic impulses in a range of 1000-1200 m/s, and above that zone the stone is so fractured that the measurements could not be made. That zone should be considered unsuitable for the continuation of the Bridge arch construction.
The high values of sclerometry measurements indicate here too a good surface hardness of the stone.

4.3. CONCLUSIONS

Four investigation methods shown and explained in this Report can, be treated as undestructive methods by their character, having also a dynamic feature (that is why it is necessary to correlate data during the process of transformation towards usual design parametars).
Each of these methods, taken separately, has limited usage, but through linking, correlating and comparing it to the others, its usage and reliability is considerably extended. This becomes much more explicit when there is a combination with some other methods (e.g. investigation borehole drilling) as well as some other appropriate testings.

A summary of the complete investigation works (both on the left and right bank), presented in this Report, is given in Table 20.

Table 20: ***Quantity Of Investigation Works***
SUMMARY (RIGHT & LEFT BANK)

INVESTIGATION METHODS	BANK	**BEDROCK**	**ABUTMENT**		**ARCH**	
			WALLS	BACKFILL	Basis	Remains
CROSSHOLE	Right	4 tomographic profiles	—	—	—	—
	Left	4 tomographic profiles				
	TOTAL	8 tomographic profiles				
SEISMIC SOUNDING	Right	—	3 tomographic areas	10 arowy-fan profiles	1 tomographic profile	—

	Left		3 tomographic areas		13 arowy-fan profiles	1 tomographic profile	1 tomographic profile
	TOTAL		**6 tomographic areas**		**23 arowy-fan profiles**	**2 tomographic profile**	**1 tomographic profile**
ULTRASONIC EXAM.	Right	—	135 stones	105 joints	—	—	—
	Left		195 stones	156 joints			
	TOTAL		**330 stones**	**261 joints**			
SCLEROMETRY	Right	—	136 stones		—	—	—
	Left		89 stones				
	TOTAL		**225 stones**				

The crosshole method proved to be spacially efficient. It is used between the individual pairs of parallel vertical boreholes. The data on these investigations were processed tomographically in this Report, as shown in the corresponding number of annexes. They are marked with coloured planes (surfaces) which are rimmed with velocity isolines of the primary seismic waves. It should be taken into account that at some places these velocities are extremely low (e.g. on annex 13 they go down to 400 and 500 m/s) which explains the cavernous zones i.e., the zones of a high risk.

Furhtermore, the data regarding seismic sounding which was carried out on the surface of the abutment walls, refer to the surface diagram of the velocity data (v_p) although they have been tomographically tested (explained in the paragraph 2.2.1.2). The surface is identical to the face of the abutment wall (more precisely, only certain zones of the wall face). In a typical example (e.g. diagram in the annex no. 18), the velocities range from 1400 m/s to 2200 m/s, which means that the carbonate rock has a considerable disintegration. However, taking into consideration the fact that the wall was built out of the stone blocks with numerous joints, the nature of such low velocities becomes relative.

Seismic sounding has also been used during investigations of the abutment structure backfill, the results of which are presented in the annex no. 41.

An arrowy fan diagram of straight-line paths of the seizmic waves which, in this case, travelled from the shoot point (SP) towards each individual detector (geophone) lined up along the inside of the borehole BV2, states the fact that spreading velocities range from min. 1584 m/s up to max. 4357 m/s.

Ultrasonic *in situ* investigations of the stone blocks are shown e.g. in the annex no. 34. Velocities vary from 1000 to 3000 m/s and according to the annex in question, it is clear that the most frequent velocity is around 2300 m/s. As regards the velocities on the wall surface, worked out by the means of seismic sounding, the increase is almost 50%. It is understandable, because the

mentioned diagram shows only the results of the investigations carried out through the cut-stones, but not through the joints between the blocks.

On the other hand, in comparison with the preliminary tested cut-stone B23 (oolitic limestone fragment - tenelija - taken out of Neretva River in 1997), the average *in situ* velocities are considerably lower, because the average ultrasound time-travel velocity in fragment B23 is around 4000 m/s. This could be explained by the fact that B23 is a solid monolith. Moreover, it should be pointed out that some *in situ* data reached values of 3000 up to 4000 m/s.

Another thing to bear in mind is that ultrasonic investigations, mentioned in the sclerometry section (2.2.4.) are much less sensitive to mineralogical-petrographic rock features when compared to sclerometric investigations.

Sclerometric investigations, on the other hand, have explicitly dotted feature and are practically not sensitive to the existance of fissure rock defects (i.e. on the investigated sample) at all. For that reason the reliable connection between sclerometric and ultrasonic investigations is practically not possible (except for the monolith sample), so these two methods have to be combined. All sclerometric investigations have given solid results ($S_{min}>22$; $S_{av}\cong 35$), which prove that the investigated blocks are not seriously damaged by the chemical (atmospheric) agents.

The summary of all these data, together with all other investigation methods which were applied on the remains of the Old Bridge are reliable indicators illustrating the current state of the investigated structure. It will also help as a directive towards the necessary remedial works, which should eventually result in a replica of the Old Bridge built on a reliable basis.

Varaždin - Wien - Mostar, July 2000.

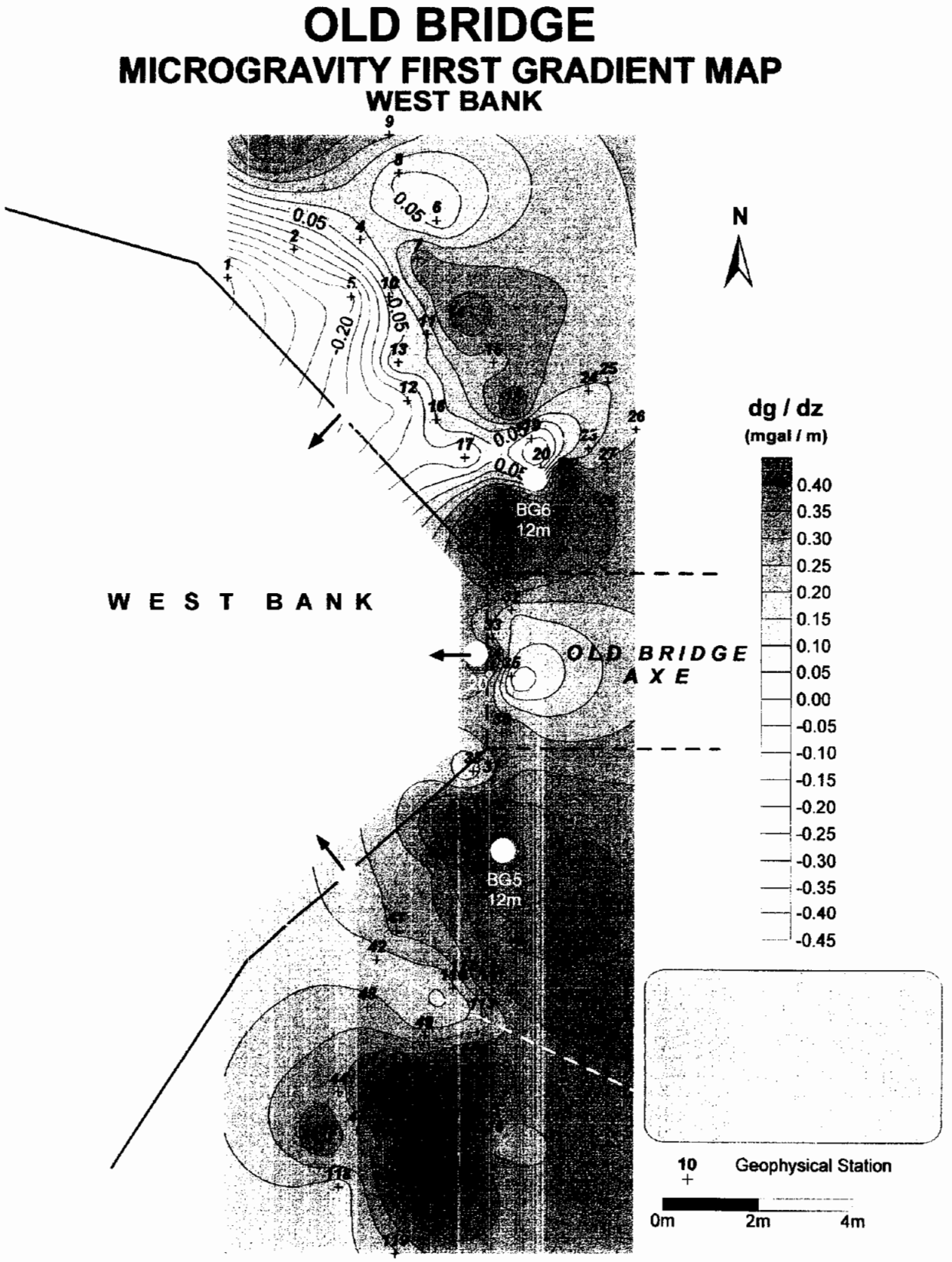
EXTRACTION FROM THE BOOk n^0 4.2.2.

INTERPRETATION RESULTS AND RECOMMENDATIONS

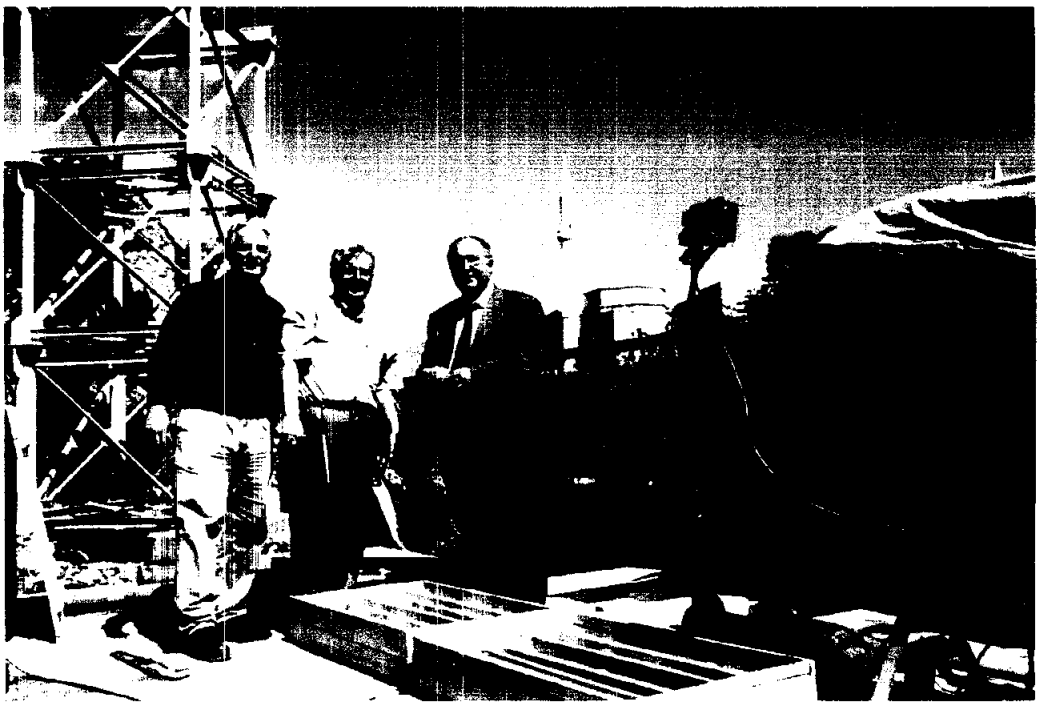
Topographic maps and Δg gravity and vertical gravity gradient maps are given in following pages. There is not any essential anomaly on the east bank. But there exist a local low gravity anomaly on the east bank just on SW side of the wall corner. Estimated depth to cavity center is about 2.35 m from the altitude of the geophysical station. There are important mass defect on the west bank. Which well correlates with low rock quality designation (RQD) values, collected from exploration drilling. Depths to the top of discontinuities are about 0.7 to 2 meters from the surface. One of the mass defect extends from W23 – W20 – W17 and the other one is limited with stations W2 – W5 – W10 and W12. These two discontinuities has interconnection. Interpreted depths and defect mass volume are given in following table.

Gravity method is a potential field geophysic technic. Therefore, information depth depends upon the wave length of an anomaly which is limited by a profile lengths, on the small observation sites at both river banks. Therefore, although interpretated values for location is exact, however volumetric estimates and bottom depths are minimums, given on that table. Having check-holes on these geophysical anomalies would complete information about exact volume of cavities or porous zones. Later, this low gravity anomalies were controlled with extra drillings. Which revealed that coincidences between low RQD%, TCR%, SCR% values are satisfactory with that of low gravity zones. Since the cavity geometry is not in a simple form, as observed from microgravity date, this should be taken under consideration before filling such gaps. As one expects, cavity development is usually observed on the west bank and at upstream side of the abutment wall, in the river bank. Such fracture or cavity zones should be filled with concrete injection to strengthen the rock at west river bank before reconstruction.

Alignment of low gravity zones and located water conduits behind the Western Tower could be considered that there could be some water channeling underneath of the bridge's base rock. If such possible inflitration zones are not filled, they could cause enlarging and uponing up some larger cavities in some time period. Which could cause hazard for the reconstructed Old Bridge.


OLD BRIDGE
MICROGRAVITY FIRST GRADIENT MAP
WEST BANK
N
dg / dz
(mgal / m)
0.40
0.35
0.30
0.25
0.20
0.15
0.10
0.05
0.00
-0.05
-0.10
-0.15
-0.20
-0.25
-0.30
-0.35
-0.40
-0.45
BG6
12m
BG5
12m
W E S T B A N K
OLD BRIDGE
A X E
10
Geophysical Station
0m
2m
4m

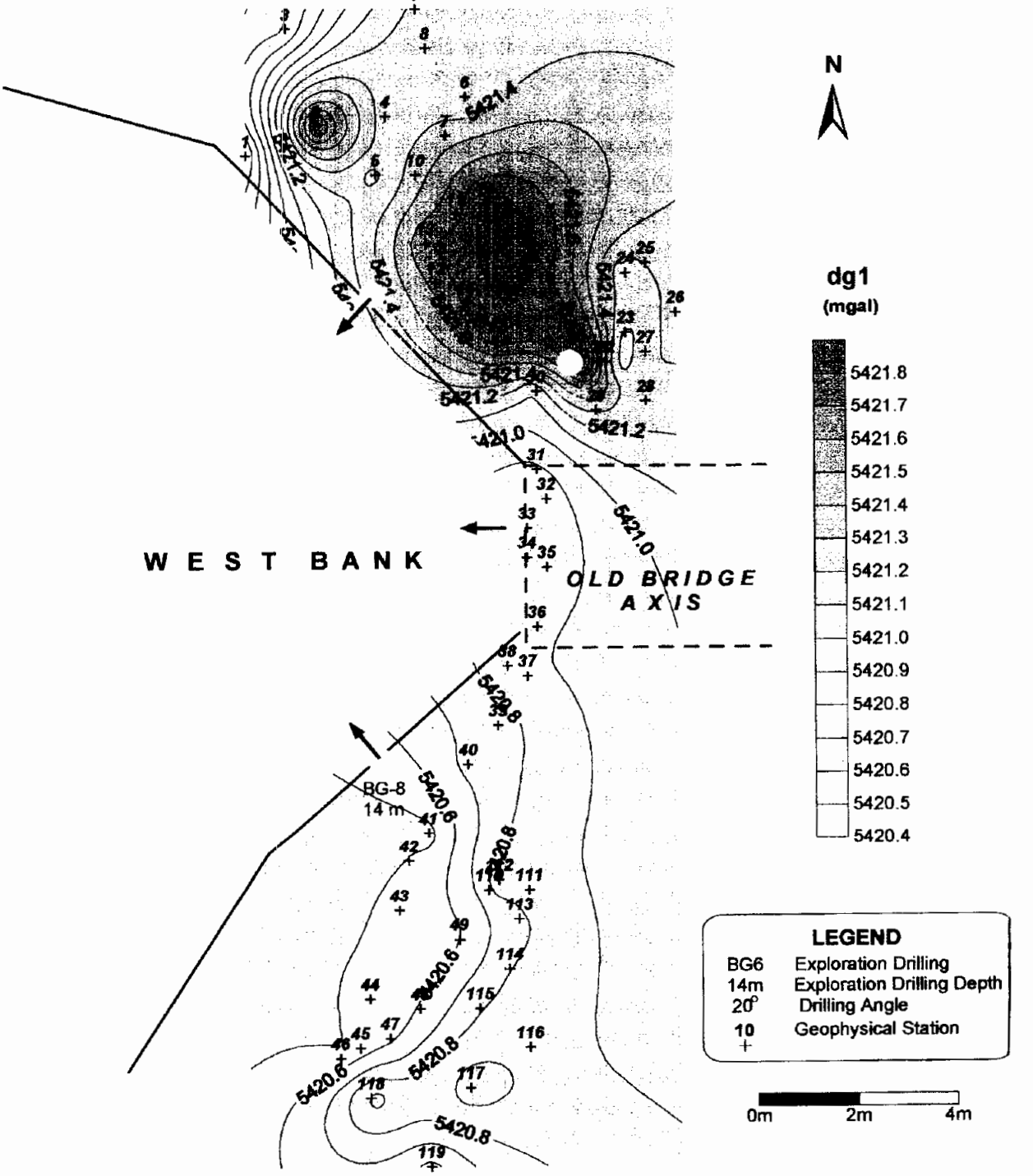
Problematic upstream side of the bank where geophysics measurement gives most of cavity information (upper left). Determination of RQD%, TCR% and SCR% values from drilling samples to correlate, gravity lows with rock weakness (below)



OLD BRIDGE

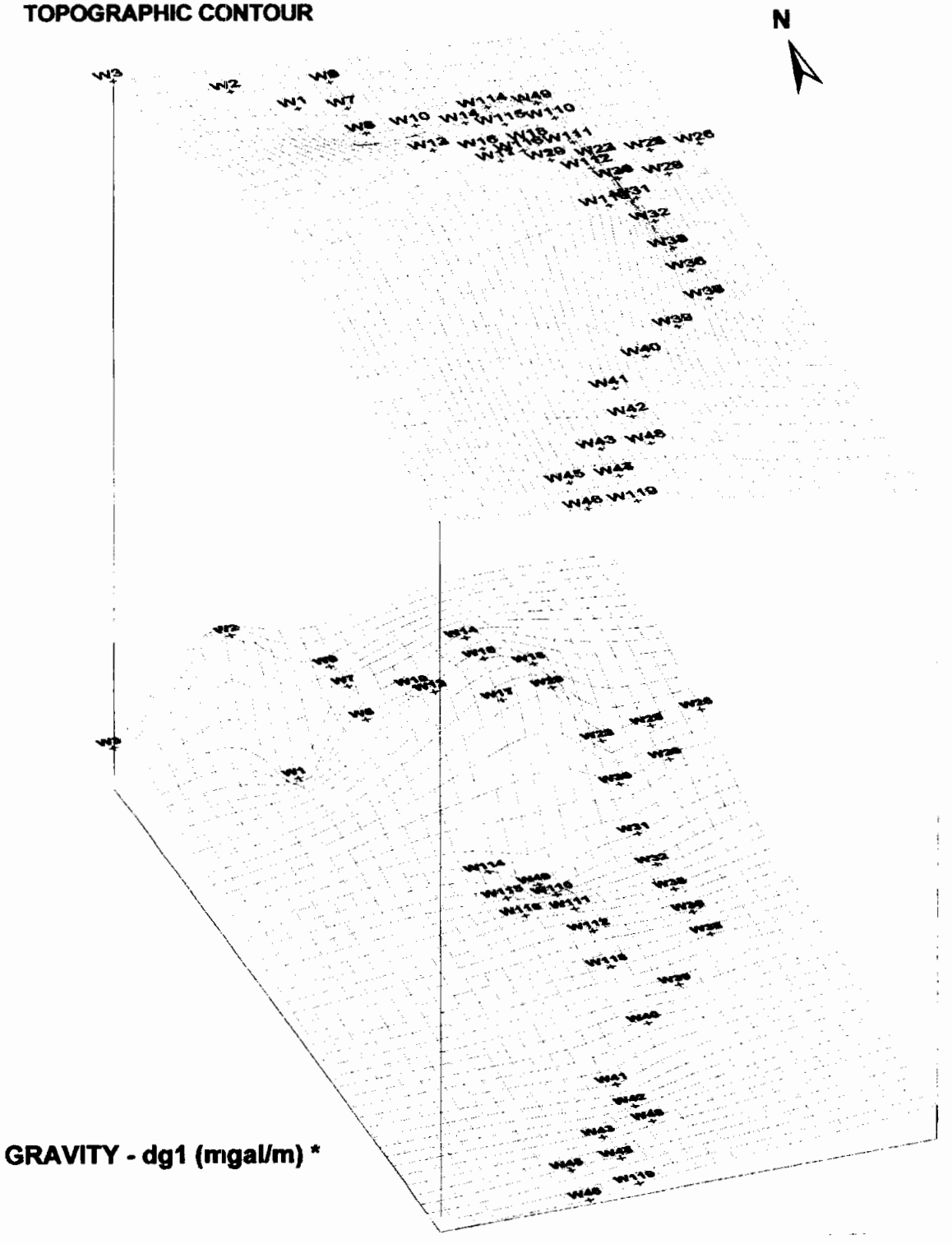
MICROGRAVITY MAP - LEVEL z1 *

WEST BANK



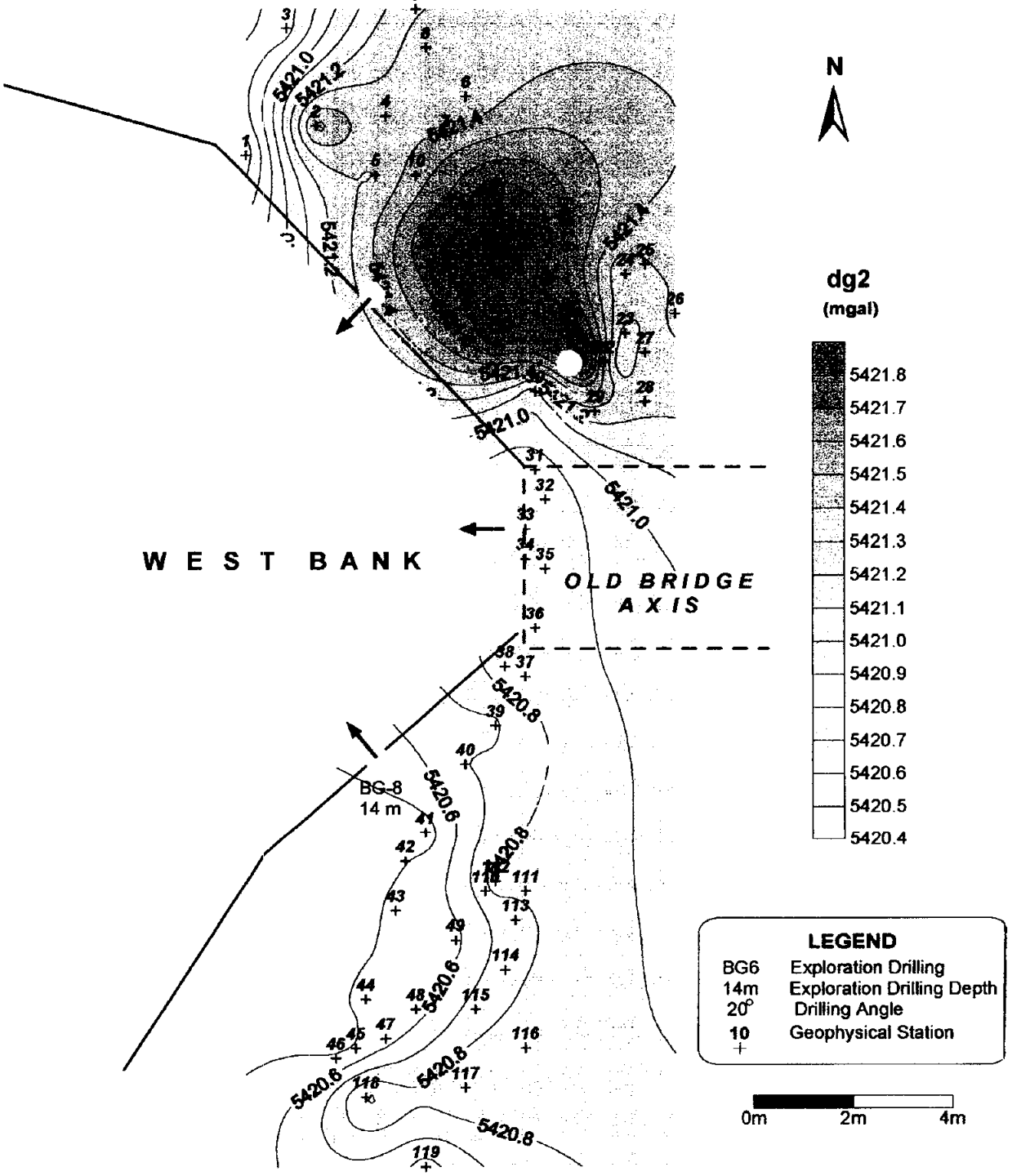
*:Elevation + LTD (Long Term Drift) + Daily + Tripod Level Corrected Data

OLD BRIDGE
MICROGRAVITY
WEST BANK

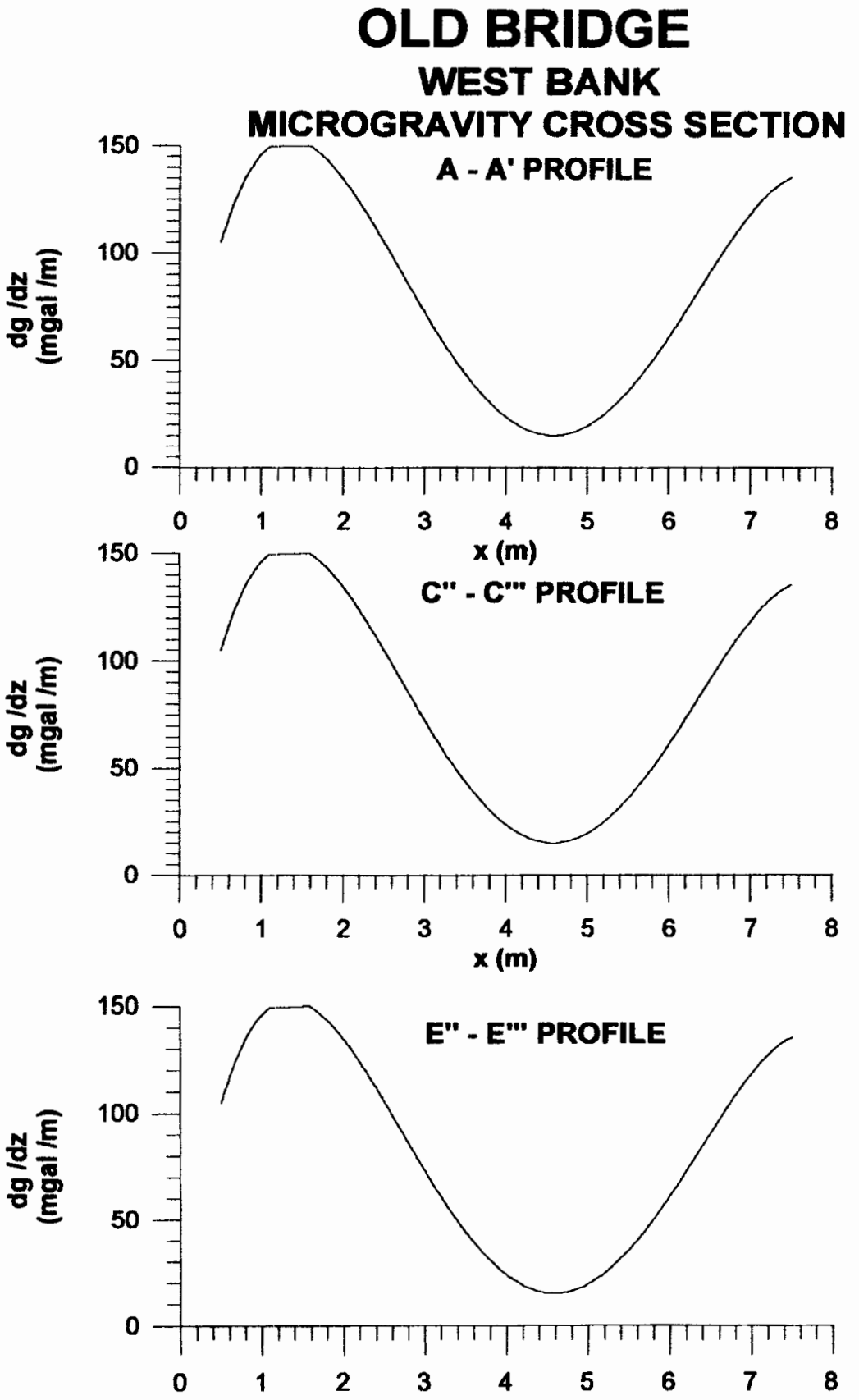


*:Elevation + LTD (Long Term Drift) + Daily + Tripod Level Corrected Data

OLD BRIDGE
MICROGRAVITY MAP - LEVEL z2 *
WEST BANK



*:Elevation + LTD (Long Term Drift) + Daily + Tripod Level Corrected Data


OLD BRIDGE
WEST BANK
MICROGRAVITY CROSS SECTION
A - A' PROFILE
C'' - C''' PROFILE
E'' - E''' PROFILE
dg /dz (mgal /m)
x (m)
0
50
100
150
0
1
2
3
4
5
6
7
8

Discontinuity Location	Station Interval	Surface Projection of Anomaly	Depth to Center h-meter	Entrance Depth (Top)	Exit Depth (Bottom)
West Bank	W6 – W8	0.5 meter Northwest of W6	1.69	1.16	2.22
West Bank	W6 – W8	0.5 meter North of W6	2.61	2.14	3.08
West Bank	W19 – W20	0.25 meter North of W20	0.65	0.37	0.93
West Bank	W110 – W49	0.5 meter Northeast of W49	2.87	2.12	3.62
East Bank	E12 – E13	0.75 meter East of E12	2.74	2.01	3.51
East Bank	E12 – E13	0.4 meter South of E13	2.59	1.89	3.29

List 1. ***Geophysical interpretation of low gravity zones and estimated dimensions of fractured/decomposed/caved zones, at Old Bridge of Mostar, BiH.***

2. MICROTREMOR MEASURMENT FOR VIBRATION IMPACT ANALYSIS

2.1. VIBRATION IMPACT ANALYSIS AT OLD BRIDGE AND SURROUNDIGS, AT MOSTAR BiH

Employer : CITY OF MOSTAR Project Coordination Unit – PCU
Pilot Cultural Heritage Project
Mostar - BiH

Contractor :

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Project Leader : Prof. Dr. Ahmet ERCAN, Team Leader
Geophysical Eng.

Operation and Data Acquisition : Can SUNGUR, Geophysical Eng.
Haluk ÜLKÜ, Electronic Eng.
Atakan ASCI, Geophysical Engineer

Data Reduction : Ahmet SOĞUKOĞLU, Geophysical Technician

Method : Microtremor.

Source of Vibration : Natural Vibration of Ground and Masonary building, induced by free oscillations of earth, and induced vibration from Neretwa River, machinary, traffic, human activities and other similar sources.

Instrument : GEOSIG Model GB-316 Three component vibration velocity recorder, with data logger and build in spectrum transformer units.

Measured Parameters : Vibration Velocity is NSx-(longitudinal), EWy-(transversal), z-(vertical) directions.

Calibration

Microtremor measurement on the bridge axes and on the on a street nearby Old Bridge to find out vibration impact at site

Correction and Data Reduction : Vibration data is recorded as a function of time for time period of 20 seconds duration, at each station. Receiver is firmly situated on a stiff material at site. Then recording is triggerred with a threshold level.

Aim of Surveys : To find oscillation harmonics of ground and masonary, abutment of the Old Bridge, tower and surrounding area. To check vibration impact of the river Neretwa on the bridge abutments, to create and to enhance micro fracturing on the abutments.

Data Acquisition Date : 1-2 March 2000 and 27-28-29 April 2000.

Number of : 49 Stations on the west and east banks.

Observation

Procedure : 1. Time Domain Microtremor data in (NS) x, (EW) y, z directions at each stations are collected.

2. FTT (Fast Fourier Transformations) are used to transform data in frequency domain.

3. Harmonic picks are selected, in order, depending upon frequency and amplitudes.

4. Maximum amplitudes (mm/sec) and the corresponding vibration frequency (f=1/T) and then dominant oscillation period are selected. First harmonic (T_{min}) is emphasized for interpretation.

5. Ground magnification was found via filtered spectral data by using (T_{INS}/T_{IZ}) and (T_{IEW}/T_{IZ}) ratios.

6. Direction of vibration impact source was found by vectorial plot of T_{NS} versus T_{EW} spectral amplitudes.

Simple Interpretation : Oscillation period depends upon a few parameters; Dynamic shear velocity (Vs) of the material (ground or building); hight or thickness of the medium, grain size, grain geometry, matrix, hardness, saturation and crack/fracture intensity of the material.

Quantitative Interpretation : From the river bank up to the tower top, we investigated change in vibration character in velocity amplitude (mm/sec) and dominant period (T).

2.2. INTRODUCING TYPE OF GROUND SHAKINGS

Earthquake : Sudden stress release in earth crust, between 5 to 70 km depth. It generates seismic energy in the order of 10^{18} – 10^{24} ergs. Richter magnitudes is between M = 3 - 9.

Micro earthquake : Small size sudden stress release in earth crust with magnitude between M = 1 – 3.

Ultramicro earthquake : Very small size sudden stress release in earth crust as a precursory for main shock or caused by microfracturing in geothermal fields M = -1 and 1.

Microseisms : Background earth movement having a dominant period usually of 5 to 10 seconds and variable amplitude of ground motion with a maximum exceeding 10 microns. Variety of sources are storm waves at sea and river waves beating the shoreline, and wind action on trees.
The effect of waves on a coastline or on the river bank is to generate microseisms or microtremor with the same period as the waves and is readily understood, but the interference effect between sea waves over deep water gives microseisms of half the ocean – wave period. Types of these are vertically polarized standing Rayleigh surface waves. It is penetrated with depths greater than one wavelength.

Free Oscillations : Excited by large earthquakes on earthcrust with very long-period seismic waves. The deformations of the Earth in free oscillations for the fundamental modes of the tree different types; radial oscillations, i.e. there in which particle motion is purely radial. The fundamental is an alternating compression and rarefaction of the whole Earth and there is a infinite series of overtones for which spherical nodal surfaces occur within the Earth. Second is spheroidal (football) mode in which the Earth deformation is alternately prolate and oblate. Third mode is toroidal which is a twist between two hemisphere which oscillation is a rotational sense with a model plane between them. Type of waves are standing surface waves; R (radial and spheroidal), L-love (toroidal). The lower modes with period up to 53 min, stress the whole Earth, but successively higher frequency oscillations are increasingly comentrated in the outer part of the Earth, so that those with periods of a few minutes effectively stress only the uppermantle. The periods of the densities and elasticities of the internal layers with different weightings for the layers according to the mode of oscillations. Free oscillations die away in a few days.

	f-Frequency Range (hz)	**T-Period (Second)**	**Wave Form**
Traffic	1 - 3	0.33 – 1	Transient
Endustrial Machines	10 – 100	0.001 – 0.1	Orderly
Water Flow in Dams	200 – 30	0.005 – 0.03	Orderly
Rain and Wind	5 – 1.5	0.2 – 0.7	Orderly
Sea Waves	0.05 – 1	1 – 20	Orderly
Volcanic Eruptions	4 – 2	0.25 – 0.5	
Lake Waves	0.3 – 1	1 – 3	Regular
Storms	0.15 – 0.5	2 – 6	Regular

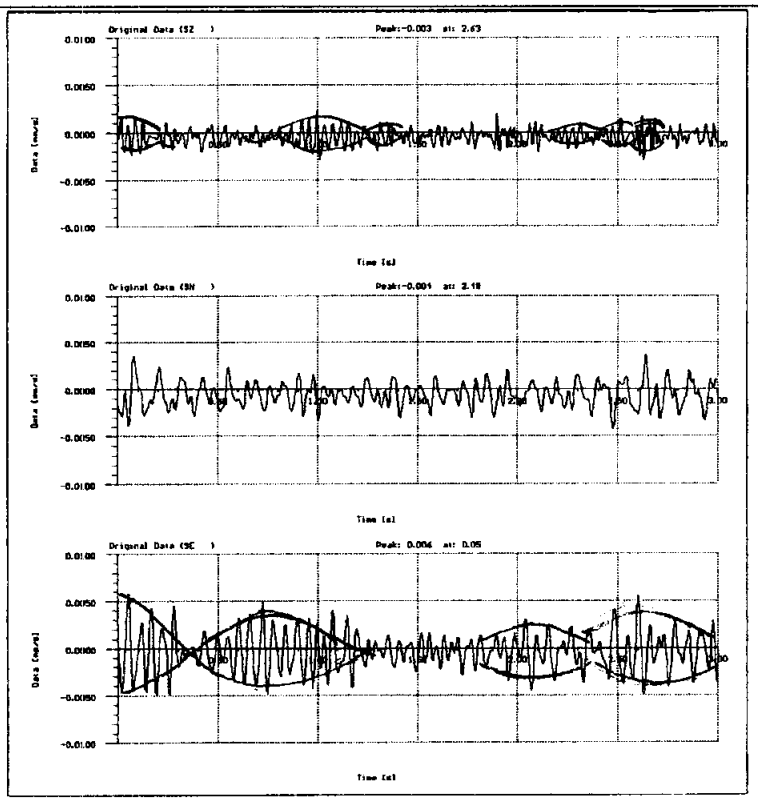
Background (Earthquakes)	0.1 – 0.25	4 – 10	
Mixed Winds at Trees	0.25 – 1	1 – 4	Regular
Air pressure	0.1 – 0.25	4 – 10	Regular
Mosoon Winds	0.1 – 0.25	4 – 10	
Beating of River or Sea Waves on Shoreline	0.05 – 0.1	10 - 20	Irregular

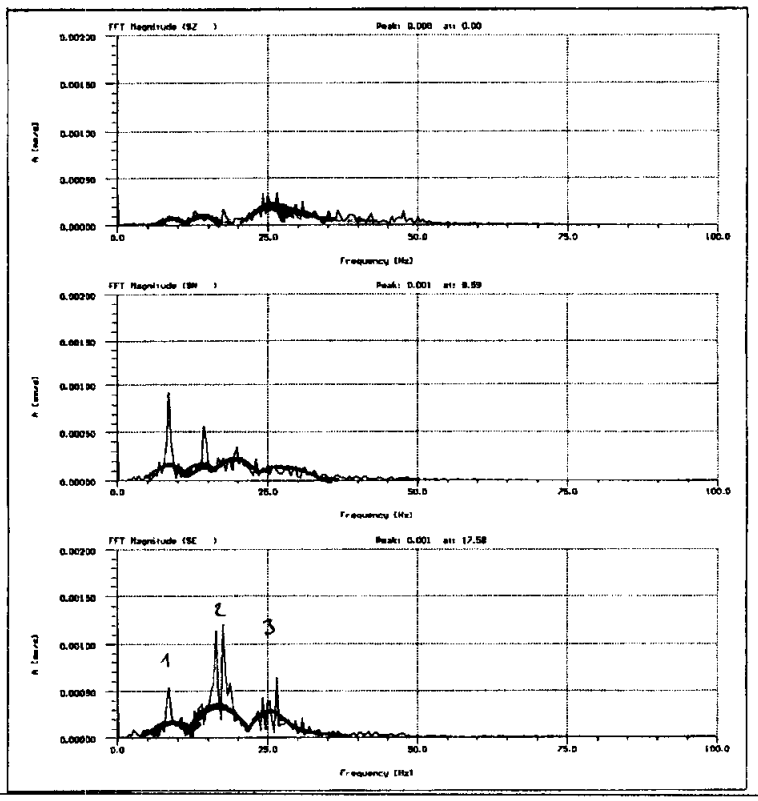
Table : Oscillation frequency and waveform of microseisms and microtremor.

	Dominant Period (sec)	**Particle Motion**	**Wave Type**	
Earthquake	0.5 – 3	1 – 10 m	P,S,R,L	Natural
Micro earthquake	3 – 10	1 – 10 cm	P,S,R,L	Natural
Free Oscillations	10 – 60 minutes (300 – 3600 sec)	mm	R,L	Natural
Microseisms	1 – 10	10 micron	R	Natural
Microtremor	0.001 – 1	0.1 – 1 micron	R	Artificial Environment

Table : Types of shakes and oscillations recorded on earth surface.

Microtremor : It is continous natural and artifial source of oscillation of ground originated by traffic, endustrial machinary, strokes of river waves and sea waves to shoreline. Such microtremors have dominant periods between 0.001 to 1 seconds and amplitude of 0.1 to 1 micron. Measurements are taken with a three component seismometers (Z, NS, EW). Spectral ratio of horizontal to vertical gives magnification factor of ground.





Sample three component (Vertical (z), NS, EW) microtremor recordings (upper section) and their spectrums and first, second and third spectral harmonics, by floting point average in frequency domain (lower). In upper part on observes typical Rayleight wave train.

In spectral view, first mode is taken as essential dominant frequency (f_1 or T_1). T_1 and amplitude of particle motion for velocity (mm/sec), depends upon quality and geometry of soil at site, as well as source distance and size. By plotting T and magnification factor (MC) and amplitude (A) oscillation characteristics of ground is found. In this way it is also possible to determine oscillation period of a bridge, building, high vise etc. Therefore, before occurance of a future earthquake one can predict it is shaking impact on the site. So that, microtremor informations assist for a seismic design of a structure, risk analysis, urban planning and microzoning of a site or city.

Dynamic soil characterization is made by correlating; wave feature in time and frequency domains by correlating largest and average periods, correlating dominant period with a maximum spectral amplitude. Microtremor amplitude vary by time depending upon activity conditions of artificial sources nearby the recording station. This occur mostly for higher harmonies (higher frequencies). However, first harmonic (low frequency) is originated by oscillation characteristics of deeper ground structure and therefore is not usually time dependent. Because of time dependent noise, amplitudes day time, reduces two folds with respect to night time. Kanai defines dominant oscillation frequency as

$$T = 4\sum_{i=1}^{N} h_i / V_{si}$$

h_i = Layer thickness (m)
V_{Si} = Shear wave velocity (m/sec)
i = Layer counter
N = Total number of layer down to basement.

Therefore, if h is bigger or if V_S is smaller, such a media is a loose ground and then T is big, otherwise it is small.

2.3. SPECTRAL CHARACTERISTICS OF MICROTREMOR

Frequency spectrum of microtremor recording, could be eigther, a – flat response, b – pick response, at low frequency, c – pick response at high frequency.

In flat response case it is difficult to pick a dominant frequency. Such response represents soft intermediately hard clay or sand. ($0.7 < T < 1$ second). Medium is usually heterogeneous in terms of engineering properties of ground.

If spectral contains only one pick at low frequency, that indicates very stiff soil or rock, in the vicinity of recording station.

If dominant frequency of structure and soil is equal, this is named as semi-resonans state. In such case, if any design procaution are not taken under-consideration, a possible earthquake will be destructive for the building.

3. INTERPRETATION OF MICROTREMOR

3.1. MAPPING OF MICROTREMOR DATA

Natural or induced oscillation vibration of ground and its amplitude and frequency changes in accordance with properties of the local soil and therefore magnification factor varies from site to site. Mapping oscillation period, amplitude any magnification factor indicates vibration impacts on buildings, situated on such ground. In order to receive environmental vibration effect, measurements are recorded in a day time period when one receives maximum artificial noise (between 9.00 a.m. – 6 p.m.).

Microtremor Periods: Most of microtremor spectral energy confined between f=0 and 25 hz range. There is some energy leakage between 25 and 50 hz range and rarely it goes behind 50 hz.

In microtremor measurement usually the first harmonic is most important. In some cases, average dominant period may also be taken.

Location	**1st Mode (T_{1Z}) Dominant Ground Vibration Period (Seconds)**	
	East Bank	West Bank
Background	0.08 – 0.1	0.08 – 0.1
River bank	-	0.1
Tower	0.1	0.12 – 0.15
Abutment Wall		
- Up stream		0.125
- Axes		0.11
- Down stream		0.2

Table : Vertical ground vibration period (T_{1Z}) at both sides of Neretwa River at Mostar BİH.

Average period T_Z is almost same on both sides, which is 0.08 – 0.1. This indicates that both sides are made of stiff rock. However there are places as down stream side of the abutment wall, period is higher (0.2 seconds). This reveals that base rock on the upstream side of the abutment wall could be relatively weak comparing with other places. Observation of a longitudinal crack on that side actually approve this interpretation.

In summary, during the design period of the Old Bridge, recommended ground period could be taken to be T = 0.1 – 0.12 seconds.

4.1. CONSTRUCTION CONSIDERATION UPON PERIOD

In place where period T is big (soft ground/soft structure), structure could not follow earthquake movement. Therefore spectral velocity variation approximates to a flat line. In this case spectral relations are defined as follows,

$S_d = T.S_V / 2\pi$ $S_a = 2\pi S_V / T$

S_d – displacement spectrum, S_V – velocity spectrum, S_a – acceleration spectrum

Displacement spectrum is linearly and accelerations spectrum is inversly related to period. Since the maximum foundation shear force (MFSF) is related to accelaration, so that it also relates period as 1/T. Therefore in earthquake regulations of most of countries (M FSF) accepted to be related 1/T or in safe conditions even with $1/T^{2/3}$ or $1/T^{1/2}$. If period is too large, structure will resist against the earthquake movement and it will want not to move at all. In this condition, displacement of system (bridge) will be equal to inverse sign of displacement of earthquake. For this reason as period increases, also S_d reaches to maximum earthquake displacement, S_V attains to maximum earthquake velocity and S_a goes to zero.

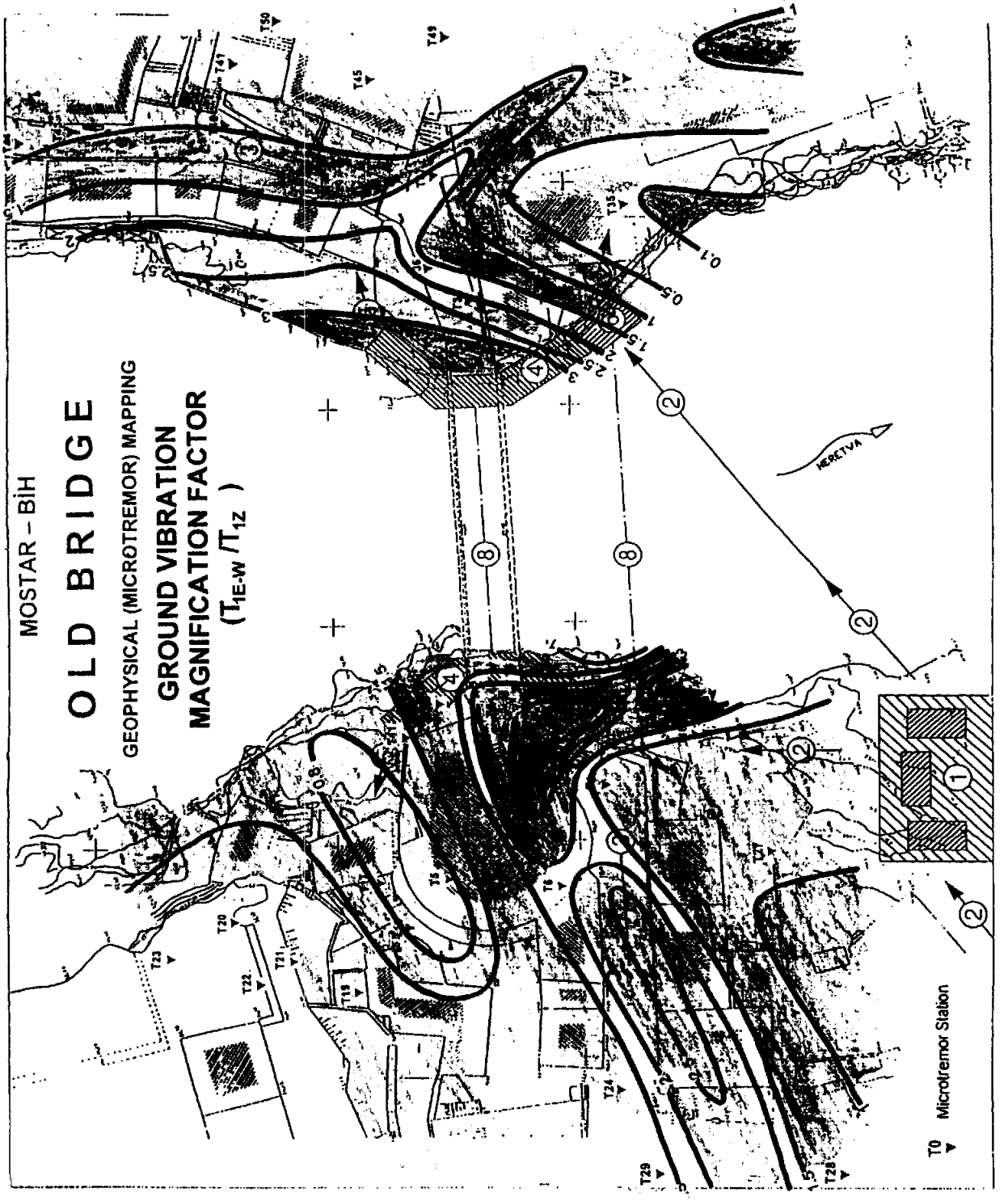
In places where period is too small (rigid structure / stiff rock) system can only be draged by an earthquake. In this case, relative displacement of system with respect to ground will be zero, and its absolute displacement will be equal to the displacement of earthquake. While T goes to zero, S_d and S_V go to zero and S_a will be equal to maximum earthquake acceleration.

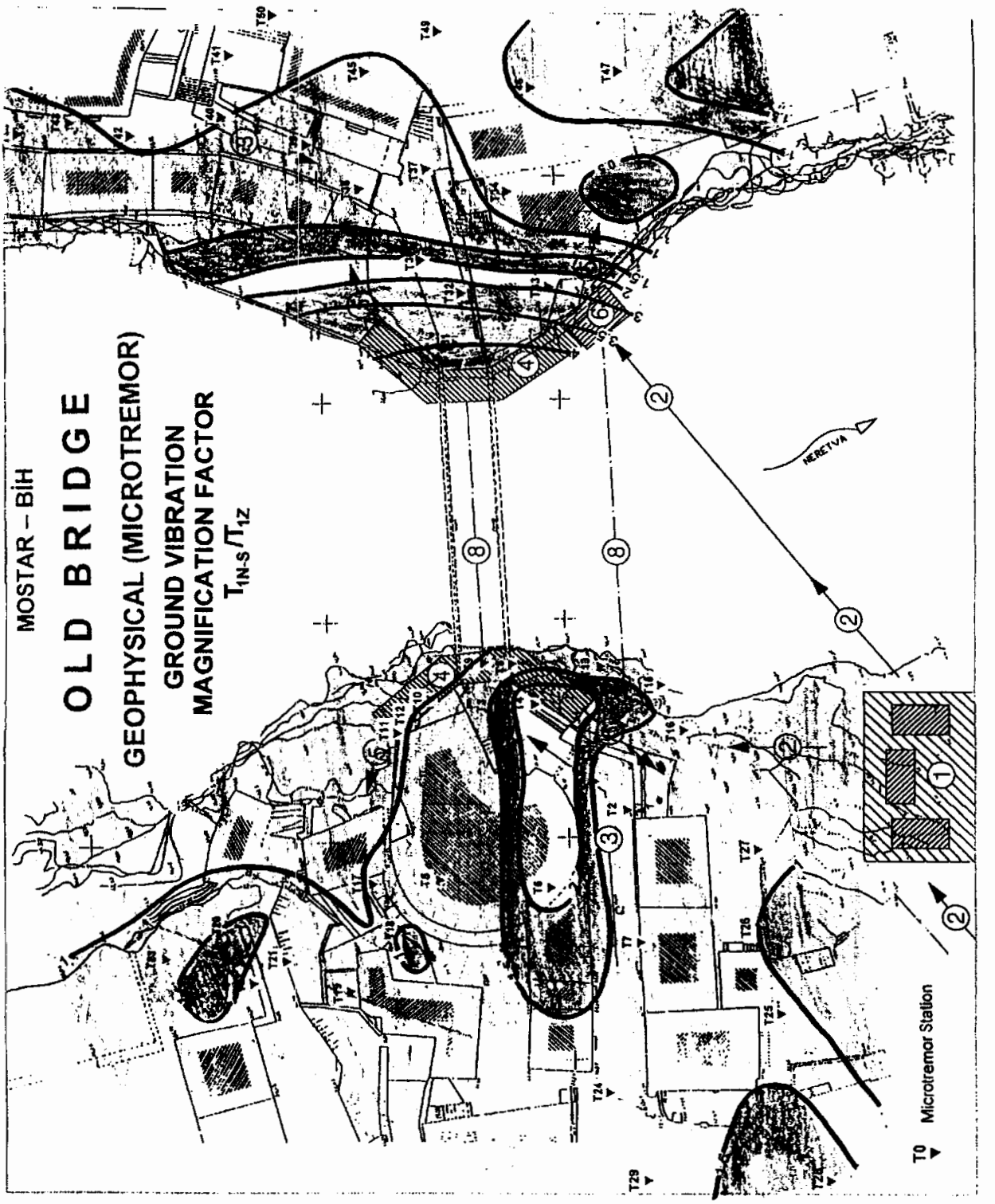
4.2. GROUND VIBRATION MAGNIFICATION CHARACTERIZATION

Magnification factor of ground (M_I) varies between 0.1 and 4. Background M is about 0.6 – 0.8 on the east bank (stiff rock) and two times bigger on the west which is 1.2 – 1.5 (Relatively loose material).

Location	**1st Mode Ground Vibration Magnification**			
	East Bank		West Bank	
	EW	NS	EW	NS
Background	0.6	0.75 – 0.8	1.2 – 1.5	1.2 – 1.5
River bank		-	1.2	1.2
Tower	3	4	4	3
Abutment Wall				
- Up stream	-	-	1.25	1.2
- Axes	-	-	1.2	1.2
- Down stream			0.9 - 1	0.9

Table : Ground vibration magnification (T_{1EW} / T_{1Z}) at two sides of Neretwa River, Mostar, BİH.


MOSTAR – BiH
OLD BRIDGE
GEOPHYSICAL (MICROTREMOR) MAPPING
GROUND VIBRATION
MAGNIFICATION FACTOR
(T_{1E-W} /T_{12})
NERETVA
T0 Microtremor Station


MOSTAR – BiH
OLD BRIDGE
GEOPHYSICAL (MICROTREMOR)
GROUND VIBRATION
MAGNIFICATION FACTOR
T_{1N-S}/T_{1Z}
NERETVA
T0 Microtremor Station

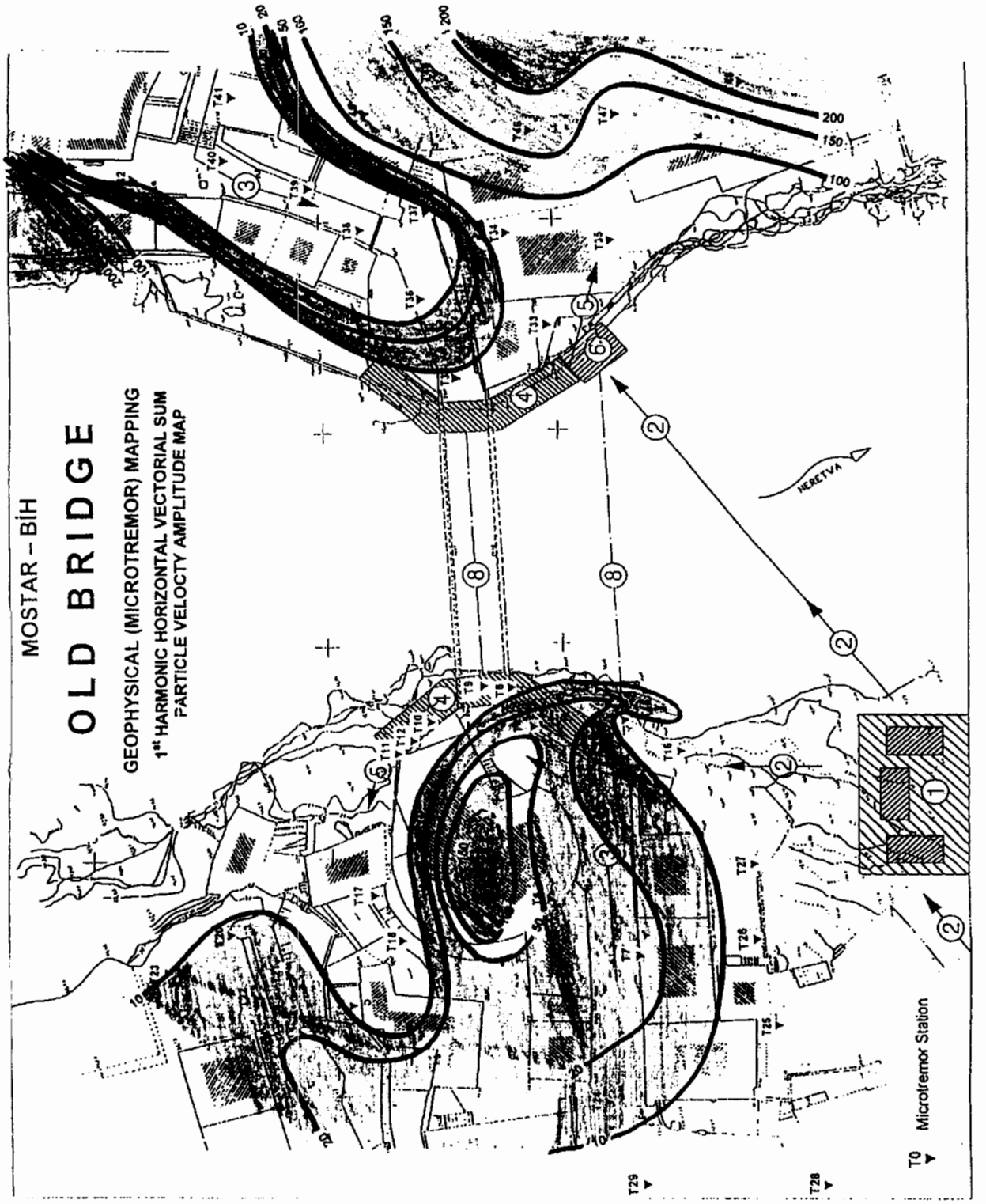
This indicates that western side of Neretwa River is more sensitive against, both, ground shaking and earthquake vibrations in (EW) direction. This depends upon the type of soil / rock at both sides. It is relatively loose on the west. If an earthquake wave from EW direction will arrive to the side, western part will be sensed approximately two times more than eastern side. Especially, as magnification factor is about 3 folds on the eastern tower it is 4 on the west. The zone limited by 2, could be a weakening zone relating to under ground geology on the west. On the contrary, most of quake energy, which will arrive on eastern side, will be attenuated by the factor of 0.6 to 0.8. In summary, eastern side is relatively safer. Similar interpretation is valid also for NS directional vibration analysis.

4.3. HORIZONTAL GROUND VIBRATION AMPLITUDE

Using vectorial sum of spectral amplitudes of (EW) and (NS) directing first harmonic periods, we plotted spectral ground velocity (V_h) in (mm/sec). V_h values vary between 6 to 200 mm/sec. Average particle velocity is 10 mm/sec. However, especially on the western side, on the tower and at the down stream side of the abutment wall V_h gets higher values between 20 to 150 mm/sec which coincides with possible weakening zones as mentioned with period and magnification factor. Characterigations higher values were observed on the eastern side, as in front of Turkish Consulate and on the far eastern side of the mosque could be caused by eighter weak ground conditions or relatively heavy traffic.

Location/Stations	**Partical Velocity V mm/second 10^{-4}**	**T Dominant Natural Period of Oscil. (second)**	**Z Relative Hight**
River side on Conclomerate T14	0.5	0.1	0 River level
On the wall strip on the Abutment T10	1	0.125	5 m
Unescova Street Level. At the Gate to the Old Bridge Pavement Road T3, T7	12	0.13	15 m
At the Top of The Tower T5	75	0.14	20 m

Along the bridge tower, dominant frequency is recorded as a function of high, from the river bank to tower top. We observed that partical velocity increases a function of hight from bottom to top. Partical velocity is about 0.5 to 2.5 10^{-4} mm/sec at the bottom and it rises to 12.10^{-4} mm/sec at the abutment and gets it is maximum value at the top, 75.10^{-4} mm/second. This indicates that partical displacement of the tower is about 50 times higher than that of ground. Natural period of ground is T=0.1 seconds and that of tower is about 0.14 seconds. So oscillation frequency of tower is bigger than of base rock.



4.4. OSCILATION CHARACTERISTICS OF TOWER

BOOK N^0 4.4. PATHOLOGICAL ANALYSES

CONCLUSIONS

Main conclusions, based on data collected from investigations of the wall surface of the bridge abutments, could be the following:

- THE RIGHT ABUTMENT –

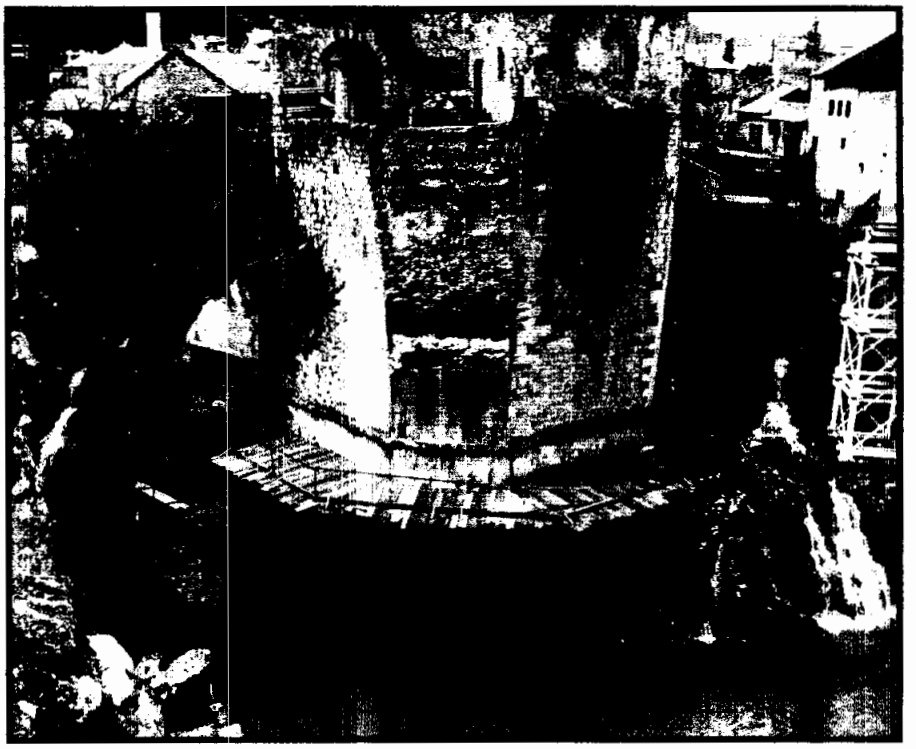
- The abutment walls are made out of two stone types, tenelija and conglomerate. Tenelija is finer finished and joints are very thin. Conglomerate is rougher finished and joints are wider.
- Surface damages are registered on the both stone types, although they are not caused by the same reasons. Parts made out of tenelija are more prone to destructive effect of water, and damages are preset on the places which are exposed to these influences (lower parts of the wall)
- Overall, damages are more expressed on the upstream side of the abutment.
- On the upstream wing wall we have marked constructive rupture that is over 10 cm wide, and which has to be repaired. Most favorable manner for repair is probably with a row of bar anchors, and grouting with previous repair of the open part of the rupture.
- On the wall of the downstream wing he have also one vertical constructive crack. This crack is close to the center of the wall, and it will be enough to do grouting repair.
- Both cracks are expressed and they are ruining the overall impression, and they should be camouflaged. Good way for that is shrinking of the visible blocks along with crack, braking its continuity.
- Mass of the walls (surface part, inside and contact with soil should be strengthen (monolithed) by grouting with mixtures that are not on cement base and have satisfying strength. Those mixtures we call synthesized natural cements (for example "Emaco Resto - I")
- Thinner cracks do not need constructive repair. It will be enough to repair them for conservation conditions, and eventually for protection from further destructing process (deep erosion).
- Repair intakes in the zone of future foot of the bridge arch are subject of the project.
- Remaining walls are not in direct function to the bridge construction, and they are more or less in satisfying condition, so they do not have to be repaired for those constructive reasons.

– THE LEFT ABUTMENT –

- Constructive elements of the abutment on the left bank are similar to those on the right bank, but the left abutment is adapted to morphology characteristics of the location. Lower parts of the wing walls are elongated due to unfavorable influences of the river. It is evident that the problems with river were continuously present, and there were added walls (more times) to the river flow in order to calm it down.
- Generally, surface damages are remarkably larger then on the right bank.

- On the screen of the upper part of the upstream wing, and on the crone of the lower part. Numerous parts of stone blocks are demolished, so we have entire areas where the stone blocks should be repaired. These damages are present only on the upstream side of the abutment.
- Constructive cracks (those that are engaging entire wall thickness) can be repaired with grouting by shrinking of the visible blocks along with crack (as it is suggested for the opposite side)
- Mass of the walls (surface part, inside and contact with soil should be strengthen (monolithed) by grouting with mixtures that are not on cement base and they are satisfying claimed strength. Those mixtures we call synthesized natural cements (for example "Emaco Resto - I")
- only grouting of the external wall of the upper part of the abutment is foreseen(part that is closing the room inside of the abutment), while the internal wall is to be left as it is now (without any special repairs).
- Other (thin – unconstructive) cracks and shallow surface damages are to be treated as on the right bank.
- Decision about further proceedings regarding the room discovered in upstream part of the abutment depends on conservator service. There are no constructive needs for any repair and securing of that space.
- Zone of the abutment wall in the foot of the bridge arch is very damaged and this problem should be treated in more detail by working out of the project for the reconstruction, taking care about real condition of the building material quality.

Beside data from this survey, final defining of needs and possibilities of the abutment walls repair (type and volume) should be taken in consideration with all data and information from other investigations performed.



Summary from laboratory tests of reconstruction materials – extractions from the report on Stones (LGA Nurnberg)

Analyses on building materials were done by LGA from Nurnberg, Germany

In the following chapter we would like to present the extraction from their final report on stones. This company has given detail reports on metal and mortar analyses, which had served as the guiding pegs for decidions on building materials during reconstrucion works.

This stone report unifies the testing of the ancient and new stones. The line of reporting by LGA comprises three main books: stones, old mortar, metals. To be issued soon: old/new mortar part two and masonry model results.

To all reports a special short version will be issued as an overall summary on the findings. The three books and the special LGA - reports issued so far are accompanied by a CD-ROM on which the report textes and the attachments are available. 6 paper copies of all reports are given to PCU.

The trial assembly of the model masonry with new stones from Mukoša quarry has been initiated by LGA including the dowel placement and lead pouring.

Special reports of LGA are issued on:

- Stone Surface Finishing, where also an original tool has been rebuilt for the shaping of the joint perimeter;
- Lead Pouring Technique, with experiments on lead sealing of the dowels in Tenelija;
- Detail Monitoring and Instrumentation Plan for the Bridge;
- Updated improved Catalogue of the Stone Blocks from Komos Depot; New Survey;
- Catalogue of all iron parts with their dimensions (dowels, cramps);
- Demonstration of the non-destructive methods for the stone quality and stone selection testing.

In comparison with the last report of LGA (1st interim draft) the contents have been largely improved on all fields of research on old and new materials. The structure of the report was modified. In this report on stones the full data on petrography, stone surface analysis and many mechanical studies on stones were included. As the result of the testing programme the preliminary data on the stone issued at the beginning of the testing phase can be confirmed with only very small changes.LGA has invited additional expert to the Project Team of LGA: Dipartimento di Ingeneria Strutturale, Politecnico di Milano, Professor Luigia Binda and Professor Giulia Baronio help solve complex questions on the material properties.

The structures of Stari Most

The vault of the bridge has been destroyed by heavy horizontal shooting from a tank positioned on the right river bank downstream in November 1993. In year 1996 those stones from the vault, which still remained near the bridge location in the Neretva have been recovered by divers and placed on a platform nearby. It has been orally reported to LGA, that only some 20% of the historic stones from the vault are recovered. However the study of the

volumes of the structure and of the stone documentation available for the platform-stones show, that much more stones have been recovered.
The most of the vault is recovered as individual stones with demolished edges, destroyed connection to the iron dowel and surface polished heavily by the sediment in the river during the stay in the water. Only two larger parts of the historic vault masonry with a volume of several cubic metres each have been found after the destruction. One of these blocks is put below the platform, the other one, which is still very heavy, is partially in water near to the right river bank, downstream of the bridge. Another larger piece is placed on the platform. It is visible in most cases, that due to the collapse the joints have been loosened or cracked.
From the previous remedial measures on the vault no documents were available so far to LGA for review. It is published in the literature, that the vault has been examined in the past and many joints were found to contain no mortar, which has been eroded. Several tens of cubic metres of injection grout have been pumped into the vault masonry. For this purposed many thin drillings were executed through the historic substance. Stones had to be replaced, where deep damages were found.Very characteristic building technique for the vault of Stari Most are the iron dowels and cramps, with which the adjacent stones have been connected with each other on the formwork during the historic construction.
Depending on the size of the block several cramps and dowels were used to strengthen the joints.
The iron parts were embedded in the block using poured lead, which has filled the gap around the iron part inside a stone. The dowels strengthen the radial joints of the vault, while the cramps are installed on the top over the joints.

In the **abutment walls** major cracks occurred in the past and reparation had to be executed in several places. Traces of it are visible. Cracks not only extend through the joints but also cross directly the blocks in the wall. Vertical and diagonal cracks are found in the wall. Flood has repeatedly strongly affected the surface of the walls. The walls differ in their masonry structure. Different stone types and mortar are found there. While the main walls are made of Tenelija (the walls facing the river), Breča is widely used in the high wing walls. The architect has perfectly incorporated a cornice in the abutment at the elevation, where it clearly marks in the bridge the adjacent line of the rock bank along the shore - a clear sign of the harmony between the structure and the location. In the elongation of this line in the wing abutment wall, downstream, right river bank - several rows of greyish-black Kreènjak stones are found, which are directly founded on
the rock (which here is composed of Breèa). As far as the campaign of sampling is concerned, the Krečnjak stones have not been found at other locations.
Thick crusts of gypsum cover the masonry at the lower part of the abutment walls. Also dark crusts of botanic origin affect visually the monument: (moss, lichen, plants, algae).

The **foundation,** especially on the right bank (desna obala) was exposed to deformation problems after deep erosion and scour affected the layers below the foundation level. Attempts were undertaken in the past to stabilise the foundation and the cavity below with grouted micropiles and injections. It is by far not sure, whether those measures have been successful. Most probably they have not been sufficient nor durable enough. The heads of few injection pipes are still visible on the right river bank. On the left bank large cracks in the rock mark a difficult geological situation encountered for the bridge construction. The underground

problem has probably not been recognised by the ottoman architect. The operation of the mills upstream of the bridge (right bank) powered by small creek lead to a water problem inside and below the right bank abutment.

The **towers** Helebija and Tara as well as the adjacent building ensemble on both river banks suffered heavy damages under the artillery fire 1992/93 and the wooden structures inside as well as the roofs have been burned. In the ruins on both sides of the bridge construction elements of modern times are visible:
steel profiles, reinforced concrete floor, brick ceiling. From the (ottoman times) history it is known, that in the past major damages occurred there locally as a gunpowder storage exploded. There is a document on the "repair of towers/bridge" but the damages are not specified
Although several dams and reservoirs are existing along the Neretva upstream of Mostar, which may allow for the control of the water flow, seasonal floods are affecting the ancient masonry frequently.

Building materials

The **building materials** of the bridge have been tested on several occasions in the past and some of the results are published. LGA had so far the access only to the report prepared by Geotehnika Sarajevo, in which mainly the new stones envisaged for the reconstruction of the vault have been described.
Main components of the bridge are calcareous blocks of **Tenelija** - a light but quite strong oolithic limestone rock - which can be found near to Mostar e.g. in the Mukoša Quarry. According to the expertise of Geotehnika Sarajevo, the material from the quarry is identical with the historic Tenelija from the vault.
Tenelija possesses very fine to medium granulation (oolithes = small spheres) and slightly varying moderate to high porosity. Tenelija is produced according to the currently used denomination in the quarry as Tenelija I and Tenelija II (according to the available sales prospectus only the colour of the both types varies, not the strength). In the local denomination also Tenelija Mekša (soft) and Èvrsta (hard) are used. These two types differ under petrographic aspects. In the latter denomination the difference is made with emphasis on the cutting and finishing of the stone surfaces, the open and the overall porosity and the strength.
The microsection picture above shows an example of an oolith with the microspheres, in which the individual concentric layers and the calcitic binder are recognisable. The porosity of Tenelija results from the geometrical structure of the spheres, which are partially not in compacted state. While cutting Tenelija the stone is cut through the pores and not through the grains. An open porous texture with micrograins is the result, providing room for environmental wear and also for biological growth, which causes adverse effects to the durability and visual function of the stone surface. Tenelija colour changes after fresh cut from yellowish and ivory to grey with time.

Figure Sample BB37 of TENELIJA OLD from the platform, concentric Oolith grains (magnitude 125x, Nicols II)

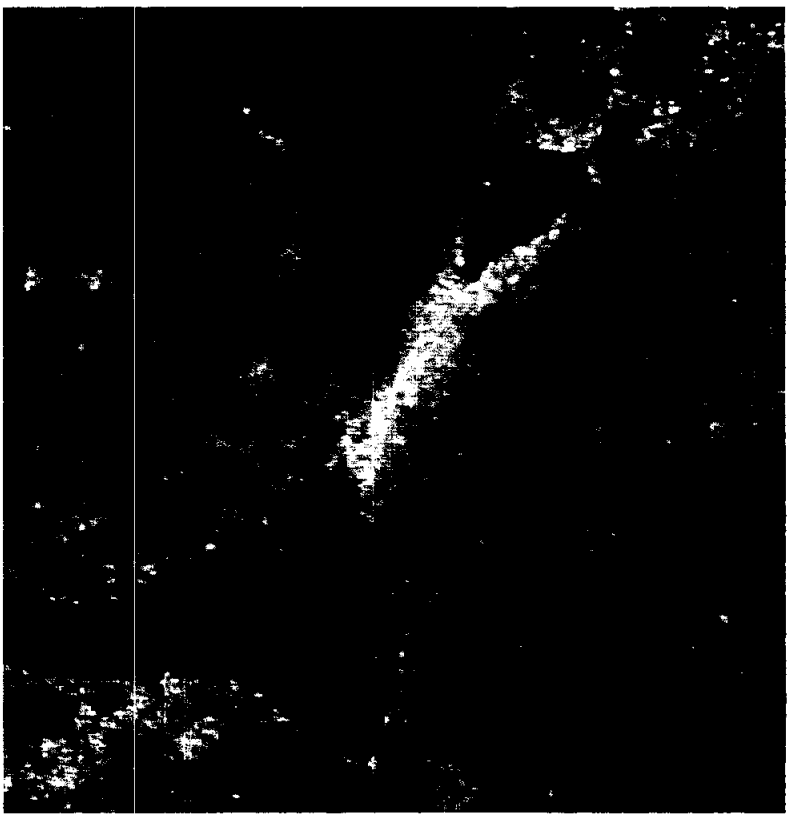


Figure B 19, TENELIJA OLD, abutment wall, micritic cement connecting the grains (picture taken at magnitude 312.5x, Nicols X)

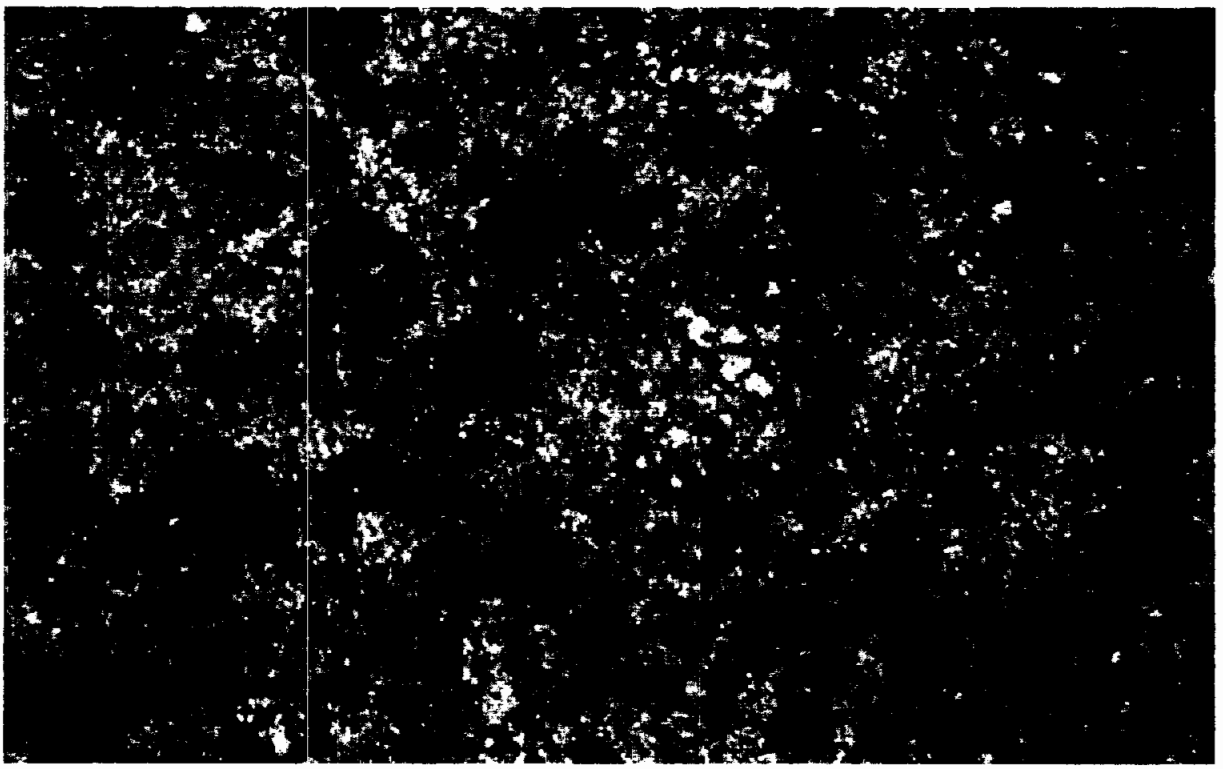


Figure: SB 40, New TENELIJA - macropores and micritic matrix (picture taken at the magnitude of 125x, Nicols X)

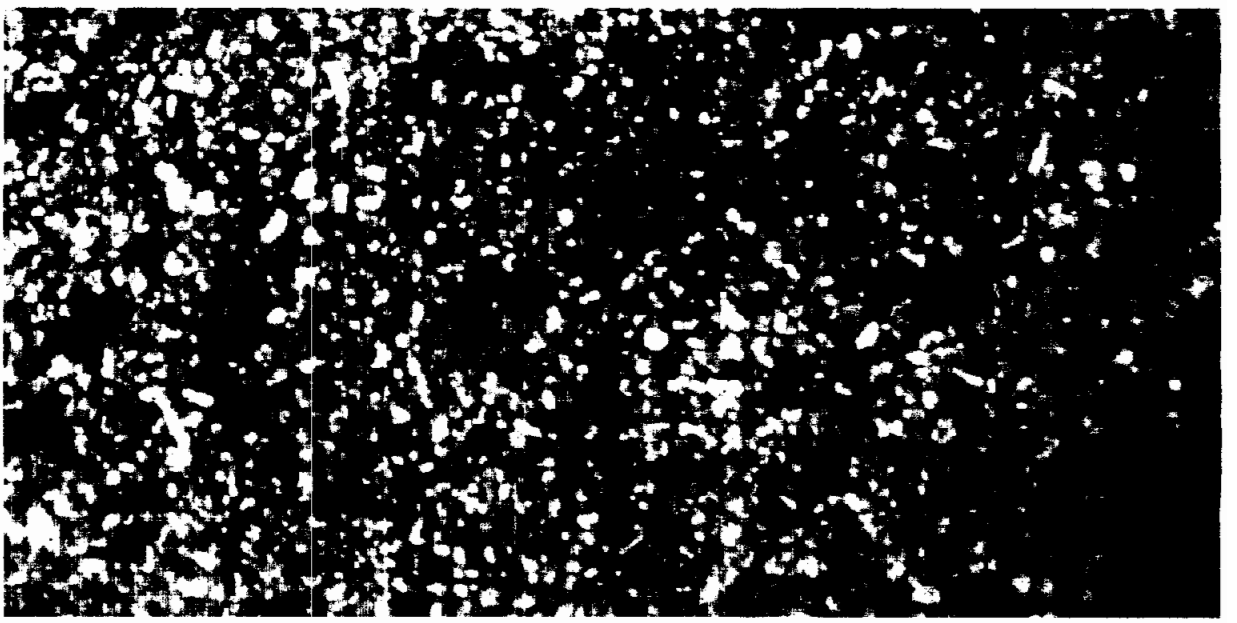


Figure: B 12, micritic limestone of the "Wackstone" class (pistire taken at magnitude 125x, with Nicols X)

Major parts of the abutment wings are built of **Breča** - a clastic conglomerate of small to large size gravel and pebbles (mostly carbonatic and locally also crystalline material), which have been geologically cemented to form the characteristic thick rock banks flanking the Neretva river. Frequently these banks collapse under their own weight, when the sediment below is eroded and washed away by the river. Breča - stones in the bridge are believed to be

a local product. Directly adjacent to the bridge the formation is clearly visible in-situ. The quarrying and the complex cutting and finishing (surface, edges) of the blocks has taken place directly adjacent to the site. Breča is quite strong but the porosity of it is very high, since due to the nature of this clastic sediment and its granular structure many pores between the grains were not cemented or filled with the calcitic binder. This specific property of Breèa is favourable, if it is used in foundations,
since it prevents capillary raise of water into the structure. The placement in the abutment wall exposed to flood and weather makes it however vulnerable to wear and it prevented not sufficiently the Neretva water ingress into the fragile inner fill and masonry.

Under the term **Krečnjak** several limestone types are encountered in the bridge, serving as different components of the structure: very hard and resistive marble-like stones were used for the pavement, conglomerates with sharp-edged gravel grains are found in the buildings and towers. **Miljevina** - a grey, very fine and uniformed grained mass-limestone was also used in the masonry. Miljevina builds a transition zone in the Mukoša quarry below the main Tenelija bank, where the granular structure of the oolithic limestones diminishes and mudstones prevail in the layers. At the bottom of the right bank downstream wing dark grey to black coloured **Krečnjak** is used in the lowest masonry layers.

2.2 Conclusions after the sampling

The sampling has been conducted full-time by the lead experts on the materials and on historic bridges. During that period detail studies on the object were possible, which encompass also aspects beyond the sampling of the building materials. Therefore along with the conclusions on the subject of the assignment also recommendations are given from the engineering point of view, which are based on experiences with similar historic bridges.
After the sampling campaign executed in July 2000 several other small sample extractions took place to study detail information of the materials.

2.2.1 Building materials in situ

- From the stone types used for the bridge construction only the Kreènjak - group of hard limestones possess enough robustness and resistivity to withstand the ageing and erosion. The outstanding example of hard stones is the pavement layer. The Krečnjak layer in the foundation in the downstream rightbank wall show heavy traces of wear and superficial erosion as well as traces of many repairs. It is proposed as a working theory, that this particular part of the bridge is older than the rest. The other stones show different traces of wear: Breèa, the most porous stone with open granular structure, shows locally very deep erosion with local losses of several centimetres of stone substance, where frequently replacement of stones is advisable during the reconstruction. Also the lay mortar in the joints of Breča - masonry is strongly eroded.
- Tenelija in the abutment wall is not everywhere in good condition. Fine fissures occur on the surface and at many locations series of several fissures parallel to the wall face are encountered in the drillings directly beneath the stone surface, reaching a depth of several centimetres to a decimetre and sometimes more. This seems to be characteristic of the walls of Tenelija, that due to high loading the face of the wall shows serious cracks parallel to the surface and located in the drilling always at similar depth behind the wall's face. On few individual samples remainings of earlier injections were found. On other locations dirt, mud or crusts of gypsum are encountered inside the cracks. Spalling, frost and unfavourable loads

are responsible for this type of damage. Such fissures will certainly have strong influence on the results of the non-destructive investigative techniques used by the experts preceding LGA works, which work on the or through the stone surface. The fissures reflect and disturb the signals measured. Some of the fissures are partially filled with brown injection grout.

- The remaining springer material, i.e. the zone, where the vault touches the vertical abutment wall, is heavily damaged near to its exposed surface: fissured and broken stones, joints without mortar fill, corroded dowels. It is essential for the design of the reconstruction works to have detail structural knowledge on the depth of the vault line behind the abutment wall and to decide to remove several layers of damaged stones and either put them again solidly in place or replace them due of inner damages.
- There will be a major problem to clearly examine the two large blocks of Tenelija - vault masonry on the right Neretva shore in order to check (for reuse in the new vault), whether during the destruction and fall into the river the joints inside the block have been disconnected. Most probably the joints have been disconnected and the dowels loosened.
- The majority of the former masonry joint fill remaining on the blocks form the river is a grey silicabased modern remedial grout. Also many traces of grout boreholes are encountered. Therefore the examination of a sufficient amount of the surely historic mortar from the vault may not be possible. On the other hand, only little mortar is required for the future fill of the compressive and radial joints of the vault. Having reviewed the results of the sampling and the testing results presented in the separate mortar report it may be advisable to give up the idea of the strict reconstruction of the ancient mortar for the bridge reconstruction.
- A detail study on the width of the joints in the monument ensemble with emphasis on the historic vault must be made available for LGA in order to precise the proposal for the new mortar composition (grain size of the aggregates must fit into the joint system!). So far on the vault remainings the joints visible in the voussoirs are between 3 mm and 8 mm thick.
- Different mortar types form the past four centuries are found in the walls of the abutments. They possess different granular compositions. In Breča - masonry mortar is found with aggregates, which presumably have been produced by crushing the hard limestone manually (so-called grit, i.e. sharp edged small size gravel grains). Similar mortar is encountered in the fill areas of the former vault. It will be a difficult and time consuming procedure to dissolve the mortar with limestone additives by acid technique in order to obtain the aggregates for further analysis, since the aggregates are soluble in acids as well. Careful works are necessary in the chemical laboratory to keep the possible errors low.
- In the gaps caused by grenades in the upper part of the thick walls of Halebija - tower a disordered irregular masonry is visually recognisable with roughly chopped or unprepared stones and no systematic joints. Could this be a proof of the historic reconstruction after the gunpowder explosion?
- Major fissures in the masonry result from structural damages due to deformation beyond tolerance (settlement, tilt). Due to high load the fissures not only follow the weak mortar around the stones but cross as well harder stones. The manifestation of such damages on the outer walls indicates clearly, that even more deformations have occurred inside the masonry and fill behind. Also for the towers, especially for the east tower major fissures are visible at the edges and in the middle of the rounded half-circle wall.
- Lay mortar samples of LGA deliver mixed results on the strength for the abutment masonry: two of the joints are integer in the cores, one falls apart during the core removal from the wall. In one drilling through a Tenelija-joint a perfect example of the original historic stone surface

profiling and finishing with a pointed tool in a joint is found. The same profile will be proposed for the surface treatment of the model stone for the masonry testing.
- In the deep exploratory drillings executed earlier by others sufficient material for the expertise on the inner fill and mortar behind the abutment walls is found.
- The reddish-brown coloured soil and mortar from beneath the historic pavement may contain bauxite earth. To maintain the historic bridge reconstruction concept based on the original features, the source of the new material must be found near to Mostar. This aspect is very new compared to the terms of reference of the project, where only main components are mentioned. Approximately 250 tons of adequate different fill material must be found for the reconstruction. It is known that a large portion of the red material must have been installed inside the bridge, since after its destruction and fall into the Neretva the river turned red for a longer time, which was caused by the red earth fill and mortar.

- The stones recovered from the river are individual blocks from the former vault masonry or other parts of the bridge like e.g. parapets, balustrade, pavement. Other building materials used in loose state in the vault, such like the mineral fill and also the mortar with the function of horizontal barrier, are completely lost - they have been washed out by Neretva after the collapse.

- The blocks on the platform are superficially eroded by the water and damaged by the shooting. The collapse from high elevation caused visible and probably also hidden damages to the stones, which in case of the outer face also exhibit traces of ageing inside the historic structure prior to the destruction.
- The surfaces of the stones recovered from the river has been mostly affected by the polishing with the river sediment except for the parts, which were laying solidly on the bottom of the river.

DENOMINATION, STONE TYPES AND FEATURES FOR TESTING

The main stone type in question for the reconstruction of the bridge is Tenelija. Form this stone type three groups were specified in the ToR of this contract for laboratory testing as they possess different structural history as building materials:

- Tenelija "old" from the platform - in this group stones from the ancient vault are incorporated, which after the destruction of the bridge in the year 1993 have been recovered in the year 1996 from the river by divers and are since then stored or exposed on a special elevated platform on the right downstream river bank. In addition to the typical ageing and weathering inside the ancient structure prior to the bridge destruction, this Tenelija "old" have been additionally structurally damaged during the collapse of the stones. It is proposed also, that the properties might have changed after the time period under water. This aspect shall be examined in the study executed by LGA.
- Tenelija "old" form the small remnants of the vault still in place in the abutments and the abutment walls themselves. This Tenelija has the same structural history as the Tenelija from the platform except for they were not subject to the fall into the river and their contact with water is limited to the floods, which covered periodically significant areas of the abutment. The walls containing Tenelija are mainly situated directly below the vault and in the east bank foundation of the wing walls.
- Tenelija "new" from the depot of the stones, which have been purchased more than two years ago from the Mukoša quarry and which will serve for the cutting of the new blocks and stones for the reconstruction. For these blocks the stratigraphy is known and the geological origin is ensured by previous studies, which also dealed with the parameters of the stone as building material.

It is furthermore intended by the ToR to check the influence of the water in saturated stones on their properties. Previous studies made available to LGA and the individual reference tests done on the stone Tenelija indicate - irrespective of the type of the three above groups - that the variations of geological structure with porosity and oolithic-matrix are much more significant for the influence of the stone properties , especially the mechanical properties, than the presence of pore water. The differences in the compression strength between dry and saturated stone remain within a range of less than 10% (the same applies e.g. for the compressive wave velocity with respect to the saturation). Dry compressive test on Tenelija in the past yielded much greater difference in the strength due to the natural character of this building material. Therefore the following tests on the stones concentrate on the verification of the well founded working theories

instead of executing new long testing series. Keeping this in mind also the samples were collected with the highest possible care in order to avoid too much additional damage with boreholes in the historic structure after the large scale drillings of the structural investigations already have left significant traces in the abutments. For the reconstruction works the denomination of the stones should be standardised. While reading the literature two categories for the Tenelija occur, which is Tenelija Meksa (soft) and Telija Crstva (hard) with the petrographical difference found in the "density" of the oolith grains in the calcitic matrix. For these both types different hardness and breaking surface features (relief and colour) are the consequences for the potential use in the architecture.

In the engineering studies on Tenelija as building material the type description and analysis is based more on the strength and durability, which depend among others on the granulation size (coarse and fine granulated ooliths) and natural porosity. No special denomination is known for granulation except for the "coarse" or "fine" attached to Tenelija in the studies available.
Completely different denomination is used by the provider of the stones for the reconstruction of the bridge. Tenelija I and Tenelija II are specified in the advertisement of the young company running now the Mukoša Quarry. For both categories different colours are given as the main difference. The basic mechanical properties published for the stone from the quarry so far are the same for the both offered types.
In the studies of the purchased "new Tenelija" from the quarry Mukoša, Geotehnika Sarajevo has used a categorisation of the stones form the depot in groups of similar properties and proposed their relevant use in the future structures. Three categories are used there as denomination: I, II and III, of which only category I can be used for the main bearing stones without restrictions. Category II is optional, while category III seems to be weaker and must therefore be used for less important structures, like e.g. fill etc. Mainly the strength values obtained during the current testing and the study of the previous sources indicate, that in the bridge and in the abutments in the ancient original both: hard and weak Tenelija were used in a variation, which cannot be easily detected to such detail as e.g. the percentage of each Tenelija stone variation type inside the structure. All the above denominations must be unified in clear groups for the reconstruction purpose, in order to exactly know what stones are in question, when talking about Tenelija as the building material. It seems obvious that the coarse and fine structure and the differently coloured types I and II form the quarry fit well to the features of Tenelija Meksa and Crstva. If such categories are to be used the limits of the parameters
for each group shall be defined with respect also to the categories of the stones as prepared for the cutting of the new bridge stones.
For other stone types encountered in the abutment wall the denomination is clear with:

- Breča - the porous conglomerate / breccia
- Krečnjak in a portion of the foundation. In the pavement area also marble - like limestones (also
- Krečnjak group) are used. Marble stones are found also on the left upstream river bank wing wall as aggregates of the filling mortar inside the thick wall behind which the gap and another wall have been found.

Except for the Tenelija in the main vault no large amounts of the other stone types must be used for the reconstruction for the abutment and the wing walls. Only the fill and the pavement stones, some of which have been recovered from the river must be newly built. The pavement stones of very hard limestone have practically zero porosity and remained structurally and mechanically unchanged in the water. Therefore no specific study is required for the pavement stones from the river and the ones from the shore.
In the west bank tower a portion of the wall masonry is missing which must be replaced by similar local small limestone pieces, which only must be roughly given a smooth outer (viewed) face and are not perfectly cut to block format (Kreènjak). An oral report obtained on the tower from local people says, that the original stones and wood remainings have been taken away to a dump area after the removal by Spanish UN-troops shortly after the war. It is not clear, if these stones can be recovered again.

Petrographic and chemical analysis of the carbonatic rock materials

The carbonatic rock samples from the remainings of the Stari Most as well as the ones from the new Tenelija block depot (stones stored at "Komos") have been analysed visually a macroscopic and microscopic studies. Microsections were used to define the detail structure and mineralogical composition of the rock samples. The specimen for the petrographic analysis were taken from the core samples collected by the LGA during the sampling campaign in Mostar. The cores of medium (5 cm - 10 cm) to large drilling dimension (15 cm) were taken directly from the walls of the bridge abutments, from the stones recovered from Neretva and now exposed on the right bank platform and from the large blocks cut in the Mukoša Quarry South of Mostar (where the original Tenelija stones of the ancient bridge are supposed to have come from). The drilling was executed using the water from Neretva as cooling agent. No chemicals were used during the drilling. The cores have been wrapped immediately after the drilling into PVC-pipes and sealed for further analysis. For the petrographic analysis polarising microscopy has been applied as well as the X-ray diffractometry for the definition of the chemical components. For the polarising microscopy microsections have been prepared.

Petrographic results

The main components building the Tenelija -type ooliths are allochemical components of the micrinite calcite and sparitic calcite.

- Allochemic components are carbonatic products, which exhibit a specific structure and originate from sedimentation zones. Oolith encountered in the microsections BB37, B19 und BB 40 belong to such components.
- Micrinite calcite is composed of carbonatic particles with grain sizes of approximately 5μm and less. It is sedimentation product from sea water or form the decomposition f the hard parts of the organisms in sedimentation basins of carbonatic formations.
- Sparitic calcite encompasses calcites with diameter of more than 5μm.. It is mostly a binder (cement), which fills the pores and which still long after the deposition of the prime geological material can be produced within the sediment.

General findings

The main structural component of the rock samples are the ooliths. Ooliths are spherical or ellipsoidal structures with a diameter of 2 mm and less. According to the valid genetic theory the ooliths were built around initiating tiny core of material kept afloat in a turbulent aquifer, where the typical concentric spheres of crusts have grown around the "core" such as e.g. micritic particles of carbonates, clastic quartz etc. The crusts can be built of aragonite or calcite. Aragonites are metastable under normal conditions in the sediment and can be later transformed into calcitic ooliths. Floating in an aquifer the ooliths gain mass through crust growth and sink into the ground sediment, when the weight is in excess of the buoyancy.

In the microsections studied for Mostar samples the concentric-spherical structure is poorly developed for the oolith grains found in the microsections. The loss of the original fine structure form is due to the transformations of the prime aragonite - ooliths into calcite. The radial structure, which is also typical for the ooliths is not more visible after this chemical change.

Individual splinters and fragments with irregular shapes of the grains are clear traces of the abrasive and rolling process to which the original grains were subjected.
The samples BB37 and B19 possess high porosity. The pores are only partially filled with micrinite crystals.
The micrinite has been partially changed into dolomite.
With the calcite content of more than 95 % the samples of the stone represent the type class of "Packstone"micritic limestone according to DUNHAM.
Broken pieces and less regular zones of the structure are traces of the genetic rolling processes of the grains in/on the sediment prior to the cementation. The porosity of the samples is relatively high (approx.33%). The pores are only partially filled with micritic crystal bodies. This Micrite has been transformed after the sediment deposition into Dolomite (see Figure below). Quartz is an extraclastic mineral included in the sample.

The ivory-coloured limestone specimen SB40 possess less pores, than the other samples studied. The porosity is about 25%. Inside the pores the filling of micritic cement is encountered. The macropores inside the structure have probably been left by the decomposition of the shells of benthic organisms (see picture below). Later in the genetic phase few crystals of dolomite have grown in the micrinite matrix. These crystals have almost fully replaced the micrinite matrix, which only remained in the niches between the grains.
The carbonate content lies at more than 95%. If the calssification of the limestones by Dunham (1962) is applied, the sample of he new Tenelija can be defined as the class "Mudstone". The quartz is present as extraclast in the sample.

The analysed grey limestone sample possesses very low porosity. The carbonate content is about 97%. Assessory accompanying minerals are red coloured iron-oxides or hydroxides inside of microscopic fissures. This type of fissures is generally classified as the result of the high compaction of the stone. In the sample analysed the fossiles are limited to only few planctonic microfossiles. The porosity lies around 5% and is limited to the areas of the few macropores and not fully filled compression fissures. According to the classification of the limestone proposed by Dunham (1962) the type of the sample is defined as "Wackstone"
- micritic limestone class.

Chemical analysis of the components by the X-ray diffractometry

The analysis of the chemical components has been executed using the X-ray diffractometry. The apparatus of type Phillips PW 1730 was used for the testing. The results obtained confirm fully the results obtained during the microscopic studies of the stones. All the samples tested are typical pure calcium carbonates.
Dolomite was not encountered in the X-ray tests. The plots of the X-ray diffractometry results are attached to the report. Additionally to this the stone samples B 12 and B 19 were tested for the clay mineral presence. The additional testing was also executed using the X-ray technology. No clay minerals are present in the stones.

Summary of the petrographic analysis

New and old Tenelija stones as well as the Kreènjak have been examined by polarising-microscopy and X-ray diffractometry. The results show clearly, that only pure calcium-carbonatic materials are present. The classification of Dunham for the limestones was used for the systematic definition of the stone types encountered. The result is summarised below.
It is proposed, that in the Mukoša Quarry, where all the samples come from, the Tenelija bank shows deviations
and variations of the grain size gradation and genetic compaction grade as well as the porosity with the chemical transformations of the matrix due to the changing sedimentation conditions during the time of the stone deposition in a aquifer. The depth of the strata varied under the water table and the floating as well as the sedimentation conditions were varying resulting in the different distribution of the stone structures within the layers, which leads to the currently encountered macroscopic and microscopic differences between the adjacent stone layers in the quarry and also between the ancient and the "new" stones. It seems obvious that for the extraction of the ancient stones used for Stari Most a horizon was used, which differs from the strata accessible today. It therefore not possible to obtain exactly the identical material from the
quarry - in the microscopic terms - to replace the ancient one, but the macroscopic conditions and the other physical mechanical parameters of the new material are comparable with the old stones from the bridge.

Table 6: Classification of the carbonatic stones

Sample	Classification acc. DUNHAM
Tenelija Limestone, samples B19, BB37, ancient stones	PACKSTONE Type
Tenelija Limestone, sample SB 40, new stone	MUDSTONE Type
Kreènjak Limestone, sample B 12	WACKSTONE Type

Physical and mechanical stone parameters

In the laboratories series of samples have been checked from all relevant stones:

- Tenelija "old" - still in-situ;
- Tenelija "old" - from the river;
- Tenelija "new";
- Breča "old";
- Krečnjak "old";

Where "old" means the historic or ancient substance and "new" is the envisaged reconstruction material. Tenelija "new" is the one purchased from the Mukoša quarry and stored at the KOMOS depot. Tenelija new was also taken from the quarry directly by LGA.

Within Tenelija old the "Terms of Reference" makes a difference between the stones which have been collected by the divers from the river after 3 years in water (stored on the platform) and the other Tenelija stones from the remnants of the vault and the abutment walls still in situ.

From the relevant archives on the Tenelija the best source is the study executed by the University of Sarajewo as the blocks were extracted from the Mukoša quarry. The summary of the archive is given below.

In the following the results obtained from the initial tests in the quarry and laboratory in Sarajevo 1998 are summarised (selected values). Note, that for this study only very few samples from the site of the bridge were taken, while a full variety of samples and tests were available for the "new" stones from Mukosa.

Test parameter STONES from the Platform i.e.
Tenelija "old" from the river
Stones form Mukosa Quarry as
available now in the depot
Specific density $\rho s = 27$ kN/m³ $\rho s = 27$ kN/m³
Density wet $\rho f = 20.60$ kN/m³ $\rho f = 21.00$ kN/m³
Dry density $\rho d = 19.20$ kN/m³ $\rho d = 19.30$ kN/m³
Moisture content Wn = 7.23 % Wn = 8.7 %
Porosity n = 23% n = 27 %
Modulus of deformation
In dry condition:
Es = 16.600 MPa
Es = 13.000 MPa
Modulus of deformation in saturated
condition
Es = 16.200 MPa
Es = 12.500 MPa
Uniaxial compressive strength in
dry condition
$q_u = 20.50$ MPa
$q_u = 20.80$ MPa
Uniaxial compressive strength in
saturated condition
$q_u = 19.00$ MPa
$q_u = 18.00$ MPa
Tensile strength at bending âz - dry: 10.00 MPa âz = 6.20 MPa
Tensile strength at bending âz - sat.: 8.40 MPa âz = 5.20 MPa

Correlation tensile strength: 0.4 * âz = 2.08 MPa.
Shear strength Tenelija from Mukosa for the stone monolith: φ' = 53°, c = 3 MPa.
Shear strength Tenelija to Tenelija surface after failure: φr = 32°, c = 0.
Permeability coefficient for Tenelija from the platform: k = 4.4 *10 -4 cm/s
Permeability coefficient for Tenelija from Mukosa: k = 1.3 *10 -4 cm/s.
The above data have been checked by LGA in the available report and are considered very reliable. They create a profound basis for the additional studies carried out by LGA. Additional test of geological character as well as durability to frost and wear, hardness have been carried out in this study.

Parameters and characteristics of the stones related to water

In the following the results are summarised for the tests related to the water: the moisture content, thesaturation, the capillarity, permeability, coefficient of imbibition.
The natural moisture is controlled on smaller sample parts after the delivery to the laboratory. The saturation degree is determined by submerging the cores under water until the constant weight is reached during the saturation process - the water content at saturation is checked. For the study of the water saturation influence on the stone mechanical parameters the saturation of the same type was used or particular tests (e.g. shear test in a box) were executed under water. The permeability is checked at the gradient of i = 30. Earlier studies were executed and made available to LGA were the water head varied at 1 m, 2 m and 3 m with the result, that at 3 m water head the constant k-value of the permeability was obtained. The permeability was measured from the inside of the stone, using a special cell designed for rock samples. In a standard German procedure the water ingress is possible through a filter plate on the head of the stones. In the special arrangement for Stari Most the head plate was replaced by a pipe leading to a defined vertical borehole through which the water entered the stone from the inside. The coefficient of imbibition is added to the testing for selected stones.

Moisture content

In table below the moisture content is presented for selected samples. It should be noted, that all stones were dry and since longer not exposed to flood or rain at the time of sampling. Therefore the moisture is "natural" as far as the moisture of the inner stone materials is concerned. It depends strongly in the summer on the duration of the exposition to the sun and of the depth of the sample inside the stone mass, which in any case was around 40 cm for the samples from the walls or from the depot - blocks. The standard observed for the testing of the moisture content is the German Standard DIN 18121.

Water absorption - imbibition in volume

For the absorption of water the values of 0.26 - 0.29 are obtained for the Tenelija New, while the old stones from the platform - also Tenelija - are with 0.24 within the very similar range. The value for the Krečnjak, which is very low porosity stone can be explained by the presence of microfissures due to the age and position of the stone inside the structure. This may mean, that this stone foundation can be vulnerable to water ingress even if the stone type is a solid limestone.

Permeability

In the table below the permeability coefficients of the stones are presented. The tests were executed at the constant hydraulic gradient of 30, which practically means 3 m of water head above the stone – a situation very probably for the moderate rise of Neretva water level at Stari Most. Higher gradients were found to accelerate the flow through the test apparatus only marginally. The values presented are valid therefore for a variety of gradients. The testing procedure observes strictly the standard DIN 18130.

The permeability of the stones is within a range typical also for less dense soils. This is due to the oolithic structure, with spread macropores and granularity of the main matrix (porosity of Tenelija reaches 25% to 30%). Several similar results with even higher permeability are published in earlier studies.

Capillarity

Four samples are presented in the following with the data for the capillarity. The active capillarity was found in the test to be higher (greater) than the actual height of the samples. After 48 hours already the capillarity raised fully and the samples have been fully saturated. Individual samples are already saturated (Tenelija) after 30 minutes. The results of the capillar saturation are summarised in the table below. The capillarity is the function of the porosity and pore size as well as pore distribution inside the stones.

The lowest capillarities (nearly zero) are found for the solid and sound Krečnjak parts and Breča. The reasons for it are quite different for the two stone types. While Krečnjak shows no capillarity as it is a limestone with no pore matrix at all the pores of the Breèa conglomerate are too large to induce the capillar.

For the Tenelija samples the capillar rise of the water surely surpasses the size of the samples used for the test. The reference test was done with the intact core of 40 cm of length in which also the full capillar rise has been observed after 48 hours. Krečnjak and Breča show no measurable influence of the capillar rise on the core samples.

With the small samples labelled "longitudinal" and "normal" the capillar rise along and orthogonal to the drilling direction of the sample (which in turn was normal - 90° - to the wall) the research was done on the effect of the stratigraphy to the capillar rise - in absence of the visible layers on the samples it was decided to have both directions checked. No significant difference can be observed, since the layerseffect in Breča is not important at the size of the large pores and in Tenelija the sequences of the small size pores are spread more or less uniformly in all directions, therefore also for this stone type no major influence on the capillar suction can be expected, except for the areas, where clear thin open porous layers change dramatically the structure and their size determines the capillarity properties.

Durability and resistivity to the frost-thaw

Samples of Breča from the drillings and samples of old and new Tenelija obtained from the direct drillings or from the quarry were cut to the cubic form or nearly similar cylindrical shape and divided into two groups tested subsequently in the frost - thaw sequences with and without salt effect. In the attachment group 7 the photos of the samples used for the testing are presented after the end of the test. Also in the same attachment group the individual data from the tests are presented in tables Prior to the test the samples were weighed and the loss of the mass has been registered during the test.

The criteria for the determination of the resistivity against frost are the effective loss of the mass of the samples tested and the appearance of damages to the stone sbstance, which also are registered in the laboratory sheets. 5 cycles were executed with freezing and thawing of the samples to -25°C and +25°C in a sequence. One series was put in the water the other one additionaly (for the twin-samples from the first series) has been tested in saline milieu. In the result the Breča shows less damages caused by frost than Tenelija. Especially in the arrangement
inside the climatic-box with saline milieu Tenelija shows heavy cracks and failures as documented in the tables below and on the photographs already after 5 cycles. As the result it must be stated, that both stones are not good resistive to frost, even if the loss of material due to splintering and cracks remains very low.

Mechanical parameters of the stones
Shear strength

In the direct shear apparatus the shear strength of the stone samples is checked. Two types of the test are executed: the shearing through a monolithic stone specimen and the residual shear strength of the stone-to-stone surface. For the shear test the check should comprise the difference analysis between the saturated and the dry shear test and additionally the influence of the stratygraphy shall be checked on the shear strength. In the table below the results of the tests are summarised together with the data from similar tests on the same materials. The geological layers cannot be directly observed visually in the stones from the old structure due to the granular matrix of Tenelija, which makes such observations possible only when colour changes or void layers are present (which are horizontal in the quarry). Therefore new stones were extracted for the shear tests in order to be able to exactly define the layers and the orientation of the shear stress. The samples used by LGA have the size of 10 cm x 10 cm in square and are embedded in a high strength concrete in a steel frame, which in turn is mounted into the steel beam loading frame, where the deformation is controlled in terms of speed until failure occurs. To obtain the
values of the shear strength: φ' and c (cohesion) at least three individual specimen from the same sample must be tested under different vertical loads. For the tests the vertical uniform stress is chosen with 100, 200 and 400 kPa.
To determine the strength of the saturated stones the specimen of Tenelija have been kept in water until their constant weight indicated the full saturation with water. Subsequently they were installed in the frame for the loading. It was not possible to drive the frame under water - therefore the check was done on the water content prior to and after the test on the stone. The loss is within the range of 2% to 3%, which is considered high, since the unforced saturation is reached at the moisture content of 7% to 9% in most cases for Tenelija.
For Breča as breccia - type of stone it is not necessary to check the influence of the moisture on the strength, having the low porosity of this stone type. It is also not necessary to study the influence of the stratygraphy on the specimen available, since having large individual grains of the gravel and small stone size (up to several cm in diameter) only very large samples would be representative for such study. The values of shear strength for Breèa are very high and given below without a reference to the orientation. In case of the LGA sample, which was

circular drilling 100 mm diameter the shear surface was forced along the drilling axis i.e. normal (90°) to the viewed stone face in the abutment wall.
The detail data of other quoted results below are not known to LGA. The size of the samples examined by Yeralti-Conex was 10 cm x 15 cm x 30 cm.

Compressive and tensile - bending strength, E-modulus, Poisson-ratio

Characteristic of Tenelija is the high E-modulus at relatively moderate to low strength (if compared to other stone types). In order to prepare the sampling and testing techniques for the assignment, LGA has executed a trial series of testing, which comprises three stone samples taken as cylinders from the Komos-depot for the uniaxial compressive strength. In addition to this the calibration has been undertaken for the much more simple (but usually not very precise) point load test for Tenelija. The aim of the calibration was the search for the correlation parameter of strength to be in the position to check roughly the uniaxial strength of the material while using only a site apparatus in the quarry. In the following the original text of the preliminary study is quoted.

Conclusions after the testing of the ancient and new stones

The new and the old stones have been demonstrated to be very comparable from the petrographic, physical, mechanical and technological point of view in the chapters above. The new stones reach not quite the local high strength of the ancient stones, which is result of other location in the sediment and in the quarry.

New Tenelija

The new Tenelija stones exhibit adequate properties for the use in the reconstruction of the vault. The cutting and the positioning of the stones must take into account the stratigraphy and the zones of visible strong porosity must be omitted in the new vault.

Old Tenelija from the platform

Old Tenelija from the platform has for individual blocks and stones equivalent physical and mechanical properties to the stones from the abutment walls and vault remnants in situ. The fact of the stay under water for few years seems to have no significant importance for the worsening of the pure stone parameters. However the destruction process, the collapse from the high elevation and the handling during the recovery may have left structural traces inside the blocks, which must in case of reuse be examined individually depending on the function given to the stones in the reconstructed bridge.

Additional handicap is the superficial damage of the stone surfaces with broken edges and surface polish after the river sediment moved over the stones for few years. This poses two problems: additional preparation with the reduction of size and the question of the colour and texture, when compared to the new stones.

Therefore the individual stones from the platform can be used generally in the reconstructed masonry only if they are structurally undamaged. The other question is beyond the expertise of the material properties and touches the general concept of the reconstruction. The old stones will remain clearly visible between the new unless they are specially freshly cut and finished similar to the new ones.

The current degree of destruction of the stones from the platform and the eroded surface will lead to the necessity of intensive cutting and finishing procedures, which may be beyond the effort of the same preparation for the new stones. Cutting the stones and finishing the surfaces anew raises the question on the original state of the stones after such treatment. Also the geometry is changed and many of such stones will not be able to take the former place in the new vault.

Potential risk arises form the hidden fissures in the stones on the platform, which cannot be detected visually. In the laboratory small scale samples fail under loads without visible fissures on the surface, which only occur after further displacement. If similar behaviour is posted for the big blocks, their integrity should be tested before the costly cutting and finishing takes place. This boundary conditions may question the use of the most of the old damaged stones. Potential use can be considered for these stones in the areas of the bridge, where lower loads are expected, such as face or fill masonry.

The vault should be structurally as uniform as possible - only one quality of the stones should be used there. Special question is arisen by the compact two blocks of the former vaults in which several stones are still presumably in more or less compact bound. Many of the

individual stones there show so far little or no substantial damages. Nevertheless, the main question for these pieces of masonry is the integrity of
the joints, which cannot be easily examined by laboratory or field methods. Special tests should be designed for these blocks in order to ensure their integrity and the placement inside the new structure must be carefully planned in case of weak joints (orientation of such joints in the stress-strain system).
Similar problem applies to the remnants of the archivaults on both river sides, which are visibly loose in the first rows of stones and their joints between the individual blocks are disturbed.
LGA has executed tests of the wave-velocity measurements on the individual blocks in order to check such technology on the platform and in the quarry as the tool for the final decision taking for the individual stones.

Other Tenelija "old"

The old Tenelija stones other than those from the platform have from the point of view of the laboratory testing still quite sufficient physical and mechanical properties. The problems for the old stones is connected certainly more to the structural damages due to high loads and weathering. In the cores taken for the laboratory samples in many cases fissures parallel to the surface are observed, which have probably been treated in some cases by injections earlier (brown grout found). We propose not to distinguish between the old stones from the river and from the remaining abutment walls, since the differences in the properties are marginal and between both categories well below the natural variation of parameters for Tenelija itself.

Other stones

For other stone types found in the bridge values are given for the calculation purpose. They lay within the range of expectation and shall be sufficient for the structure. Breča and "Krečnjak" seem to be the most weak in their response to erosion and wear. The reconstruction programme should include stabilisation and remedial measures for the abutment zones of those stones as well. Weathered and brittle stones should be replaced.

General engineering – selections from Structural and Architectural Design of the Old Bridge

Selections from Structural and Architectural Design made by General Engineering (Florence, Italy)

In the following chapter we would like to present the extractions from Architectural and Atructural designs, especially concerning the stone cutting methodology, which was the key element in the Project.

ARCHITECTURAL DESIGN

3.2 MAIN OBJECTIVE OF THE ASSIGNMENT

As specified in the Inception report (see §1.1) and in the Phase A report (see §1.1), here next it is confirmed the main purpose of this assignment: the aim is to rebuild the bridge as it was before war (see §5.4.1 p.49 of ToR: "This section refers to the part of the reconstruction or remedial works that will be carried out, and the result of which should be a structure identical to the one prior to destruction"). Many other completely different design approaches would have been possible in that site, (e.g.: contemporary architecture bridge inserted next to ancient surroundings and ruins), but decision about this matter was already defined and General Engineering was not required and not supposed to make any proposal. The mentioned design choice, of an identical structure, will be therefore assumed as the Client request and as Mostar citizen's wish for the future of the Old Bridge with no further analysis and comments.

3.3 DESIGN OBJECTIVES AND THEORETICAL APPROACH

Main design objective is to follow and respect the request of the assignment that has been exposed in previous paragraph, which has been always taken as reference direction during the performing of the works, (providing required elaboration). At the same time, coherently with the adopted approach, some additional indications, concerning the philosophical contents of the design, have been developed in order to gain a more mature awareness of the aims and finalities of this delicate and peculiar rehabilitation intervention.
All the theoretical considerations that have been developed have been exposed in the different stages reports, (Inception Report and Phase A report), and given for approval to UNESCO and to the ICE commissions (4^{th} and 5^{th} commissions).
In this type of intervention, and in this historical moment, it is extremely important to define a correct and clear theoretical approach to the design objectives, without which the whole design would be fragile and would have to face frequent incoherences that would invalidate also an operation perfectly correct on the technical side.

3.3.1 DESIGN OBJECTIVES DESCRIPTION

This Pilot Project has been named, in agreement with PCU TA, as "Rehabilitation of the Old Bridge of Mostar" since it is partially composed by different practical approaches: conservation and preservation, remedial and repair interventions, dismantling and remounting

- Declaration between former bridge elements and new intervention should be performed trough refined and light marking devices, (as defined by design specifications and drawings).
- Ancient abutments should be repaired only for what concern structural fractures and heavy shootings: only for those damages that, due to the river floods, may lead to further degradation if not repaired.
- In the adjacent areas, concrete blocks should be totally demolished and remedial works should be performed over the ancient flooring.
- Repair works should be performed leaving all the signs of time and small traces of the war, avoiding any intervention that may lead to a polished and renewed masonry layout.

REHABILITATION OF THE OLD BRIDGE IS THEREFORE DESIGNED AS A:
- conservation and preservation of the ancient stones recovered from the river;
- remedial and repair of built-in stones, bridge remnants, abutment walls and flooring;
- dismantling and remounting in the original locations of some portions of the bridge remnants;
- reconstruction of a "new old bridge" marked and declared as a recent intervention;
- demolishing of the concrete provisional blocks built during the war and post-war period;

It has to be strongly underlined that all the above listed items are only main design steps that represent, trough a synthetic and simplified scheme, the objectives of the rehabilitation of the Old Bridge of Mostar. Of course, either to gather a detailed explanation, either to understand which have been the technical and theoretical reasons that have led to the above decisions, it is necessary to refer to the subsequent paragraphs of this chapter, and to the whole chapter 4 of this report.

3.3.2 DESIGN METHODOLOGY

Design methodology has followed mainly the ToR requirements, and has been developed considering current approach criteria for similar type of rehabilitation interventions. Design has been mainly structured in order to respect the ancient remnants of the Old Bridge and the abutment walls and in order to clearly declare which are the new interventions.
Methodology has referred, moreover, to the requirements asked by the PCU TA, UNESCO and by the ICE and has referred to the International Principles of restoration. In detail we have:
- Restoration should be performed trough documented phases
- Any integration should be documented and recognisable.
- For the strengthening aim of the structure modern techniques may be used only for static reasons and only when the ancient constructive method would not be adequate.

Design methodology has referred, moreover, to the additional principles:
- Preservation and special care should be taken for the interior interventions, even if they are not visible.
- Structure and technological solutions should be maintained.
- Interventions should be as less invasive as possible.
- Interventions should be as much reversible as possible.

During the several stages of on site surveys and design processing, it has been used exclusively instrumental systems and computer systems. The procedures adopted guarantee the following:

- precise diagnostic and measurements
- constant control and updating of the designing stage
- long-lasting, ready-to-hand and duplicable data for records

For additional notes about methodology refer to chapter 4 of this report.

3.3.3 RECONSTRUCTION WORK METHODOLOGY

It should be underlined that the ancient Bridge of Mostar was built following a methodology, a technique and a procedure which was typical of the ancient times, linked to the available construction systems and machinery and which, nowadays, may be only hypothesised. If a similar hypothetical procedure were followed strictly, the final result would be the construction of a similar Old Bridge: in other words, referring mostly to stone layout and to curvature geometry, we would obtain a similar but different structure.
For the above reasons, coherently to the required objectives and aims of the assignment, the design is not trying to re-perform all the hypothetical steps of the ancient yard, (which in most cases happened to be randomly performed, like the sorting of the stone sizes), but it has been found a compromise among ancient methods and final results in order to gain a structure identical to the former one even for what concern many details like stone layout and geometry of the intrados curvatures.
The above mentioned observations mostly concern the stone cut works, (refer to chapter 7 of this report for additional notes), and the new technical devices that will be used: like machinery and provisional structures.
Design objectives are, therefore, aimed at reconstructing an "identical structure", (as required), more than performing nowadays the same hypothetical yard experience of the ancient time, which would be an interesting experience but with remarkable different results and with technological and practical difficulties. (Refer to §4.1.2 for additional notes).

3.3.4 DESIGN TECHNOLOGICAL APPROACH

Design has been developed being well aware of the gap that there is among accuracy worked out in the drawings and practical technical impediments and constraints in performing the works on-site, having to manage the stone as construction material. For the above reasons special devices and procedures have been worked out in order that dimensioning of the different stones and voussoirs would not be so difficult to be performed (refer also to chapter 7 of this report).
Moreover thank to the given tolerances (like quarrying tolerances), and the management of some groups of dimensions trough the range system, (refer also to next paragraph), it will be possible to face this matter that has been defined as "technological issue" of the design.
Geometrical and survey controls about the proceeding of the works will be, for the above reasons, extremely important and will have to be performed constantly while works are ongoing to avoid any incoherence and unforeseeable result. (Refer to §4.1.2 for additional notes).

3.3.5 METHODOLOGY FOR DETERMING ANCIENT ASSEMBLING CRITERIA

Former bridge stone elements were assembled with metal cramps and dowels sealed with lead poured in purposely built slots. This refine technique has been considered, in the design approach, as one of the most important value to be preserved of the ancient construction: design has therefore studied with detailed accuracy all the peculiarities and the positioning criteria of the above mentioned metal stuff with the declared aim of gathering all the wise devices that were proper of this ancient assembling method. At a first glance, the positioning of the strengthening metal elements may seem to be approximately performed, but with more accurate observations held on the bridge remnants it gets clear that there were some important rules linked to practical and technological requirements for the right functioning of the structure. Before proceeding to final design, studies and surveys have been performed, and for each element it has been determined a range of location measurements and a range of dimensions. The study has led to work out some limit measures to be respected in the positioning of the metal strengthening devices compared to the shapes and dimensions of the stone blocks and their joints. The same method has been consequently applied to the stone blocks and to their carved channels and slots.
Design dimensions and measurements, for the above described devices, have been given with ranges and with limits following the determined ancient criteria; this because it wouldn't have been theoretically correct to give a single average dimension to be repeated identically all over the structure, while, in the ancient bridge, a different method was followed, which was more suitable to the variability of the stone elements depending on the natural availability of the quarry.

3.3.6 MANAGEMENT OF SMALL IRREGULARITIES

Former Bridge was characterised by small irregularities, variations and by ordinary constructive imperfections, of which there is no documentation, (apart from surveys of the Bridge remnants). These small variations are precious and are part of the beauty of the monument and shouldn't be neglected to guarantee the final global aspect of the bridge. In current design they have been considered and analysed to fulfil to the required aim of reproducing the ancient bridge as it was, and to avoid the construction of a polished structure quite different from the former one. (See §4.2.3 for additional notes). Design, in order to manage correctly the above mentioned features, has given range dimensions for some of the elements that were subjected to variations, (it wouldn't have been correct to assume an arbitrary measure for them all). At the same time, design has adopted a tolerance systems which allows the possibility of slight variations (in one centimetre range): leaving margins free to be slightly managed during the on site stone assembling, by practical and manual adjustments, similar to the ancient adopted techniques, this way we will guarantee the reproducing of the same level of imperfections of the former bridge. A special system of progressive control has been worked out to make sure, step by step, that we are not going far from the final design and far from the former bridge.

3.3.7 MANAGEMENT OF THICKNESS DIMENSIONS

The ancient documentation is poor of cross sections and of thickness and projecting dimensions of the elements. This of course constitutes an important limit to the exact global geometry determination, and these elements have of course a remarkable esthetical architectural value. Inaccuracies in the geometry determination of these dimensions may lead to a different global aspects of the monument. (Refer also to §5.7 of this report).
For what concern thickness of spandrel, cornice and parapet elements, dimensions, have been given by range values being unknown and quite variable from the study of the bridge transversal section. Design approach trough range dimensions for the undetermined dimensions is one of the basic philosophical choice of this rehabilitation design and it is aimed at reproducing the same quantity of randomly that was proper of the former structure. Criteria adopted for range dimensions are results of observations of the ancient bridge remaining portions. (Refer also to §7.12.4 of this report).

3.3.8 DECLARATION OF NEW INTERVENTIONS

One of the most important conceptual risk that we run by reconstructing the bridge, is to confuse the ancient original elements of the abutments and of the bridge remnants with the new interventions. This should not happen for a conceptual coherence, for respect to the ancient left portions, and because history may be not changed: with war, in fact, something has been lost forever and may be not completely restored. The memory of what has happened should not be cancelled and should leave at least a trace also on the Bridge. A refined design plan with marking of some joints and stones, (see drawing AD-03), has been worked out to gain the results with no-shocking devices but with slightly interventions that at a first sight may be not gathered but with an accurate observation they are readable. This marking of the joints and of the stones is required for two different reasons: one is mainly scientific, and related to restoration requirements for which it is important to identify in future times each different intervention on the monument; the other reason is instead historical, and is aimed at preserving the trace and the course of time and events. (Refer also to §4.5 of this report).

3.3.9 USE OF NEW TECHNOLOGIES

New technologies will be used for what concern working machinery and provisional structures like centerings, scaffoldings and similar facilities for the yard purposes.
Not the same may be said for the work phases: there will be different foreseen stages in which traditional working and hand made working will have to be performed (like all the finishing, stone final cut and assemblage of metal cramps and dowels).
Construction materials will be equal to the original ones unless structural and safety requirements will impose the use of better performing materials. (This issue will be finalised with the results coming from laboratory tests and consequent structural design).
For the strengthening aim of the structure, modern techniques may be used only for static reasons and only when the ancient constructive method would not be adequate.

3.3.10 THE SPIRIT OF THE WORKS AND DESIGN LIMITS

No architectural design work will ever be enough to guarantee a perfect result on-site for such a delicate intervention as it is the rehabilitation of the Old Bridge of Mostar. To gain an high level of architecture work, which could compete with the marvellous former monument, all

the given technical advises, specifications, warnings and requirements will be useless if rehabilitation is not performed with sensible, careful, humble and respectful attitude. The quality results, final aspect of the structure, architecture details, finishing works, are all in the hands of the Work Supervisor and in the hands of the Workers: with equal technical specifications we could have either the worst, either the best intervention of the kind, depending mostly on the accuracy with which works will be performed.
The spirit with which restoration works should be held is not the same that is used for ordinary construction interventions: money saving, serial organisation, simplifications, time and deadlines are things which absolutely do not match with the requirements of an intervention of this type. Rehabilitation should be held with a spirit of research, of study, of understanding the ancient values, of humble observation of the wise technique used many years ago. If this spirit is not shared by all the members involved in the project, then we will soon loose the real meaning of this work and we will get something which will never satisfy the expectations of the whole cultural World and, what is even worst, of Mostar citizens.
The rehabilitation of the Bridge will have to be conceived also as an important moment for the population of Mostar and of Bosnia: the symbol of the town will be restored after war events, and the construction period will assume the characteristic of a local, quite and thoughtful celebration, (not as a World press event).
Of course when works will be completed, this project will soon lead to develop a cultural interest about the monument and about the history of the town that should be valorised trough the settling of a museum. This design work, among its main objectives, foresees the foundation of a museum either to host the ancient ruins of the Bridge, (plus studies and findings), either to host anything which is related to the history of the town, which is still so little known and spread out. In the museum, two blocks currently stored in Komos depot, n°47 and n°48), could take place, as proposed by Mr Bessac, being traced by carvings of ancient hand-quarrying-work that may has been performed for the Old Bridge voussoirs.

Another matter that should be underlined is about design limits. Limits lie in the fact that, in a restoration design, it can not be possible to define everything at this stage, because it's not possible to know everything about the site and about the ancient ruins: trough investigations we do not get a complete knowledge like the one during on-site excavations. For the above reasons it would not even be correct to try to define and finalise anything concerning the works that may lead to slight design changing and improving. Nevertheless design has tried to give different options for matters that weren't still completely clear.

7 STONE CUT - REQUIREMENTS AND SPECIFICATIONS

7.1 INTRODUCTION TO STONE CUT PROCEDURES

The stone cut final design is rather complex due to the main requirement for the reconstruction of the Old Bridge which is to gain a structure identical to the one before conflict events, as required by the City of Mostar. Being the bridge characterised by many peculiarities and ordinary hand working construction imperfections, the stone cut is somehow atypical and for this reason some requirements and specifications should be pointed out.
The reconstruction work of the bridge will not be similar to the procedure adopted at the time when it was first built (even if the result should be the same): in the ancient times, in fact, stones were quarried and cut following average measures and mostly depending on the quarry natural availability, stones were assembled on to the centering almost randomly taking just

care of a few rules (like stone joints shift, global thickness of the load bearing arch, thickness of each row and row parallelism). The bridge was therefore perfectly built but not regular, its anomalies due to this regardless way of choosing the voussoirs were at the same time the real beauty of the bridge and the origin of a complex geometry.
Today, knowing the most likely geometry of the bridge, and willing to have the previous shape and same imperfections and locations we should follow a stone cut design carried out stone by stone where each element will have a peculiar shape and a planned position. A purpose built method and procedure has been worked out in order to perform quite easily all the measures, but recommendations are necessary to follow correctly all the design steps. General Engineering will not be responsible of any incongruity if design recommendations and warnings are not strictly followed.

7.2 METHODOLOGY AND THEORETICAL APPROACH TO STONE CUT

As already mentioned in previous paragraph, main assumption of the current work is that design should be aimed at the reconstruction of a structure identical to the former one, and this in order to give to the new structure, (clearly declared as new), an additional value of historical and scientific documentation of the ancient one (for other notes refer to "main objectives" in current report).
The above assumption doesn't absolutely mean that it is at the same time possible to follow the ancient constructive methodologies and techniques to gain this objective: it has to be clearly underlined that we are not repeating the same constructive experience that took place in the past, mostly because this way it wouldn't be possible to respect fully the objective of the work, this even if sometimes it is of great use to repeat some steps and to study and make researches on the hypothetical methods followed at the time.
The stone cut of the arch voussoirs is one of the works that may be not repeated following the ancient methods but following another technique that may guarantee a geometrical final correspondence to the ancient structure. The way this design of stone cut has been conceived and performed wouldn't have been possible without a computer management of all the data representing the 3d co-ordinates of every single stone joint of the arch. Stone wasting optimisation, management of irregularities, anomalies and documented imperfections concerning raising and heights of rows have been planned trough the use of purpose built software calculation routines and every single stone has been represented in 3d digital drawings and defined in its final co-ordinates and dimensions: stone cut design has soon brought to manage an electronic chart of many sheets with a global amount of elements that, including the analysis stage, counts about 200.000 data.
Nevertheless beyond this exact method for geometry control, it has been carried out a special methodology to manage and repeat smaller ordinary constructive imperfections trough special devices which will follow some procedures and steps of the ancient way of assembling the arch but in predefined ranges and to be performed among points of known positions.
Moreover anything which is concerned with the final finishing and working of the surfaces is foreseen to be performed trough hand working and trough detailed specifications and checks in order to control the bridge final appearance and its esthetical value.

7.3 STONE CUT WARNINGS

Stone cut design is divided in two main groups of measures: one is related to the quarrying work, and the other is aimed at the final cut. Data are organised in four different books subdivided in charts, schedules and sections that will be explained later in this text, moreover

drawings in 1:25 scale are provided. All the above is useless if it doesn't go with the following main warnings and with all the instructions given in the current chapter.

STONE TYPE FOR ALL THE BRIDGE ELEMENTS (SMS-A AND SMS-B)

Stone to be used and cut is Tenelija of the same type, colour and resistance of the ancient one originally used for the bridge construction, quarried in the same quarry where the ancient stones where presumably originally taken. Detail specification to guarantee the above requirements will be given by LGA company (which is in charge of all the laboratory tests).

Stone quality and correct procedures for all the quarrying phases should be guaranteed by a supervisor that is supposed to be on site during the works and that has the necessary expertise to make the checks. The supervisor should also check that the bedding is respected coherently to the warnings here next reported and that the numbering is performed as well as here next explained.

For what concern the lowest required resistance to compression stress and for the mechanical characteristic of the material it should be referred to the structural design report.

INTEGRITY AND QUALITY OF THE CONSTRUCTION MATERIAL

Each block of construction material should be checked with ultrasound tests at least once, before installation, and if necessary, more than once to establish the responsibility of the different involved companies; this will be up to the PCU TA. Ultrasound checks should be performed with the presence of a supervisor, and acceptable limits will be defined on the basis of the results of LGA company (which is in charge of all the laboratory tests).

JOINT TOLERANCE (EQUAL TO ZERO)

Main assumption of this work is that all the measures of all the stones of the bridge are worked out considering the joints equal to zero. This assumption has been agreed with PCU TA and is aimed at a global simplification of the work mainly in the management of the co-ordinates which are therefore referred to the center line between two adjacent stones or voussoirs. Moreover this approach was necessary since the average dimension of the joint was not yet defined, at the current design stage, depending on many matters and being in the ancient construction quite variable.

On the other side this choice has been found favourable since joint dimensions will be used during the final cut as an additional margin to be managed in the assemblage phase, coherently with the global design approach which foresees this method for the sub-centimetre dimensions in order to perform a randomly distributed amount of ordinary construction imperfections.

QUARRYING TOLERANCE (EQUAL TO CM 3)

Another assumption adopted for this work, agreed with PCU TA as well, was to work out dimensions for the stone blocks to be quarried increasing them of a quantity of three centimetres per side. Being the voussoirs of irregular shapes, the above mentioned device wouldn't have guarantee a feasible procedure for the quarrying work and for this reasons it has been provided an additional calculation aimed at working out the smallest parallelepipeds dimensions as possible that could contain each stone to be cut. In other words, trough a purpose built software routine, three dimensions have been worked out for each stone block to be quarried, representing the base, height and thickness of a parallelepiped that is big enough

to contain the final voussoir solid shape with a tolerance of a minimum of three additional centimetres for each side. Note that "for each side" means that if a base dimension is taken, for instance, this will be longer of a quantity of three centimetres on the left and of three centimetres on the right which in total brings six centimetres referred to that single measure.
To minimise the stone to be quarried these parallelepipeds are calculated along the average center line of the thickness of the voussoir to be cut and along the center line of the voussoir face, and this method will lead to a slightly variation of the ideal orientation of the natural stone bedding; mentioned variation is anyhow negligible.

STONE NATURAL BEDDING

The terms "stone natural bedding" are referred to a natural characteristic of the lime stones (like tenelija). Lime stone has an orientation, (bedding), due to different layers that during time have settled forming the stone vein, this natural orientation has an important structural value for stones used in constructions: stress should be orthogonal to the natural bedding.
For the above reason attention should be put during quarrying and during final cut in order to prepare stones with the correct orientation and not up side down.
In detail, during quarrying, the parallelepipeds should be taken out in a way that dimensions are compatible with the final assembling position: this means that depending on the type of block (voussoir, spandrels, parapets and cornices) a different approach should be followed as here next resumed (better explained in following paragraphs and in reconstruction works drawings):

ELEMENT	BEDDING	PARALLEL SIDES	
voussoir (arch stones)	Bedding parallel to:	Hqt dimension	K(n)qt dimension
spandrels	Bedding parallel to:	bqt dimension	t dimension
cornices	Bedding parallel to:	bqt dimension	t dimension
parapets	Bedding parallel to:	bqt dimension	hqt dimension

Immediately after the quarrying a clear and undeletable tag (sign) should be stuck on the side of the stone which is parallel to the stone bedding, this to avoid misunderstandings with the following phase of final stone cutting (also because the bedding may be not clearly visible after stone drying).
During stone final cut the care for the natural stone bedding will be important as well, but it will be of help either the mentioned tag (sign) either the dimensions of the quarried block.

NUMBERING AND CODING

Numbering and coding of quarrying blocks is essential, if this operation is not correctly performed the bridge may be not easily built following the design indications. Immediately after the quarrying a clear and undeletable tag (sign) should be stuck on the stone (may be together with the indication of the bedding) with code and number that has been proposed in the classification system.
For instance signs like the following:

SMS-A103/5 means: arch stone located in row 103 position 5th (starting from north)
SMS-Bsp_ne79 means: bridge spandrel stone located on the north-east side position 79 (ref. drw.)

Also after the stone final cut the tags (signs) should be repeated on the stones to avoid position exchanging during the delicate phase of the assembling.

STONE FINAL CUT

Stone final cut should be performed following strictly the specifications exposed in this chapter and in the one about the centering; as it will be explained, final stone cut will be performed on a wooden structure model 1:1 identical to the one that will be settled on the load bearing steel centering.

Final stone cut will have to be performed with the control of a supervisor that is totally informed of the architectural design results and objectives and well aware of the warnings and instructions here reported. A 1:1 test before the beginning of this work is required in order to obtain the approval of the ICE commission.

Stone final cut should be performed following architectural design, either for what concern the final geometry, either for what concern the different steps and procedures of preparation: it should be completed off site on a model wooden deck in order to be assembled and finalised in a short time and with no incoherences. Any other different approach is most likely to be incompatible with the planned dimensions either for the stone final cut, either for the stone rough cut, and may lead to the following consequences:

- quite different geometry and final appearance of the bridge arch
- different number of rows and different shape of voussoirs
- incoherence and unmatched of joints (specially inner joints among rows)
- rough stone blocks and final stone blocks may not be adequate or enough dimensioned
- time for assembling may get too long and bring to the bad season with high risk for the whole structure

General Engineering will not be responsible of any of the above matters if design is not fully and strictly followed.

STONE FINISHING

Stone finishing should follow specifications given by Mr. Bessac (who is in charge of all the archaeological research as a stone expert). LGA company findings about the different type of surface working should also be taken into consideration for the mentioned purpose.

A supervisor with the expertise on stone working should be present in order to check the correct performance of the required specifications. A 1:1 test before the beginning of this work is required in order to obtain the approval of the ICE commission.

INVOLVED STONES IN STONE CUT DESIGN

The design of the stone cut involves all the bridge stones, even those that are still built-in (SMS-BS) and those that have been recovered (SMS-RS). As far as the arch is concerned, all the voussoirs have been designed from the arch springer.

Stone cut design of all the stones has been necessary and required for different reasons:

- recovered stones (SMS-RS) won't be reused to avoid additional cut of ancient stones and to avoid repositioning in different locations;
- it is not possible to foresee, at this stage, how many of the built-in stones (SMS-BS) will be remounted in the original locations (depending on integrity and on disassembling);
- for what concern the load bearing arch, only built-in stones in perfect conditions might be left on-site (to be decided while works are ongoing);
- for the reconstruction work some extra stones are required.

NOTE

The delicate type of work and the amount of design documentation and investigations produced requires a permanent presence of a supervisor with the necessary expertise, in order to face any difficulty that may arise while works are ongoing.

An additional 10% (35-40 cubic metres) of extra stone is desirable since during the works some stones may be damaged by ordinary constructive procedures.

7.4 STONE CUT PROCEDURE

Stone cut procedure is here globally referred to the work of preparation of the stones for the bridge construction, actually it could be correctly subdivided in different categories related to time and to types as here next explained:

	phase description	conventional term
1	quarrying of huge blocks from the source site	QY-blocks
2	rough stone cut in parallelepipeds + (qt) min 3 cm	SC-rough
3	final stone cut with final shape and dimensions	SC-final
4	stone finishing and adjusting	SF-adjusting

	type description	conventional term
1	Stari Most Stones - Arch Stones	SMS-A
2	Stari Most Stones - Bridge Stones	SMS-B

The above classification terms will be used in following paragraphs to allow a better understanding of all the different issue which are often referable to more phases at the time. A preliminary analysis of the main peculiarities of the arch geometry analysis is here next exposed in order to gather the reasons of the technical approach.

7.5 MAIN IRREGULARITIES OF THE ARCHIVOLT - SMS-A

The most likely survey of the arch bridge, result of different ancient survey comparing, and called here survey 2000, has revealed all the slightly imperfections that were a proper characteristic of the monument. Geometrically speaking these variations may be resumed as follows:

	main irregularity type	additional note
1	arch curves irregularities (also from north to south)	different north-south span
2	front face shape variation	all dimensions and angles
3	variation of height above sea level	north to south in arch row
4	different raising of the rows	north to south in arch row
5	size and rotation of front face	north to south in arch row
6	deviation from row plan	for each row plan

The above listed irregularities have been moreover studied, by the use of numeric electronic charts and co-ordinates with special enquiries about range, highest and lowest values, areas in

the arch where these anomalies were more present and by detail digital graphic comparing among north and south elevation. A more detailed comment about each type is here next reported.

7.5.1 ARCH CURVATURE IRREGULARITIES

arch intrados and extrados curvatures have some local irregularities and discontinuities that make the arch of an irregular shape definable only trough co-ordinate points (for more details refer to geometry determination studies); moreover north elevation curvature and south elevation one do not follow same deflections, same height and do not even have the same length and span.

main curvature data	(cm)
span north side	2871
span south side	2862
springer level east abut	0
springer level west abut	13
north elevation intrados curve length	4058
south elevation intrados curve length	4036

The relationship between north and south elevation curvature points is mainly linked to the relative position of the origins of the co-ordinate system of the curves; in other words, most of the observed anomalies, and their possible quantification is all based on the position of the springer level points in the space. The survey work has chosen, as working reference, both for south and north elevation the east side as the origin (coherently with the 1955 survey). In the three dimensional co-ordinate system the origin has been set on the north-east springer, and the south east has brought the following:

origin shift	X shift (cm)	Y shift (cm)	Z shift (cm)
north-east	0	0	0
south-east	3.8	1	-395

where the height is represented by the Y co-ordinate, and the thickness by the Z co-ordinate.
In the following figure it is shown a correct projection of north side over south one to have a better view of the differences that we have in the thickness of the archivolt.

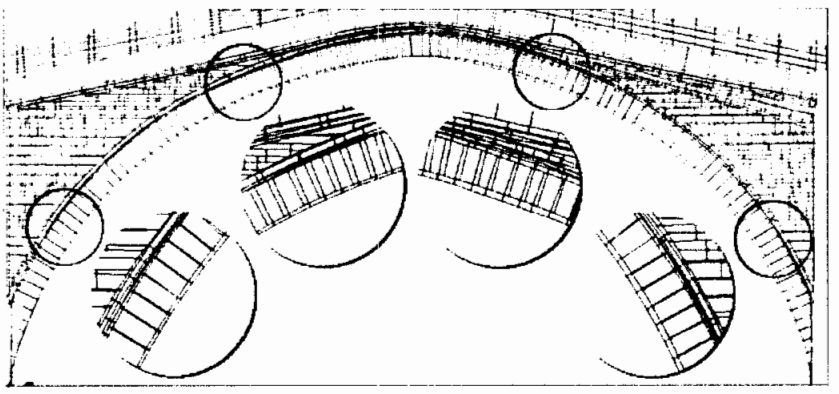


fig.1 - north and south elevation correctly projected to underline differences

What it is important to observe is that, (apart from local deflections), from the springer level to the arch reins, and also further, there is a fairly good matching among north and south side: rows are almost regular and deviations are low. It is mostly in the central portion of the arch where north and south elevation do not match. It is probable that, during the original construction, they had some settling of the wooden centering by the time they were loading it (this could be the reason why we have highest differences on top); and probably they tried to correct the settling of the centering by using wedges under the stone voussoirs (traces of which have been noted by Mr. Bessac because of small steps among adjacent arch stones). All the above matters anyhow are better analysed in the chapter about the original design and construction method.
In order to complete this analysis of the main anomalies of the intrados curves of the archivolt it is important to point out that the position of north elevation and south elevation have been carefully analysed during the geometrical study (refer to the proper chapter for detailed notes) and have been determined to be parallel either for the 1982 survey results, either for a scarcely amount of other notes about the eventual thickness variations of the bridge, which anyhow was most likely to be quite regular for this peculiar matter.
Already from this preliminary overview it should be clear that the archivolt is not a regular solid figure and that, for the stone cut, a complex dimensioning system is required; this may be also confirmed by the fact that some of the above variations may reach about 20 centimetres for homologous points along an arch row. On the other side the requirements for a practical way of proceeding for the works has led to design a simplified system of dimensioning which will allow, with a small amount of dimensions, the performing of this irregular solid figure.

7.5.2 FRONT FACE SHAPE VARIATION

Front faces of the arch voussoirs (elevation side) are commonly of a regular trapezoidal shape and all alike; it is not at all the case of the Old Bridge of Mostar, where front faces of the voussoirs vary in shape, size, dimensions and angles: only an average size is maintained along the archivolt as shown in following figure.

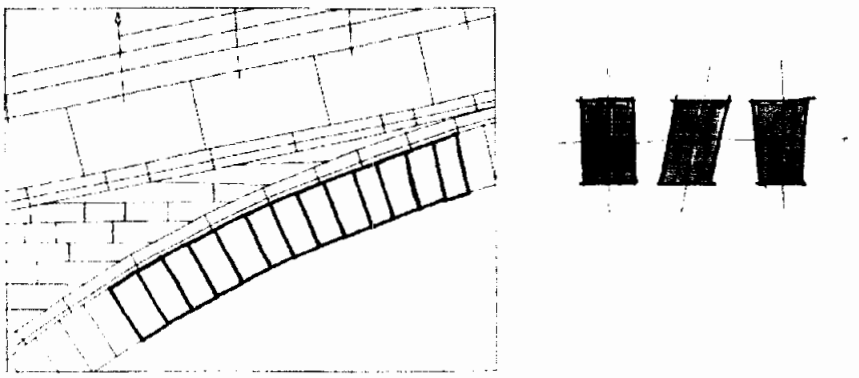


fig.2 - type of variations in front faces of voussoirs

7.5.3 VARIATION OF HEIGHT ABOVE SEA LEVEL

Each row of voussoirs, going from north to south elevation, varies each height above sea level, of a quantity which is in a range of cm 0-10 on about cm 395 of thickness. This irregularity is one of the most difficult to be managed during the SC-final (final stone cut) and SC-adjusting (stone finishing and adjusting) and requires to be analysed with observations held on the way the bridge was originally assembled (see next paragraphs).
The above mentioned irregularity may have been caused by a settling and a consequent lowering of the centering during the construction stage, and should not be confused with local deflections that may have been caused by arch springers settling or other similar happenings that have slightly changed the geometry of the arch in defined spots.

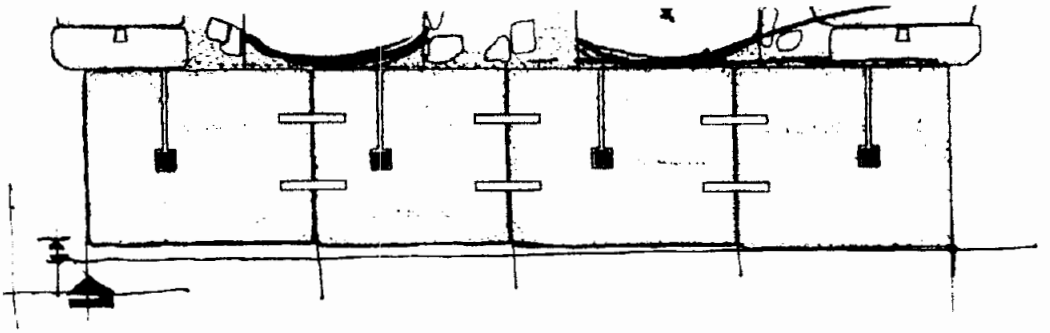


fig.3 - variation of height of a single row in the bridge thickness

7.5.4 DIFFERENT RAISING OF THE ROWS

During the bridge construction, one of the parameter that was more difficult to be monitored was the raising of the rows. Arch rows of voussoir have been assembled in a way that they do not lie perfectly horizontal and parallel one to each other, and by the time that we get on top (key stone level) this imperfection increases progressively mostly on one side.

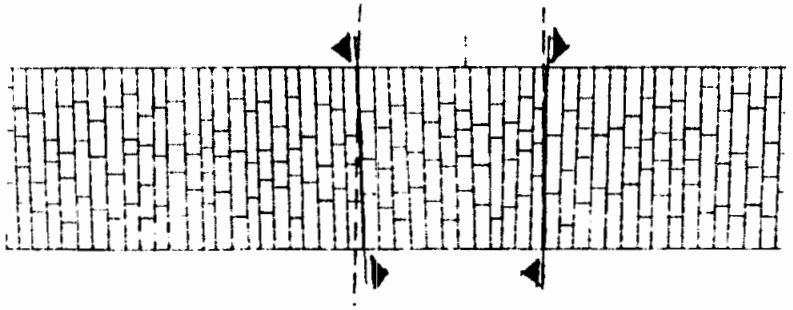


fig.4 - different raising of the arch voussoirs rows on north and south elevation (plan view of the arch extrados)

This irregularity of the rows may be caused by the fact that during the assembling procedure was not so easy for a worker, standing over the centering, to gather the correct progression at the same level either form north and south side. Another explanation of this could have been that this irregularity easily increases by the time it is repeated due to ordinary construction inaccuracies of stone sizes (see chapter about hypothesis on the original construction method). The range of this anomaly is the widest: cm 1-19 on about cm 395 of thickness.

7.5.5 SIZE AND ROTATION OF FRONT FACE

Undoubtedly one of the most interesting findings of the geometrical observations has been the fact that this kind of irregularity, (size of front face variation), is extremely low compared to the others and we can say that voussoirs belonging to the same row were almost of the same intrados dimension from north to south and in the bridge thickness: the gradual shift is in a range of only cm 1-3.5 on about cm 395 of thickness, there are only a few cases around the key stone in which exceptionally cm 11 are reached.

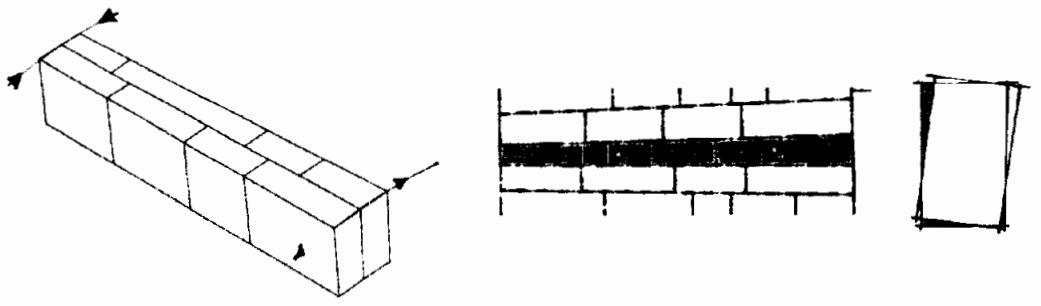


fig.5 - intrados size variation in a single row in the bridge thickness and front face rotation

All the above reveals interesting notes about the construction technique used at the time: it is most likely in fact that one of the construction rule that was followed during the load bearing arch assembling was to choose for each row similar voussoir of same intrados length; so even if adjacent rows could be different due to the natural availability of tenelija each row was almost constant in its transversal thickness even if affected to a different raising (as explained in previous paragraph). And it is only because of the raising anomaly that at the key stone they were compelled to shape the last three rows gradually with a strong size variation (until cm 11 in only one row) in order to recover the raising inaccuracy and to close correctly the archivolt (see for more details chapter about hypothesis on the original construction method). In the next paragraphs it will be explained how all these observations will influence the SC-final and the SC-adjusting procedures.
Rotation of front face is also very low, but this irregularity is much more difficult to be managed during the stone cut procedure and assembling, and even small values may lead to very high incoherence. Rotation of front faces in the thickness of the bridge archivolt is mostly a matter related to the intrados surface (extrados had more construction imperfections and was not even smoothed), this is why rotation is analysed in the following paragraph as a deviation from the row plan.

7.5.6 DEVIATION FROM ROW PLAN

The geometrical analysis held on the ancient surveys (see related paragraphs) was mostly aimed at finding all the co-ordinates of the connections joints of the arch curves on both north and south elevations. Once the results of this inquiry have been related in 3d co-ordinates each intrados row was delimited by four points: two of a voussoir of north elevation, and the other two of the homologous voussoir belonging to the south elevation. But from geometrical rules we know that one plan is defined by three different points in the space, and four points may be not lie together on the same plan. So the model of the archivolt had to be worked out facing this irregularity mostly for what concern the intrados surface. Numerically it has been monitored for each intrados row plan how far it was the fourth point from a plan that was perfectly matching three of the four points. This anomaly has been defined as "deviation from row plan" and represents the non planarity of every single intrados row, the range found is from cm 0 to cm 3.5 out of cm 395 of thickness, luckily in most of the cases this anomaly is lower than cm 1. And even if this type of monitoring gives the error to one point only, we should not forget that even small values of this parameter may lead to a rotation of the stone face that if not managed and planned will cause a very bad matching of adjacent rows.

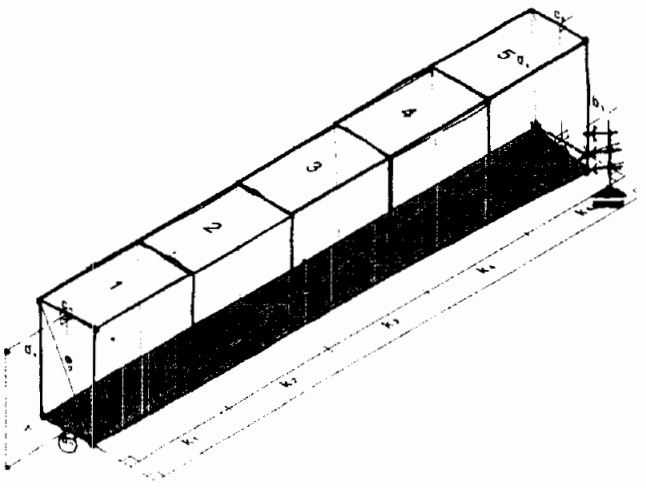


fig.6 - deviation from intrados row plan (equal to rotation of front faces)

7.6 ROUGH STONE CUT - (SC-ROUGH)

After the quarry of blocks (QY-blocks) an intermediate cut is required in order to have smaller blocks: the closest as possible to the final ones. This cut is here next called "rough stone cut" (SC-rough) as before defined. As already pointed out, in the warnings of this chapter, it has been agreed with PCU TA that a minimum tolerance of cm 3 was required in order to have a margin, large enough, to perform the final stone cut (SC-final) and the possibility of adjusting and finishing the surfaces (SF-adjusting).
It has to be pointed out clearly that the quarrying tolerance (qt) has to be considered as an additional quantity to be added for each side of a length, which means that globally the examined length will get six centimetres longer than its final size once the stone cut (SC-final) has been performed.

Nevertheless, after a preliminary check, it was clear that, as far as the arch stones (SMS-A) were concerned, it wouldn't have been possible to work out the rough stones dimensions just by adding the quarrying tolerance to the final measures of the stone faces and thickness. this mainly for two reasons:
1. Rough stone cut is meant to be an easy cut in parallelepiped blocks with no irregularities and variations which are proper of the stone final cut.
2. Irregularities of height and raising in the rows actually require wider rough block dimensions in order to contained wholly final blocks with the predefined quarrying tolerance.
Of course all the above is referred to the arch stones (SMS-A) and not to the bridge elements (SMS-B), where geometry is much easier and not linked to the vault shape.

Figure n°7 of current page may give an easier explanation of the above mentioned peculiarity: section **A** of fig. 7 represents: plan view (bottom) and front view (top) of a block (coloured in grey) in its final shape (after SC-final) which has got a perfectly regular shape. In this hypothetical case no problem arise to determine the shape of the block for the rough cut (SC-rough), which is drawn, as an outer profile, of the previous one, respecting the tolerance (qt).

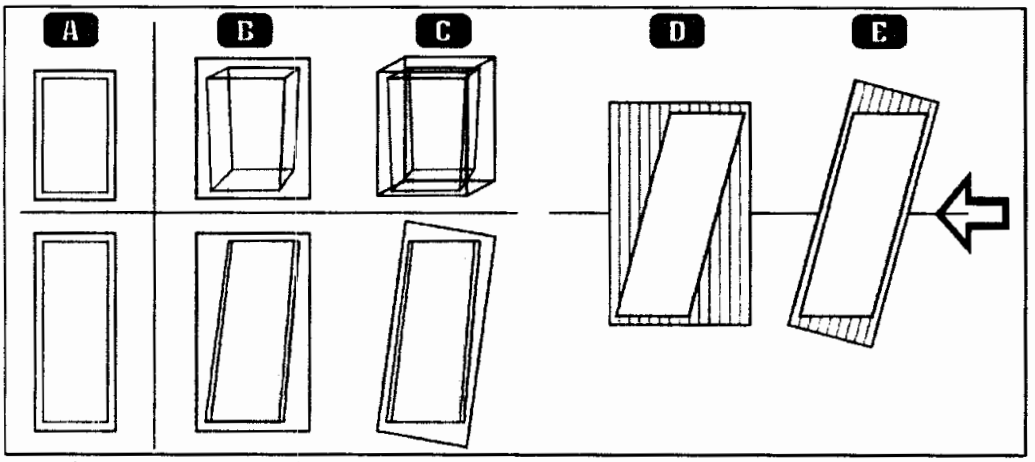


fig.7 - regular and irregular shaped stone compared with the related rough block (SC-rough)

section **B** of fig. 7 represents: plan view (bottom) and front view (top) of a block (coloured in grey) in its final shape (after SC-final) which has got an irregular shape due to different heights and raising of the row. In this case it is clear, from the shape of the profile, that the rough block has to be much wider compared to the dimensions of the final block (coloured in grey).

section **C** of fig. 7 represents: the same of section B but with a different profile of the rough stone block which is oriented in the direction of the average axe of the final block. This way the rough block, being always a parallelepiped may minimise either the use of stone either the stone final cut work (SC-final).
section **D&E** of fig. 7 represents: this two schemes are respectively referred to section B and C and they point out, in an enlarged plan view, the difference of the two approaches in matter of optimisation. Stripes are oriented as the natural bedding of the lime stone and their gradient is compared to the acting forces (arrow on the left). Of course best gradient would be for the one represented in section D (=section B).
Conclusion of all the above notes is that the procedure to work out dimensions of parallelepiped blocks (SC-rough) with the planned tolerance is not short and may be not only based on the final dimensions of the final stones (SC-final).
In other words shape and volume are parameters that are strictly related in this section of the design work, since an irregular shape, which has deviations in all the directions, requires a larger volume, to be contained in it with a planned margin, than a regular shaped parallelepiped (for which it is enough to increase its dimensions of the desired "qt"). Being the irregularities of the arch stones (SMS-A) in a wide range that may reach 10-20 centimetres, it is clear that, even if distributed on three or more stones assembled in the same row, this quantity may get higher than the "qt" with serious consequences and the impossibility of working the final shaped stone out of the rough block.

7.6.1 DESIGN PROCEDURE FOR ROUGH STONE CUT

Design procedure to determine dimensions of the parallelepiped blocks of the stone rough (SC-rough) has been performed following different steps to better evaluate the most desirable choice to adopt.

First all the dimensions of the stone cut (SC-final) of every single row have been examined and compared in order to get the widest ones for the stone faces. For every single block, this way, it has been determined the rectangular face shape by an X and Y measure (maximum found in the row plus two times the quarrying tolerance). Thickness has been examined for every single block depending on stone cut-final measure and by adding two times the quarrying tolerance. All this has brought to a preliminary calculation of the required volume of rough stone blocks even if it wouldn't have been enough to contain all the final blocks (as before explained): this volume was about 190 cubic metres (for SMS-A only).

Subsequently all the co-ordinates of every single point of every single final block have been calculated in order to manage the design by stone and not by rows (approach by rows was not enough anymore for optimisation reasons). This calculation has been performed trough mathematical calculations using as input data either the co-ordinates of north and south faces, either the thickness dimensions of the different block in a row (previously worked out with ancient surveys analysis). Co-ordinates of a point that subdivides a segment with a predefined ratio are here next reported:

$$x_0 = \frac{x_1 + Kx_2}{1+k} \qquad y_0 = \frac{y_1 + Ky_2}{1+k} \qquad z_0 = \frac{z_1 + Kz_2}{1+k}$$

Where x_1,y_1,z_1 are the 3d co-ordinates of a point on the north side, and x_2,y_2,z_2 are the 3d co-ordinates of an homologous point on the south side; k is the thickness of the stone (procedure has to be repeated as many times as the number of arch stones in the examined row and for

every front face point). Co-ordinate has been worked out with calculation because no ancient survey data was available for this purpose. This work has led to more than 10.000 new data.

The following step has been to analyse every single stone by means of co-ordinates: all the co-ordinates were referred to a reference system which was oriented coherently to the bridge elevation. For every stone all the co-ordinates have been considered and it has been assumed the following:

X rough parallelepiped dimension = Xmax-Xmin+2qt;
Y rough parallelepiped dimension = Ymax-Ymin+2qt;
Z rough parallelepiped dimension = Zmax-Zmin+2qt.

The result of this procedure has brought to the scheme represented in fig.7 (sections B&D) of previous page: rough blocks were big enough to contain the final shape of the stones but were not optimised for construction material saving. The difference was so remarkable that the total volume of rough blocks, worked out this way, was +70% wider than the one previously calculated.

Since optimisation of stone was required and methodology of stone cut would have been atypical compared to the ancient methodologies and to any other ever adopted, design of stone cut has been performed following another mathematical and geometrical device for calculation of rough stone block.
The final geometrical approach is the one represented in fig.7 (sections C&E) of previous page: the axe of the SC-rough parallelepiped has been oriented along the average axe of the SC-final block in order to minimise the quantity of wasted stone locating it mostly at the short edges of the block. This calculation has required the use of a purpose built software routine, (see next paragraph), that, trough rotations of a temporary reference system for each stone, has worked out all the required measures in an automatic process.
The above system has given, as total amount of volume for the rough stones, about 202 cubic metres, which is quite an acceptable value being about +7% compared with the first estimation (that was moreover inadequate to cover the whole vault in many cases). Moreover this design system will allow an easier procedure during the other stages of stone cut with following facilities: smaller quantity of stone to be cut for the SC-final (hand cut), more similar methodological procedure to the ancient followed one. The only disadvantage which is foreseen is that stone bedding will have a small gradient compared to the direction of the acting forces (see fig.7 section E); this gradient will depend mostly on the different raising of the rows in the arch and will be present only in the top portions of the vault: it has been evaluated, (after agreement with PCU TA and stone expert), that it is negligible being not so wide and not a risk for the durability and efficiency of the masonry.

7.6.3 CONCLUSIONS ABOUT THE RESULTS OF THE ROUGH STONE CUT

Rough stone cut (SC-rough) has given, as final result, three dimensions for each voussoir that represent a parallelepiped block wide enough to contain the final shape of the designed arch stone with a minimum margin of three centimetres. This way it will be possible to perform rough cut easily with no care for any deviation or imperfections and with the use of mechanical instruments for stone cut. A more accurate work during the design stage has given the possibility of an easier process on site.
The above described procedure was required for what concern all the arch stones (SMS-A), all the other bridge elements (SMS-B) had absolutely no similar difficulties and it was

possible to determine the SC-rough dimensions by choosing the highest dimensions for each stone block and by adding two times (one per side) the quarrying tolerance.

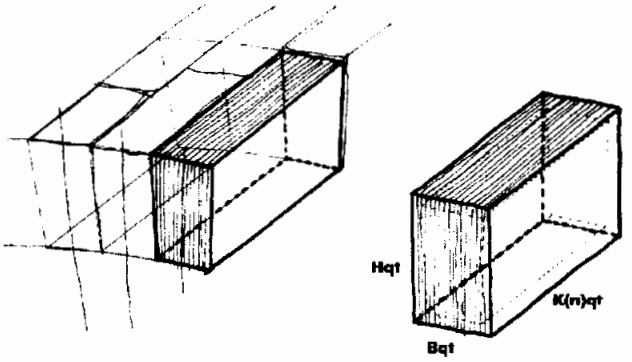


fig.8 – arch voussoir after final cut and related rough cut block with bedding and code dimensions used in final charts

7.10 FINAL STONE CUT - (SC-FINAL)

Final stone cut of the voussoir (SMS-A) is undoubtedly one of the most delicate stage of the bridge reconstruction, and for this reason architectural design has required special care and different evaluations.
Final cut main objective is to cut all the stones blocks (SC-rough) following final shape and size foreseen by design and making sure that each one matches with the adjacent ones. The easiest and most practical way of performing the above task, with little use of measures, is to work the stones on an intrados wooden model of the arch.
Final stone cut is therefore supposed to be performed off site, on a wooden deck, that should have the intrados shaped as the load bearing centering (most likely a regular curvature) and the extrados equal to the former bridge intrados (following design geometrical specifications). This wooden deck may be subdivided in to different sectors and settled over the ground: by performing the final cut over the deck the intrados curvature will be respected with no difficulties and no use of measures. For details about centering and related wooden deck refer to next chapter of this report.

STONE FINAL CUT MAIN WORKING STEPS:

- Once the first sector of the wooden deck is ready and stable on the ground, the rough blocks (SC-rough), following the code numbers, may be moved next to it and subsequently placed on the proper position which is marked on the deck.
- Metal sheets should be prepared and numbered shaped with the front face of the stone voussoir as defined and dimensioned in the stone cut charts.
- First stones to be put on the wooden deck should be, for each row, the ones that are at the outer edges (north and south side).
- Edge voussoir will be settled by the use of wedges and its intrados face will be hand worked and cut coherently with the front face shape (metal sheet).
- With the use of ropes, of the metal front sheets and working over the deck, it will be possible to define the final shape of the whole row and to determine the longitudinal cut of the voussoirs.

- Edge voussoirs will be placed with their axe parallel to the direction of the row (marked on the deck) and, front faces, due to the quarrying tolerance, will be projecting slightly out of the deck outer profile.

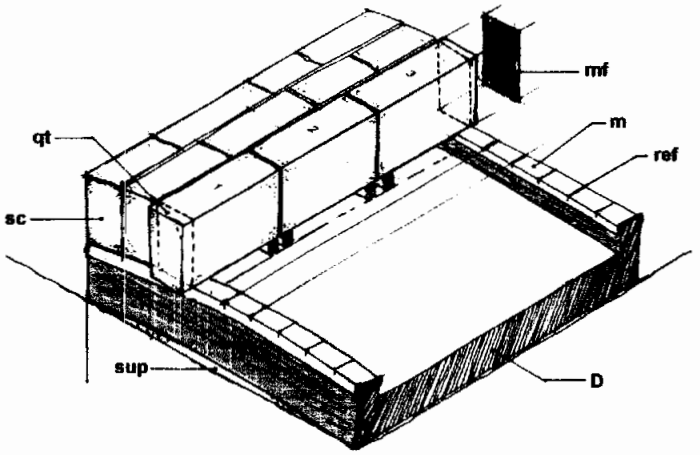


fig.15 – arch stones (voussoirs) during final stone cut off site, placed on a sector of the wooden deck. In the sketch we have following notes: **D**: wooden deck structure - **sup**: sand support for the deck - **sc**: voussoirs that have already been cut and prepared - **qt**: edge portions of the block that should be cut due to quarrying tolerance - **mf**: metal front face reference sheet - **m**: metal protection for wooden edges of the deck following the arch intrados profile - **ref**: reference signs of connection joints among rows as planned in design specifications.

- Once that the two edge voussoirs are correctly positioned and cut, it will be quite simple to do the same job for the voussoir that are inside the row: these will be put, as well, on site by the use of wedges in order to face gradually and with small steps the differences of height among north and south elevation.
- No problem will arise for the stone cut of the extrados, being quite rough even in the former bridge, and moreover a sharp reference dimension will be again given by front face metal sheets.
- By the time that adjacent rows are completed small cut corrections may be performed in order that all the stone sides matches. Among rows thin wedges may be placed in order to simulate the mortar thick.
- Front faces will be hand cut following the direction and the elevation plan.
- All the channels, the carvings, the slots for cramps and dowels foreseen by design, should be performed at this stage; with special care for their mutual position in order that they do not interfere with joints position of different rows. Range dimensions given in final design drawings should be verified and respected.

7.10.1 WARNINGS ABOUT FINAL STONE CUT

MOST IMPORTANT WARNINGS:

Stone final cut measures are reference dimensions, (given for all the rows and all the voussoirs), that define a theoretical volume which does not consider the thickness of joints, (measures are referred to the joint center line), and which has been worked out by linking with straight lines the extreme faces of each row. This means that this volume with all its dimensions will have to be followed as a reference limit and all the geometrical variations between north and south elevation will be performed by small steps of adjacent voussoirs and

not by straight ideal profile which would make the stone cut much more complex and the result quite different from the former bridge.
Even slightly differences (1-2 centimetres), that are reported in stone chart final cut, among opposite faces of a single voussoirs may be managed either with the joint thickness among rows, either by making each voussoir profile constant and with a small step with the adjacent arch stone (which can be performed trough the use of wooden wedges during the assembling procedures, and which was a peculiarity of the former bridge as well).

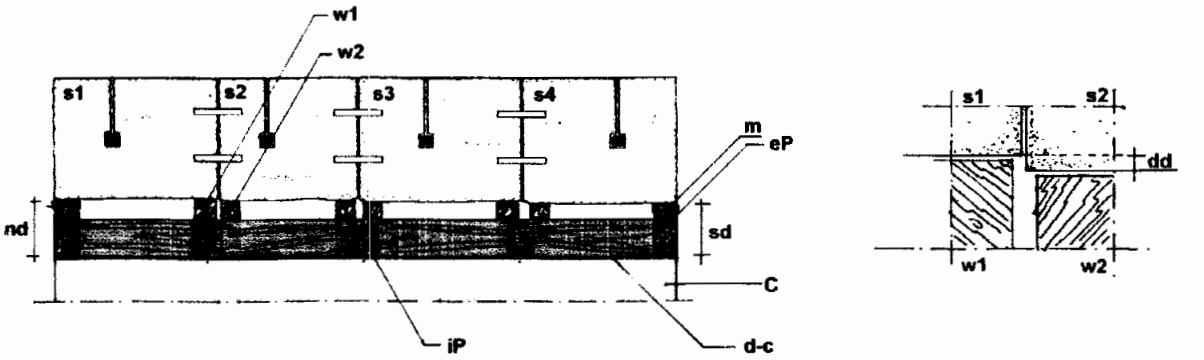


fig.16 – arch stones (voussoirs) during final stone cut off site, placed on a sector of the wooden deck (transversal section). In the sketch a very important warning is underlined: stones should not progressively change their dimensions in their length, but there will be small steps between two adjacent stones of different heights (see also enlarged detail on the right). In the sketch we have the following notes: **s1-s4**: arch adjacent voussoirs in current row - **w1-w2**: two adjacent wedges of different heights to be used to settle correctly the arch stones - **nd-sd**: north and south dimensions of the deck depending on levels of north and south intrados curves of the bridge arch - **iP**: inner stiffening wooden profile - **eP**: external wooden profile of the deck - **m**: metal protection for the edge of the wooden profile - **d-c**: connection joint among deck and steel centering - **C**: future position of the steel centering (regular profile) - **dd**: difference of height among two adjacent arch stone = step dimension.

ADDITIONAL WARNINGS:

- mortar thickness should be simulated by the use of thin wooden elements during the stone-cut, and dimensions of stone charts final design are referred to center line of joints (as if joints were zero);
- stone final cut should be performed by hand cut only;
- slots for dowels should be cleaned carefully after carvings;
- slots for dowels should have a slightly trapezoidal section (larger at the bottom) and should be performed with sharp tools and accuracy. (Detail of trapezoidal section may be not gathered from the final design drawings);
- slots for dowels will be of different sizes depending on the stone side (refer to design drawings);
- channels for lead pouring will be carved only on one side of the voussoir coherently to design drawings;
- All the channels, the carvings, the slots for cramps and dowels foreseen by design, should be performed with special care for their mutual position in order that they do not interfere with joints position of voussoirs of adjacent rows. Range dimensions given in final design drawings should be verified and respected. Position of dowels and cramps is given in design drawings;

- key stone voussoirs will not have channels nor dowels (refer to design drawings);
- each stone voussoir should maintain its tag (sign) with numbering and bedding direction;
- refer for more notes also to assembling specifications given in this report;
- design drawings should be carefully examined before any final cut begins: any doubt and question should be forwarded to General Engineering, any unforeseen problem should be evaluated and examined by works Supervisor and by General Engineering Workgroup.

7.10.2 DIFFERENT APPROACHES TO FINAL STONE CUT

The above described procedure for stone final cut (SC-final) is mainly aimed at avoiding any incoherence between design dimensions and their future use: in other words a different procedure for stone cut may be not suitable with design dimensions given in stone charts and may lead to unforeseen problems and to a bridge with a different geometry from the planned one.
At the same time, it should be pointed out that the wooden deck for the stone cut is here reported and represented as a sketch: it shouldn't become a constraint as it has been proposed, and a purpose design of it is required. During structural and architectural design of the deck, any variation to its shape and functionality is possible and probable but should be approved by work Supervisor and by General Engineering Workgroup.

Any completely different approach to stone cut is not desirable specially if it is not aimed at an accurate control of the geometry. General Engineering will not be responsible of any different procedure and of any variation that has not been agreed; nevertheless General Engineering, since work is quite peculiar and atypical, will be pleased to receive any additional suggestion and observation about the matter and will be available for any changing before works or while works are ongoing.

The philosophical approach to final stone cut has been worked out by General Engineering Workgroup knowing that it was not exactly the same way probably followed in the ancient times. By following the ancient time procedure we would have had as result a quite similar bridge but not equal in geometry to the bridge of Mostar. Respect of geometry is one of the main requisite and objective required for current design by the ICE and by the City of Mostar represented by the PCU.
Of course respect of geometry requires more expertise and accuracy by workers, and this expertise shouldn't be asked to stone workers but to carpenters that are used to make accurate wooden provisional structures (nowadays usually formworks for cast concrete in r.c. structures).
The wooden deck will allow therefore:

- to devolve all measuring work to carpenters
- to mount a regular steel centering with a circular profile
- to cut stones properly off-site with plenty of time and in a comfortable yard
- to follow geometrical design requirements easily
- to check all the joints and all the metal anchoring system before assembling stones

7.10.3 FINAL STONE CUT (SC-FINAL) OF THE BRIDGE ELEMENTS - SMS-B

Stone final cut of all the bridge elements (SMS-B) is quite more simple than final cut of the load bearing arch stones (SMS-A) and doesn't need many comments and warnings.
Once all the stones have been prepared, cut (SC-rough), and numbered, the stone final cut may be started following drawings and stone cut charts.
Best moment and place, in which stone final cut may be performed, depends mostly on the decision of the works Supervisor and on the organisation of the yard. It is suggested in this report that, by the time the load bearing arch is under construction (assembling), trough a constant verify of all the measures on site, a final cut may be started next to the yard at least for the lower levels of the spandrels. Small tolerances may be maintained in order that, on the centering, during the assembling, there is still the possibility of managing any ordinary construction inaccuracy trough the joint thickness and trough a quick adjusting and finishing work (SF-adjusting).

MAIN WARNINGS

- each stone should be checked and measures should be verified on site;
- stone final cut are given in the final design stone charts for what concern the parallelepiped shape of each block, any additional cut that makes the block trapezoidal or differently shaped is documented in stone cut (SC) drawings; also for what concern all the other elements like cornices and parapets, drawings and charts should be used together;
- Assembling and final position of all the stones related to the numbering system is represented in stone cut (SC) drawings;
- Thickness of spandrel, cornice and parapet elements have been given by range values being this dimensions unknown and quite variable from the study of the bridge transversal section; detailed notes about the adopted criteria have been provided with description of stone final design charts;
- stones of the spandrels which are close to the load bearing arch (next to lower cornice) will have to be cut with care in order that the angled weak edges do not break;
- not all of the spandrel rows are horizontally assembled: in order to partially reduce angled weak edges, (refer to archaeological study of Mr Bessac), this has to be respected following design drawings;
- parapets are to be considered as sculptures: their final cut should be carefully evaluated and may be performed partially off-site and partially on-site, in order to globally manage the final effect of all the parapets with the direct control of the works Supervisor and with the approval of the ICE;
- the more we proceed to the top of the bridge, the more parapets are leaning slightly outwards: this has to be respected as well during the assembling phase;
- after final cut, any element which is not directly assembled, should have its numbering tag (sign) applied again coherently with its bedding clearly declared;
- refer for more details and specifications to the chapter concerning the assembling techniques in this report.

7.11 STONE FINISHING AND ADJUSTING (SF-ADJUSTING)

Stone finishing and adjusting is actually the final cut refining work which is aimed, during the assembling and immediately afterwards, at matching all the adjacent stones and at working the surfaces in the proper way.
One of the things which, in this report, is not intentionally defined and described is about all the specifications concerning how stone cut should be performed: this mainly for two reasons. The first one is that wider specifications for stone cut will be included by stone experts in bidding documents; the second is that it is not possible to define with the use of words the final result that is to be obtained, not even by the use of pictures or drawings. For the above reasons here next will be given guidelines and suggestions that should be followed in order not to have any final unforeseeable result of the whole stone structure; anything that is here next reported may be valid also for most of the aspects which concern the stone final cut.

Main objective of the SC final and of the SF adjusting is to gathered the same surface, texture and layout of the former bridge in its different portions and areas, trough a careful observation of all the remaining portions of the bridge and of any worked inner joint (which may still have the traces of the tools, used at the time, intact and not eroded).
Specifications by stone experts an by LGA should be followed in order that the right direction is taken and warnings and requirements are respected. But the above is not enough and, following guidelines are given:

- from the beginning of the works, next to the works Supervisor, and to the ICE, two professional expertise should be present while works are ongoing: one must be a stone and sculpture expert (SE) and another one should be an artistic consultant (architect) (AC), chosen with a purpose competition based on previous experiences on ancient façades restoration works;
- company that will win the competition for the bridge reconstruction will have to perform a sort of test by building a small portion of the bridge off-site in a 1:1 scale: stone final cut of the surfaces and finishing will be performed; the above test will be evaluated and analysed by the ICE and will need approval before the company could start works; if the test is not approved company won't be accepted for the works, as already agreed with PCU TA;
- The new professional figures should control works in order to check that finishing works and final stone cut is correctly performed for what concern the final aspect and the following:
  - no machinery should be used for stone cut;
  - the level of polishing of the surfaces should be monitored;
  - the level of intensity of the stone work should be monitored;
  - the level of density of stone work should be monitored;
  - the distribution of the stone work should be monitored;
- The artistic consultant and the stone expert will also evaluate and judge the proceeding of works during other stages like:
  - evaluation of joint thickness
  - spandrel assembling
  - adjusting of cornices and spandrels in crucial turning spots
  - parapets stone cut and assembling (either bridge parapets, either nearby ones);
  - parapets gradient quantification
  - load bearing arch intrados finishing
  - stone angles smoothing (specially on parapets)
  - settling of organic admixture for light patina
  - carvings over the pavement

Other specifications for the above mentioned works will be defined later in this report. Among what it has been mentioned two finishing works should be better underlined and defined:

- The load bearing arch intrados, due to the method of construction, trough the use of wooden wedges (as probably happened for the ancient one), will be characterised by steps and irregularities, some of which may result to much prominent and should be therefore slightly smoothed with a refine finishing works to be supervised by the artistic consultant and by the stone expert.
- Bridge flooring was probably originally built with no carvings on the stone tiles, and (as Mr Bessac has noted), these carvings may have been performed later on: like from 50 to 200 years later, when stone got slippery. In the rehabilitation works of the bridge, these carvings will be performed again as they were, without waiting for the flooring to get slippery: this because the objective of the current work is to rehabilitate the monument as it was right before destruction, (a declared scientific copy of the former bridge), and is not to live again the experience of building a similar bridge with same techniques and same construction materials.

General Engineering will be available at any time for definition and explanation of any single details which has not been fully defined in current paragraph, (due to the mentioned reasons), and which is concerning the stone final cut and the finishing works.

7.12 FINAL DESIGN CHARTS FOR STONE CUT

Stone cut design, either SC-rough, either SC-final, of all the stones have been performed trough the use of charts that have been organised in four different books (for a global amount of 45000 data). These books contain both the dimensions of the stones and all the co-ordinates of the intrados and extrados curves of the bridge arch. Books have been subdivided mainly as follows:

- stone cut - book 01 – SMS-A Stari Most Stones – Arch
- stone cut - book 02 – SMS-A Stari Most Stones – Arch
- stone cut - book 03 – SMS-A Stari Most Stones – Arch
- stone cut - book 04 – SMS-B Stari Most Stones – Bridge

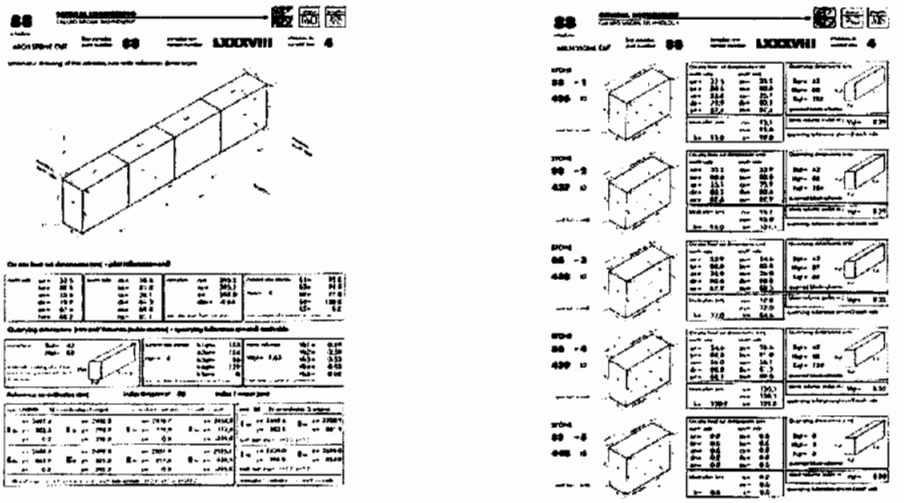


fig.17 – one schedule taken from book 01 and one taken from book 02

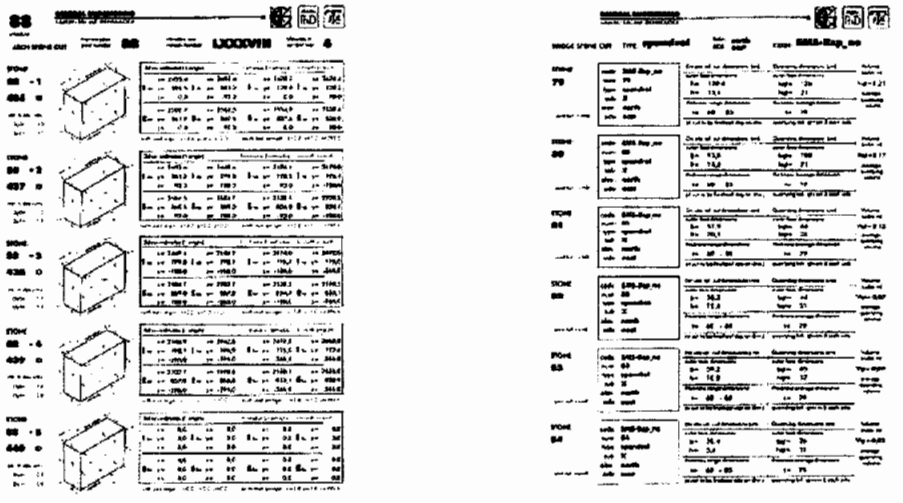


fig.18 – one schedule taken from book 03 and one taken from book 04

STRUCTURAL DESIGN

STRUCTURAL ANALYSIS AND CALCULATIONS

The structural calculations of Stari Most were performed to evaluate the maximum stresses in the structure produced by the design loads and the maximum deflections produced by the loads during the working phases.
The following loads were considered: permanent loads, live loads, thermal loads, accidental loads due to the flood and to the earthquake.
The check of the structure against the earthquake actions was made determining the peak acceleration which produces the collapse of the structure.
In the fisrt part of this report some notes have been taken on the basis of a preliminary and simplified geometry of the bridge, then, in the second part, more accurate investigations have been performed on the "most likely bridge shape".

The thrust line applied to the arch of the Old Bridge of Mostar

The thrust line of an arch is equivalent to the pressure of the infinite number of funicular polygons joining the stresses applied, whose first and last sides are represented by the springer reactions R_a, and R_b.
This polygon is also referred to as polygon of subsequent resultants because one of its generic sides represents the straight line on which the resultant R of all the forces that precede it, including also reaction R_a, acts. The value of R comes instead from the projecting line corresponding to the polygon of forces shown in the figure.

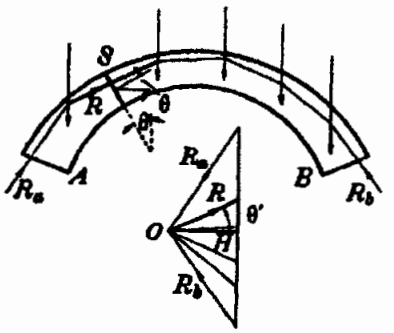


fig. 1 - the thrust line

Thus, the ordinary stress N and the shearing stress T over a section S can be calculated by decomposing the resultant R, referred to S, that follows the ordinary line and the line that runs in parallel with the track of section S. The bending moment originates instead from any of the following expressions:

$$M = R\,d = V\,d_o = H\,d_v,$$

where d, d_o and d_v, respectively indicate the distances of the section of resultant R, of its vertical component V and of its horizontal component H from barycenter G.

The thrust line offers an immediate view of the static conditions of the arch that tends to improve with smaller deviations from the geometrical axis and with the limited bending moments M. If it coincided with the axis, each section would be subjected only to an ordinary stress, because the stress would be uniformly divided along the section and could therefore be equivalent to the safety load.
For this reason, you generally try and reach this result by changing the form of the arch axis or, when it is possible, by changing the thrust line through the distribution of the loads.
The sections appear completely compressed if the thrust line is within the strip defined by the core points of all the sections (third medium points of the rectangular section).
When all the loads are vertical, which occurs frequently, the resultant R of any section S has an horizontal component H that is constant and equivalent to the horizontal component (thrust) of reactions R_a and R_b. In this case, it is easier to calculate value M of a section S using the third expression of those given above, thus taking as reference the horizontal component. Thus, the thrust line of the arch axis, with vertical ordinates, is represented by diagram M less factor H.
On three-hinge arches, the thrust line is statically determined by the fact that the end and intermediate sides pass through the three hinges. On two hinge arches, the ends must pass through the hinges. In the previous examples and on restrained arches with rigid constraints, the thrust line cannot coincide with the arch axis. As stresses M and T would have no effect on all sections, the arch would be deformed due to the ordinary stress that causes a reduction of length of all the infinitesimal trunks ds, theoretically forming the frame. In other words, this would produce a reduction in length of the chord that is incompatible with the rigidity of the restraints.
By managing to apply appropriate stresses independent from loads (for example by appropriately moving the restraints) it is possible to confer an axial characteristic to thrust line of a specific system of loads.
It is evident that the bending thrust line is more significant in presence of higher loads, because the projecting lines of the polygon of forces change direction more rapidly in these points. Thus, with heavy loads on the reins, the thrust line appears as shown in Figure 2-a, while higher loads on the key stone produce a curve equivalent to the one shown in Figure 2-b. If a significant load is concentrated on the key stone, the thrust line is characterised by a cusp in the same point, as shown in Figure 2-c.

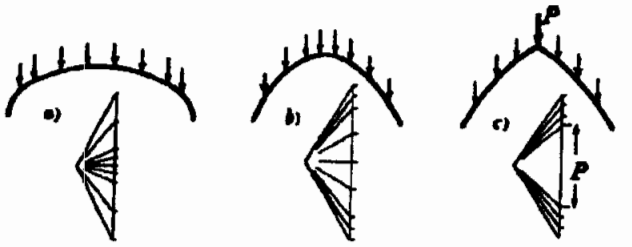


fig. 2 - thrust line shapes due to loads

The main consideration suggested by Heyman's theory, underlines that the loss of stability of an arch or of a vault is never a consequence of the breakage of material due to exceeded

resistance limits, but a result of the geometrical configuration of the structure in relation to the funicular polygon connected to the external loads. This means that from a safety point of view it is not important to know the "true" thrust line. It is sufficient to make sure that the arch thickness contains at least one line. The above consideration can also be supported by Heyman's safe theorem, that states that "the arch is safe, if it possible to find a thrust line for the whole arch, both in balance conditions and with loads applied, provided that is within the thickness of the arch".
Given these premises, it is evident that the problem implies verifying the compliance with this requirement for one of the three infinite funicular polygons connected to the system of loads and acting on an arch restrained by the springing line.
This approach to the problem is the most plausible one, also in consideration of the fact that the following issues were reported for the examined arch:

- the arch is loaded by filling, which determine an unbalanced trend of loads;
- the arch itself has a structural dissimetry. It is sufficient to think that the arch of a circle with the best interpolation for the left arcade is R = 1438 cm as opposed to R = 1427 for the right arcade;
- these interpolated arches have a higher eccentricity as opposed to the axis line by few tenths of centimetres.

In these conditions it is advisable to view the problem in generic terms as suggested by Heyman's interpretation of the thrust line.
For this purpose we have created several models with finite elements.

F.E. model of the arch

After the preliminary analysis described above, more accurate structural analyses have been performed, starting with the creation of a F.E. model of the arch with the well-known computer-code SAP2000. The obtained results were compared with the ones of the preliminary analysis to check their reliability.
The SAP2000 code allows only for linear elastic calculations of the structures, and consider a material with infinite strengths both in compression and in tension. Therefore, at the end of the analyses, it has been checked that the sections were not partialised.
The arch model consists of "beam" elements that lie along the axis line of the actual arch (this condition is important to attain a reliable evaluation of the funicular polygon).
In the F.E. model the dead loads of the following elements have been applied:

- arch
- spandrels
- stiffening rib
- stone slabs that connect horizontally the stiffening rib and the spandrels
- filling material and threading surface
- parapets

The mechanical characteristics of the material, calculated as approximate values, are:

E= 100000 Kg / cm^2 and ν =0.15.
The trend of the stress resultants attained are illustrated here at the sketch:

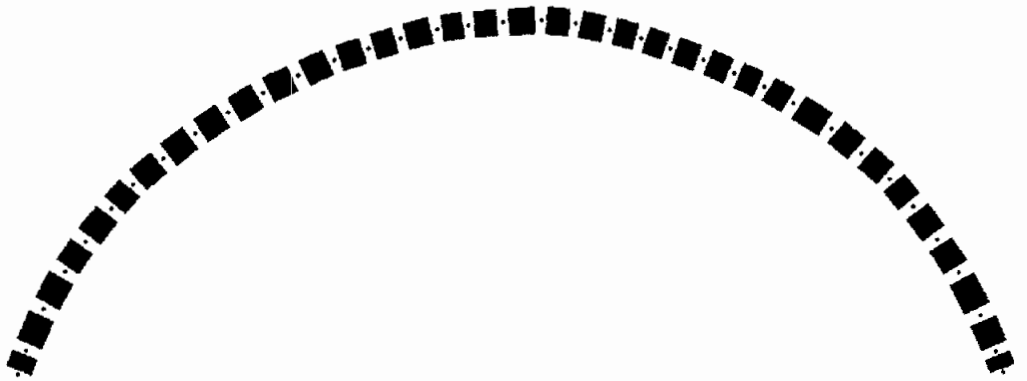


fig. 3 - Undeformed configuration

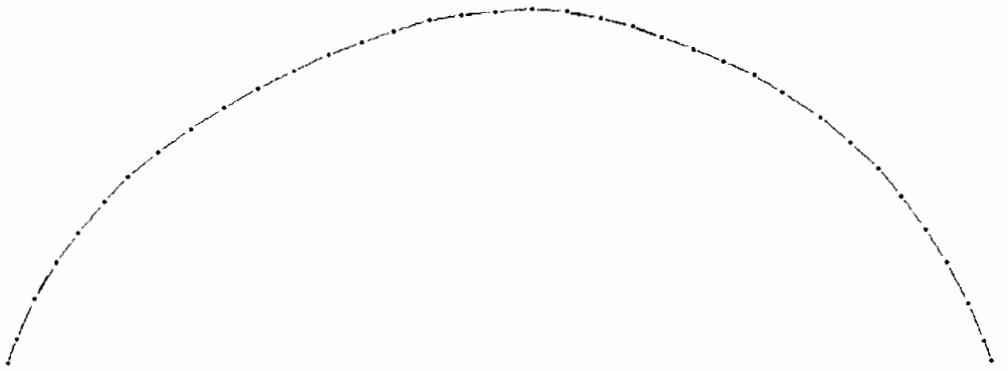


fig. 4 - Deformed Configuration

fig. 5 - Normal forces

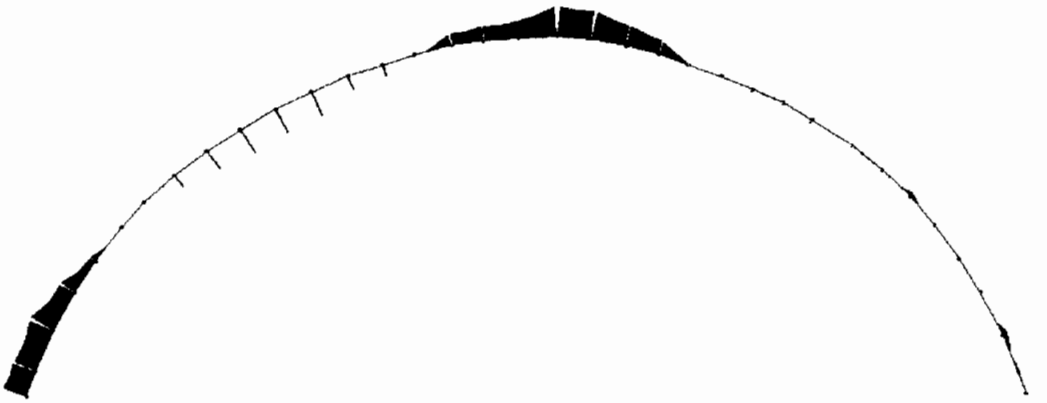


fig. 6 - Bending moments.

In order to evaluate the reliability of the model, we have calculated the trend of the thrust line by dividing the bending moment by the normal force at each section.
The trend of the curve of thrusts is represented (figure 07) in red, the arch is identified by means of continuous black lines, the envelope of the third medium lines by dotted black lines. Finally, the axis is identified by means of a black hatched and dotted line.

It is useful to observe that the trend of the curve is limited within the third medium line. The axial thrust value is out of tolerance only in the area that corresponds to the central inertia core of the areas shown. The keystone section is the one that suffers the higher traction stress, with an eccentricity of the load from the axis line of 22.2 cm, that can be calculated with the following formula:

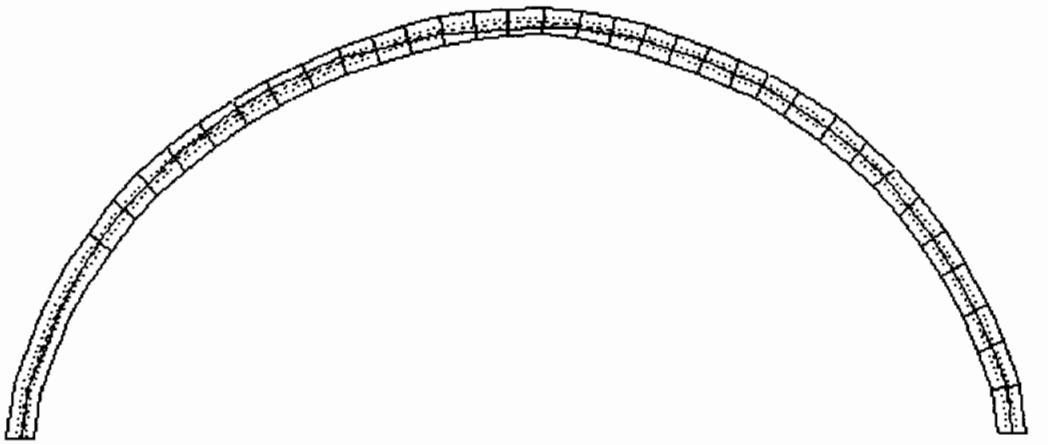


fig. 7 - Thrust line
$\sigma_t = 2\ N / (3\ u\ b) = 19.93\ kg/cm^2$,
where

- N is the axial thrust equivalent to N = 191945 kg,
- M_f is the bending thrust equivalent to M_f = 4287994 kgcm,
- b is the base of the section equivalent to b = 400 cm,
- u is the distance of N from the edge equivalent to h = 16.05 cm.
- If we assume the section to be not partialised, then the stresses are:
- $\sigma_t = N / (b\ h) + (6\ M_f) / (b\ h^2) = 4.7\ kg/cm^2$ (both in compression and in tension)

that is the stresses are higher than the traction limit of the masonry.
As in the past the former bridge did not exhibit stability problems and diffused cracking patterns, these stresses could not be present in the arch, which means that the actual bearing structure was formed by the arch and the overlying spandrels and slab.
Moreover, these results highlight the deviation of the funicular polygon on the left side from the arch axis as opposed to the opposite arcade. The above considerations are confirmed by the stretching of the curved axis of the left arch.

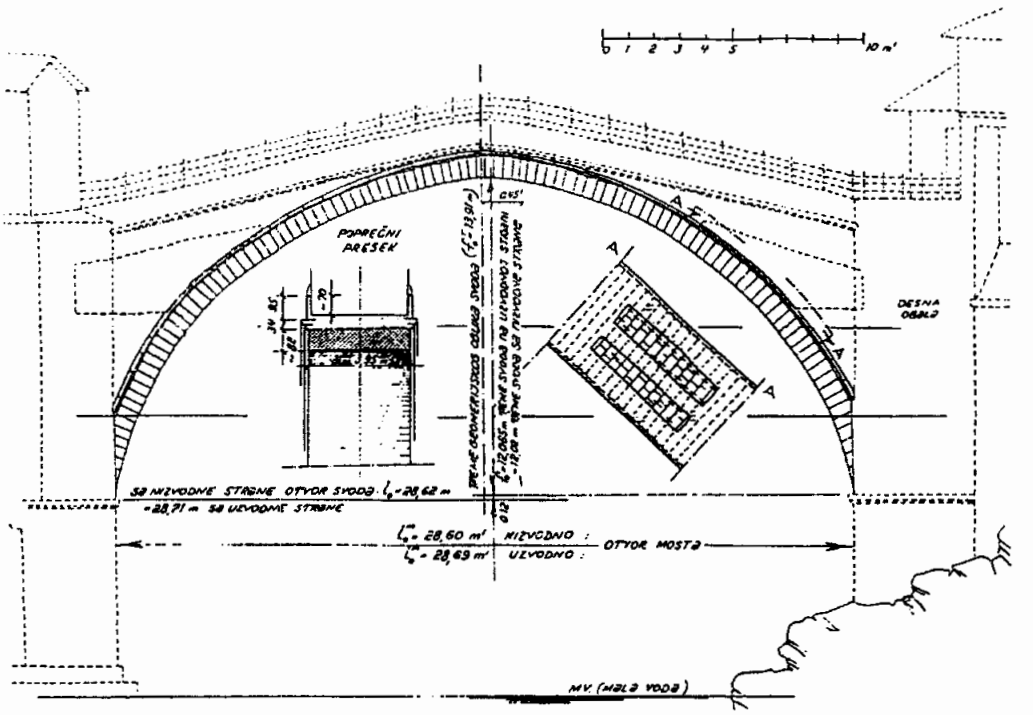


fig. 8 - Section of arch. Notice the collapse of the abutment

On the basis of the above results, a refined F.E. model was created.

F.E. model of the whole bridge

In the second stage the Ansys calculation code was adopted. This programme enables to perform non-linear analyses of the structure. The F.E. model has been created with the available data.

I. Modelling of non-linear material behaviour:
The brittle behaviour of masonry has been modelled through an appropriate failure criterion, here defined by means of only two material parameters f_t (uniaxial tensile strength) and f_c (uniaxial compressive strength); cross section of the assumed failure surface will be defined with a cyclic symmetry about each 120° sector of the deviatoric plane. Both cracking and crushing failure modes have been accounted for. The presence of a crack at an integration point has been represented through modification of the stress-strain relations by introducing a plane of weakness in a direction normal to the crack face. Also, a shear transfer coefficient ß has been introduced (depending on the crack status. open -$ß_t$- or re-closed -$ß_c$-), representing a

shear strength reduction factor for those subsequent loads inducing sliding (shear) across the crack face.

II. Rate independent plasticity: Frictional and dilating behaviour of masonry

In order to reduce the number of the parameters employed to represents the non-linear behaviour of masonry; a Drucker-Prager perfectly plastic criterion has been employed in the model, avoiding the need for definition of a hardening rule. In this way cohesion c and angle of internal friction ϕ has been assumed, as the only two material parameters required defining the yield surface. A non-associated flow rule has been adopted for determining the direction of plastic straining, which has been calculated assuming the angle of dilitancy ν instead of the angle of internal friction. The dilitancy (which represents a third material parameter) controls both the volumetric expansion during the plastic straining and its deviation from the associated flow rule, the correct setting of the dilitancy value, moreover, permits to define the relevance of the frictional behaviour of the material, as $\nu = 0°$ signifies a pure frictional behaviour with no volume change during the plastic flow, while $\nu = \phi$ indicates a purely dilating or perfectly plastic material with zero friction and the validity of the flow rule. Several ways are possible in order of representing relationships between ϕ and ν (see f. i. Bishop (1950), Rowe (1962) and Davis (1968)), focusing the major attention on the physical meaning of the parameters, as represented in Fig. A, where the trace of the yield function is depicted in a meridian plane in the τ - σ stress space.

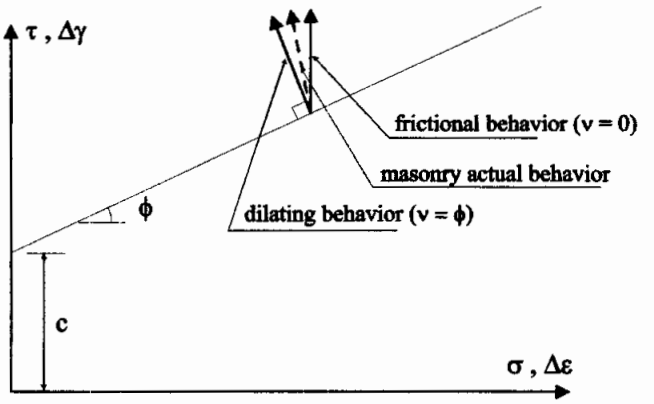


fig. A - Frictional and dilating behaviour: flow rule for masonry material

III. Failure surface

The failure criterion has been adopted (William and Warnke (1975)), initially defined for concrete, accounts for both cracking and crushing failure modes trough a smeared model. Despite the need for five constants in order to define the criterion, in most practical cases (thereby when the hydrostatic stress is limited by $\sqrt{3}\, f_c$,) the adopted failure surface has been specified by means of the only two constants: f_t and f_c (respectively the uniaxial tensile and compressive strength). The failure surface that has been adopted is depicted in Fig. B.

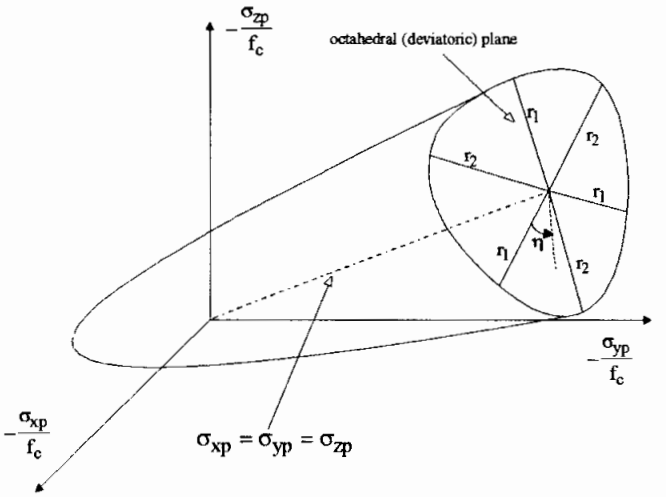


fig. B - Failure surface

IV. References

ANSYS (1993) Revision 5.0A, Swanson Analysis System, Inc., Houston.

Bishop, AW, (1950) Discussion on measurement of the shear strength of soils. Geotechnique, Vol. 2, No. 1, pp. 113 -116.

Davis, E.H., (1968) Theories of plasticity and the failure of soil masses, in I.K. Lee (Editor), Soil mechanics: selected topics. Butterworth, London, pp. 341-380.

Rowe, P.W., (1962) The stress-dilitancy relation for static equilibrium of an assembly of particles in contact. Proc. R. Soc. London, Ser. A, 269, pp. 500-527.

William, K.J., Warnke, E.D., (1975) Constitutive model for the triaxial behaviour of concrete , Proc. Int. Ass. for Bridge and Struct. Engng., Vol. 19, ISMES, Bergamo, pp. 174-186.

First a linear analysis was performed, obtaining a thrust line similar to the one found before in the F.E. model of the arch alone, but less eccentric.

The tensile stresses were very limited because the solid modelling allowed for taking into account also the contribution of the other elements (spandrels, slab) to the bearing mechanism. The solid model provided a better description of the stress patterns within each section than the beam model. A non-symmetrical stress pattern has been obtained, which confirms that the bridge has acquired a non symmetrical configuration due to the settlements of its foundations and the settlement of the centering.

The linear analyses were performed taking into account a maximum tensile stress of 0,5 kg/cm^2 in the masonry. This means that in the regions were the tensile stresses were over this limit, the finite elements were separated to simulate the formation of cracks. With this operation the linear analyses performed allow for taking into account, with a good approximation, the non-linear behaviour of the masonry.

The analyses under the permanent loads, the live loads and the thermal actions were performed in the linear field, but the model connectivity was modified according to the stress pattern present in the model: in the regions where the stresses were higher than the prefixed limit of 0,5 kg/cm^2 the elements were disconnected or the external restraints were removed.

Therefore, for each load combinations, different mesh disconnections and restraint conditions were defined.
On the contrary non-linear analyses were performed under the flood loads and the earthquake actions.
For these analyses a different F.E. model was created, reducing the elements of the abutments and increasing the limit traction to improve the convergence of the non-linear analyses. The results obtained show that the maximum tensile stresses do not concern the main arch.

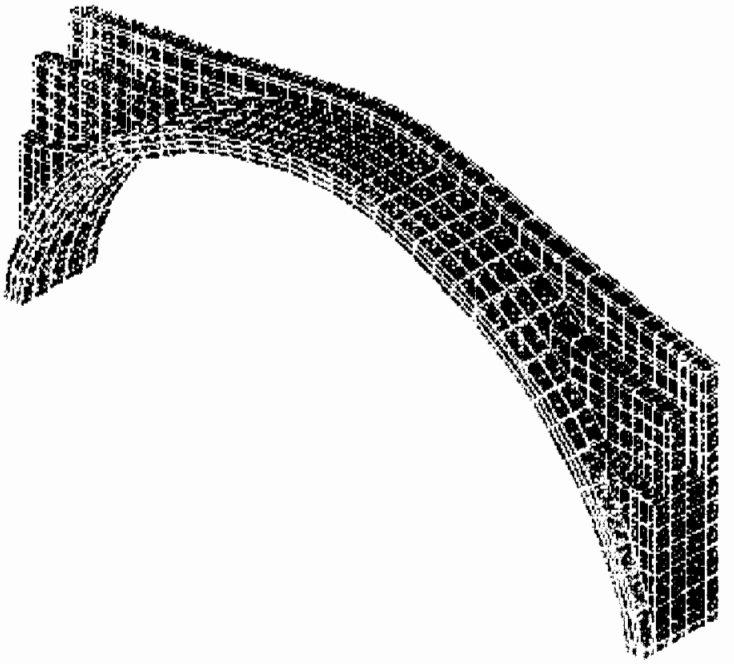


fig. 9 - Finite elements calculation: "open" model of the bridge

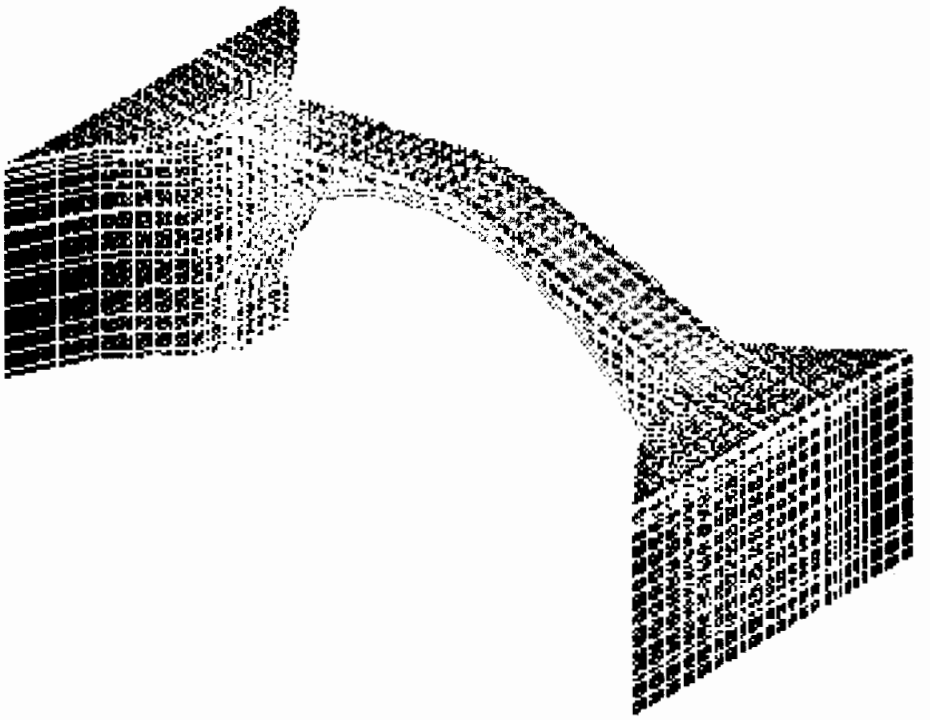


fig. 10 - Finite elements calculation: global model (abutments included)

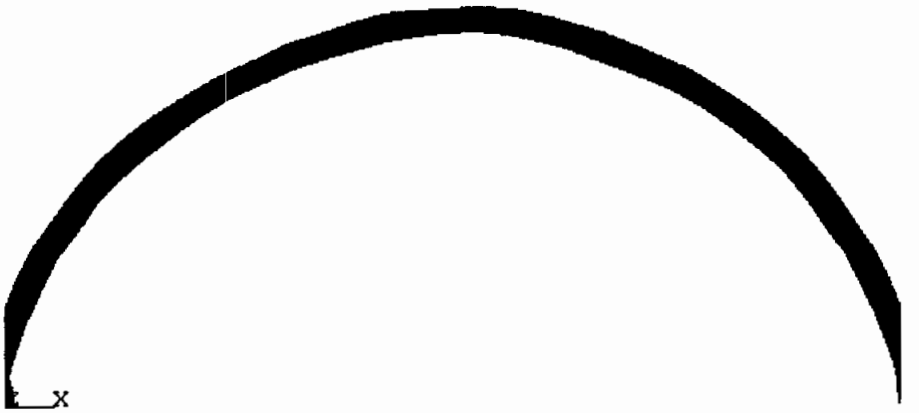


fig. 11 – Undeformed configuration of the arch (extracted from the F.E. of the whole bridge)

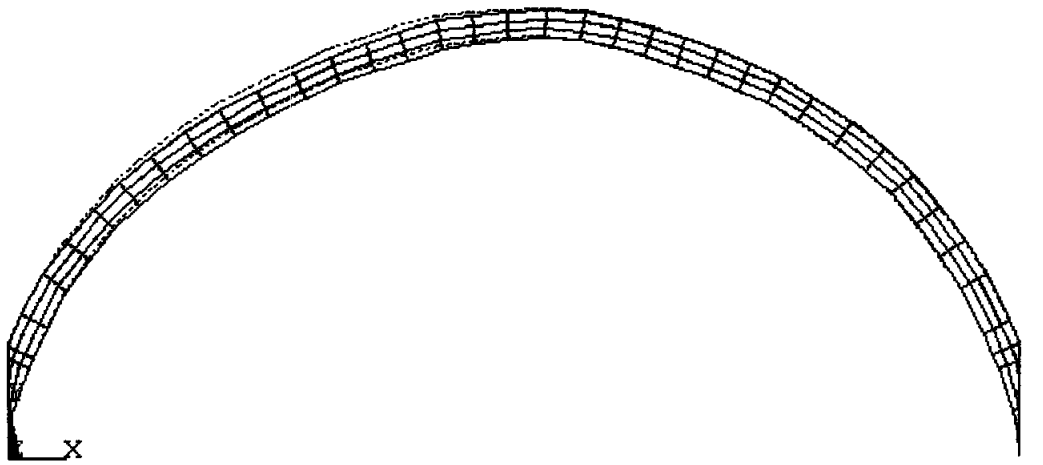


fig. 12 - Deformed configuration of the arch (extracted from the F.E. of the whole bridge)

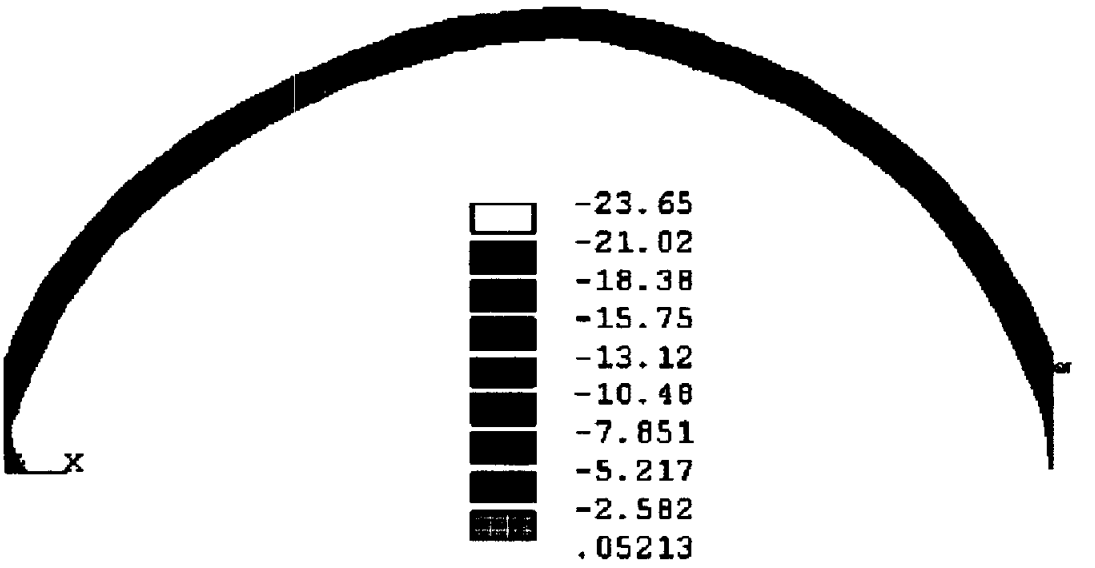


fig. 13 -Pattern of the main compressive stresses of the arch (extracted from the F.E. of the whole bridge)

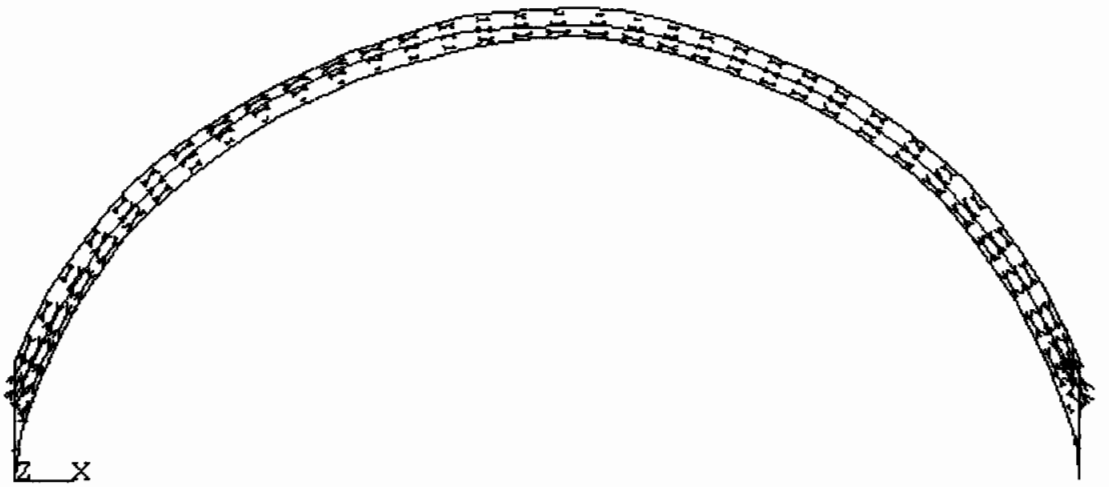


fig. 14 - Thrust line in the arch (extracted from the F.E. of the whole bridge)

Load conditions and combinations

The load conditions and combinations were defined according to Eurocode 1, in particular to Part 3 (ENV 1991-3: 1994) which refers to the definition of the pedestrian, cycle action and other actions specifically for footbridges. Eurocode 8 was referred to for the definition of the earthquake actions.

In Eurocode 1 footbridges are categorised as:

1. those on which pedestrian – and cycle traffic is not protected, or not fully protected, from all types of bad weather, and
2. those on which traffic is fully protected

Stari Most is of the first category.

For footbridges, wind and thermal actions are not taken into account as simultaneous.
For the first category of footbridges (like Stari Most), the traffic is considered incompatible with significant wind and/or snow.

Load combinations

PARTIAL FACTORS, TABLE C.1 ENV 1991-3: 1994

	SYMBOL	P/T	A
permanent actions	□g	1,35	1,00
traffic loads	□q	1,35	1,00
other variable actions (snow, wind, temperature effect)	□q	1,5	1,00
accidental actions	□a	---	1,00

ψ FACTORS FOR FOOTBRIDGES

	ψ_0	ψ_1'	ψ_1	ψ_2
traffic loads	0,40	0,80	0,40	0
wind	0	0,6	0,5	0
temperature effect	0	0,8	0,6	0,5

NB: ψ_1' to define infrequent loads

The following load combinations were defined, for the ultimate limit states.

PERSISTENT / TRANSIENT DESIGN SITUATIONS

$$\sum_{j\geq 1}\gamma_{Gj}G_{kj} + \gamma_{Q1}Q_{k1} + \sum_{i>1}\gamma_{Qi}\psi_{0i}Q_{ki}$$

PERMANENT LOADS	TRAFFIC LOADS (*)	SNOW	WIND	THERMAL EFFECT
1,35	**1,35**	incompatible	0 x 1,5 = **0**	0 x 1,5 = **0**
1,35	0,40 x 1,35 = **0,54**	incompatible	**1,5**	0 x 1,5 = **0**
1,35	0,40 x 1,35 = **0,54**	incompatible	0 x 1,5 = **0**	**1,5**

(*) to be considered on the entire bridge and on half the bridge

ACCIDENTAL DESIGN SITUATIONS

$$\sum_{j\geq 1}\gamma_{GAj}G_{kj} + A_d + \psi_{11}Q_{k1} + \sum_{i\geq 1}\psi_{2i}Q_{ki}$$

PERMANENT LOADS	FLOOD	TRAFFIC LOADS	WIND	TEMPERATURE EFFECT
1,35	**1,0**	**0,40**	**0**	**0,5**
1,35	**1,0**	**0**	**0,5**	**0,5**
1,35	**1,0**	**0**	**0**	**0,6**

(wind and thermal loads have not to be simultaneous)

SEISMIC DESIGN SITUATION

$$\sum_{j\geq 1}G_{kj} + \gamma_I A_{Ed} + \sum_{i\geq 1}\psi_{2i}Q_{ki}$$

PERMANENT LOADS	EARTHQUAKE	TRAFFIC LOADS	WIND	TEMPERATURE EFFECT
1,00	γ_I	**0**	**0**	**0,5**

The load combinations with the wind loads were not taken into account, as the bridge was checked against the accidental loads due to the flood and the earthquake, which are more onerous.

Load conditions

The following load conditions were considered:

a. dead and permanent loads
b. live load uniformly distributed over the whole bridge
c. live load uniformly distributed over half the bridge
d. uniform thermal load +15 °C
e. uniform thermal load -15 °C
f. flood load
g. earthquake load

a - Dead and permanent loads

The dead weight adopted for the masonry of the various structural elements are listed in the following table.

		type of stone used in the old bridge	quality	γ KG/ MC
1	Load-bearing arch	Tenelija Cvrsta	Excellent	2200
2	Filling wedge	Tenelija Mekša	Ordinary	2000
3	stiffening ribs	Tenelija Mekša	Ordinary	2000
4	spandrels	Tenelija Mekša	Good	2100
5	Additional masonry layer	Tenelija Mekša	Inferior	1800
6	Horiz. stone slabs	Krecnjak	Good	2100
7	Parapet	Tenelija Mekša	Good*	2100
8	Filling material	Variable	Scarce**	1600
9	abutments	Tenelija Mekša	Good	2100

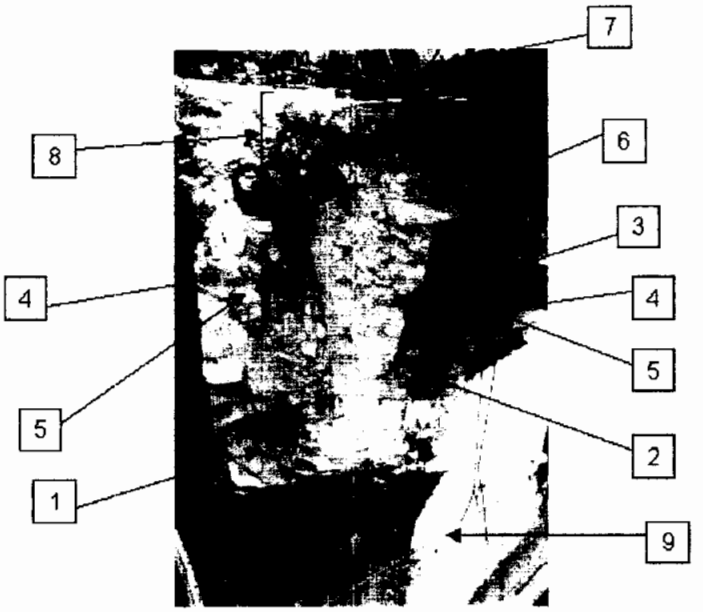


fig. 15 - Ruins of the bridge arch: location of the main elements

b – Live load uniformly distributed over the bridge

A uniformly distributed load of 5 kN / m^2 was put on the whole bridge. EC1 allows for a reduction of this load for L > 10 m, but in safety no reduction was applied even if the bridge span is about 30 m.

c - Live load uniformly distributed over half the bridge

A uniformly distributed load of 5 kN / m^2 was put on half the bridge.

d – Thermal loads (+ 15 °C)

A uniform thermal load variation of +15 °C was applied to the whole structure.

e - Thermal loads (- 15 °C)

A uniform thermal load variation of -15 °C was applied to the whole structure.

f – Flood (2500 m^3 / s)

The actions due to the flood have been analysed assuming a discharge between 1500 m^3/sec and 2500 m^3/sec, with step of 250 m^3/sec.

The discharge of 2500 m^3/sec is the maximum allowed between the abutments of the arch; the line of the specific loads is tangent to the crown of the bridge itself.

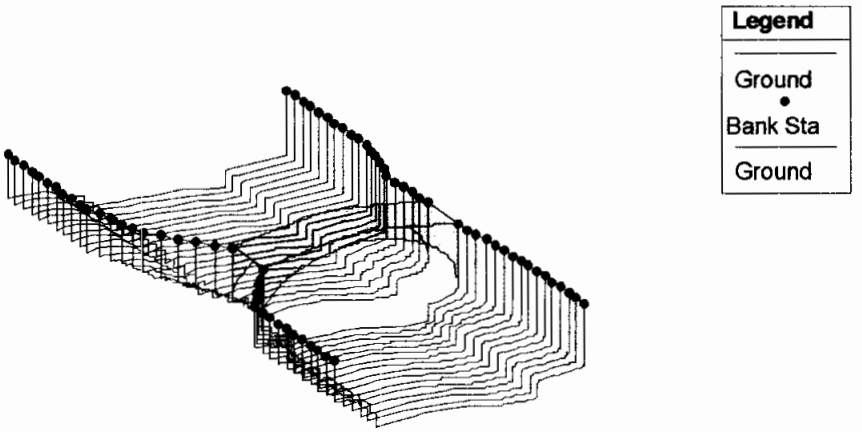


fig. 16 - Assonometric view of the hydraulic sections used in the calculations

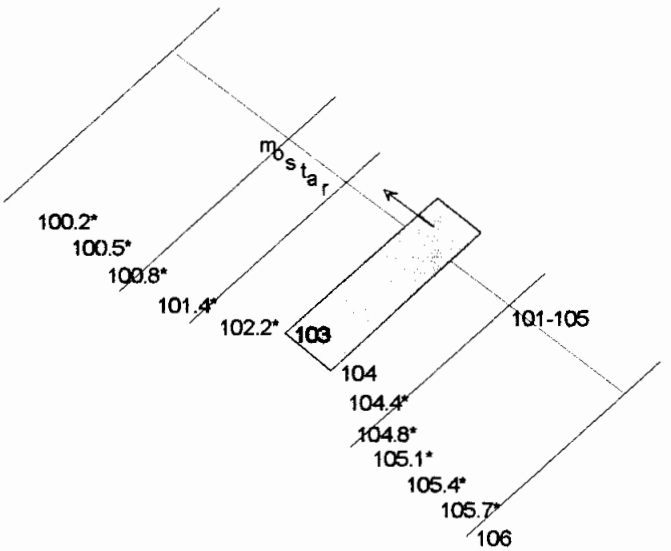


fig. 17 - Plan view of the hydraulic sections used in the calculations

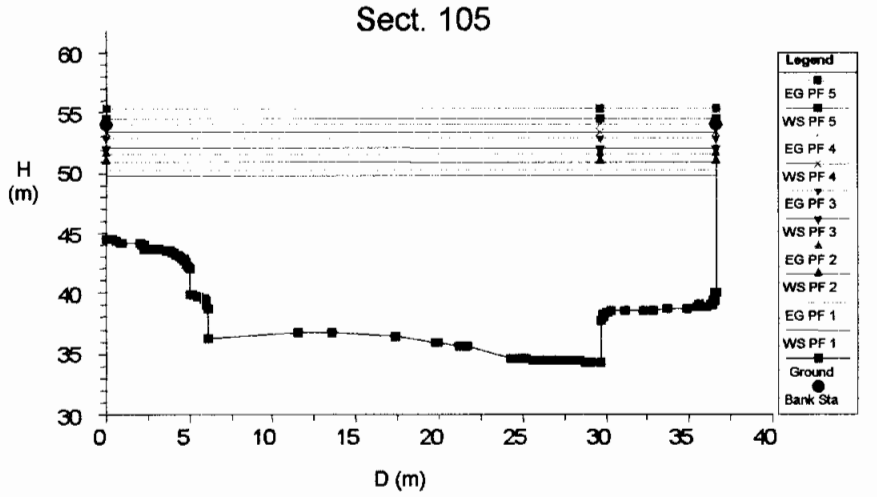
The hydraulic sections were obtained starting from the five available sections (101, 102, 103, 104, 105, in black). The deck of the bridge is included between the sections 103 and 104, while the abutments lay between the sections 102 and 105.
The bed profile of the river was drawn, allowing for the evaluation of the mean slope.
The flow is slow, the motion in the section no. 101 is assumed as uniform with a mean slope of the riverbed $i_f = 8.5 * 10^{-5}$.
A Manning coefficient of roughness n=0.03 $s/m^{1/3}$ has been used, being the riverbed characterised by gravel and cobbles.
The following figures show the results of the performed simulations, with the following list of the symbols used:

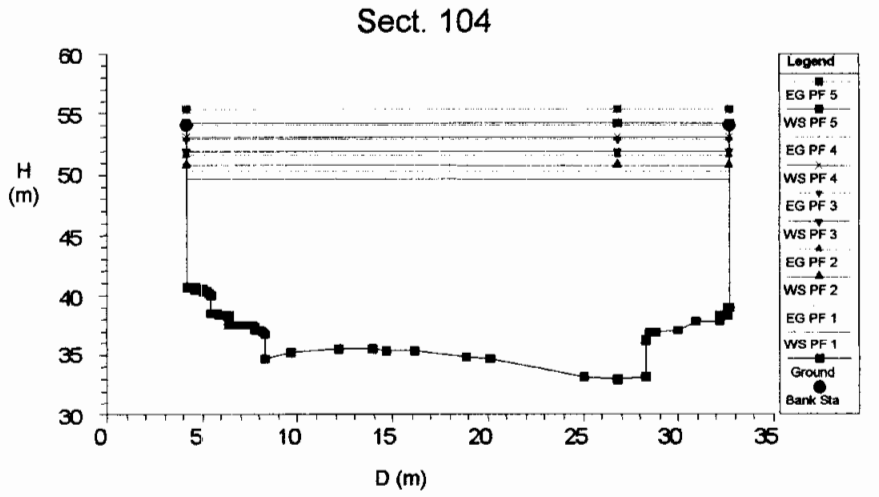
- the discharges associated to the profiles are indicated as:

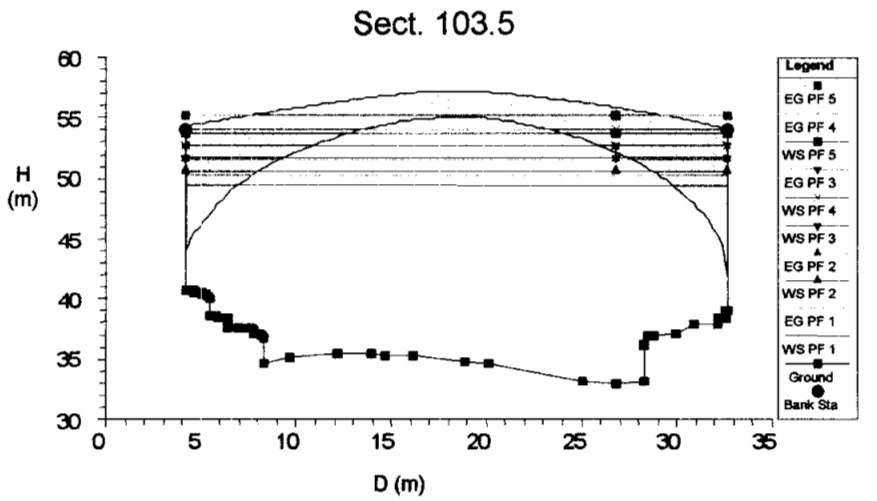
Profile	PF1	PF2	PF3	PF4	PF5

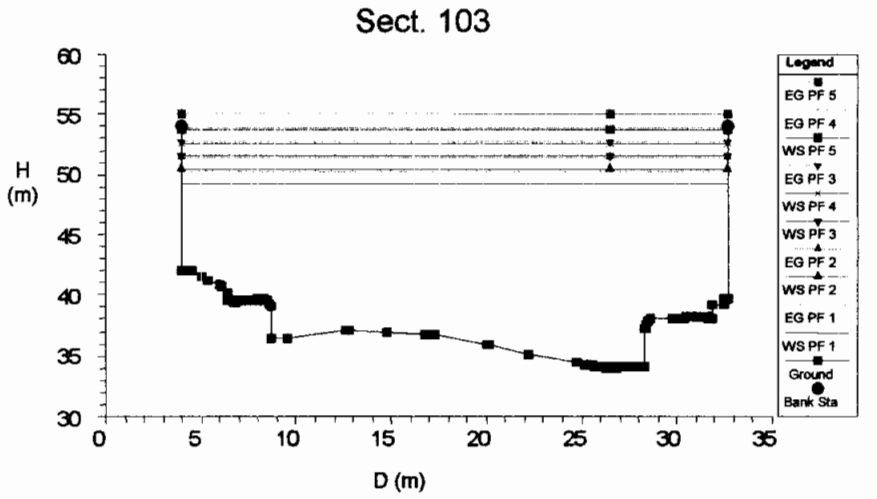
Q (m3/s)	1500	1750	2000	2250	2500

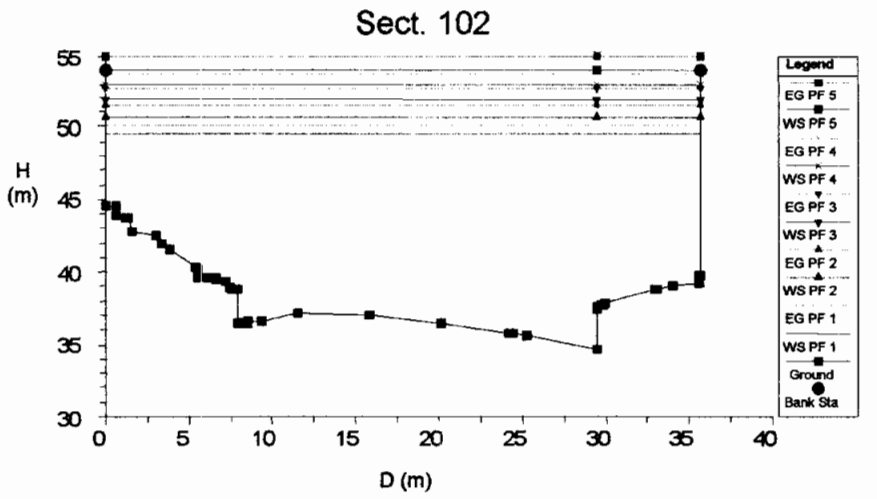
- the water surface level WS corresponds to the blue line,
- the specific energy EG is represented in green,
- the talweg profile is in black and the red circles indicate the maximum height of the lateral banks,
- D, H represent the coordinate system, measured from the mean sea level and from the first left point of each cross section, respectively.

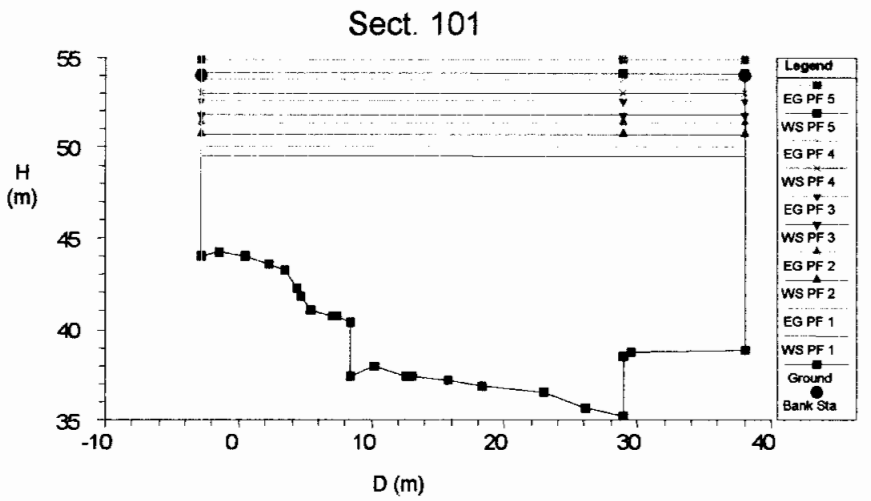





Sect. 103.5
H (m)
D (m)
Legend
EG PF 5
EG PF 4
WS PF 5
EG PF 3
WS PF 4
WS PF 3
EG PF 2
WS PF 2
EG PF 1
WS PF 1
Ground
Bank Sta

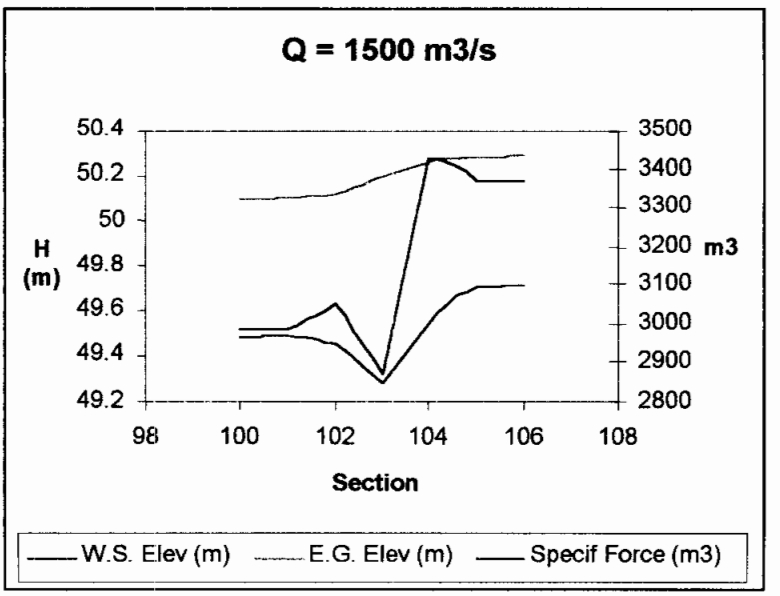

Sect. 103
H (m)
D (m)
Legend
EG PF 5
EG PF 4
WS PF 5
EG PF 3
WS PF 4
WS PF 3
EG PF 2
WS PF 2
EG PF 1
WS PF 1
Ground
Bank Sta

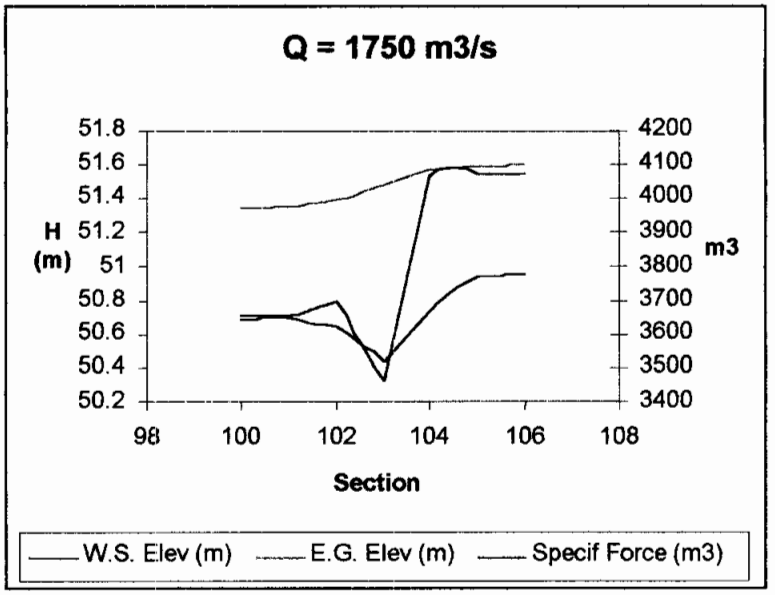

Sect. 102
H (m)
D (m)
Legend
EG PF 5
WS PF 5
EG PF 4
WS PF 4
EG PF 3
WS PF 3
EG PF 2
WS PF 2
EG PF 1
WS PF 1
Ground
Bank Sta

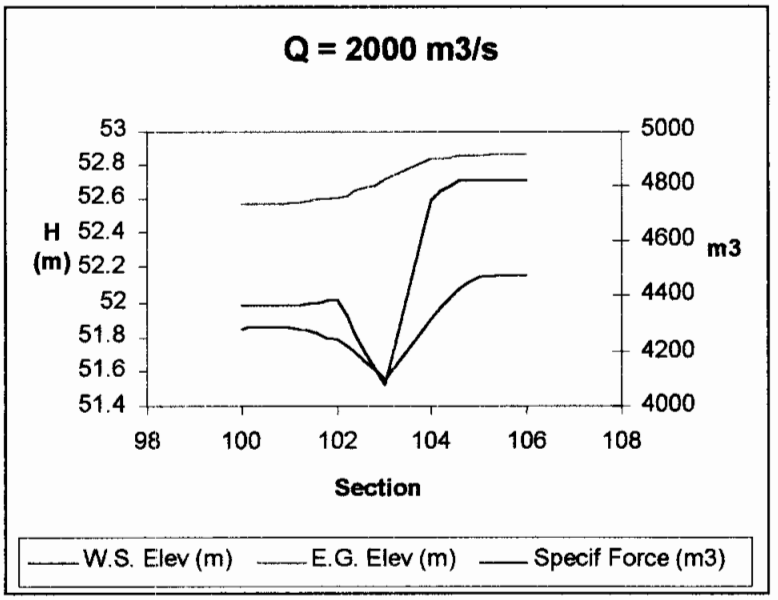


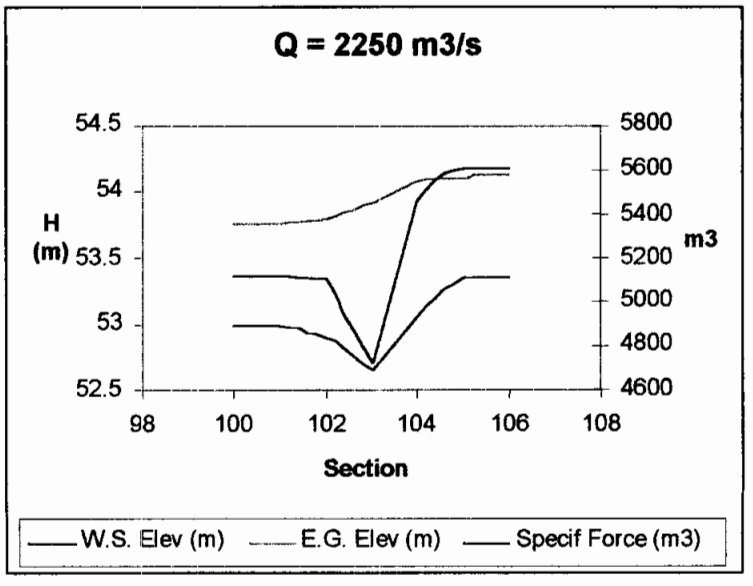
The following figures show the result as the rate of the discharge varies. The profiles are also reported in correspondence of the same values of the discharge.

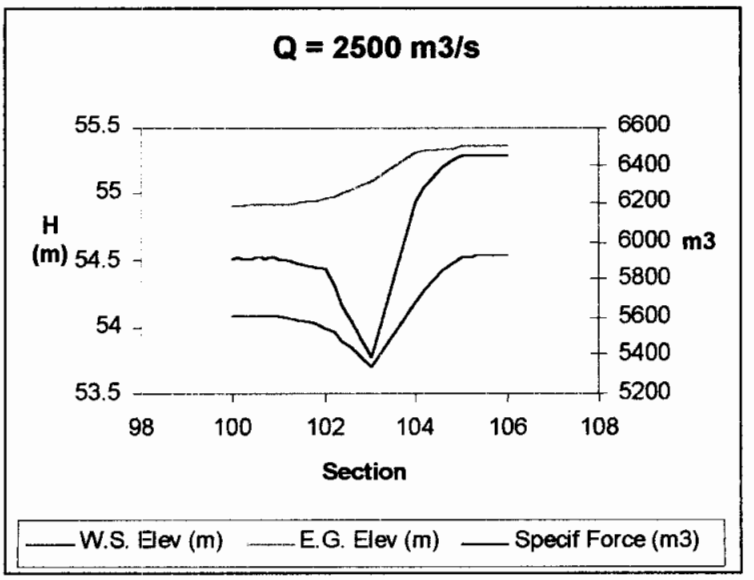
- the water level is shown in blue and indicated with the symbol WS,
- the specific energy in terms of height is represented in green and indicated with the symbol EG,
- the specific force, force divided by the specific weigth of the water [m^3] is represented in red and indicated with the symbol Specif Force,




Q = 1750 m3/s
H (m)
51.8
51.6
51.4
51.2
51
50.8
50.6
50.4
50.2
m3
4200
4100
4000
3900
3800
3700
3600
3500
3400
98
100
102
104
106
108
Section
W.S. Elev (m)
E.G. Elev (m)
Specif Force (m3)


Q = 2000 m3/s
H (m)
53
52.8
52.6
52.4
52.2
52
51.8
51.6
51.4
m3
5000
4800
4600
4400
4200
4000
98
100
102
104
106
108
Section
W.S. Elev (m)
E.G. Elev (m)
Specif Force (m3)


Q = 2250 m3/s
H (m)
54.5
54
53.5
53
52.5
m3
5800
5600
5400
5200
5000
4800
4600
98
100
102
104
106
108
Section
W.S. Elev (m)
E.G. Elev (m)
Specif Force (m3)



The force between the section no. 105 and the section no. 103 is computed applying the momentum theorem to the control volume bounded by these sections, neglecting the shear stresses:

$$R = S_u - S_d$$

where R is the resultant action, S is the total force, the pedices u and d means the upstream and downstream section, respectively. The total force can be written:

$$S = \gamma A y_b + \gamma Q^2 / (g A)$$

where

- γ is the specific weight of the water,
- A is the wetted area of the section,
- Y_b is the depth of the barycenter of the section,
- Q is the discharge,
- g is the acceleration due to the gravity.

The pressure resultant on the bridge is calculated, in safety, as the difference of the total pressure of the flow (specific force multiplied by the specific weight of the water) between the sections 105 (immediately upstream of the lateral abutments) and 103 (immediately downstream of the bridge deck).
Such a resultant has been considered acting uniformly on the surfaces of the wetted portion of the abutments and of the bridge.

Q (m3/s)	1500	1750	2000	2250	2500
Force 105 (ton)	3368	4069	4816	5608	6449
Force 103 (ton)	2874	3458	4074	4719	5393
Force on the bridge ton)	494	611	742	889	1056

Pressure forces

g - Earthquake actions

The structural behaviour of the bridge under the seismic actions has been studied taking into account the non-linear behaviour of the masonry, as it was done for the flood force.
A simplified modal response spectrum analysis has been performed; this type of analysis can be used strictly speaking only to structures whose response is not significantly affected by contributions from higher modes of vibration.
In the analysis the X-axis coincides with the longitudinal axis of the bridge, the Z-axis is in the transversal direction and the Y-axis is vertical.
For each direction the mode of vibration considered is the mode corresponding to the maximum participation factor.
Moreover the seismic actions of each direction have been applied contemporarily on the F.E. model using the combination factors of Eurocode 8.

Load combinations

The load conditions described above were combined in the following load combinations:

1	1.0 a + 1.0 b
2	1.0 a + 1.0 c
3	1.35 a + 1.35 b
4	1.35 a + 1.35 c
5	1.35 a + 0.54 b + 1.5 d
6	1.35 a + 0.54 b + 1.5 e
7	1.35 a + 0.40 b + 0.5 d + 1.0 f
8	1.00 a + 0.5 d + 1.5 g
load conditions	a. dead and permanent loads b. live load uniformly distributed over the whole bridge c. live load uniformly distributed over half the bridge d. uniform thermal load +15 °C e. uniform thermal load -15 °C f. flood load g. earthquake load

Soil characteristics at the abutments

The geotechnical characteristics of the soil beyond the abutments were obtained from the Conex report, and particularly from the drawings showing the vertical sections of the abutments.
The three-dimensional finite element model was extended on each side, starting from the arch springers, for a depth of about 6 m.

On both banks it is possible to identify the following stratigraphy: upperly there is a clayey sand material with fragments of stone, then there is a layer of masonry of about 7 m, and finally hard conglomerate is encountered.

From the samples which were driven out from the vertical and horizontal boreholes in the abutments, the following values of the materials of the abutments were obtained.

Hard conglomerate Edyn (Mpa)	**Masonry Qu (MPa)**
43200	1.70
14800	2.60
12000 ÷ 28700	-
22650	-
7100 ÷ 13500	-
1400 ÷ 2300	-
17500	-

Boreholes				
			Fc MPa	E MPa
BH3	Tenelja	0.0 ÷ 0.8	22.57	17000 / 20000
BH4	Conglomerate	2.5 ÷ 3.0		24000
BH5	Conglomerate	2.0 ÷ 2.5	7.40	10435
BH6	Conglomerate	2.0 ÷ 2.5	8.80	22642
BH7	Conglomerate	1.0 ÷ 1.3	10.95	5634

Masonry Strength fc		
Mean MPa	Min MPa	Max MPa
9	7.4	10.95

Masonry Modulus E		
Mean MPa	Min MPa	Max MPa
19000	10000	24000

Load combination with the flood force

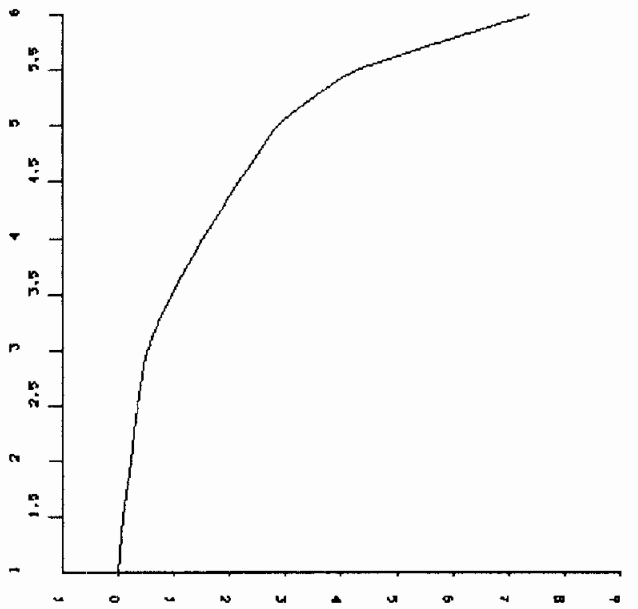
The flood force has been applied to the bridge together with the permanent loads, assuming for both these loads a factor of 1.0, to the load combinations used in the F.E. model of the phase A.

The flood force was applied according to the steps and sub-steps listed below. The first and the second steps consist of one sub-step each, while the other steps were divided into two steps each.

load force		
%	Load Step	Sub Step
100% Dead weigh t	1	1
Flood force X Q=15 00	2	2
Flood force X Q=17 50	3	4
Flood force X Q=20 00	4	6
Flood force X Q=22 50	5	8
Flood force X Q=25 00	6	10

The flood force acts in the horizontal plane, in the weakest plane of the bridge.

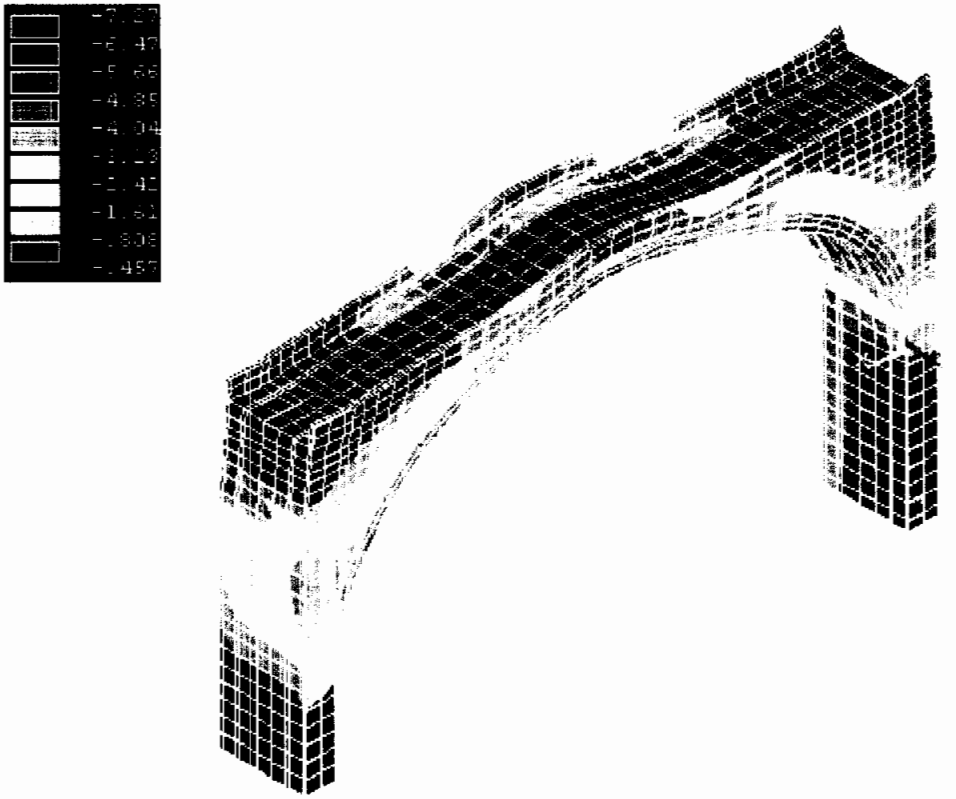
The flood produces a total shear much higher than the shear produced by the seismic actions, but the stresses and strains are lower than those produced by the earthquake, because the flood force is concentrated prevalently on the lateral sides of the bridge.
The following figure shows the load-displacement diagram, obtained for the joints at the crown of the arch.



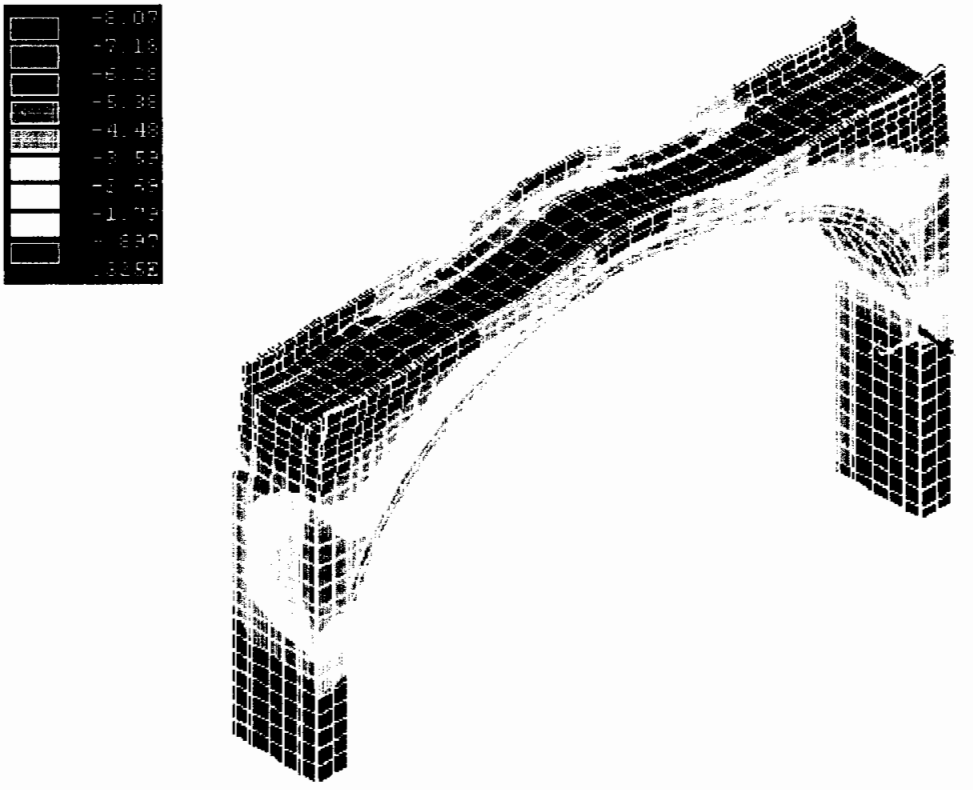
Load-displacement diagram with the Load-Steps (vertical axis) and displacements (horizontal axis) in the Z direction (in 10^{-1} cm)

Up to the load step no. 3 (flood of 1750 m^3 / s) the bridge has a linear behaviour, later the overall stiffness reduces, with a hardening branch up to the load step no. 5 (flood of Q = 2250 m^3 / s). The inclination of the diagram changes again and there is another branch of plastic-hardening up to the load step no. 6 (flood of 2500 m^3 / s).
The following figures show the principal stresses S1, S2 and S3.

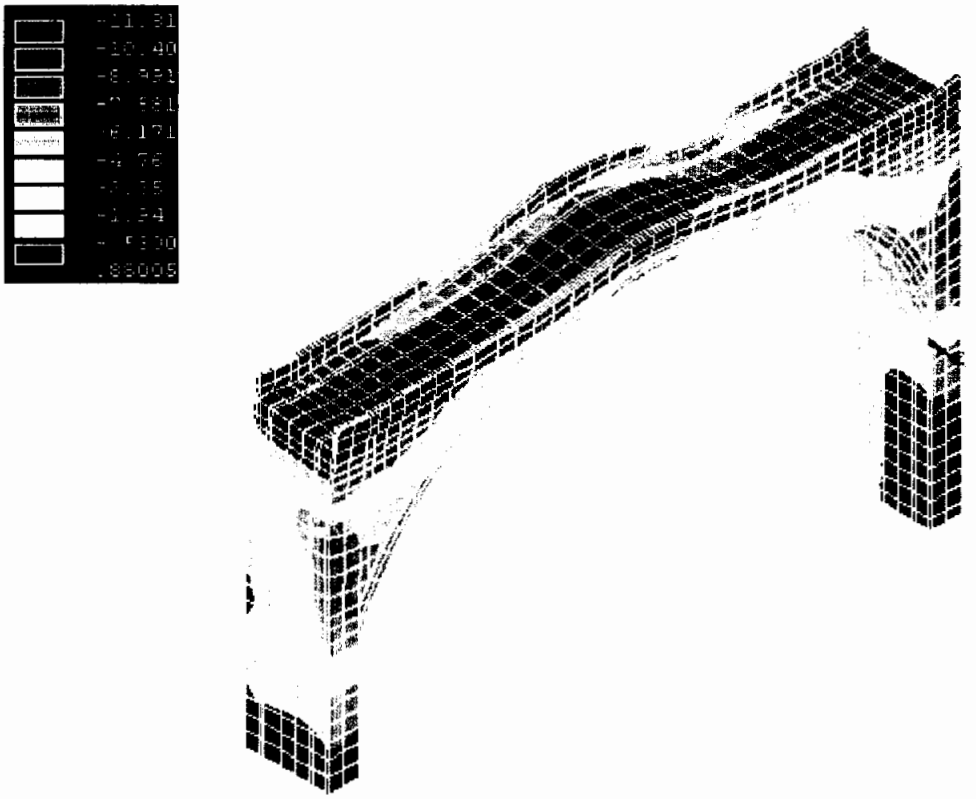
S3 Assonometric view at the load step no. 2 (Q = 1500 m^3 / s)



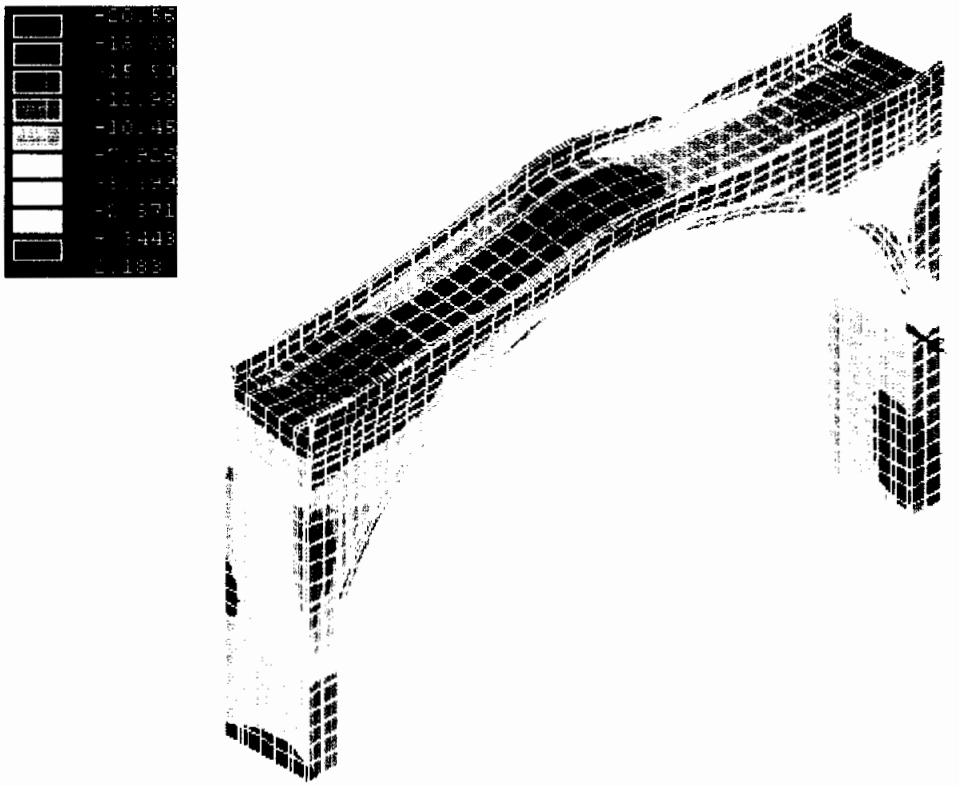
S3 Assonometric view at the load step no. 3 (Q = 1750 m^3 / s)



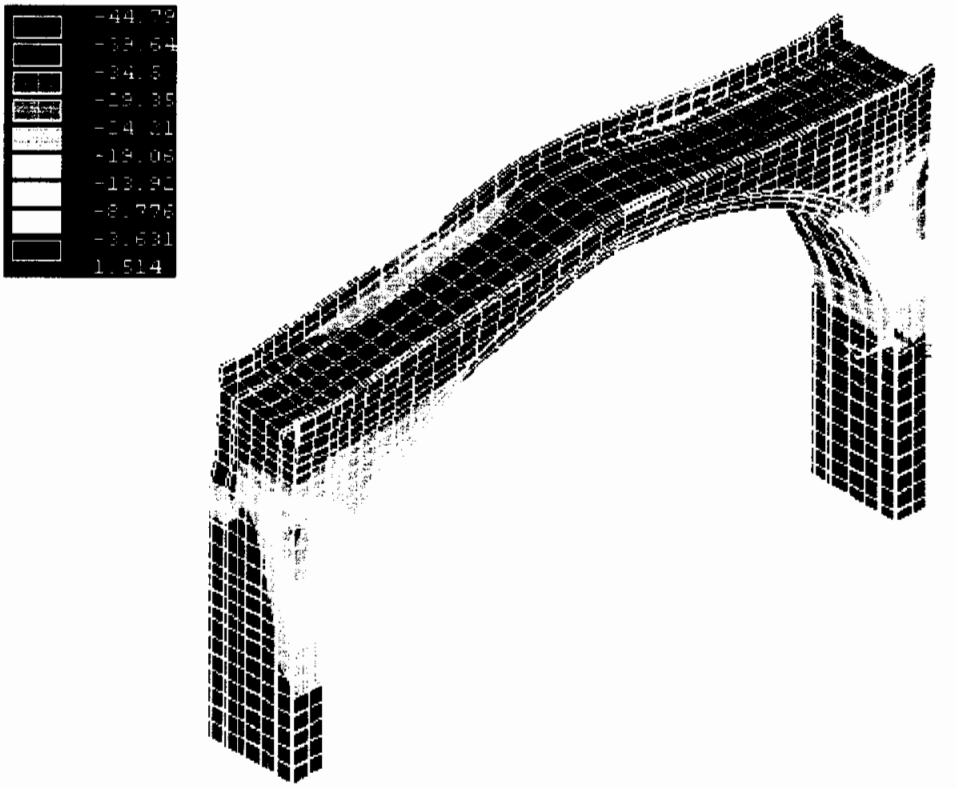
S3 Assonometric view at the load step no. 4 (Q = 2000 m^3 / s)



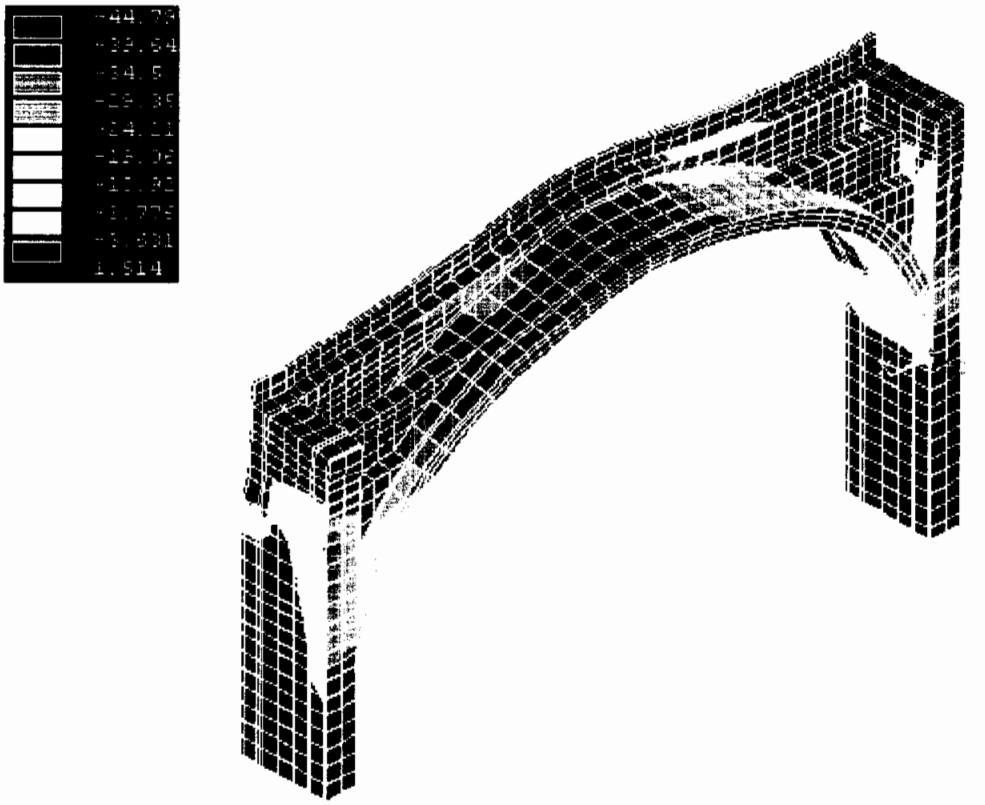
S3 Assonometric view at the load step no. 5 (Q = 2250 m^3 / s)



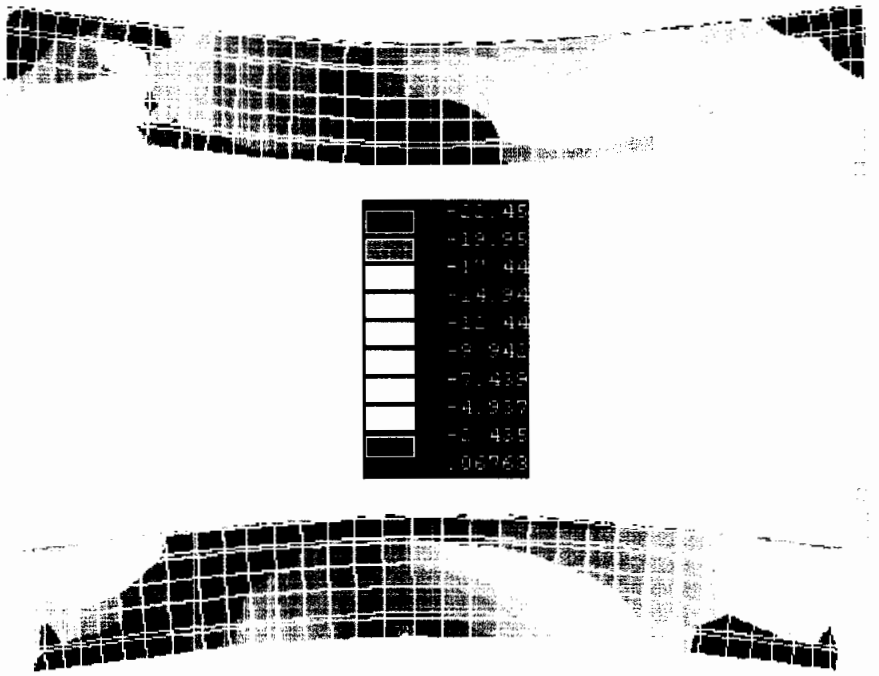
S3 Assonometric view at the load step no. 6 (Q = 2500 m^3 / s)



S3 Assonometric view at the load step no. 6 (Q = 2500 m^3 / s)

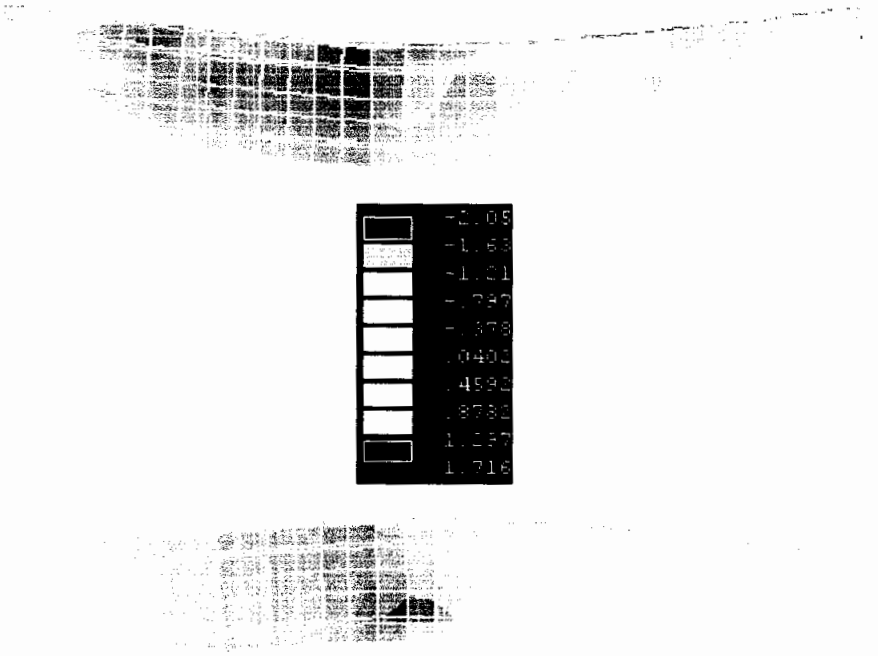


S3 Extrados and intrados at the load step no. 6 (Q = 2500 m^3 / s)

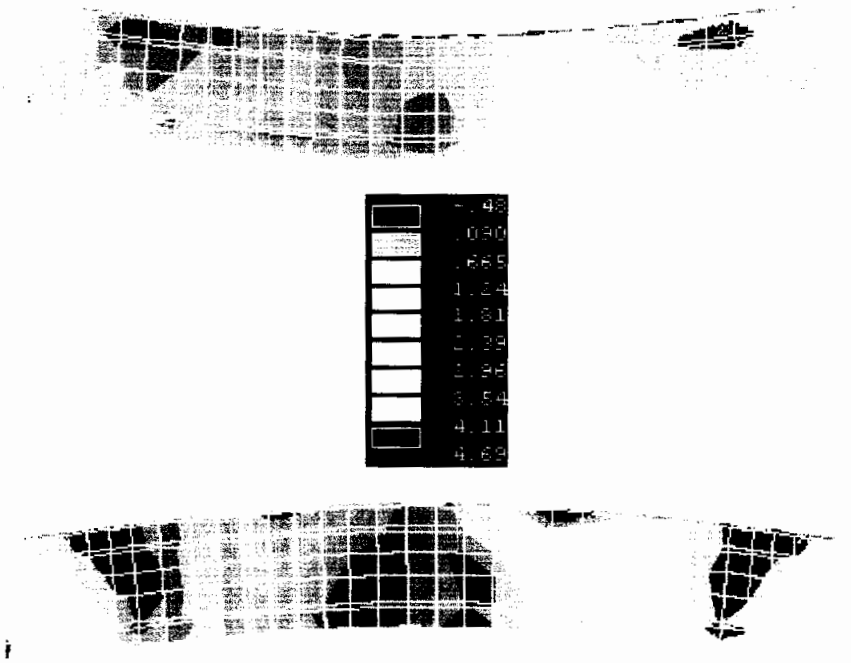


The main results are:
the stresses and strains are not worrying up to Q = 2000 m^3 / s; at the crown of the arch, the compression induced by the dead weight higher than the tractions induced by the flood. The tractions at the crown section arise only for Q = 2250 m^3 / s.
The following figures show the principal stresses *S2* and *S1* (in Kg/cmq).

S2 Vista Estradosso (in alto) e Intradosso (in basso) al passo Load Steps6 (Q = 2500 m^3 / s)



S1 Vista Estradosso (in alto) e Intradosso (in basso) al passo Load Steps6 (Q = 2500 m^3 / s)



Load combination with the seismic actions

The structural behaviour of the bridge under the seismic actions has been studied taking into account the non-linear behaviour of the masonry, as it was done for the flood force.

A very reliable seismic analysis can be performed using the step by step procedure, which is also well suited to the analysis of non-linear structures, because no superposition is invoked.

A simplified modal response spectrum analysis has been performed; this type of analysis can be used strictly speaking only to structures whose response is not significantly affected by contributions from higher modes of vibration.

In the analysis the X-axis coincides with the longitudinal axis of the bridge, the Z-axis is in the transversal direction and the Y-axis is vertical.

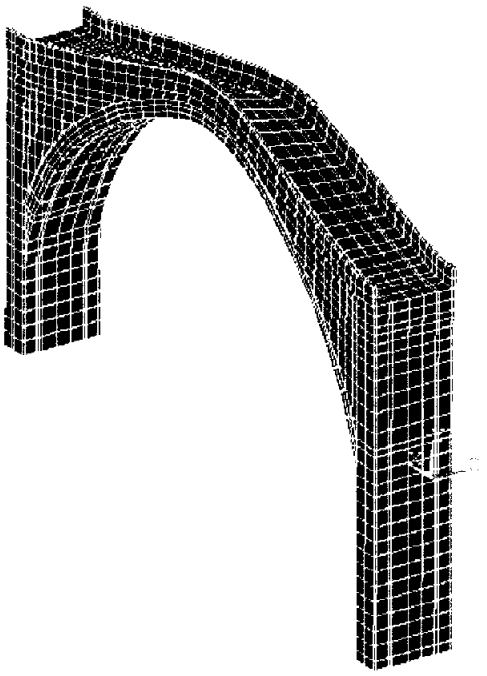
For each direction the mode of vibration considered is the mode corresponding to the maximum participation factor.

Moreover the seismic actions of each direction have been applied contemporarily on the F.E. model with the combination factors according to Eurocode 8.

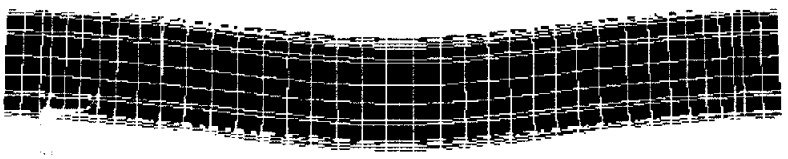
The following figures show the modes of vibrations used for the seismic analysis.

Mode of vibration along Z (mode of vibration no. 1)

- Assonometric view



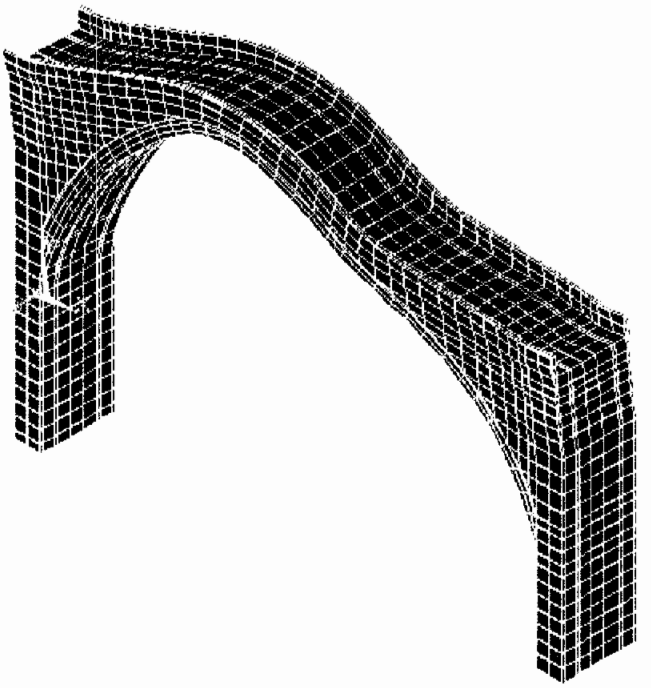
- *Plan view*



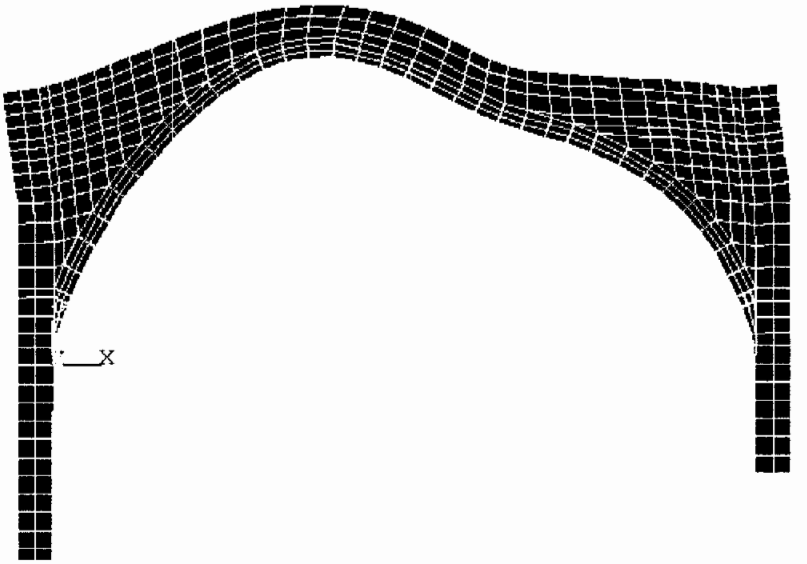
The first mode of vibration is translational, its eigenfrequency is 6.88 Hz and the participation mass is equal to 53 % of the total mass.

Mode of vibration along X (mode of vibration no. 2)

- Assonometric view



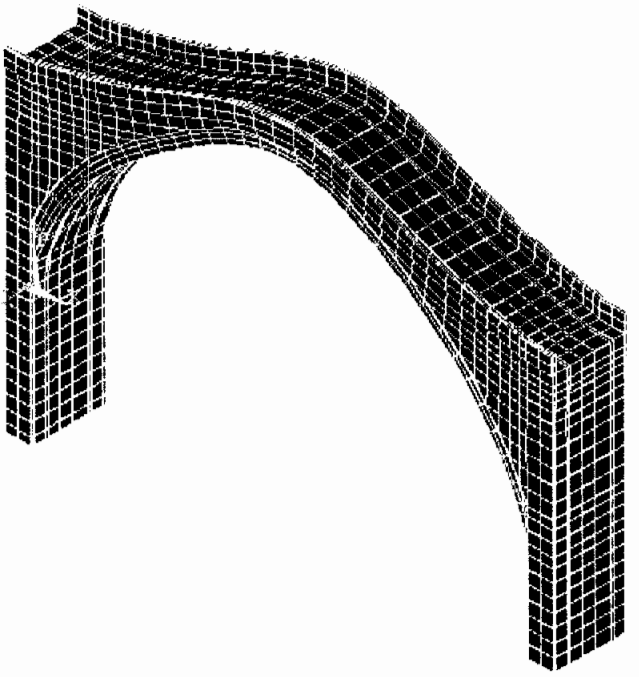
- Frontal view



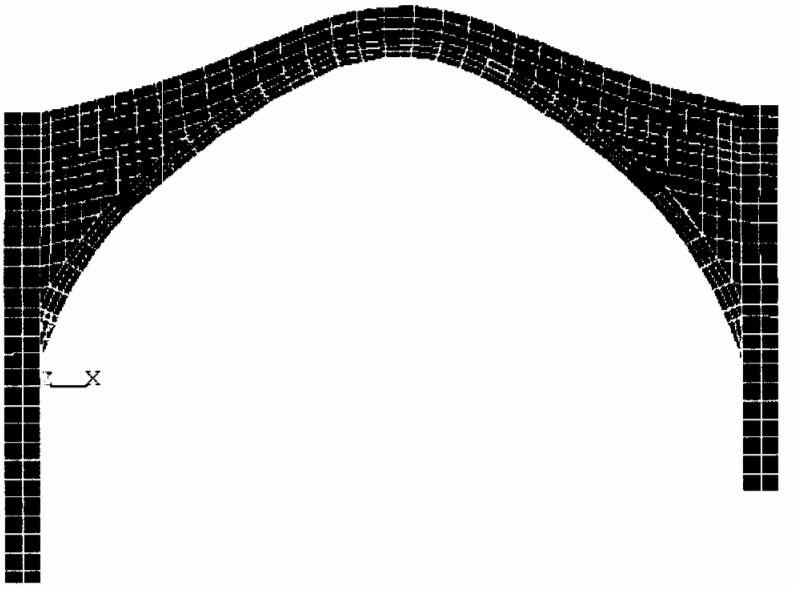
The second eigenfrequency is equal to 10.48 Hz, the correspondent mode of vibration is anti-symmetrical in the vertical plane and the participation mass is equal to 25 % of the total mass.

Mode of vibration along Y (mode of vibration no. 4)

- Assonometric view



- Frontal view



The fourth eigenfrequency is 14.68 Hz and the correspondent participation mass is 37 % of the total mass.
The above shown modes of vibrations are uncoupled; the modal mass is high in one direction and small in the other two directions.

In the analysis under the seismic actions, in safety the total mass of the structure has been given to each of the above shown modes of vibration.
The effects of the earthquake have been determined applying statically equivalent loads F_i in each node, proportional to the nodal mass, in the direction parallel to the considered seismic action.
The forces have been determined with the following formula taken from Eurocode 8:

$$F_i = S_e(T) \cdot s_i \cdot W_i \cdot \frac{\sum_j^n W_j}{\sum_j^n s_j \cdot W_j}.$$

where:

- $S_e(T)$ ordinate of the design spectrum,
- W_i, W_J weights of masses m_i, m_j,
- s_i, s_J displacements of masses m_i, m_j in the fundamental mode shape.

The weights have been computed with the following formula:

$$\sum_j G_{kj} \oplus \sum_i \psi_{Ei} \cdot Q_{ki},$$

where

- G_{ki} characteristic value of the permanent loads,
- Q_{ki} characteristic value of the variable loads,
- ψ_{Ei} reduction factors of the variable loads Q_{ki}.

Once the modes of vibration have been individualised, the response spectrum was defined.

The horizontal seismic action is described by two orthogonal components considered as independent and represented by the same response spectrum.
The vertical component of the seismic action is represented by the response spectrum as defined for the horizontal seismic action, but with the ordinates reduced as follows:

- for vibration periods T smaller than 0,15 s the ordinates are multiplied by factor of 0,7
- for vibration periods T greater than 0,50 s the ordinates are multiplied by a factor of 0,50
- for vibration periods T between 0,15 s and 0,50 s a linear interpolation is used.

The elastic response spectrum $S_e(T)$ normalised with respect to the ground acceleration α_g is defined by the following expressions:

- *for* $0 \le T \le T_B$ $\quad S_e(T) = \alpha \cdot s \cdot \left[1 + \frac{T}{T_B}(\eta \cdot \beta_o - 1)\right]$
- *for* $T_B \le T \le T_C$ $\quad S_e(T) = \alpha \cdot s \cdot \eta \cdot \beta_o$
- *for* $T_C \le T \le T_D$ $\quad S_e(T) = \alpha \cdot s \cdot \eta \cdot \beta_o \cdot \left[\frac{T_c}{T}\right]^{k_1}$
- *for* $T_D \le T$ $\quad S_e(T) = \alpha \cdot s \cdot \eta \cdot \beta_o \cdot \left[\frac{T_c}{T_d}\right]^{k_1} \cdot \left[\frac{T_d}{T}\right]^{k_2}$

where

- $S_e(T)$ ordinate of the elastic response spectrum,
- T the vibration period of the mode shape considered,
- α ratio between the peak acceleration of the ground and the gravity acceleration g ($\alpha = \alpha_g / g$).

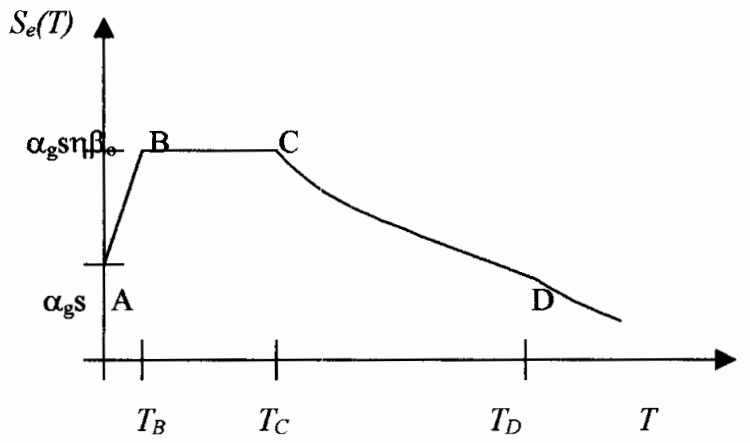
In particular the Stari bridge is located in a high seismic region; $\alpha_g s \eta \beta_o = 0.35$ where:

- β_o spectral acceleration amplification factor for 5% viscous damping,
- η damping correction factor with reference value $\eta = 1$ for 5% viscous damping for the masonry the Eurocode gives a viscous damping $\xi = 8\%$, which implies $\eta = 0.84$,
- T_B and T_C limits of the constant spectral acceleration branch,
- T_D value defining the beginning of the constant displacement range of the spectrum,
- k_1 and k_2 exponents which influence the shape of the spectrum for a vibration period greater than T_C, T_D respectively,
- s soil parameter.

N.B. The behaviour factor q is not used, because the performed analysis is non-linear.
The other coefficients are defined on the basis of the seismic-geological characteristics of the ground.
The bridge is located in a region classifiable as class A:

Class	S	β_o	k_1	K_2	T_B (sec)	T_C (sec)	T_D (sec)
A	1	2.5	1.0	2.0	0.10	0.40	3.0
B	1	2.5	1.0	2.0	0.15	0.60	3.0
C	0.9	2.5	1.0	2.0	0.20	0.80	3.0

The final design spectrum is the following:



where T is the vibration period of the mode shape considered and the characteristic points of the diagram are:

- A with $S_e(T)$= 0.17 and T_A=0 sec,
- B with $S_e(T)$= 0.35 and T_B=0.10 sec,
- C with $S_e(T)$= 0.35 and T_C=0.40 sec,

The spectral ordinates, relative to each direction, are:

- Z direction:

T = 0.15 sec $\Rightarrow$ $S_e(T)$ = 0.35,

- X direction:

T = 0.10 sec $\Rightarrow$ $S_e(T)$ = 0.35,

- Y direction:

T = 0.07 sec $\Rightarrow$ $S_e(T)$= 0.30 * 70% = 0.21.

The horizontal and vertical seismic forces to be applied in each node of the structure have been calculated using the code *"Matlab", elaborating some output files of the code "Ansys".* The expression of the seismic forces is:

$$F_i = S_e(T) \cdot s_i \cdot W_i \cdot \frac{\sum_j^n W_j}{\sum_j^n s_j \cdot W_j}.$$

Combination of the seismic forces

The seismic actions along the three directions X, Y and Z have been combined together, as prescribed by the Eurocode (see the following table).

	Along X	Along Y	Along Z
Prevailing earthquake along X	1.00	0.30	0.30
Prevailing earthquake along Y	0.30	1.00	0.30
Prevailing earthquake along Z	0.30	0.30	1.00

The seismic actions have been combined with the other actions according to Eurocode 8:

$$\sum_j G_{kj} \oplus \gamma_I \cdot A_{Ed} \oplus \sum_i \psi_{2i} \cdot Q_{ki}$$

where:

- G_{ki} characteristic value of the permanent loads,
- γ_I importance factor of the structure,
- A_{Ed} design value of the seismic forces,
- Q_{ki} characteristic value of the variable loads,
- ψ_{2i} reduction factors of the variable loads (all zero)

Results of the seismic analysis

The following table lists the steps and the sub-steps used in the non-linear analysis for each seismic load combination.

Prevailing earthquake along Z			Prevailing earthquake along X			Prevailing earthquake along Y		
%	load step	Sub Step	%	load step	Sub Step	%	load step	Sub Step
100% Gravity	1	1	100% Gravity	1	1	100% Gravity	1	1
10% Earth q.	2	1	10% Earth q.	2	1	10% Earth q.	2	1
20% Earth q.	3	1	20% Earth q.	3	1	20% Earth q.	3	1
30% Earth q.	4	1	30% Earth q.	4	1	30% Earth q.	4	1
40% Earth q.	5	4	40% Earth q.	5	5	40% Earth q.	5	2
50% Earth q.	6	10	50% Earth q.	6	5	50% Earth q.	6	2
60% Earth q.	7	10	60% Earth q.	7	10	60% Earth q.	7	5
70% Earth q.	8	20	70% Earth q.	8	10	70% Earth q.	8	5
80% Earth q.	9	20	80% Earth q.	9	15	80% Earth q.	9	10
90% Earth q.	10	25	90% Earth q.	10	15	90% Earth q.	10	10
100% Earth q.	11*	*	100% Earth q.	11	20	100% Earth q.	11	10
110% Earth q.	12*	*	110% Earth q.	12	20	110% Earth q.	12	15

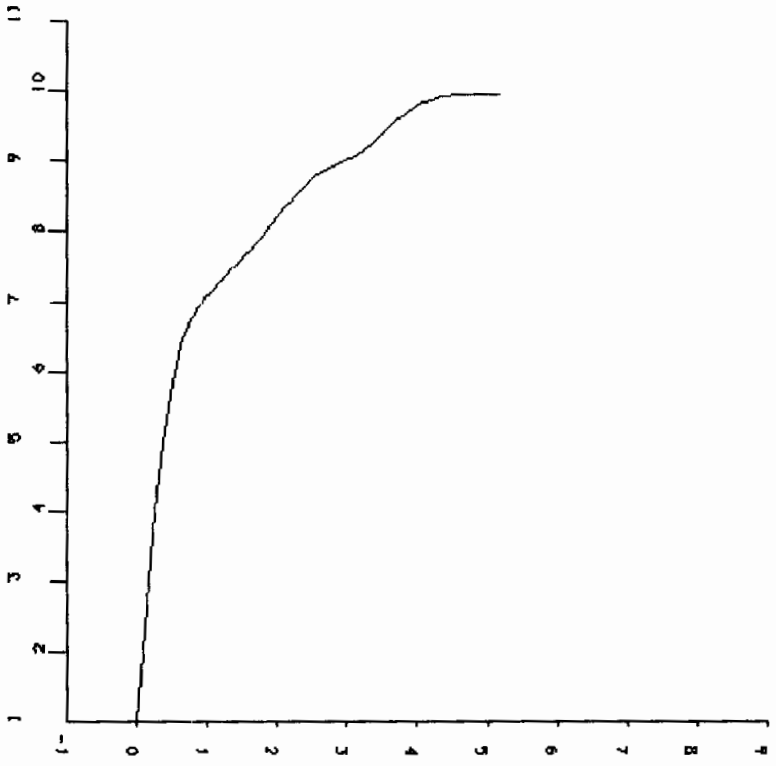
120% Earth q.	13*	*	120% Earth q.	13	30	120% Earth q.	13	15
130% Earth q.	14*	*	130% Earth q.	14	30	130% Earth q.	14	20
140% Earth q.	15*	*	140% Earth q.	15	30	140% Earth q.	15	20

* Load steps not performed because the structure collapsed in the preceding steps.

At the Load Step no. 15 the 140 % of the seismic load is reached (corresponding to the importance factor $\gamma_I = 1.4$).

Results for the load combination with prevailing earthquake along Z

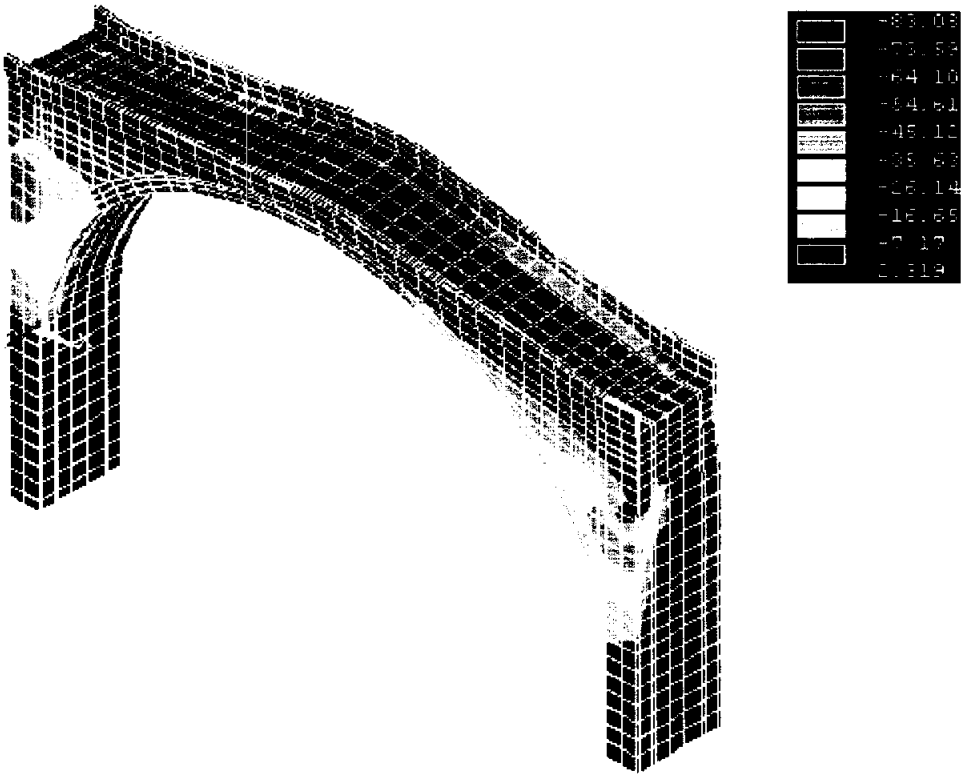
In this load combination the bridge is loaded in its weakest direction.
The bridge collapses before reaching the total design seismic load, at the load step no. 10 and sub-step no. 24, reaching the 89.6% of the total seismic load (without the importance factor). The bridge can resist against an horizontal acceleration of 0.314 g, as the spectral ordinate of the main mode of vibration is *0.35 g*.



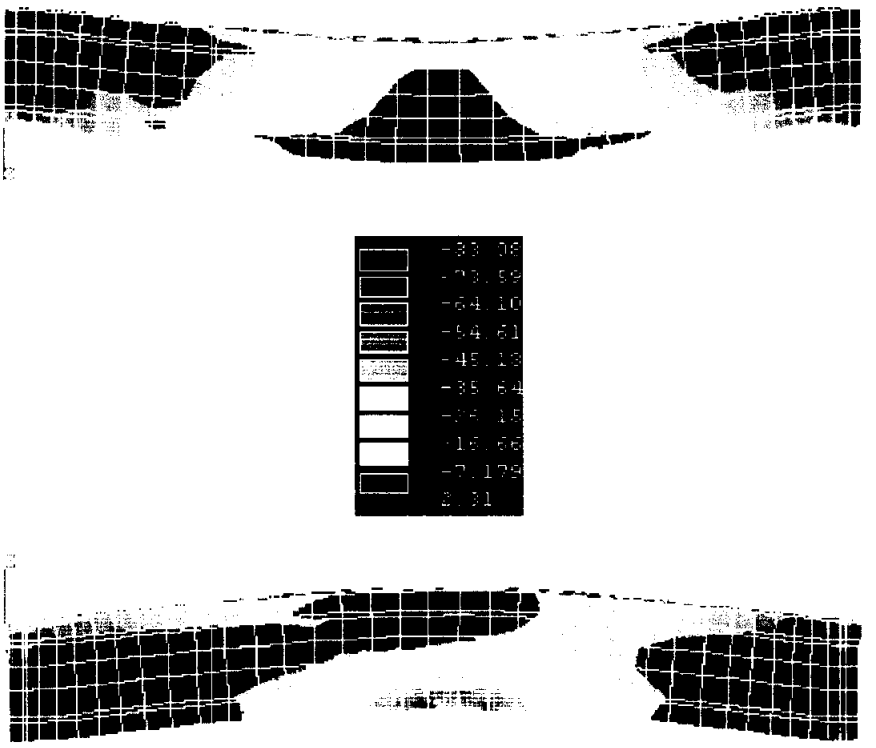
Load-displacement diagram for the crown section (displacements in cm)

The structure behaves linearly up to the load step no. 7, after the overall stiffness reduces. The following figures show the principal stresses S3, S2 and S1.

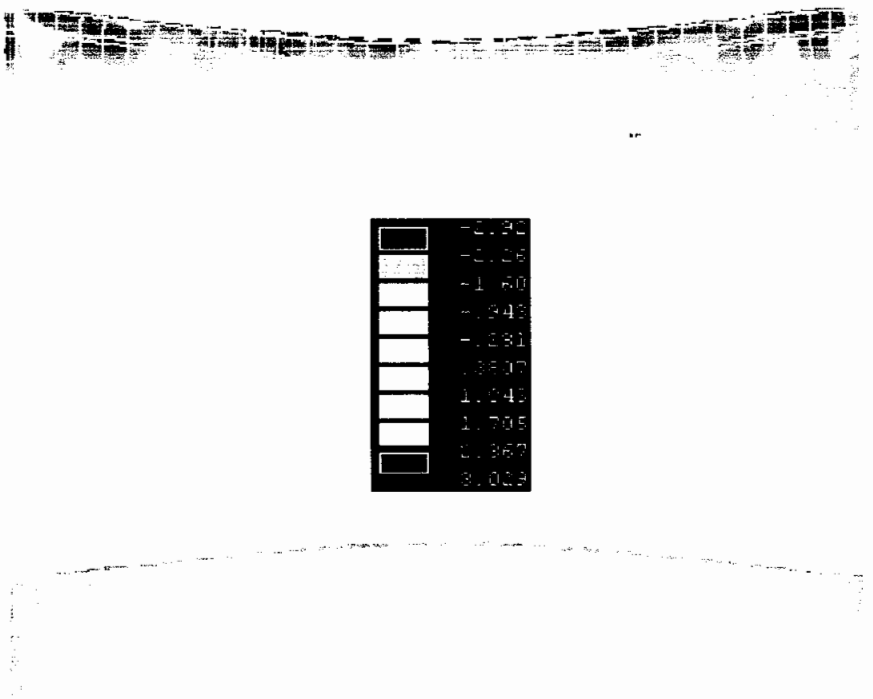
S3 Assonometric view at the load step no. 10 and sub-step no. 24



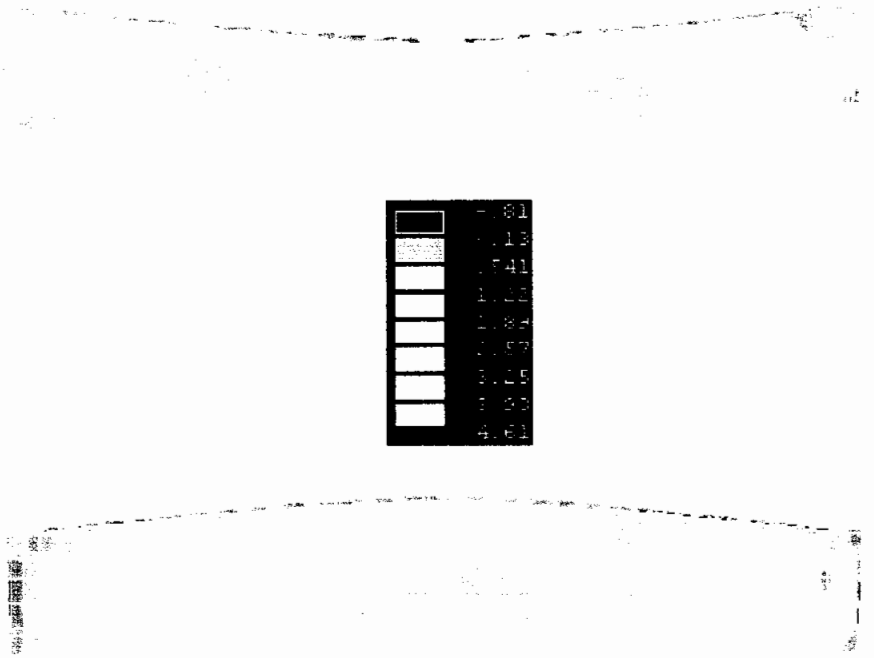
S3 Extrados and intradox at load Step no. 10 and sub-step no. 24



S2 Extrados and intradox at load Step no. 10 and sub-step no. 24

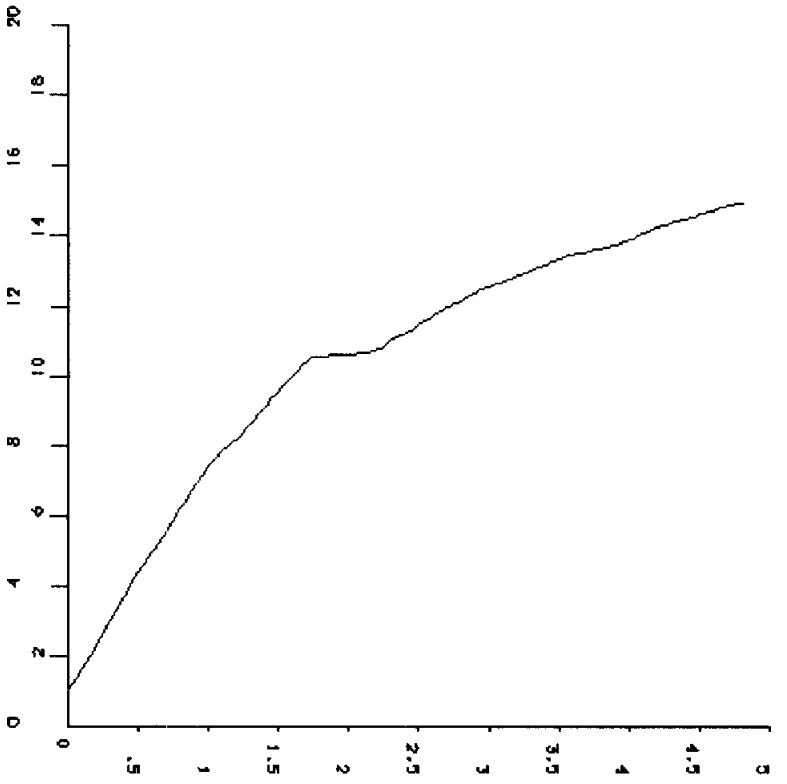


S1 Extrados and intradox at load Step no. 10 and sub-step no. 24



Results for the load combination with prevailing earthquake along X

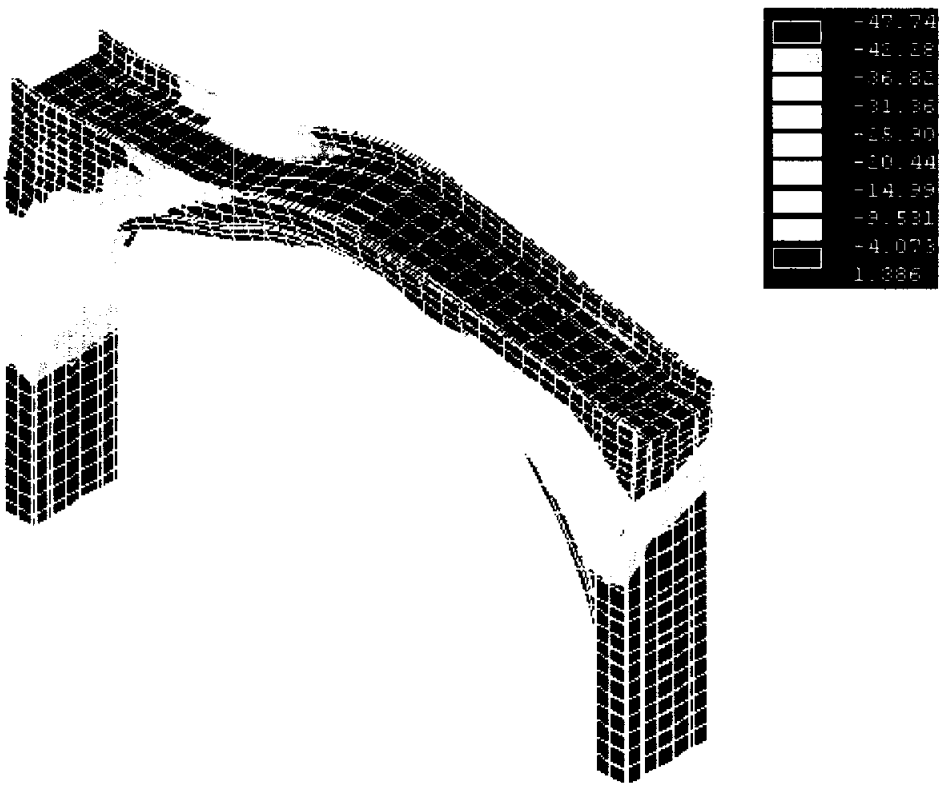
In this load combination the bridge is loaded in its longitudinal direction. The bridge can support the whole design seismic load in this direction (included the importance factor).
The analysis reaches the load step no. 15 and the sub-step no. 30.
The bridge can resist an horizontal acceleration of 0.49 g, as the spectrum ordinate of the mode of vibration considered is equal to 0.35 g.



Load-displacement diagram of the cross section (displacements in 10^{-1} cm)

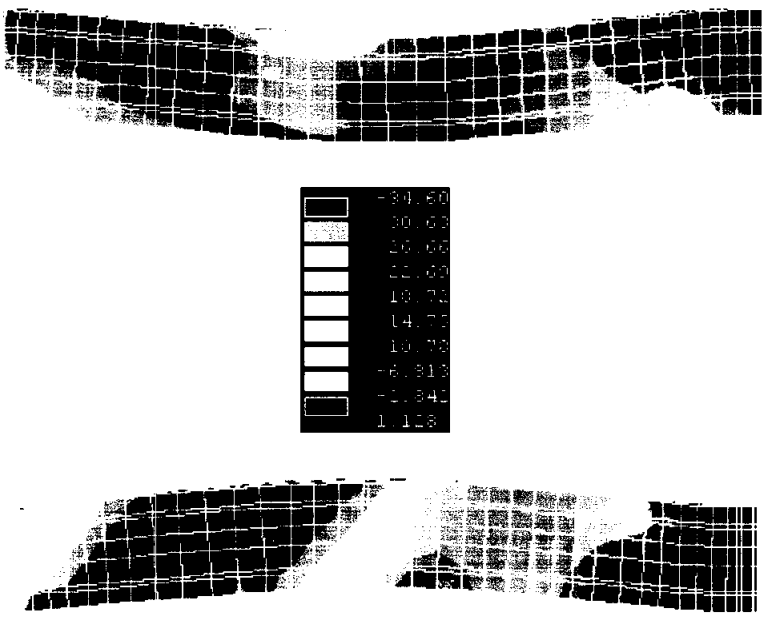
The bridge behaves linearly up to the load step no. 10, later at the load step no. 11 the yield load is reached, with a reduction of the overall stiffness.
The following figures show the principal stresses S3, S2 and S1.

S3 Assonometric view at load step no. 15 e sub-step no. 30



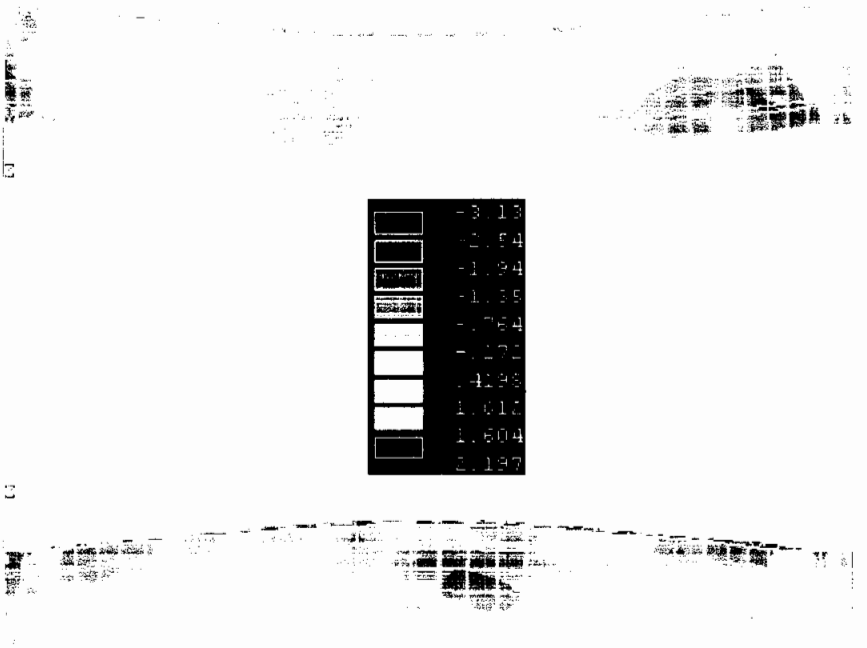
Under this load combination the bridge assumes the typical anti-symmetrical configuration.

S3 Extrados and intradox at the load step no. 15 and sub-step no. 30

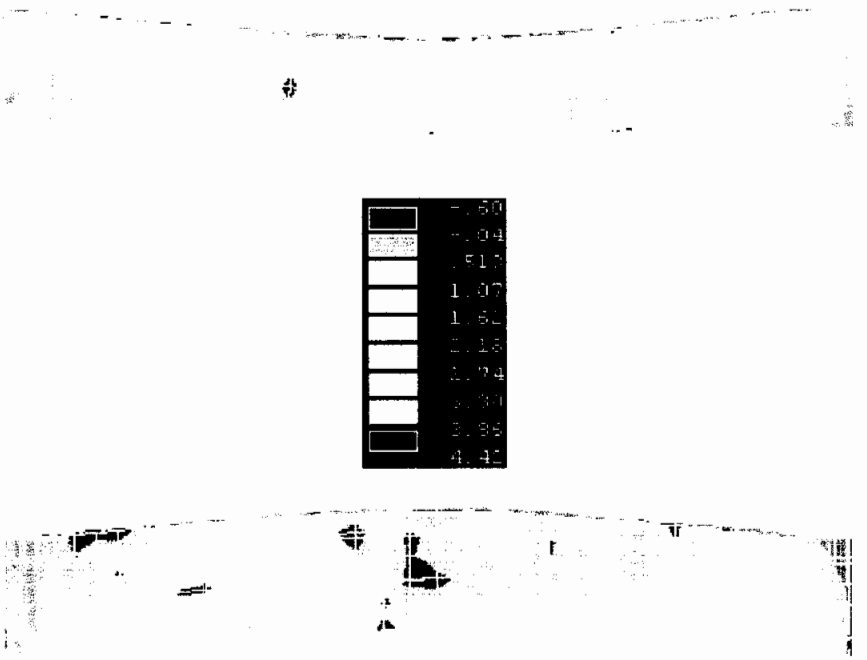


In the previous figures it appears clearly how the tractions induced by the dead loads in the intradox of the bridge are increased by this seismic load combination.

S2 Extrados and intradox at the load step no. 15 and sub-step no. 30

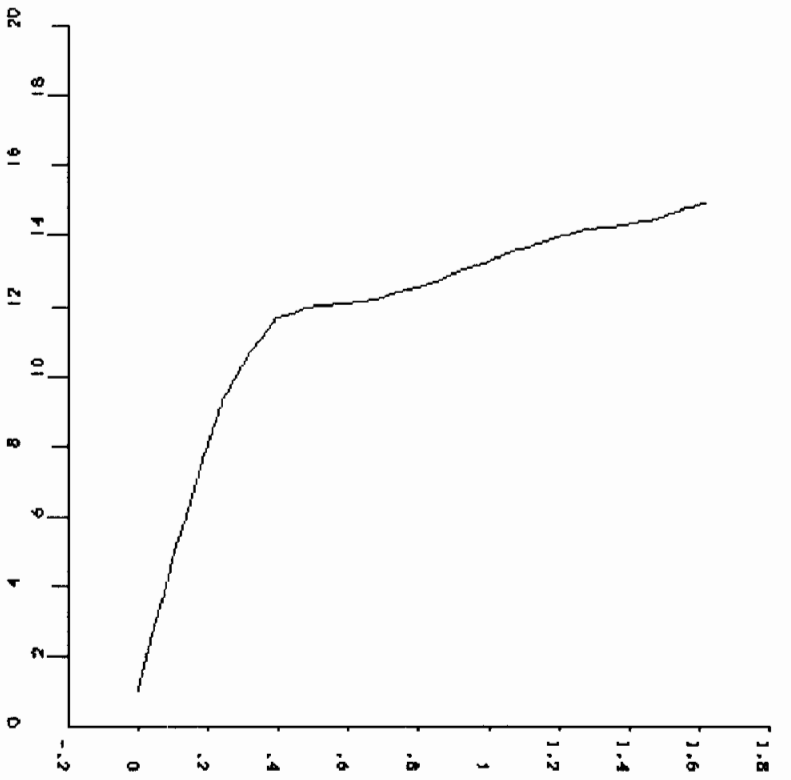


S1 Extrados and intradox at the load step no. 15 and sub-step no. 30



Results for the load combination with prevailing earthquake along Y

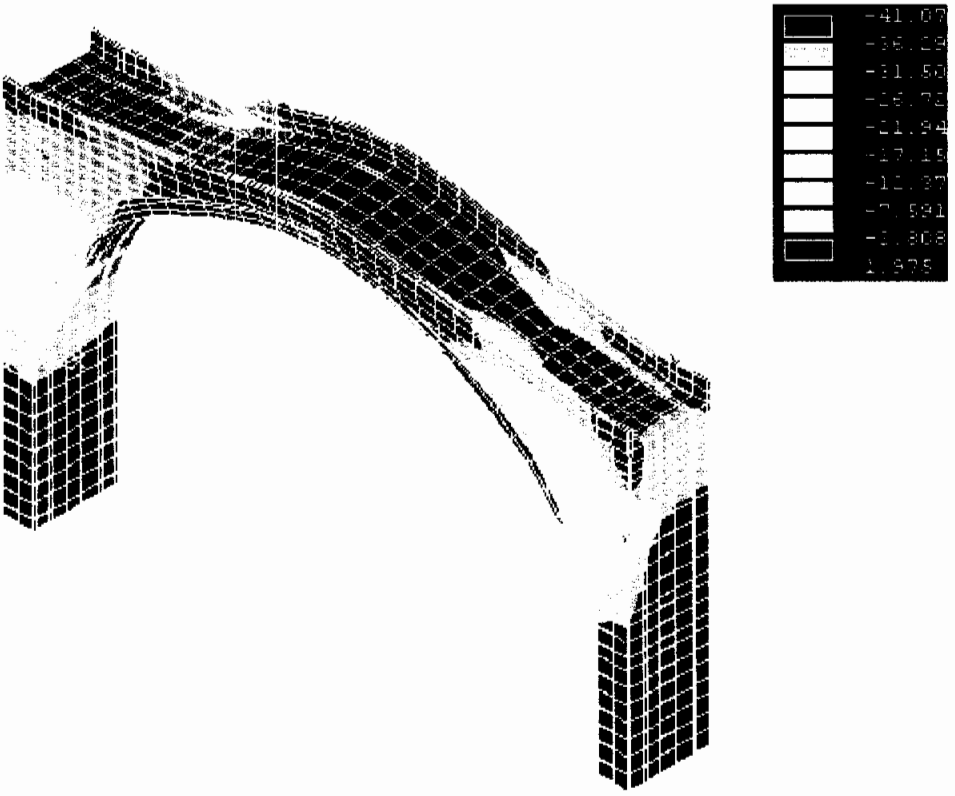
The bridge can support the whole design seismic load in this direction (included the importance factor).
The arch tends to be unloaded and loses partly its capacity of "redistribution and confining" of the tractions due to the seismic components in the X and Z directions (present with a factor of 0.3).
The analysis stops at the load step no. 15 and sub-step no. 20, reaching the total design load.
The bridge can resist a vertical deceleration of 0.294 g, as the maximum spectrum ordinate of the considered mode of vibration is *0.21 g*.



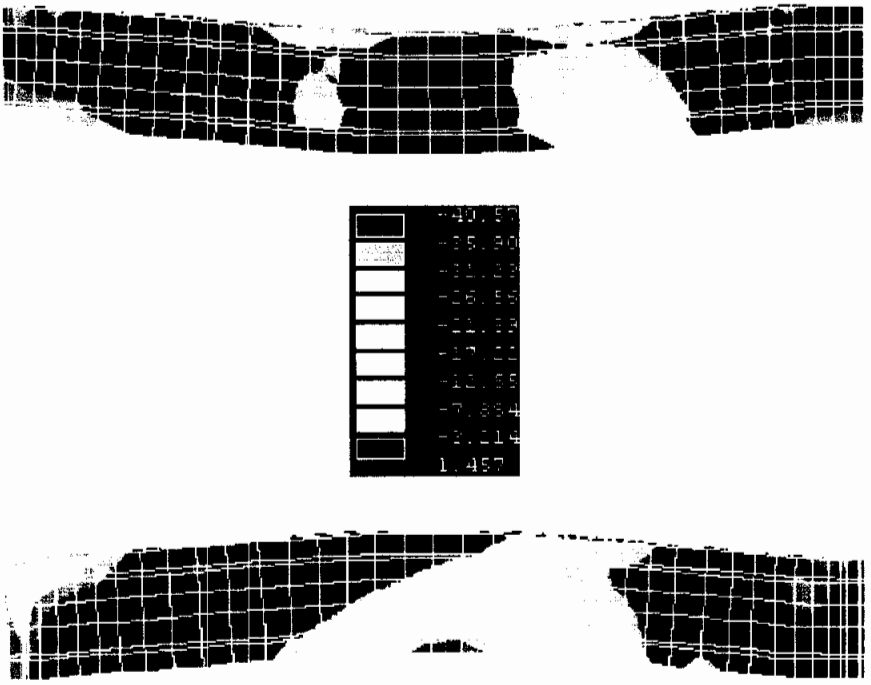
Load-displacement diagram of the crown (displacements in cm)

The bridge behaves linearly up to the load step no. 11, later at the load step no. 12 the yield load is reached and the overall stiffness decreases.
The following figures show the principal stresses S3, S2 and S1.

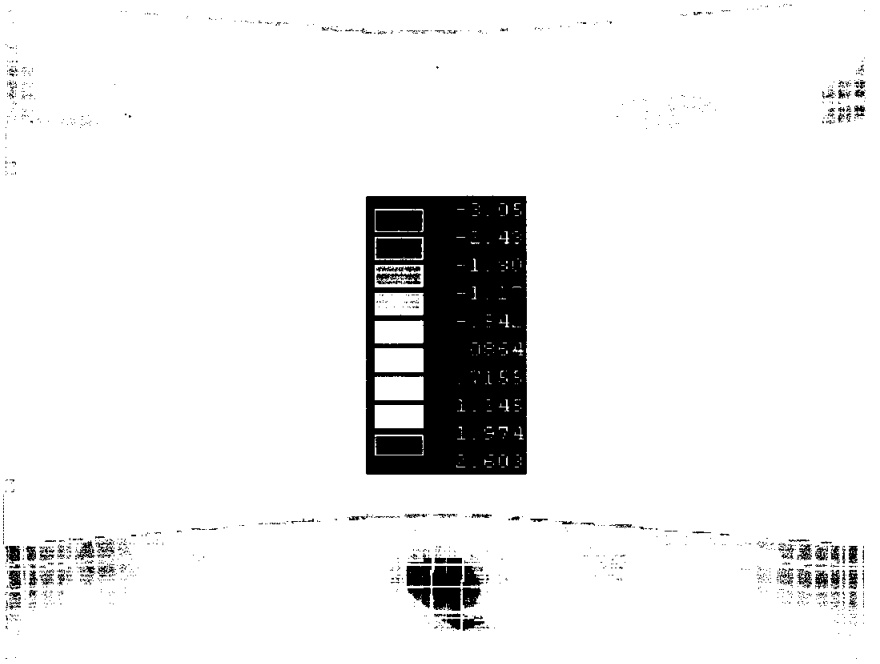
S3 Assonometric view at the load step no. 15 and sub-step no. 20



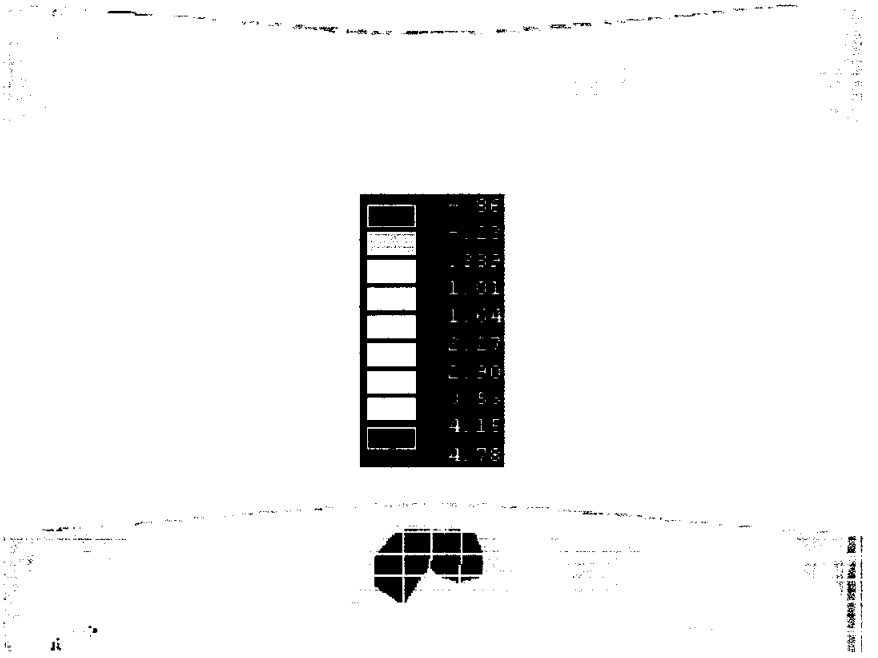
S3 Extrados (top) and intradox (below) at the load step no. 15 and sub-step no. 20



S2 Extrados (top) and intradox (below) at the load step no. 15 and sub-step no. 20



S1 Extrados (top) and intradox (below) at the load step no. 15 and sub-step no. 20



3.6 Deformations of the structure during the construction

The F.E. calculations allowed evaluating the deformations of the structure during the successive phases of the construction.
The values of the horizontal and vertical deflections (in cm) of the arch intradox are listed in the following table.
The values refer to seven different points of the intradox, which are located at L/8, L/4, 3L/8, L/2, 5L/8, 3L/4, 7L/8.
The following deflections during the construction phases were considered:

- deflection of the centering under the dead weight of the arch voussoirs (to be evaluated by the contractor for the centering design)
- deflection of the arch, after the its completion, and under the dead weight of the arch itself (obtained from the model which comprehends arch and abutments, see fig. 17)
- deflection of the structure formed by the arch, the wedges and the spandrels under their dead weights (fig. 18)
- deflection of the whole structure (fig. 19)

The values refer to each construction phase, so that the final deflection is obtained summing all the contributions.

Construction phases		L/8	L/4	3L/8	L/2	5L/8	6L/8	7L/8
Centering	TO BE EVALUATED							
Abutments + arch	Vertical	-0.01	-0.11	-0.20	-0.22	-0.16	-0.06	+0.02
	Horizontal	-0.05	-0.01	+0.02	+0.03	+0.03	+0.06	+0.08
Abutments + arch + wedge + spandrels	Vertical	-0.04	-0.09	-0.12	-0.12	-0.11	-0.08	-0.04
	Horizontal	+0.00	+0.01	+0.02	+0.00	-0.01	-0.01	+0.00
Bridge	Vertical	-0.05	-0.11	-0.15	-0.15	-0.14	-0.10	-0.05
	Horizontal	+0.00	+0.01	+0.02	+0.00	-0.01	-0.01	+0.00

In the paragraph 1.10, we suggested to dismantle the centering only after the completion of all the work phases with the exception of the construction of the paving and of the parapets. The calculations of the deformations have been performed in safety considering that the arch was dismantled just after its completion (to be more precise, when the mortar setting takes place), as a consequence the actual deformations will be not higher than the ones listed in the above table.
Schemes adopted in the calculation of the deformations

fig. 17 - Abutments + Arch

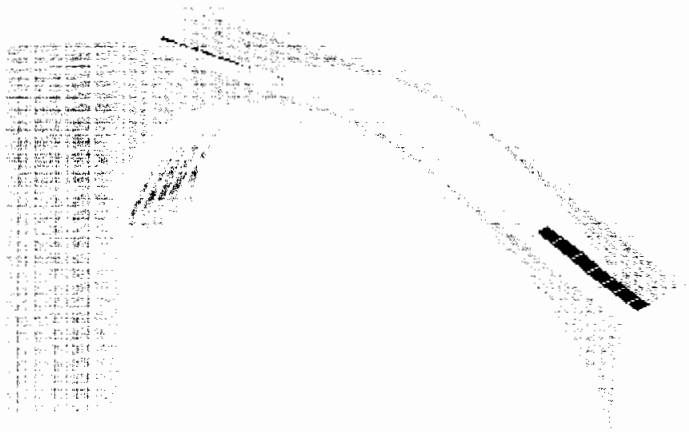


fig. 18 - Abutments + Arch + Wedge + Spandrels

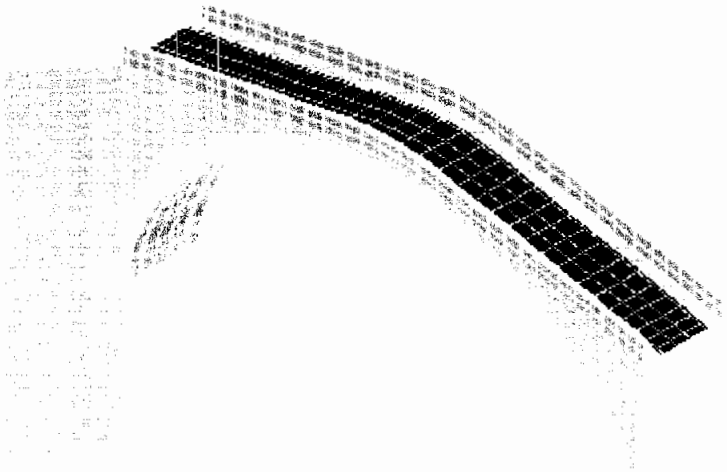


fig. 19 - Bridge

3.7 Loads acting on the centering

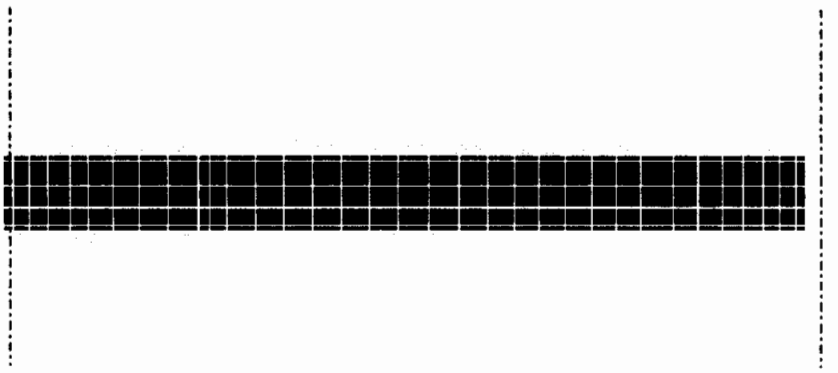
The following table lists the loads acting on the centering during the work phases. The minimum load is given by the dead weight of the centering and of the arch and is equal to about 140 tons on each side. The maximum load on each foot of the centering is equal to about 260 tons and is reached when the spandrels and the wedges have been erected over the arch.

Work phases	Sv (Kg)	
Centering + Arch	Left	137892
	Right	137828
Arch + wedge + spandrels	Left	254230
	Right	246900

N.B. : The dead weight of the centering has been estimated equal to about 11,5 tons.
The values referring to the second case (arch + wedge + spandrels) do not include the dead weight of the centering. Therefore assuming the above value of 11,5 tons, in the second case Sv gets values close to 260 tons on the left side and close to 253 tons on the right one.

Moreover in the second case, the values of Sv must be considered upper limits for the loads acting on each foot of the centering. In fact these values were obtained assuming that all the loads produced by the arch + wedge + spandrels were transmitted to the centering. Really the arch will bear part of these loads in a quote proportional to its stiffness compared to the one of the centering.

The Sv values for the second case represent the vertical reactions over the section of joint of the arch to the abutment (see following figure).



Required strength of the arch masonry

The strength of a masonry does not depend only upon the strength of the blocks, but also upon the strength of the mortar, the thickness of the mortar layers and the height of the blocks.
Therefore, the required strength of the stones for the arch cannot be chosen leaving out of consideration these parameters.
The following table lists the values of the masonry strength, which can be obtained using the formula by Tassios (1985) or applying the EC6 formulas.
The tables list the values for three different mortar strengths (1.2 MPa, 2.5 MPa and 5MPa) and eighth values of the stones strength (from 15 MPa to 22 MPa).

Tassios (1985)

The formula by Tassios (1985) allows for taking into account a different thickness of the mortar layers and blocks:

$$f_k = \left(1 - 0.8 \cdot \sqrt[3]{t_m / t_b}\right) f_{bk} \qquad \text{if } f_{bk} \le f_{mm}$$

$$f_k = \left(1 - 0.8 \cdot \sqrt[3]{t_m / t_b}\right)\left[f_{mm} + 0.4\left(f_{bk} - f_{mm}\right)\right] \qquad \text{if } f_{bk} > f_{mm}$$

where t_m = thickness of the mortar layers
t_b = thickness of the stones
f_{bk} = strength of the stones
f_{mm} = strength of the mortar.

(in our case $f_{bk} > f_{mm}$, so the second formula has to be used).

f_{bk}	M1.2	M2.5	M5
15	5.45	6.08	7.30
16	5.78	6.40	**7.62**
17	6.10	6.73	7.95
18	6.42	7.06	8.27
19	6.75	7.38	8.60
20	7.07	**7.71**	8.92
21	7.40	8.03	9.25
22	**7.72**	8.35	9.57

NB From the above table it is clear that to get a strength of the masonry of about 7.5 MPa, the strength of the stones must be 22 MPa (if the mortar strength is 1.2 MPa, column no. 1), 20 MPa (if the mortar strength is 2.5 MPa, column no. 2), 16 MPa (if the mortar strength is 5.0 MPa, column no. 3). This means that the bigger is the mortar strength, the lower is the minimum required strength of the stones.

EC6

For natural elements of II category and Group 1 we have:

Blocks:

$f_b = f_{bm} \cdot \delta$ where $\delta = 0.70 \div 1.15$ (in our case $\delta = 1.15$)

f_{bm} = mean strength of the blocks

Mortar

The mortars are classified in EC6 into two groups: a) normal mortars and b) mortars with thin layers.

a) The mortars with a normal layer thickness are those with a thickness t_m between 8 and 15 mm.

b) The mix design for mortars with thin layers has to be chosen according to EN998-2 and has to be M5 (5 MPa) or more resistant. The thin layer mortar are those with a layer thickness t_m between 1 and 3 mm.

Our case (t_m = 5 mm) lies in an intermediate field, nearest to the field of the mortars with thin layers a), therefore we suggest to use a mortar with a minimum strength of 5 MPa, as prescribed for these mortars.

Characteristic strength of the masonry

In the following the strength of the masonry was calculated for both the case of normal mortar and thin mortar.

a) normal mortar

$$f_k = k \cdot f_b^{0.65} \cdot f_m^{0.25}$$

k = 0.60 being the masonry classifiable into the group no. 1

$f_b = f_{bm} \cdot \delta$ in our case $\delta = 1.15$

where f_{bm} = mean strength of the stones

f_m = mean strength of the mortar

Normal mortar

f_b	M1.2	M2.5	M5
15	3.65	4.39	5.22
16	3.81	4.57	5.41
17	3.96	4.76	5.66
18	4.11	4.94	5.87
19	4.26	5.11	6.08
20	4.40	5.29	6.29
21	4.54	5.46	6.49
22	4.68	5.63	6.69

b) mortar with thin layers

as in the previous case , but with k = 0.7

Thin mortar

f_b	M1.2	M2.5	M5
15	4.26	5.11	6.09
16	4.44	5.33	6.35
17	4.62	5.55	6.60
18	4.80	5.76	6.85
19	4.97	5.97	7.10
20	5.14	6.17	7.34
21	5.30	6.37	7.57
22	5.46	6.56	7.81

According to EC6 $f_{bk} = 21$ MPa
According to Tassios (1985) $f_{bk} \geq 16$ MPa

In absence of the experimental determination of the masonry strength, it is appropriate to assume, with a mortar M5 ($f_m = 5$ MPa), a characteristic strength of the stones f_{bk} not lower than 19 MPa.

This value represents the minimum strength required for all the stones of the arch, if a punctual control of the strength is made, e.g. the strength of each stone is assessed experimentally through ultrasonic tests.

Arhaeological site at the Old Bridge in Mostar

Archaeological researches done by Omega engineering from Dubrovnik, Croatia

In the following chapter we will present development of the site concluded from the abovementioned researches along with the wiew on the archaeological site situated below the approach roads of the Old Bridge.

The archaeological site

After archaeological researches it was important to make quality consolidation of the walls by grouting with lime-based grouting mixtures. It was decided (at the 7th session of ICE, long before the reconstruction works on the towers) that the archaeological site will be presented to the public and accompanied with the museum services. The site on the left bank is large enough with the good two-sided communication path and therefore easier for presentation.

On the other hand the archaeological site on the right bank is small underground space with difficult communication through the structure of different purpose. Taking into account all the abovementioned it was decided that the site at the right bank will be kept closed and opened only for specially invited guests. Site at the left bank will be arranged for the every day visits of the public.

Designer has designed metal walking surfaces through the space for presentation. The light was used to emphasize the most important parts of the structure.

Approach platform to the underground archaeological site at the left bank behind House No. 1

REPORT AND ARCHEOLOGICAL EXAVATIONS OF MOSTAR FORTIFICATIONS PERFORMED IN 2002

HISTORY AND DEVELOPMENT OF THE SITE

In the earliest archive documents, the right bank of the today Mostar was mentioned as *Cimovski Grad, Cimovski Grad u Večeriću*, with no mention of the bridge.
The left bank was mentioned in 1444 as *Nebojša in the district of Večerić*, in 1448 as *Nebojša*. After 1452, both banks are regularly mentioned as one or the towns (towers) at the bridge.
It is very much clear that the bridge is an important structure mentioned, after it's building, in all documents that mention the towers at the Neretva. It can be included, therefore, that the bridge did not exist before 1452.
This further supported by the location and structural solution of the first suspended bridge, the remains of which are discovered on archaeological excavations. It appears that the bridge support at the left bank was subsequently added eccentrically to the already existing regular, symmetrical, polygonal fortification. It was built about only ten years after building of the fortifications and in a very like manner, using the same way of erecting of scaffolds. Furthermore, the walls at which the bridge rested at the right bank were not connected structurally with the Halebija Tower.

The Halebija and Tara towers with the Tara fortification were erected by the aristocrat Radingost in 1440s. The towers and the settlements by them at the left and the right banks of the Neretva, most probably, were initially not connected by the bridge. It is possible that cargoes were initially transported over the canyon by a "cable-car" between the two opposite towers. However, very soon there was built a wooden bridge with suspended central section. Although unsafe for crossing, it lasted almost a century, till the magnificent undertaking of building the single-arched stone bridge spanning 28, 6 m.

The wooden, suspended bridge was the altitude of 58.82 m above the sea level, above the high water level, which is 50.70 m above the sea level at the bottom side of peak its arch, and 60.00 m above the sea level at the highest point of the walkway. For centuries, therefore, it made a safe crossing over the restless and capricious Neretva, even above the catastrophic high water level of 53.50 m above the sea level registered in 1860.

In order to shorten the span, which was 35 meters at the wooden bridge, Hayrudin erected new supporting walls, positioned slant to the bridge longitudinal axis. He made use of the existing fortification walls and towers, partly filled them up and leaned against them. The approach to the new bridge was made over the earlier one. Side walls of the approach were erected and the space between them was filled with soil. On top of this, in thick layer of red soil and lime, cobble pavement was laid.

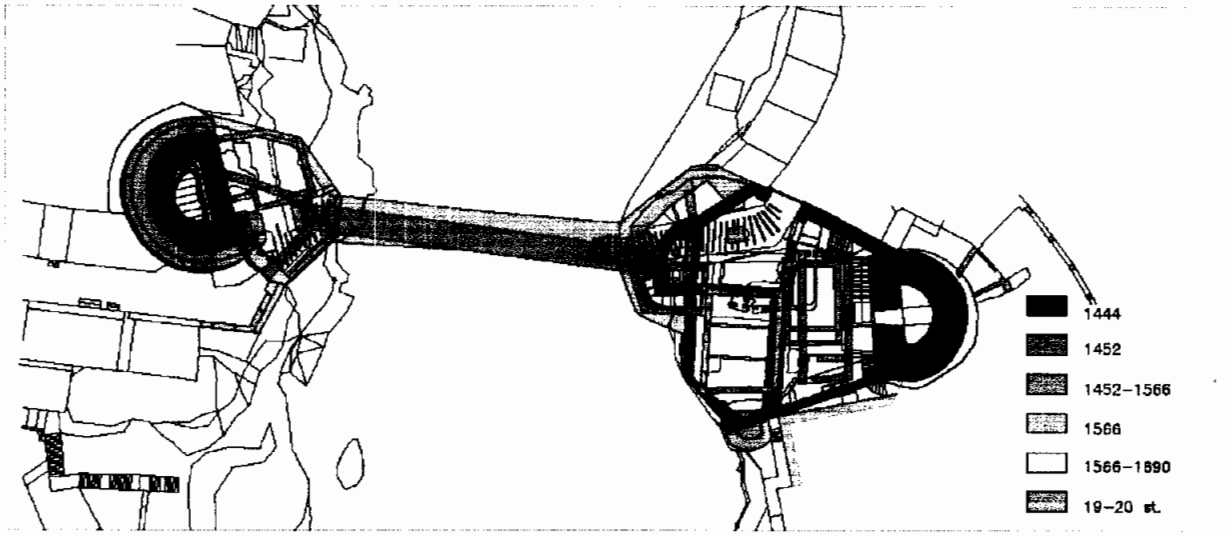
Little is known about building of the bridge. There are registered only traditional and legends, the name and the work of the great builder Hayrudin. Even now days, when bridge segments are rescued from the Neretva and all its connecting elements examined, there remains the

puzzle as how the scaffold was erected, stone transported from one bank to the other, how the scaffold stood such a log period of building, and many other "little" building problems that we encounter today, while using state-of-the-art technologies. This speaks for the builder's power, tdea, unique and understanding elsewhere, yet implemented in the piece of work that is doubtlessly among the greatest buildings of the époque.

Following detailed, but still incomplete researches, and analyzing of the archive documents, the development of this site may be divided into several stages.

- About 1444. there were towers at both banks of the Neretva. At the right bank there was the detached, semicircular, Halebija Tower, and at the left one the semicircular Tara Tower with a hexagonal fortification.
- Before 1452, the first wooden bridge that connected the two fortifications was built. The bridge was wooden, consisting of two processing console parts and the central, "suspended", section. To rest the bridge, at the left bank there was built a semicircular, asymmetrical annex to the fortification, and at the right bank a trapezoidal widening of the Halebija Tower with walls that supported the bridge.
- Between 1452 and 1566, at the right bank, the Halebija Tower was strengthened with jacket wall, watchmen walkway and merlon. The tower was risen and within the fortification a building was built to house the crew. In 1522, there was built the Sultan Selim's mesdjid, a smaller mosque for the fortification crew. The south-eastern corner of the fortification was strengthened and the Herceguša Tower was erected.
- In 1566, building of the Hayrudin's bridge was completed. There were built the protruding supporting side walls that decreased the bridge into span, and the singe-arched stone bridge was built. Over the new entrance onto the fortification, the wooden watchmen tower, "čardak", was built. Such a tower also existed over the left-bank fortification.
- Between 1566 and 1690, the fortification side walls were strengthened by erecting an inner, parallel and distanced wall and filling the space between the two walls with soil. The Tara Tower was risen once again, with new, stone, merlon on the top. The Halebija was also risen, with new merlin and gun holes. Between 1680 and 1695, Captain Halebija, after who the tower was named, rebuilt it into a covered blockhouse. He rose it and opened a number of windows, turning its uppermost floors into the crew dwellings.
- Between 1690 and 1878, lesser rebuilding were made on facades, with no significant new building. Between 1714 and 1716. lower floors of the Halebija Tower were turned into jail. At upper floors, the facades were modified by opening of new windows. The watchmen corridor on the jacket wall was risen as a ramp to the northern gate. The new parapet was built at the same time.

Buildings of the end of the 19th ct. and the 20th ct. the fish-market building at the right bank. At the left bank, next to the bridge, a smaller storehouse. The mesdjid eas built again on the old foundations. Between the mesdjid and the Tara Tower, a new residential-office building was built.



Development of the site chart

ARCHAEOLOGICAL RESEARCH

Archaeological research in Mostar was conducted in two time periods, 2001/2002, as a grid archaeological research inside the complex of two towers which resulted with continuation of research in 2002/2003. At that time the area under streets approaching the stone bridge was explored. Purpose of the investigation was to gather a new data on construction period and construction location of the earlier wooden bridge and development of belonging complex of towers. Methodologically, excavations were done as grid stratification explorations, taking into account relative chronology of the site. Layers on this research location belong to a kind of site with simple layering system, so each layer was excavated one by one. On the total depth of 10 m from the initial layer, as a result of research methodology and excavating manner, 15 recognisable drifts were excavated. Excavations were conducted to the rock level, to the terrain as it was before the settlement, which resulted with exploration area of 165 m2 on the left and 94 m2 on the right riverbank.

Left riverbank

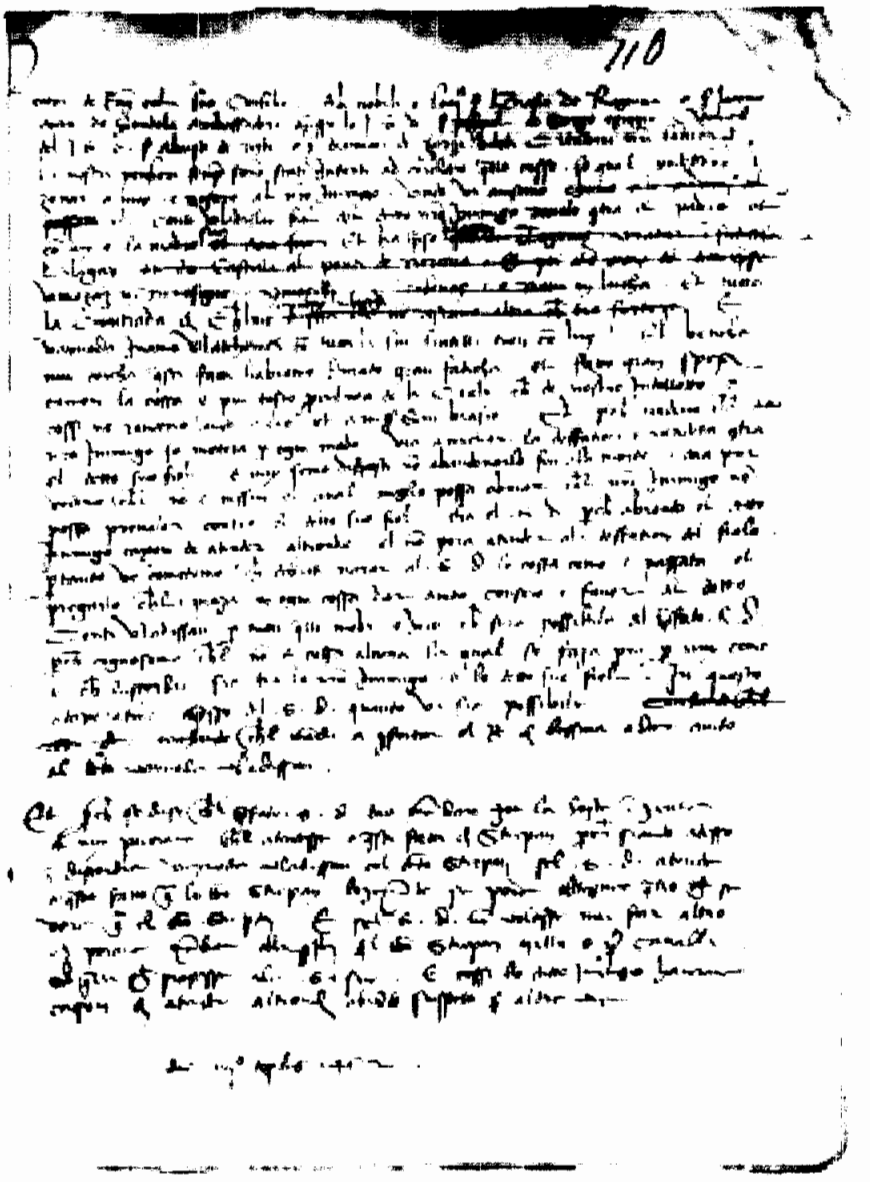
The first context on the left riverbank consisted of pavement which leaded to the Old bridge. Underneath, two older pavement layers were discovered, and in one of them the remnants of the wooden water pipe were found. Further excavating revealed the cultural layer of the same period as the wooden suspended bridge. Its original wooden parts are unwell preserved, but the bridge is very well illustrated by the remnants of pair of nine vertically pointed large oak beams placed in three rows which came out on the river in cantilever position. Wrought iron wedges that served as

connecting elements, size 20 to 100 cm, are also found. It was determined that earlier phase of wooden bridge existed, preserved in two massive masonry pylons supporting two wooden A bearers which carried suspended construction.

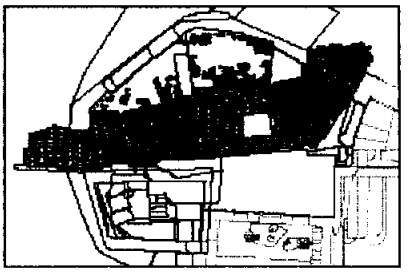
Right riverbank

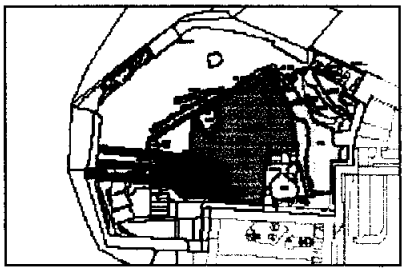
Underneath the first context on the right riverbank, that consisted of pavement which leaded to the Old bridge, it appeared that there are no cultural layers before the first cultural layer holding the structure of the wooden bridge, identical to the one on the left riverbank. Further research, due to preservation of the wooden bridge structure, is continued only in western part of the quadrant. Two cultural layers were discovered there. The first of them consists of black

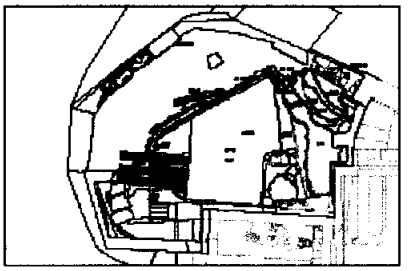
clay soil with the highest amount of archaeological finds (fractions of late medieval pottery, stone bowls, fragments of unidentified iron subjects, gun parts, cropper, hoe, anvil...).Throughout the entire surface on the left and right riverbank there is a calc-sinter and sandy subsoil. Movable archeological finds are very modest, and their dating is in accordance with the archive data and building structures on this location. In the archaeological research on the location of the present Mostar's bridge and the towers, none archaeological finds were discovered which could point out to the conclusion that the bridge and the towers are older than late middle ages, the first half of the XV century.

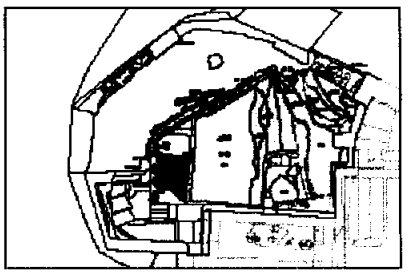


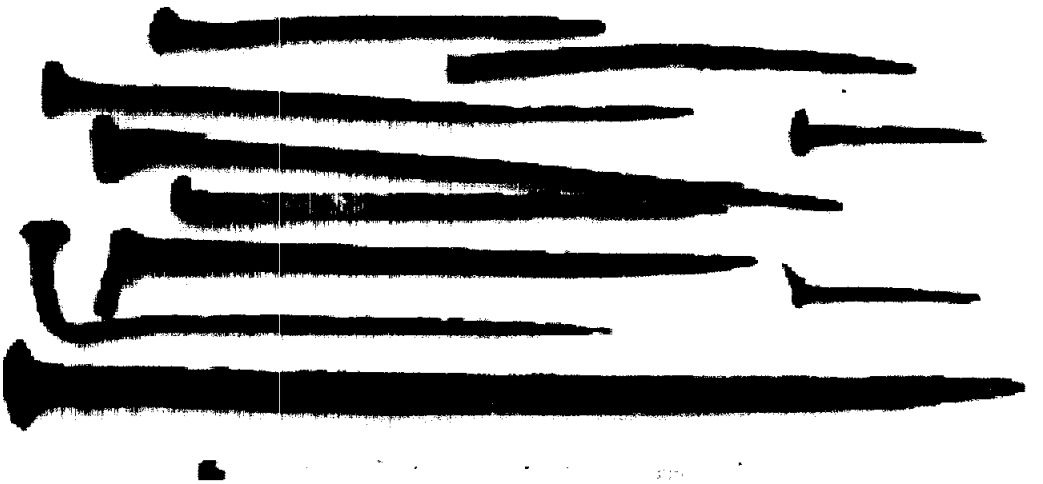
Dubrovnik Archive, Lettere e Commifissioni di Levante 1451-1452, f. 110
First mention of the Old Bridge in Mostar as: ...due castelli al ponte de Neretua...

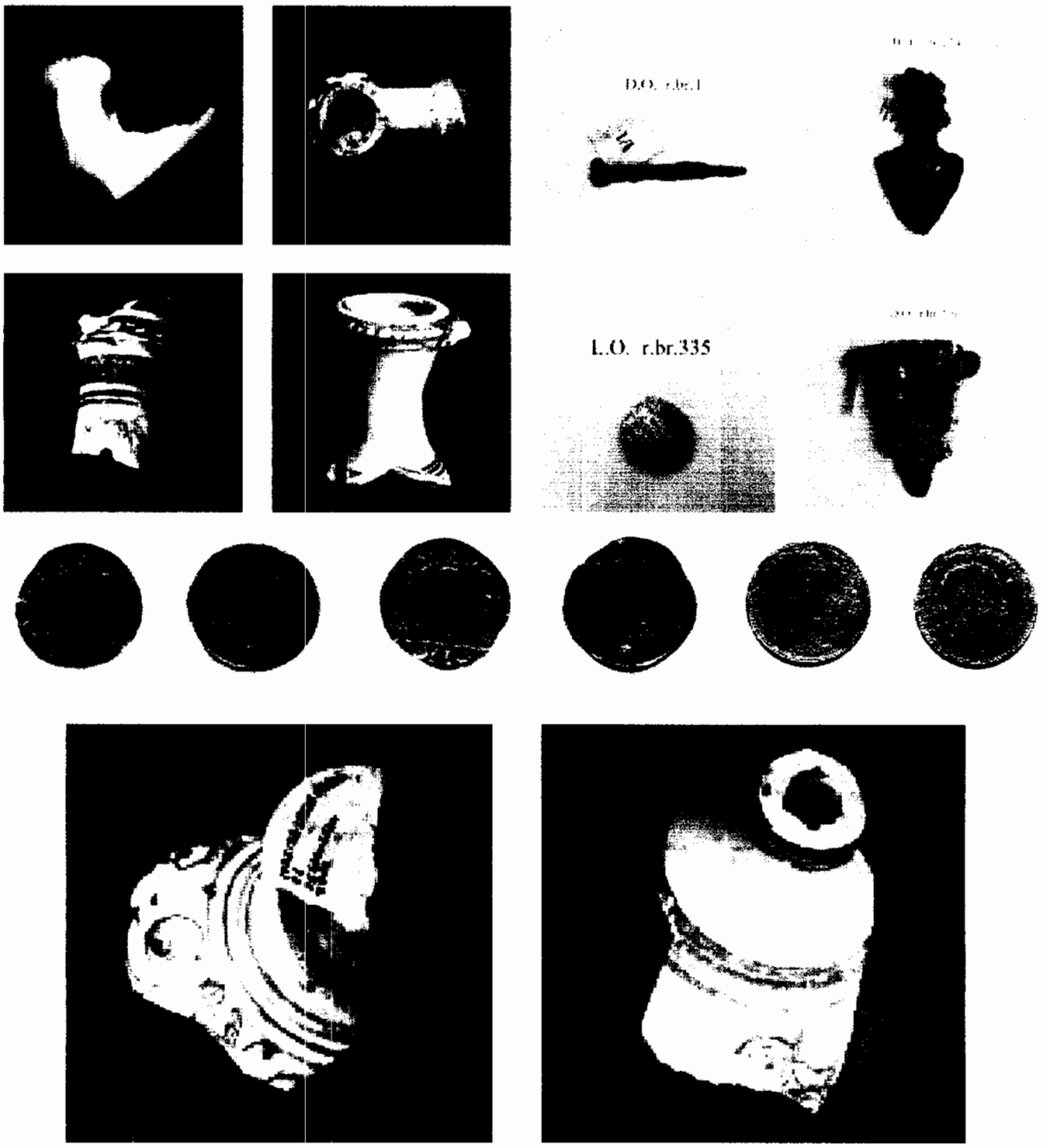












Recorded finds

Conclusions from UNESCO ICE sessions

DECISIONS OF THE FIRST SESSION OF THE INTERNATIONAL COMMITTEE OF EXPERTS MOSTAR, 17-18 NOVEMBER 1998

Definition of Stari Most and the Stari Most ensemble:
For purpose of clarification the Committee defined Stari Most as the Bridge and two towers, and Stari Most ensemble as the bridge, towers and the buildings at the each end of it.

List of Preliminary Studies Requested by the International Committee of Experts
The Committee initially identified two types of preliminary studies – those meeting immediate objectives and those meeting deferred objectives. However, after discussion the distinction cannot be maintained. For example, Prof. Kiel discovered a document of 1737 concerning restoration of Stari Most. Only exhaustive inquiry in the archives of Istanbul and Sarajevo will provide a complete view of the historical documentation having a bearing on the project for Stari Most and the Old town. It is proposed therefore, to draw up a single list of preliminary studies and to envisage the funding of each. The List is as follows:

Report on existing documentation regarding works on the Stari Most, including underwater surveys
Historical documentation on Stari Most and the Old Town, including on the traditions of Stari Most
3) Study of all stones used in the construction of the Stari Most ensemble
4) Study of mortars
5) Study of iron and lead joints
6) Study of stone cutting and dressing
7) Removal and classification of stone from Neretva River
Study of bathymetry of the riverbed and visual inspection of riverbed and banks
9) Geological investigations
10)Surveying of abutment walls
11)Surveying of arch base including initial position of the arch
12)Measurement and monitoring of displacement of the abutments
13)Study of reaction of stone and mortar to precipitation on the north and south sides of the bridge in the current situation
14)Study of foundations
15)Study of architecture of buildings and towers at the each end of the bridge
16)Study of city scape of environment of the bridge
17)Geodesic surveys
18)Survey of damages and vestiges
19)Study of the works required on the riverbed to avoid the erosion
20)Detailed studies on conservation, especially for definition of the protected area in the Old Town and its juridical protection
21)Testing of the stone pieces prior to rebuilding Stari Most

3)Documentation

1) The Committee welcomes the initiative of the Vice-Mayor on behalf of the City of Mostar to make available a space for documentation and readiness of the institutes of the City of Mostar to make available their documentation, and invites the Mayor and Vice-Mayor to ensure that documentation is available to the Committee for reproduction.

2) The Committee asks the other institutes and libraries in Bosnia and Hercegovina and in other countries to make available their documentation on Stari Most and the old town of Mostar. The members of the Committee will assist in collection of this documentation.

Newsletter and Information Services

The Committee considers indispensable that accurate information be made available to the public during the implementation of the project. To this end there should be a newsletter and an internet site. In addition there should be a permanent exhibition in Mostar throughout the project. The Committee requests that the footbridge near Stari Most be maintained to permit the public to view the progress of the works.

4) UNESCO Rehabilitation Plan

The Committee considers the Rehabilitation Plan of the Old Town prepared by UNESCO in 1997 as the basic working document for the project.

5) Statutes and Rules and Procedures

The statutes for the International Committee of Experts were approved.

INTERNATIONAL COMMITTEE OF EXPERTS (ICE)
DECISIONS OF THE SECOND SESSION
MOSTAR, 22-23 JANUARY 1999

ICE regrets that the tenders for Geological Investigations were not submitted to it during this session and expressed concern about their being opened under unclear conditions without examination of their scientific value.

Professor Kiel presented to the ICE copy of two important documents from
the archives in Istanbul. The first one concerns the well known text stating the name of the architect and the Stari Most work, the second concerning the restoration work that was undertaken.

Four speakers were invited to present report at the session:

Mr. Gilles Pequeux, on removal and classification of Stones

Mr. Alain Bouineau, on complementary tests on the Stones

Mr. Carlo Blasi, on photogrammetry

Mr. Francesko Siravo, Aga Khan Foundation, on the strategic Development Plan for Mostar

Based on their information and in line with the conclusions of the last session, the ICE agreed on the following issues:

* All stones should be removed from the river regardless of their weight since all are potentially usable whether in the bridge or as exhibition stones and thus ICE accepts the terms of reference proposed by Mr. Gilles Pequeux for the removal of the stones.

* Aware of the difficulty in reusing all the stones, ICE insisted on the necessity of classification of the stones and their storage on this basis.

* Also aware of the risk that putting stones back into their original position in the bridge might provoke, it therefore advised making complementary tests both on the stones that were in the water and the new stone before deciding on their future use (among the tests identified are ultrasonic tests, capillarity, mortar lead joints, resistance to frost and the importance of thermic differences, resistance, etc)

* As to the issue of color and other visual aspects, the Chairman proposed consulting the other members who were absent and especially Mr. Erder whose reflection on the question of authenticity enlightened the discussions at the last session.

* ICE proposes to regroup some identified tests and submit them to a single institute: for instance, the study on various mortar/ iron and lead joints which could be entrusted to the Institute for Geotechnics, Faculty of Civil Engineering, Sarajevo.

* It also suggests that the observation of Mr. Bouineau concerning the Laboratory tests contained in the working documents be taken into account and included in the tenders.

* Having examined the documents presented by Mr. Blasi, ICE welcomes the initiative and highlights the importance of having a complete survey on the bridge complex and to take into account the available documents such as drawings and photogrametrics recording. It expresses its wish to have the Institute of Zagreb make available all the documents it has on Stari Most.

* Regarding the two towers, the lack of graphic documents was underlined and ICE asked for computerized modeling for the towers using the already existing documentation.

* ICE expresses its interest in the report presented by Mr. Siravo and stressed the complementarity of the UNESCO Rehabilitation Plan for Stari Grad and the Aga Khan Foundation Strategic Development Plan and the common concern for the protection of the urban landscape, which is not limited to the urban centre.

* ICE welcomes cooperation with the Aga Khan Foundation on the issues of conservation/ preservation

* ICE decided that the discussions of the Committee would be recorded and released at the discretion of the President.

* ICE welcomes UNESCO's readiness to contribute to research in the archives of Istanbul for a period of three months (February to April 1999), in the form of a contract of DM 500 per month.

* A list of studies, indicating priorities will be presented at the next meeting.

* Mr. Ivancevic will submit a list of technical problems that must be addressed for preparation and implementation of the project. He proposed his services to coordinate the documentary research with various national and local institutions.

ICE decided that the next session will be held in March 1999.

Decisions taken at the 3rd Session of the International Committee of Experts for the Rebuilding of Stari Most and the Rehabilitation of the Old Town of Mostar, 30.June-1.July 1999.

The ICE welcomed the agreements signed by all the parties involved in the restoration and congratulates the PCU for the excellent preparation of this session.

Having heard reports by Mr. Rusmir Cisic, director of the PCU, by Mr. Dickerson, representative of the WB on the meeting, and Mr. Pequeux, the technical adviser of PCU, the ICE took the following decisions:

A. Regarding the removal of the stones from the river:

1) The Committee congratulates the PCU for obtaining the support of SFOR for removing the Bridge stones from the river bed during the month of August 1999;

2) The Committee stated that in no case, the 60-ton block, lying in the river bed, could be re-used as it stands in the reconstruction of the Mostar Bridge.

3) Therefore, the Committee recommends the PCU, either to dismantle that block and remove its elements during the summer 1999, or to leave it in the river bed until 2001 when it could be lifted by the company which will undertake the restoration of the Bridge.

B. Regarding documentation,

The ICE decides that the documents directly related to the reconstruction of the Bridge in the 19th and 20th centuries, presently in Belgrade and Zagreb, be available to PCU in the best possible form before July 15, 1999.

The Committee suggests that Professors Gojkovic and Ivancevic, could assist PCU in this matter, respectively in Belgrade and Zagreb.

Concerning the historical documentation of the Ottoman archives in Istanbul and Ankara, the Committee, after hearing a short report by Professor Kiel decided to entrust PCU to negotiate this matter with the Turkish authorities. Therefore, the Committee proposed to write a letter to PCU, suggesting that two Turkish historians be employed in Istanbul and Ankara and attach to that letter the report made by Professor Kiel.

The ICE stresses that all the relevant documentation should be kept by PCU in its office, in order to be accessible for the bidders and the members of the ICE.

C. Regarding the building material of the Bridge,

The ICE stressed that it is still impossible to define the percentage of the stones which can be re-used in the reconstruction of the Bridge. It expressed its thanks to the Turkish government for having provided funds for extracting Tenelija stone from the Mukosa quarry. It expressed its concern about the shortage of stone in Mukosa quarry which could be closed as soon as year 2000.

For this reason, it is recommended to secure as much as possible of Tenelija stone while still available.

After long discussion with the representatives of PCU and WB, the ICE concluded that it could be possible either to buy an option on stone for one or two years or to purchase immediately a stock of about 400 M3 of additional stone. Consequently, the ICE decides to write a letter to the Mayor and Vice -Mayor of Mostar to make them aware that the shortage of Tenelija stone could put at risk the Bridge Reconstruction Project.

D. Regarding the Terms of Reference,

The ICE discussed the ToR proposed by the PCU and requested clarification from the WB representative concerning the time frame of the Project. The ICE decided to modify the title of one of preliminary studies, which will be worded:

PHOTOGRAMETRY, DESIGN, STATIC AND DYNAMIC CALCULATIONS

The ICE proposed new wording of the paragraph on history, which appears in all the documents. The ICE approved the ToR of both studies and asked PCU to proceed to the bidding.

E. Advertising the Project

On behalf of the PCU, Mr . Demirovic made a report on the board that the Institute preparing for advertising the Project. The ICE thanked Mr. Demirovic for his contribution and expressed the whish the project be finalized for the next session.

Decisions of the 4th Session of the International Committee of Experts for the Rebuilding of Stari Most and the Rehabilitation of the Old Town of Mostar, 16, 17, 18 June 2000.

1. The ICE welcomes the decision of the City of Mostar regarding adoption, on 12 June 2000, of the "Urban Heritage Map and Rehabilitation Plan of Stari Grad- Mostar" prepared by UNESCO in 1997.

2. The ICE also welcomes the decision of the Government of the Republic of Turkey regarding the nomination of one Turkish expert whose task will be to establish a team of archivists in the Archives of Istanbul and Ankara in order to collect all relevant documents related to the Old Bridge in Mostar.

3. The ICE welcomes the support given by Mr. Jacques Paul Klein, Special Representative of the Secretary General of United Nations, in providing an office for UNESCO in the UN mission in Mostar.

DECISIONS

Regarding the above mentioned decision of the Turkish Government, Professor Kiel will on behalf of the ICE prepare the Terms of Reference for the work of the team of archivists in Ankara and Istanbul.

The ICE will request the City of Mostar to prepare a regulation plan and appropriate legislation for the protection of the Cultural Heritage in Mostar, especially for the old part of the City in order to implement the rehabilitation plan proposed by UNESCO in 1997.

Regarding the inscription of Mostar on the World Heritage List, the ICE will send a letter to the Chairman of the World Heritage Committee to call his attention regarding visual and environmental values of the site which are presently put at risk by illegal constructions.

The ICE expresses its concern about the cessation of the Technical Assistance Contract granted to Mr. Gilles Pequeux by the European Commission. Close and uninterrupted co-operation between the Technical Assistant, the ICE and the PCU is a prerequisite for the completion of the Mostar Bridge Project. The ICE therefore requests the World Bank to find a financial solution for the continuation of Mr. Pequeux´s services. The ICE will support the efforts of The World Bank to this aim.

The ICE recommends the PCU to prepare the tenders related to stone-cutting in the forthcoming weeks and to finalize them immediately after the completion of the preliminary study undertaken by General Engineering.

The ICE requests General Engineering to prepare one preliminary design on the basis of photogrametry and calculations. The design should include the possibility of small corrections and should be submitted to the ICE at least 15 days before its next meeting in September.

The ICE calls the attention of the PCU on the problem of drainage and infiltration near the towers and abutments of the Old Bridge. Its requests Joint Venture Yeralti Aramacilik – CONEX to propose a solution for the problem. It is also proposed that an overall investigation on the water supply and drainage system be included in a forthcoming tendering.

The ICE requests the Joint Venture Yeralti Aramacilik – CONEX to study the empty room located on the upstream side of the east abutment and to report on the possible uses of it.

The ICE proposes to include within the Terms of Reference for Towers Rehabilitation, adequate archaeological survey of the towers and their surroundings.

Decisions of the 5th Session of the International Committee of Experts for the Rebuilding of Stari Most and the Rehabilitation of the Old Town of Mostar, 26-28 October 2000.

The ICE endorses the revised plan of operations for the project presented by the PCU and expresses its satisfaction at the implementation of ongoing activities by the PCU.

The ICE asks the PCU to assure timely and appropriate information for assignments, including towards embassies in Bosnia and Herzegovina, who will be asked to publicize the assignments in their countries in order to reach a reasonable number of companies.

The ICE reiterates the decision of the 4th Session regarding the drainage system on both riverbanks behind the abutment walls and also regarding archaeological investigations in the project for the restoration of the two towers.

The proposals of the joint-venture Yeralti Armacilik-CONEX regarding the reinforcement of the foundations of the Old Bridge and the consolidation of soil behind the abutments are adopted and the joint-venture is asked to correct its final report, which will become the basis for the tender documentation.

The future contractor for the foundations will be asked to ensure that no ecologically damaging materials or processes will be used, and he will be held responsible for any damage to the environment.

LGA is asked to propose only INOX steel for interior dowels and clamps for the Old Bridge, and forged iron for visible clamps and the fence that is as similar as possible to the original materials.

The ICE notes that, according to the laboratory tests the stone from Mukosa quarry has the same characteristics as the old tenelija stone used in the Old Bridge. Therefore, the ICE recommends, after using the maximum quantity of old stone in zones of lower tension, that the tenelija stone from the Mukosa quarry should be used on a regular basis according to the specifications established by General Engineering.

The ICE expresses concern about the suggestions made by LGA concerning new mortar. The ICE asks LGA to carry out more complete analysis and investigation of the old mortars in order to prepare the composition of new mortars that will satisfy all archaeological requirements. It must be known if the composition of the old mortars is acceptable from the viewpoints of statics and durability. The origin of the colour of red mortar must be clarified, i.e. whether made of bauxite, ground brick, or natural red earth (terra rossa, pouzzalana). The composition of the new mortars must be submitted to the PCU and UNESCO as soon as possible in order to avoid any delay in the implementation of the plan of operations.

The ICE suggests that the large blocks of stone still in the Neretva riverbed, which cannot be reused in the restoration process, should remain in their present location in the Neretva riverbed as a testimony and monument to the destruction of the Old Bridge. At the same time

it is suggested that a small significant selection of blocks located on the platform, and of archaeological interest, should be preserved in view of museum display.

The ICE asks General Engineering to prepare proposals for the repair/restoration of the abutment walls against future floods. The ICE insists that rebuilding the Old Bridge does not imply the repair of small damage: a proper balance must be found between static security, durability and visual effect.

Regarding the pavement of the Old Bridge it was decided that all the old krecnjak stone should be reused and that the remaining parts should be composed of suitably prepared krecnjak stone in order to attain the same appearance.

The ICE welcomes again the adoption, on 12 June 2000 by the City of Mostar of the Rehabilitation Plan, prepared by UNESCO in 1997. Nevertheless it deeply regrets that a management plan based on the UNESCO plan has still not been prepared for adoption by the City of Mostar, which unfortunately has facilitated uncontrolled urban development.

The ICE stresses that conservation in Mostar cannot be divided according to municipal districts and recalls to the City of Mostar the urgent necessity of preserving the architectural, historical and environmental values of Mostar as a whole, particularly in connection with the project for the Old Bridge and the nomination for the World Heritage List. To this effect Messers Beschaouch and Pressouyre are requested to prepare a letter for the signature of the Director-General of UNESCO addressed to the authorities of the City of Mostar.

The ICE welcomes the recommendation of the PCU that the ICE should reinforce the technical expertise of the evaluation committee for all future assignments.

The ICE accepts phase A of the report of General Engineering, subject to specific decisions concerning materials and techniques (see points 6,7,8,10 and 11).

Decisions of the 6th Session of the International Committee of Experts for the Rebuilding of Stari Most and the Rehabilitation of the Old Town of Mostar, 4-6 April 2001

The Session was held in the presence of the majority of the ICE members, Mr. Beschaouch, Professors Erder, Kiel and Necipoglu being absent due to prior engagements.

After hearing detailed reports by UNESCO, the PCU and the Technical Assistance to the PCU, the ICE proceeded with the agenda. At the request of one of its members, it was decided to include in the present report remarks made by the experts when they were not in accordance with the decision taken by majority. Those decisions, whether taken unanimously or by a majority of the members, will be indicated in bold face type.

RESULTS OF STONE CUTTING AND THE SITUATION REGARDING PURCHASE OF EXTRA QUANTITIES NEEDED FOR RECONSTRUCTION

The ICE, having previously expressed its concern about the stone supply available in KOMOS and the shortage of Tenelija in Mukosa quarry. (3rd session, 30 June-1st July 1999), was informed that, after the supervision of stone–cutting process by Mr. Ante Krsinic and the tests performed by Prof.Langof, only 280 blocks amounting to 75 cubic meters of Tenelija stone can be used, an additional 282 cubic meters being needed for the bridge reconstruction (318 cubic meters including reserve stone in case of damage).

Mr.Cisic and Mr. Rozic have submitted this crucial stone issue to the city government, which has decided to purchase the necessary quantity of high quality Tenelija. The geological investigations carried out by Prof. Langof and Mr. Krsinic in the vicinity of the Mukosa quarry have ascertained the presence of a layer of about 10 meters wide and one meter high. It must be noted that this layer, far from being horizontal, follows a steep slope facing south.

The ICE, after discussing the report by Prof. Langof and Mr.Krsinic, acknowledges the fact that quarrying in the Mukosa quarry area cannot be performed with the relevant equipment which would avoid waste by cutting the stone according to the slope of the sediment, this equipment not being available on the site.

It stresses the necessity, in order to respect the timeframe of the reconstruction project, to start quarrying as soon as possible and to proceed immediately by stone cutting under proper supervision and laboratory tests. The material must be ready before the end of February 2002. This date is absolutely binding for contractual reasons.

FINAL DESIGN – PHOTOGRAMETRY, DESIGN AND CALCULATIONS

The ICE, having heard reports prepared on behalf of General Engineering by Prof. Vignoli and Mr. Romeo, stresses the fact that results of phase B should have been available seventy days before, on 15 December 2000.

In order to respect the timeframe of the project, three experts for the ICE, namely Professors Gojkovic, Langof and Mulabegovic, will give by written form their final comments on the last version of the Phase B design before 15th April 2001, at the latest. The documents, updated with their comments, will be submitted to the PCU for final approval.

During the drawing up of Technical Specifications and Definition of Unit Prices by the PCU Technical Assistance, the same ICE experts will work closely with the PCU Technical Assistance. During this phase, the design prepared by General Engineering could be slightly modified.

On behalf of General Engineering, Mr. Mela stresses his willingness to co-operate. His team will be available for clarification, if needed, even after the formal acceptance of their final report.

LABORATORY TESTS

At the request of LGA, the ICE heard reports from Professors Luigia Binda and Giulia Baronio, of the Politecnico di Milano, in which three different mortars for the Old Bridge were presented:

mortar with washed Neretva sand and burned lime, mixed at a ratio of 1:3, giving a compressive strength of 0.84 MPa;
same as a) but Neretva sand is mixed with 2% silica fume, giving a compressive strength of 0.87 MPa;
same mixture, but with 10% silica fume, giving a compressive strength of 4.5 MPa, after 28 days.

The designer requires at least 5 MPa compressive strength. Prof. Langof stressed that mortar being a basic constructive element of the bridge, its mechanical characteristics should be known, including elasticity modules.

The ICE decided that the mortars should be divided as follows: a) red mortar under the pavement prepared in the traditional way; b) mortar for the arch corresponding to proposal c) of LGA with sufficient retentivity.

The LGA recommendations for pouring techniques were accepted, and ICE proposed that the PCU include LGA recommendations in the technical specifications.

As a personal suggestion, Prof. Ivancevic insisted that Omega Engineering should prepare for testing a number of mortars similar to those used in Dubrovnik on the occasion of the restoration works.

TURKISH ARCHIVES

The ICE heard a report on the Ottoman archives concerning Stari Most by Professor Mehmet Ibrahimgil, Professor of the History of Art at Gazi University, Ankara. Prof. Ibrahimgil has found in Istanbul an important document included in the Muhimad Efteri relating the construction of the bridge and showing that the city planning had been started from the bridge itself.

Another document is related to the first restoration of the bridge and shows that, as for its construction, the villagers of the vicinity who were working on Stari Most were exempted from taxes. This decision concerned 23 villages or settlments in the region of Mostar.

The ICE expressed its thanks to Prof. Ibrahimgil and to the Turkish government for appointing him for this research job. It is decided that the ICE will send a list of requirements for further research to Prof. Ibrahimgil through the Sarajevo office of UNESCO. Meanwhile, a progress report will be sent to the ICE by Prof. Ibrahimgil.

TOWERS

The ICE, having heard a preliminary report on the restoration of the bridge towers by Mr. Pekovic, on behalf of Omega Engineering, expresses its doubts as to the feasibility of the whole programme in the short time allowed to the company.

It is underlined by several members of the Committee that the final functions of the towers and of the adjacent monuments are the responsibility of the city government, after appropriate discussions with the land and real estate owners concerned and that it is therefore premature to define them beforehand. The ICE expresses its doubts and concerns regarding the use of the towers for museums, galleries, shops or coffee-shops. The restoration should aim at revealing the architecture of the Tara and Halebija towers, two major monuments which should be understood and visited as an intrinsic part of the bridge complex.

At the present stage Omega Engineering must avoid carefully the elimination of 18th- century structures, such as the vault in Tara tower, or the reconstruction of other elements, such as the upper part of the towers with a conjectural roofing of the 15th century. The philosophy of the restoration is to preserve as much as possible the shape and general aspect of the towers prior to the destruction of the bridge. Limited interventions concerning roofing, access and circulation will have to be approved by the ICE after submission of a detailed and precise project.

On the other hand the ICE again stresses the need for archaeological investigations already underlined on the occasion of the 4th and 5th sessions. It is necessary to start a comprehensive study, including survey, visual examination of the masonry and excavations of selected areas. It is also advisable to have recourse to archeometric methods such as dendrochronology in the case of the timber elements to be found in the walls of Halebija tower.

Archaeological investigations are an essential part of the contract, which made provisions for the presence of an archaeologist- Prof. Ante Milosevic- in the team. They cannot be carried out by the team which is working on the drainage system nor by the team which will be drilling pits at the request of Mr. Damir Corko on behalf of the Conex-Yeralti Aramcilik joint venture with a view to preparing the works on the foundations.

Within the timeframe of the project, it is obvious that the hydrological investigations must be performed before the beginning of the works on the foundations and that the archaeological investigations must also predate any intervention on the masonry.

TERMS OF REFERENCE

The ICE decided that in the future all terms of reference for expressions of interest, pre-qualifications and contracts will be discussed and approved by the ICE in order to avoid certain problems encountered in the past.

EVALUATION COMMITTEE

The ICE discussed the means of improving the pre-qualification and evaluation process. The final document for pre-qualification has to be approved by ICE, before publication in Development Business. It is decided that the members representing the ICE during the evaluation of the pre-qualifications will also sit in the evaluation committee for the appointment of the successful bidder for the reconstruction works. The evaluation committee will consist of 3 members of the ICE and 3 members of the PCU with possible assistance of a mediator if needed.

SUPERVISION

Concerning the supervision of the strengthening of the foundations, the ICE recommends hiring one of the experts of the companies that have been involved in the geological investigations. The ICE was informed that the supervision is the responsibility of the Technical Assistance to the PCU, which agreed to cover the cost of the above-mentioned expert.

An approval for expression of interest concerning the supervision of the bridge reconstruction should be published on 16th April together with the notice for pre-qualification.

The ICE suggested that the supervisor will be a qualified restoration architect assisted by experts in the various fields (mortars, stone-cutting and dressing, lead-pouring process, etc.). It was suggested that experts from the companies that have been involved in preliminary studies could be considered for these assignments.

Decisions of the 7th Session of the International Committee of Experts for the Rebuilding of Stari Most and the Rehabilitation of the Old Town of Mostar, 15-16 January 2003

Recommendations

CENTERING

Considering that it is necessary for the bridge reconstruction not to focus only on the technical discussion and documentation of the centering design but also to take into consideration the close link between the arch concept of the Old Bridge and the centering, the experts adopted the following recommendations:

The actual centering design must be revised in order to consider all possible deflections, the compression of centering foundation columns, the rotation of the centering foundation columns and cantilevers, the horizontal venting.
The revision must include radial beams and height regulators.
It is important to add to the centering a system of hydraulic jacks.
Monitoring of the deflections of the centering by means of precision levelling should be permanent and a survey progremme should be defined. Such a programme should envisage procedures appropriate to keep constant the points of the intrados of the arch.
It should be determined if there is enough space on both sides of the bridge for a secure access during the treatment of the joints.
The temporary reinforced concrete pillars should be removed at the end of the works by demolition in such a way as to avoid any vibrations on the Old Bridge. Appropriate means are helocoidal wires with diamond edges.

DOWELS

For dowels permanently connecting the stone blocks it is highly recommended to use the metals which have proved to be not subject to serious corrosion for a period of the order of 100 years.

Carbon steels produced by modern industrial processes do not have the properties of the iron produced in the 16th century. Their expansion caused by corrosion gives rise to ruptures of the stone.

Appropriate materials are stainless steel and titanium.

MORTARS

It is recommended that, according to the Venice Charter, only mixtures proven by longterm application should be used as mortar for filling the joints of the stone masonry. However, cement mortar should be avoided.

The vertical joints of the arch should preferably be less than 10 mm thick. In the case of use of traditional lime mortar, centering should be in place for a period sufficient to reach partial carbonation and solidity. Experimental applications on site or in the laboratory should be resorted to in order to check the appropriate consistency for a satisfactory application.

GEOMETRY

It is again recommended that the geometry of the Old Bridge be kept according to the photogrammetric survey done in 1982, with only minor modifications where needed and justified. The structural calculations by finite elements should be done by applying permanent and variable actions and seismic actions to a numerical model built according to such a geometry. Such calculations have not yet been presented to the ICE.

THE PRESENTATION OF THE AECHEOLOGICAL REMAINS

As a result of the archeological research we have gained important new knowledge of the history of the Old Bridge. The archeological remains especially within the area of Helebija and Tara towers constitute an important testimony regarding the historical phases of the bridge itself, the urban development of Mostar, and the history of Bosnia and Herzegovina.

Therefore, the conservation of the architectural structures such as wooden bridge from the 15th century by appropriate techniques and material must be implemented, their proper storage-area should be also guaranteed. As it is stated in the Venice Charter, the restoration should stop after there is a conjecture and it may be necessary to only allow anastylosis.

It is recommended to include the archeological remains within any cultural and touristic tours in Mostar and to insure an esthetical and pedagogical presentation of all significant elements of these remains.

PROPROSITIONS MADE BY Dr. RADOVAN IVANCEVIC, Dr. ZLATKO LANGOF AND THE ARCHITECT FERHAD MULABEGOVIC FOR TESTING OF MATERIALS, CHISELING TECHNIQUE, APLICATION OF MORTARS AND ASSEMBLING METHODS

If the tests, proposed by us at present, had been carried out at begin of 2002, today we would have had on our disposal precious information for assembling of the bridge more than one year old

It is necessary to cut models in smaller ratio, but also in the ration 1:1 according to the drawing for building them into the arch of the bridge

Those stone blocks should be assembled under same conditions (line of the bridge-line of the arch) in elements-various lines of 2-5 pieces and connected by mortar

Dowels and clamps in led should be used in the same manner

Elements / (stone blocks) prepared in such a manner should be connected immediately (if the exterior temperature is not suitable, that this should happen in a closed space), and results of applied techniques should be checked by monitoring and eventual cutting as well as the process of mortar consolidation. Contractor and supervisor can determine if they like to perform it once a month or in other intervals.

It is however necessary to carry out the analysis of the effects of the cutting of the ashlars, application of mortars and other connecting components every three months and then to inform the ICE about the results. If it is not possible to organize a meeting in Mostar all photographic, graphic and other documentation with exhausting analytical comments should be handed out to the experts.

INTERPRETATION OF THE SITE

Considering that the bridge and towers proved to be a very complex ensemble of historical layers discovered during the archeological activities:

The interpretation of the archeological findings on the site, their esthetic and didactic presentation as well as the concept for the presentation of found artifacts in the site Museum should be truly comprehensive. It should include a history of the destruction and reconstruction of the bridge and towers.

CONCLUSIONS OF THE 8TH SESSION OF THE INTERNATIONAL COMMITTEE OF EXPERTS FOR THE RECONSTRUCTION OF THE OLD BRIDGE AND REHABILITATION OF THE TARA AND HELEBIJA TOWERS IN MOSTAR

MOSTAR, 8 APRIL 2004

DRAFT

Today on 08 April 2004, the International Committee of Experts has completed its final 8th Session. The Committee was actively involved in the studies and the monitoring of the rebuilding of the Old Bridge of Mostar with the rehabilitation of towers since its beginning.

First of all we have unfortunately to mention that during the mandate of the Committee two of our colleagues passed trough Prof. Milan Grošković (Serbia and Montenegro), he was working for its conservation since 1955, he was taking care of it for than 30 years. Therefore the Old Bridge of Mostar was always his love.

- Prof. Radovan Ivančević was symbol of courage. Unfortunately his last wish did not became the reality and he will never see bridge rebuild.

Than we have to use this opportunity to express our deep gratitude to the City of Mostar, the Mayor and Deputy Mayor to the Project Coordination Unit, to the Supervisor to EAR-BU and to the Joint Venture Gradjevinar Izet, Karadzvo, HP Investing.

We have also to pay a special tribute to all involved in the project as well as the designer General Engineering, participants, experts and technicians.

Finally considering the efforts and the results, the Committee is pleased to say that the main aim of the rebuilding of the Old Bridge were fulfilled

1. The identity of Mostar, (Bosnia and Herzegovina), known through the Old Bridge is being restored.

2. The quality of the studies conducted and the works implemented are to the satisfaction of the City, the PCU and the ICE.

3. We hope strongly that the Old Bridge rebuilt will be the symbol of the reconciliation and the starting of the standing development for Mostar and its region.

4. We recommend that during the period remaining until the ceremony of 22 July the PCI and the Supervisor will take into account the remarks and suggestions made by the members of the IC.

5. We recommend to the World Heritage Committee due to the values of the Old City of Mostar and the Old Bridge rebuilt, to consider the importance of the inclusion of the Old City (Stari Grad) around the Old Bridge (Stari Most) in the World Heritage List, following guarantees and measures for the conservation not only of the monuments but also of the entire historic site.

Prof. Giorgio Macchi

Prof. Gabi Dolff - Bonekamper

Prof. Zlatko Langof

Prof. Cevat Erder

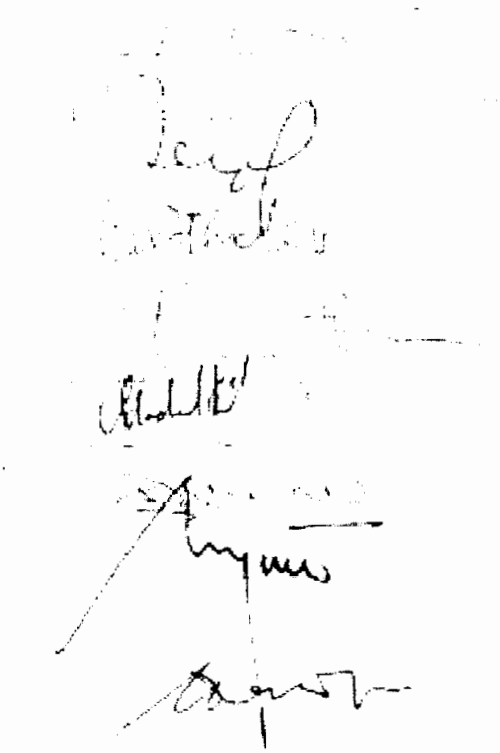
Prof. Azedine Beschaouch

Prof. Mihailo Muravljov

Prof. Machael Kiel

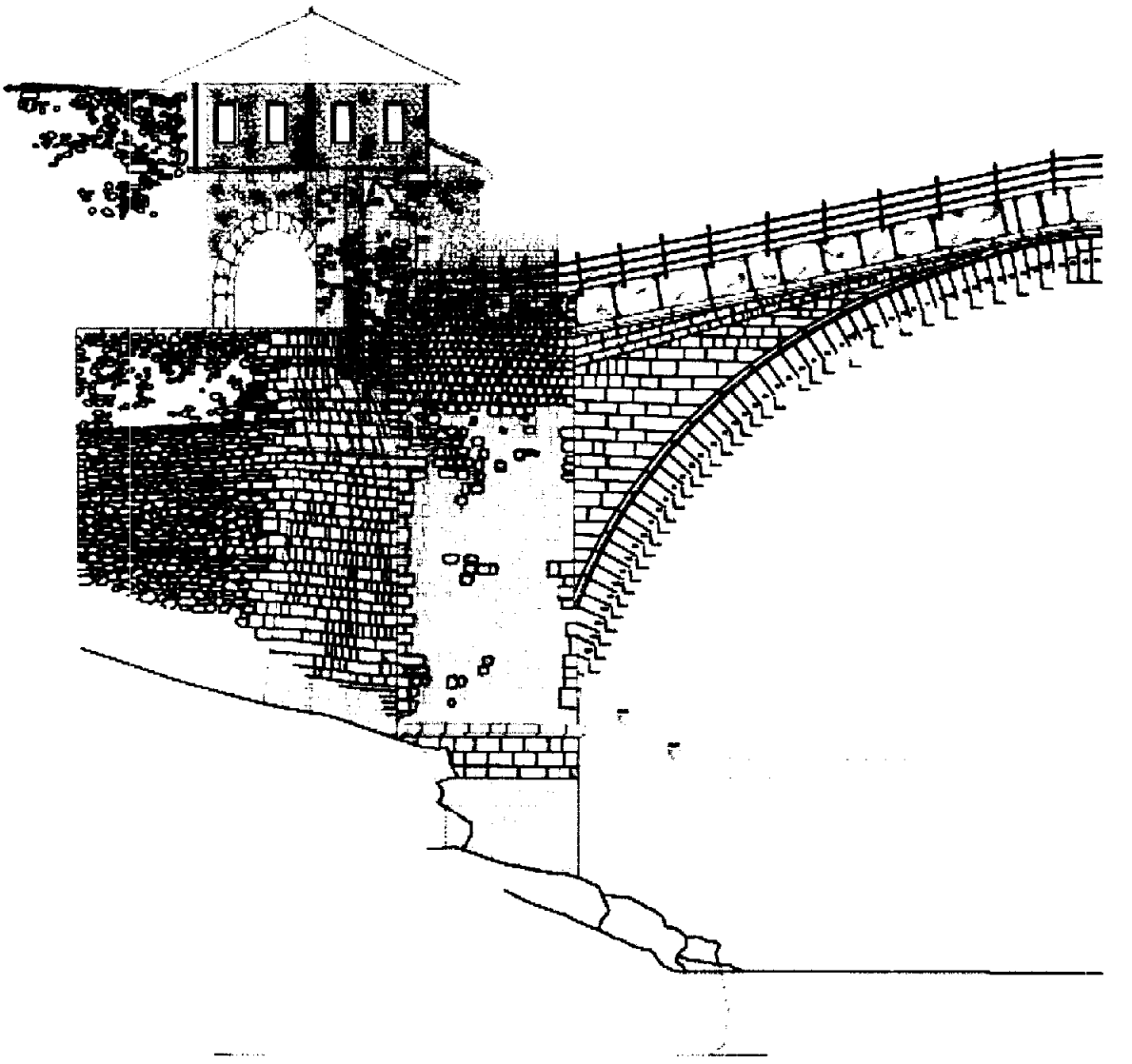
Prof. Eddy De Wolf

Mr. Fernad Mulabegovic

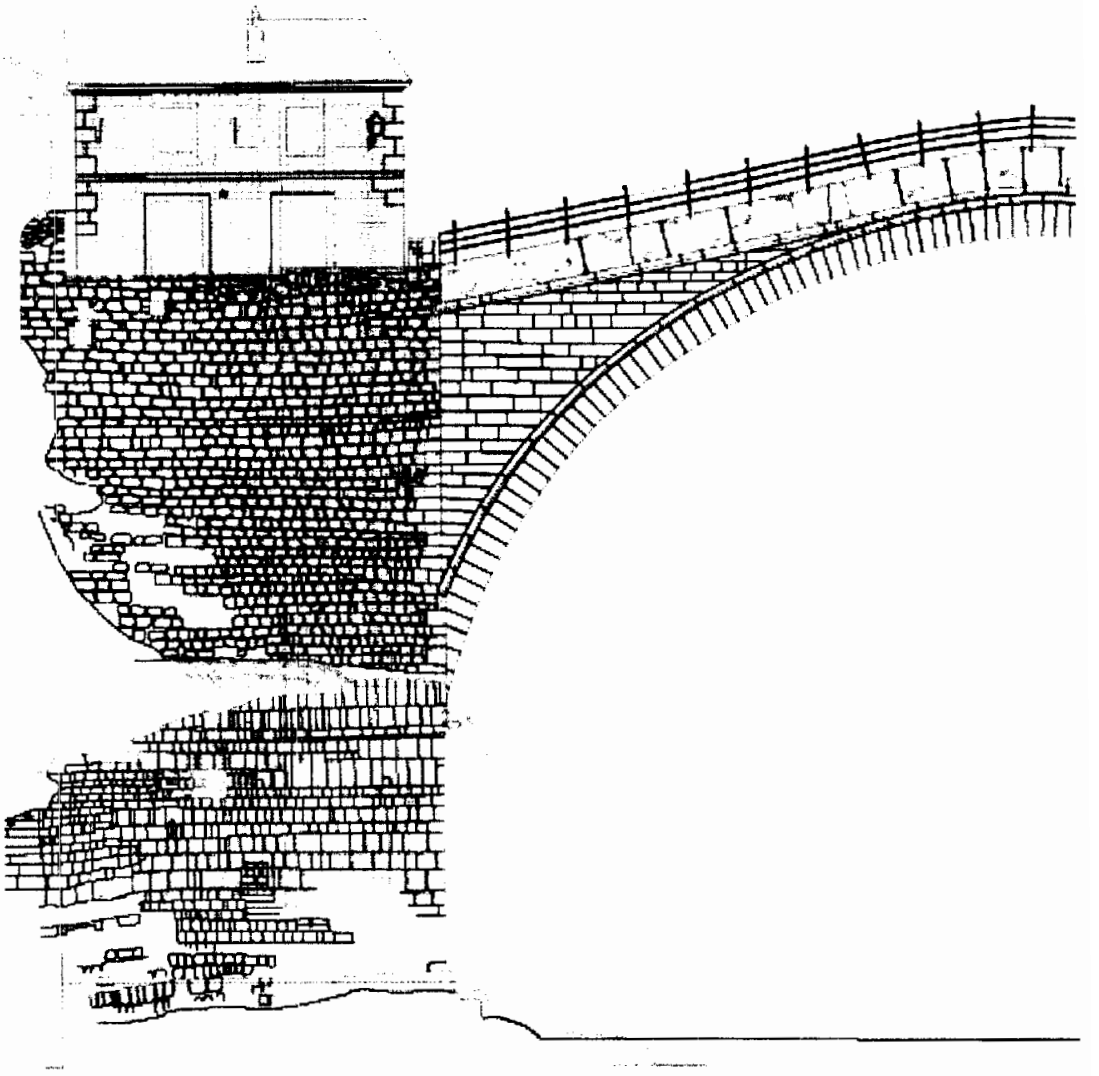


Photogrammetry – "before and after"

(photogrammetry used for the reconstruction were done by Survey institute University Zagreb, survey of the reconstructed bridge was done by PROTON, Mostar)



Photogrammetry from 1982. overlaped w



Photogrammetry from 1982. overlaped w

Monitoring of the bridge – system of prssure cells and strain gauges installed on the arch (LGA, Nurnberg – Germany)

LGA Bautechnik GmbH
Measurement Solutions

Test laboratories accredited by
DAP Deutsches Akkreditierungssystem Prüfwesen GmbH.

Certified in accordance with DIN EN ISO 9001/14001.

LGA Bautechnik GmbH • Postfach 30 22 • 90014 Nürnberg

PCU-MOSTAR
Mr Tihomir Rozić, Deputy Director
Adema Buca 17
88000 Mostar
Bosnia I Herzegovina

Your message	Your reference	Our reference	Contact person	Telephone	Nuremberg,
		BBMT0400067	Homburg/Juricevic	+49 (0) 911 6 55-5574	10.01.2005

Monitoring system for the Old Bridge in Mostar

Online Monitoring – Status June 2004 to January 2005

Dear Sirs

Please find attached visualization of measured values which were recorded by the instruments installed at the old bridge "stari most" in Mostar.
The displacement of the ashlars were strain gauges have been installed reaches a maximum of 0,80 mm between the left bank and the top of the bridge at the position of strain gauge 359. Strain gauge 448 which is installed at the left upper quarter of the bridge reaches a maximum measurement of 0,87 mm. The pressure measured in the joints between the ashlars sinks to a minimum pressure of 182 kPa at the position of gauge 691 which is corresponding to the sinking temperature at site.

Please do not hesitate to contact me for any further questions or suggestions.

Sincerely yours

LGA Bautechnik GmbH

Günther Jost, ,Dipl.-Ing.

Sven Homburg, M.Eng.

LGA Bautechnik GmbH • Tillystraße 2 • 90431 Nürnberg
Tel. +49 (0) 911 655-5574 • Fax +49 (0) 911 655-5536
E-Mail: sven.homburg@lga.de • http://www.lga.de

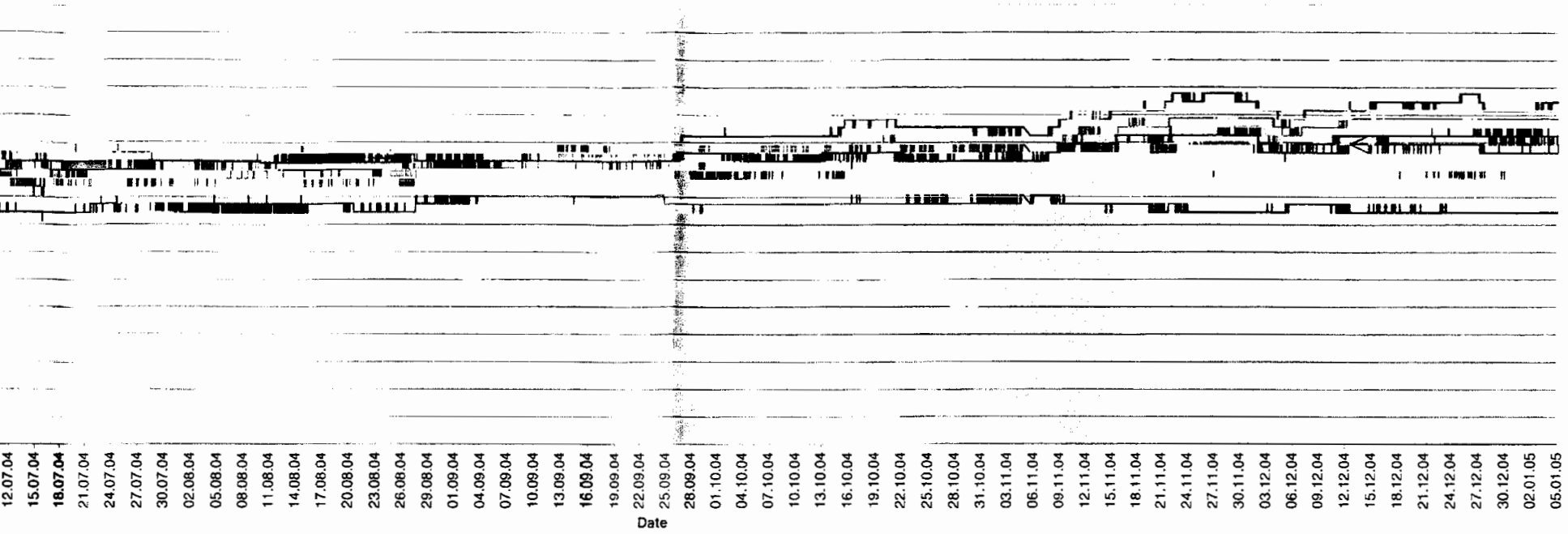
Company register Nürnberg HRB 20586
Executive Board: Peter Röckl, Hans-Hermann Ueffing
A member of the LGA© - group of companies
Tax No: 241/115/90733 VAT No: DE813835574

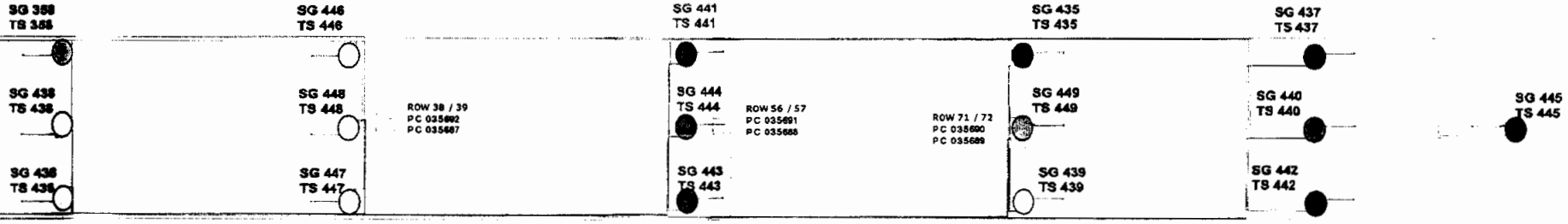
Monitoring of relative Displacement

Measurement Data from 23.06.2004 to 05.01.2005

LGA

Online - Monitoring
Tel.: 0911 655 5574
Project: STARI MOST ; Mostar





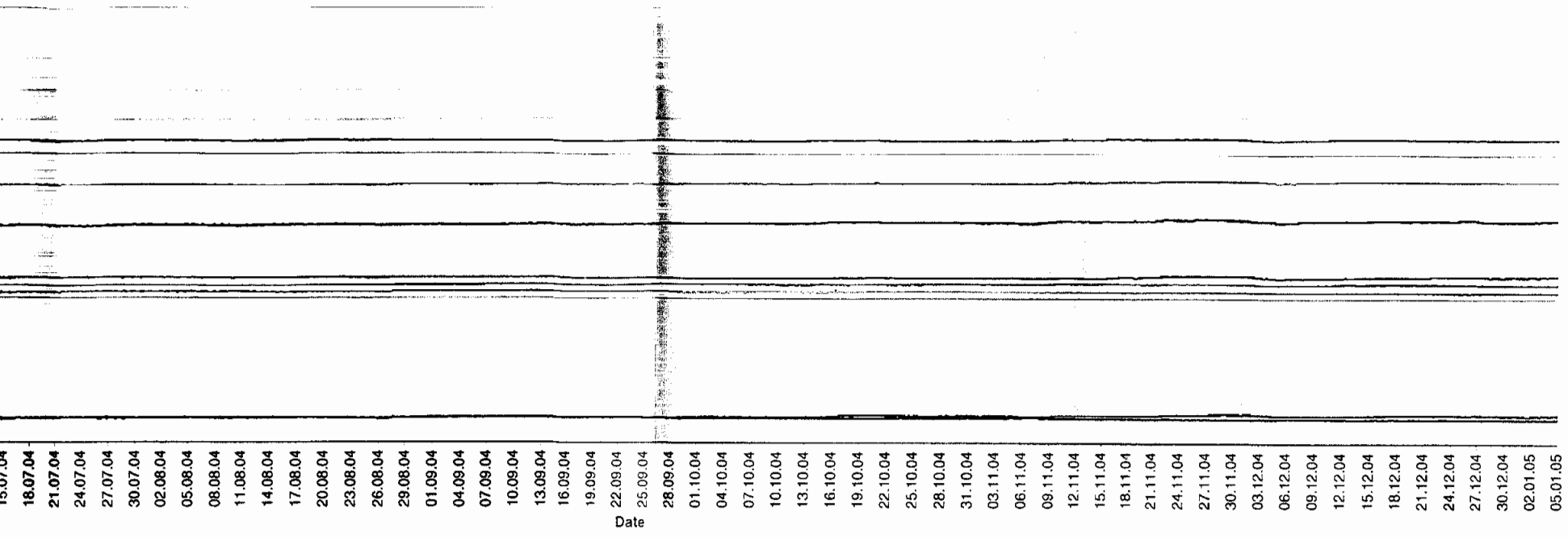
- Cannel 1 Exten. 441 [mm]
- Cannel 3 Exten. 449 [mm]
- Cannel 5 Exten. 442 [mm]
- Cannel 7 Exten. 437 [mm]
- Cannel 2 Exten.436 [mm]
- Cannel 4 Exten.358 [mm]
- Cannel 6 Exten. 448 [mm]
- Cannel 8 Exten. 443 [mm]

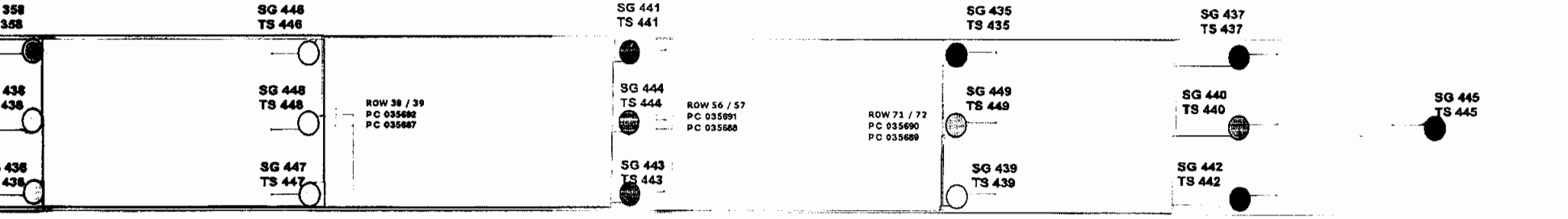
Monitoring of absolute Displacement

Measurement Data from 23.06.2004 to 05.01.2005

LGA

Online - Monitorin
Tel.: 0911 655 557
Project: STARI MOST ; Mosta





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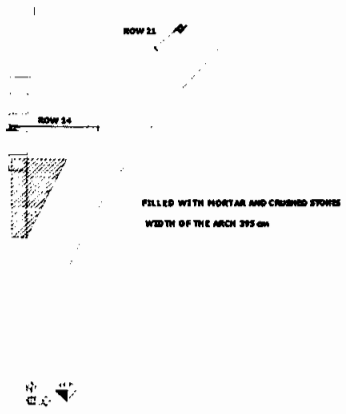
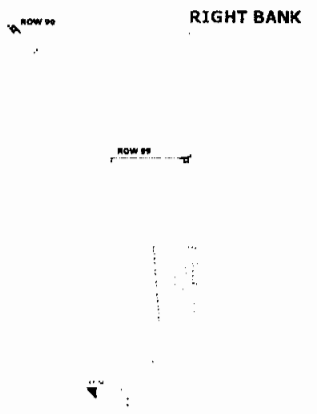
- Cannel 8 Exten. 443 [mm]



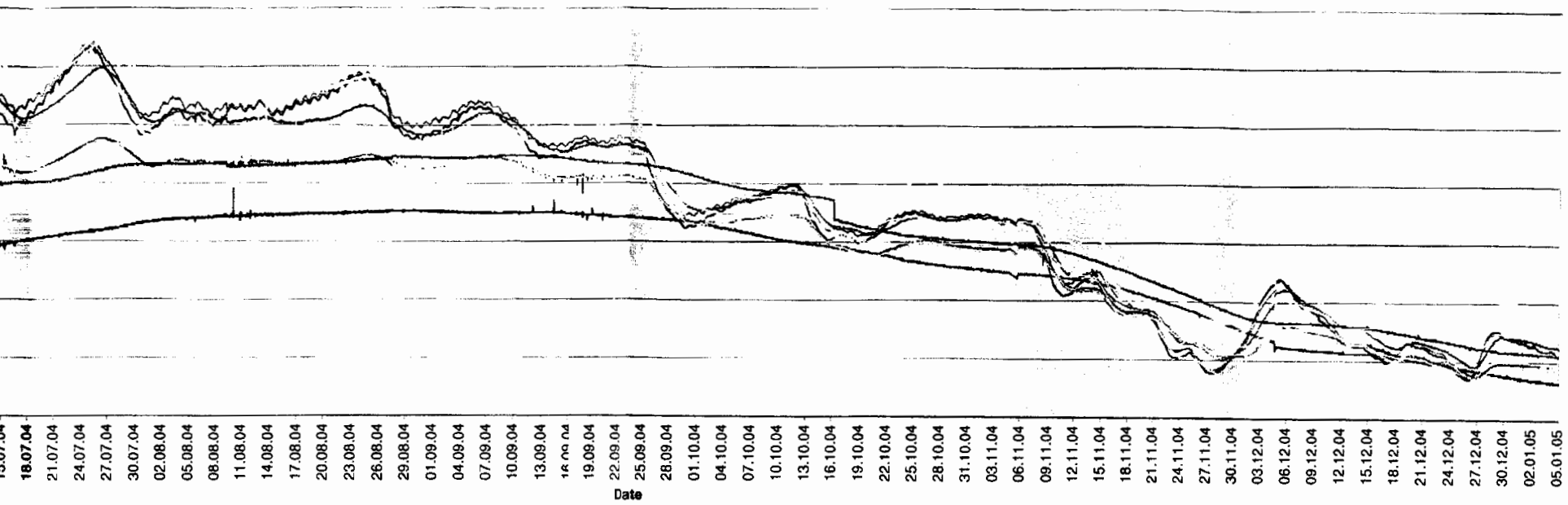


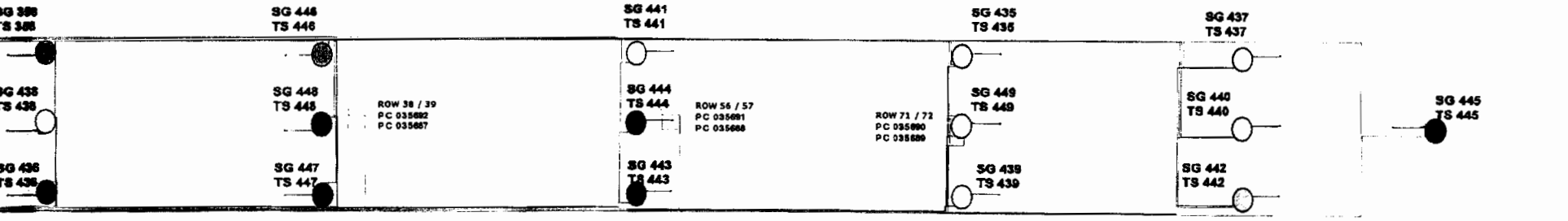
RIGHT BANK

Monitoring of Temperature

Measurement Data from 23.06.2004 to 05.01.2004

Online - Monitorin
Tel.: 0911 655 557
Project: STARI MOST ; Mosta





Cannel 2 PT 100 Nr.2 °[C]

Cannel 1 PT 100 Nr.7 °[C]

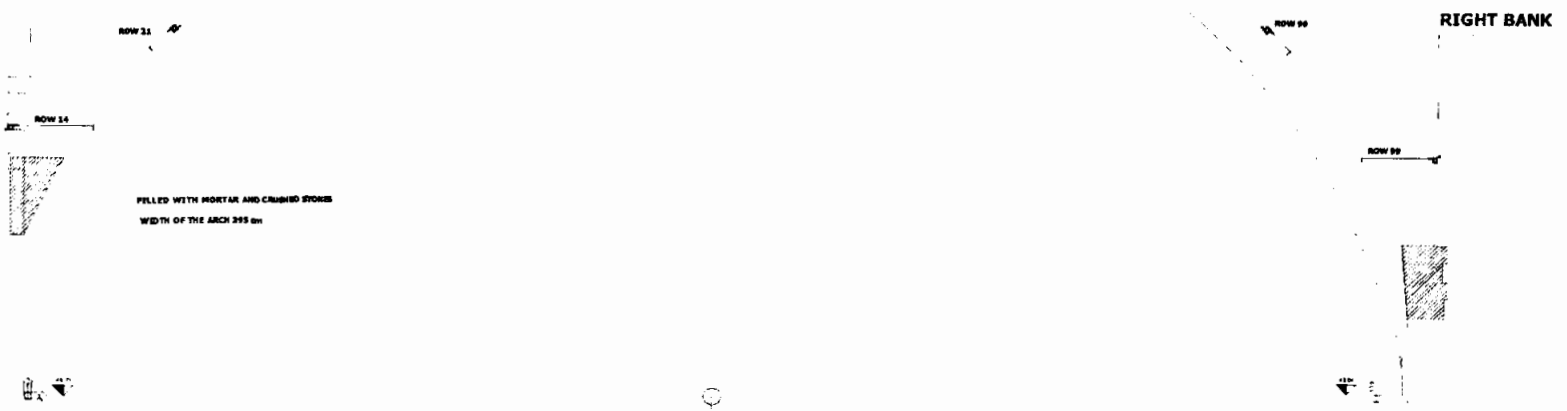
Cannel 3 PT 100 Nr.9 °[C]

Cannel 2 PT 100 Nr.11 °[C]

Cannel 1 PT 100 Nr.13 °[C]

Cannel 3 PT 100 Nr.15 °[C]

Cannel 3 PT 100 Nr.17 °[C]



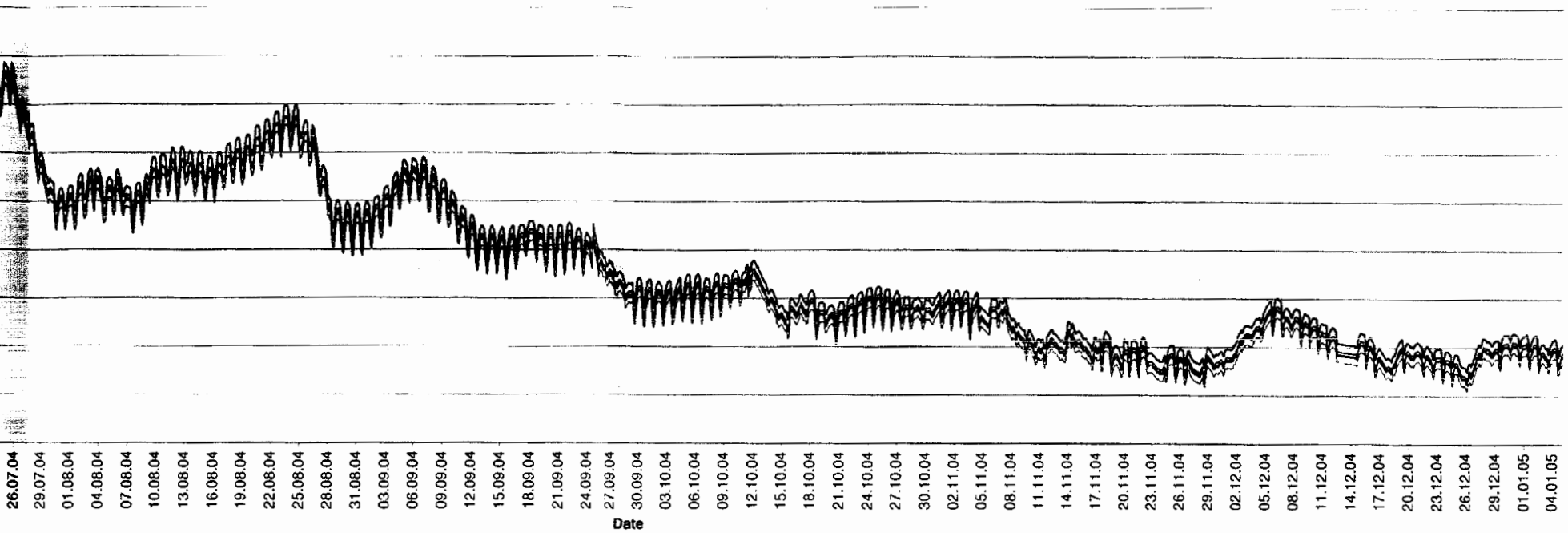
Company register Nuremberg HRB 20586
Executive Board: Peter Röckl, Hans-Hermann Ueffing
Tax No: 241/115/90733 VAT No: DE813835574

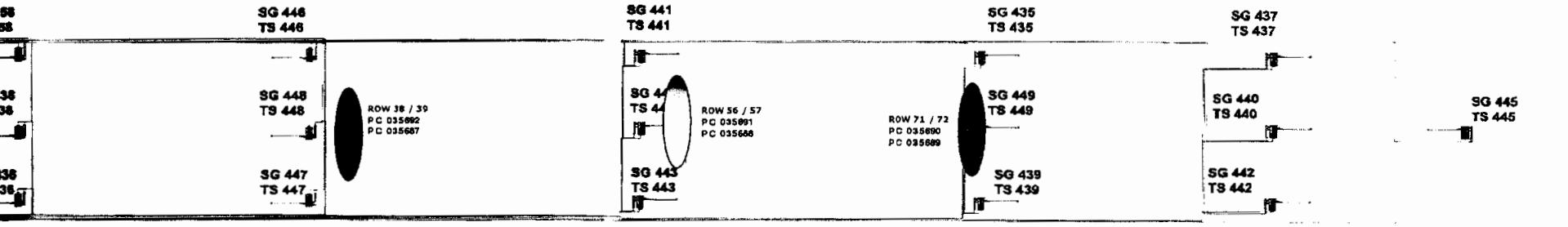
Monitoring of Pressure Cells

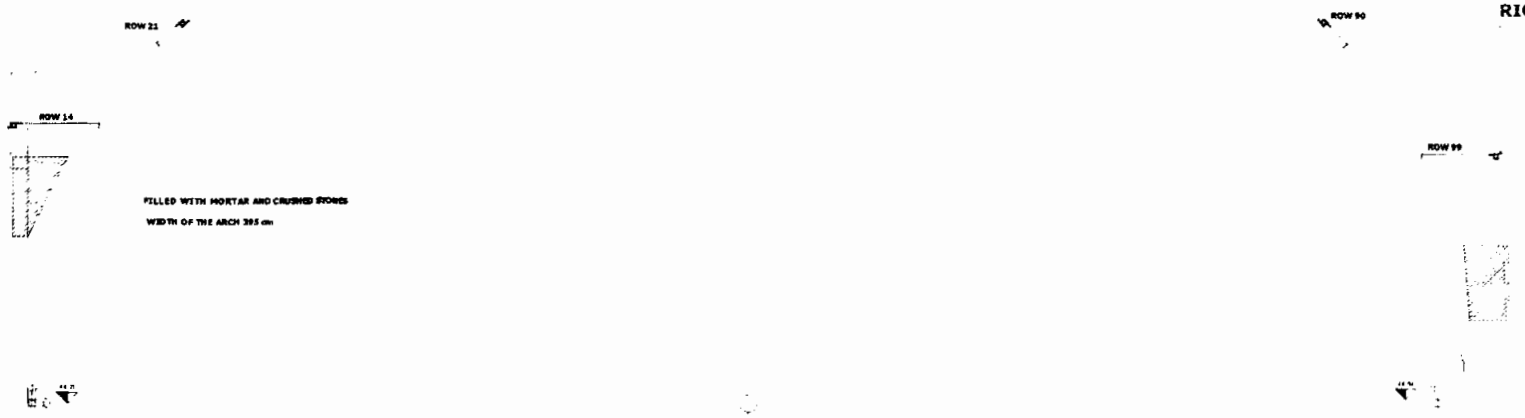
Measurement Data from 23.06.2004 to 05.01.2005

LGA

Online - Monitorin
Tel.: 0911 655 557
Project: STARI MOST ; Mosta







annel 2 Gauge 689 [kPa]

annel 4 Gauge 687 [kPa]

annel 6 Gauge 688 [kPa]

Mostar (Bosnia and Herzegovina)

No 946 rev

1. BASIC DATA

State Party: Bosnia and Herzegovina

Name of property: The Old City of Mostar

Location: Herzegovina-Neretva Canton

Date received: 15 July 1998, with additional information on 14 January 2002; revised nomination submitted 27 January 2005

Category of property:

In terms of the categories of cultural property set out in Article 1 of the 1972 World Heritage Convention, this is a *group of buildings*. In terms of the *Operational Guidelines for the Implementation of the World Heritage Convention* this is an area of an inhabited historic town (2005).

Brief description:

The historic town of Mostar, spanning a deep river valley, developed in the 15th and 16th century as an Ottoman frontier town and during the short Austro-Hungarian period in the 19th and 20th centuries. Mostar has been characterised by its old Turkish houses and the Old Bridge, designed by the renowned architect, Sinan. In the 1990s, however, most of the historic town as well as the Old Bridge were destroyed. In the past few years the Old Bridge has been rebuilt and many of the buildings in the Old Town restored or rebuilt.

2. THE PROPERTY

Description

The area nominated for inscription spans the Neretva River, with the bridge at its centre.

Of special significance is the Radoboija stream, which enters the Neretva on its right bank. This provided a source of water for the growing settlement, and from it spring a number of small canals used for irrigation and for driving the wheels of water-mills.

The centre of the settlement was the bazaar, which extended on both banks of the river, the two parts being articulated by the bridge. From them began the network of streets forming the *mahalas*. This system was altered to a considerable extent during the Austro-Hungarian period, when the new quarters were laid out on European planning principles and other bridges were built across the river.

The nominated area and its buffer zone contains many important historic buildings. Of the thirteen original mosques dating from the 16th and 17th centuries, seven have been destroyed during the 20th century for ideological reasons or by bombardment. One of the two 19th century Orthodox churches has also disappeared, and the early 20th century synagogue, after undergoing severe damage in World War II, has been converted for use as a theatre.

Several Ottoman-period inns also survive, along with other buildings from this period of Mostar's history such as fountains and schools.

The administrative buildings are all from the Austro-Hungarian period and exhibit Neo-Classical and Secessionist features.

There are a number of houses surviving from the late Ottoman period (18th and early 19th centuries) which demonstrate the component features of this form of domestic architecture – hall, upper storey for residential use, paved courtyard, verandah on one or two storeys. The later 19th century residential houses are all in Neo-Classical style.

Some early trading and craft buildings are also still existent, notably some low shops in wood or stone, stone store-houses, and a group of former tanneries round an open courtyard. Once again, the 19th century commercial buildings are predominantly Neo-Classical in style.

A number of elements of the early fortifications are visible. The Hercegusa Tower dates from the medieval period, whilst the Ottoman defences are represented by the Halebinovka and Tara Towers, the watch-towers over the ends of the Old Bridge, and a stretch of the ramparts.

History

There has been human settlement on the Neretva between the Hum Hill and the Velez mountain since prehistory, as witnessed by discoveries of fortified enceintes and cemeteries. Evidence of Roman occupation comes from beneath the present town.

Little is known of Mostar in the medieval period, though the Christian basilicas of late antiquity continued in use. The name of Mostar is first mentioned in a document of 1474, taking its name from the bridge-keepers (*mostari*) this refers to the existence of a wooden bridge from the market town on the left bank of the river which was used by soldiers, traders, and other travelers. At this time it was the seat of a *kadiluk* (district with a regional judge). Because it was on the trade route between the Adriatic and the mineral-rich regions of central Bosnia, the settlement spread to the right bank of the river. It became the leading town in the Sanjak of Herzegovina and, with the arrival of the Ottoman Turks from the east, the centre of Turkish rule.

The town was fortified between 1520 and 1566 and the bridge was rebuilt in stone. The second half of the 16th century and the early decades of the 17th century were the most important period in the development of Mostar. Religious and public buildings were constructed, such as mosques, a *madrasah* (Islamic school), and a *hammam*

(public bath); these were concentrated on the left bank of the river, in a religious complex (*kullia*). At the same time many private and commercial buildings, organized in distinct quarters, known as *mahalas* (residential) and the bazaar, were erected.

Bosnia-Herzegovina was first occupied (1878) and then annexed (1908) by the Austro-Hungarian Empire, and it was in this period that a number of administrative, military, cultural, and Christian religious buildings were established. These were mainly on the right bank of the river, where a new quarter was developed according to a strict 'Rondo' plan. This provides a strong contrast with the left bank where there was a more organic growth on the steeper slopes, with winding narrow streets and public open spaces for trading (*pazar*), recreation (*mejdan*), and prayer (*musallah*). The town was also connected at this time by rail and new roads to Sarajevo and the Adriatic.

Between 1992 and 1995 the town was badly damaged during the war in Bosnia and Herzegovina and much of the urban centre was left in ruins and the Old Bridge destroyed. Since 1998 there have been major restoration projects carried out in the centre of the Old Town, most notably the rebuilding of the Old Bridge.

Management regime

Legal provision:

Historic Mostar is protected by the 1985 Law on the Protection and Use of the Cultural, Historical, and Natural Heritage of Bosnia and Herzegovina, the 1996 Interim Statutes of the Town of Mostar, and the 1998 Law on Waters. In 1998 the Mostar Municipal Council promulgated a series of decisions relating to the rehabilitation and conservation of buildings in the protected zone of the town and the prohibition of any non-authorized interventions. Furthermore, on the July 7th 2004, the Historic Urban Area of Mostar was designated as a National Monument of Bosnia and Herzegovina. This designation conveys the highest degree of legal protection.

Management structure:

Ownership of properties within the nominated area is varied – government bodies, religious communities, and private individuals and institutions.

At national level, overall supervision is exercised by the Centre for the Heritage of Bosnia and Herzegovina, based in Sarajevo. Direct responsibility at regional level is the responsibility of the Institute for the Protection of the Cultural, Historical, and Natural Heritage, located in Mostar. This body collaborates with the Mostar-based Institute for Urbanism and Spatial Planning and the Municipality of Stari Grad, and also works closely with the Old Mostar Foundation and the Research Centre for Islamic History, Art, and Culture in Istanbul (Turkey). It also collaborates closely with the Aga Khan Foundation and with the World Monuments Fund, which support a team of six young professional staff working on the implementation of the conservation plan and on the surveillance of specific restoration projects on behalf of the Mostar Institute.

All applications for authorization of projects coming within the provisions of the municipal decisions must be submitted to the Municipality of Stari Grad. These are then evaluated by the Institute for the Protection of the Cultural, Historical, and Natural Heritage, which submits recommendations to the Municipality, which in turn is responsible for *final* decision-making (working through its Programme Coordination Unit in respect of the reconstruction of the Old Bridge).

In order to strengthen the coordination of activities in the Old City, on December 29, 2004 the City Council of Mostar established an Agency in charge of the preservation and development of the Old City, which starts work on April 1, 2005. This body replaces the former 1999 Project Co-ordination Unit, PCU.

A UNESCO Rehabilitation Plan was prepared in 1997 and the Aga Khan Foundation has also produced a master plan, as well as undertaking detailed studies for the rehabilitation of some important monuments and districts on either side of the river.

The Aga Khan Trust for Culture and the World Monuments Fund provided management for the detailed preparation of the neighbourhood improvement plan, the master plan for the Old Town, and the Strategic Plan for the Central Urban Area of Mostar.

The Old Town Council municipality adopted these plans, as a "Master Plan" on the May 10th 2001. (After abolishing municipalities on March 15, 2004, their authority passed to the city administration).

At the time of the original nomination there was no comprehensive management plan in force for the historic centre of Mostar.

The revised nomination was accompanied by a management plan dated January 2005 which has been prepared for the historic town area. This Plan contains Chapters on: Governing, Finance, Planning and Implementation.

The International Experts Committee nominated by UNESCO had the role of reviewing important technical material concerning project investments.

Resources:

The State Party has submitted details of the World Bank Pilot Culture Heritage Project for Mostar Old Bridge and Town and other documents relating to the future conservation and management of the Old Town. However, the long-term management at the local level still needs to be established and the required resources indicated. The task of developing and implementing a sustainable financial system has been given to the newly established Agency.

Justification by the State Party (summary)

Mostar is the result of interaction between natural phenomena and human creativity over a long historical period. The universal qualities of the cultural landscapes of south-eastern Europe represent a universal phenomenon

that is the common property of all humankind. The cultural and historical value of Old Mostar resides in the urban agglomeration that was created in the 16th century during the height of the Ottoman Empire around the Old Bridge, the technological wonder of its age, in which complete harmony was achieved between the built structures and the natural environment of the Neretva River.

The Old Town has been embellished for centuries with the visual artistic expressions of succeeding generations, particularly towards the end of the 19th century and the beginning of the 20th century under the influence of the Austro-Hungarian Empire and central European architecture.

The sustainable development of the area has been endangered by human destruction and devastation by war. This ensemble has attracted the continuous interest of both the local and the international public from the outset, as witnessed by many historical documents, up to the present day, when that interest has been renewed. Enduring interest has been shown in exploring the origins of the different styles and the way in which they have been expressed, in spatial harmony, and their preservation.

Protection, maintenance, regulation, and revitalization of the historic centre are a long-term process. Earlier minimal studies have only been known through preliminary reports, scattered references in the literature, or lectures at meetings. For all these reasons and because principles relating to the importance of preserving the material remains of the past, including the architectural heritage, and in particular because of the false impression that this part of the town has become outdated and is in the process of disappearing from the historical landscape, UNESCO and the international community must accept the justification for this nomination, the more so since the preserved remains of the earliest town are themselves urban in character. They became incorporated over time into the urban fabric of the entire town of Mostar as an integral part of European culture. The historic core, with the surrounding areas, has become a symbol of civilized living. This almost automatically justifies the existence of the town as one of the earliest sources for the identity and history of Bosnia and Herzegovina as a whole.

Destruction of the town deprived cosmopolitan travelers of opportunities for resting both their bodies and their souls and for understanding their own past. The living townscape of Mostar constitutes a vast class-room for the young and the enquiring in appreciating their own destiny.

[Note: The State Party previously did not make any proposals in the nomination dossier concerning the criteria under which it considers this property should be inscribed on the World Heritage List. In the revised dossier criterion iv, v and vi have been proposed].

3. ICOMOS EVALUATION

Actions by ICOMOS

The nomination of Mostar was first proposed in 1999, but its inscription has been delayed. An ICOMOS mission visited the site in October 2000, and ICOMOS at that time decided to support inscription as a special case, intended as a 'positive contribution to the protection and management of this outstanding multicultural heritage site'. Nevertheless, the nomination was deferred subject to further verification of the management plan and its implementation, in the Bureau 2000, and again in the Committee 2003. Another ICOMOS expert visited Mostar in March 2003. Since this date there have been no specific ICOMOS missions. However ICOMOS has received progress reports from visits by its members.

ICOMOS has formulated its current evaluation from a large number of different sources including the revised nomination file and a large number of relevant, detailed written and oral reports.

Conservation

Conservation history:

The first steps in the conservation history of Mostar date from 1872, when the Ottoman Grand Vizier issued a decree "prohibiting the export of antiquities and the destruction of old buildings'.

The Old Town suffered grievous damage during World War II. Legal instruments enacted between 1945 and 1965 provided the basis for the conservation of historic buildings and their scientific study, and several relevant institutions were established in Mostar. A number of major restoration projects were undertaken during this period, including the restoration of Koski Mehmed Pasha's *madrasah* and the Old Bridge. The works continued in the 1970s and 1980s with the restoration and reconstruction of further buildings. In 1986, the restoration of the historic town was given an Aga Khan Award in Architecture.

The hostilities that broke out in the early 1990s saw systematic destruction of much of the Old Town by bombardment and fire in 1992-95, with resulting structural destabilization and deterioration from natural forces as a result of neglect. Among the structures that were wholly or partially destroyed were the Old Bridge, with its towers, the old warehouses and shops close to the bridge, all the domed mosques, many other Islamic buildings, and a number of the Austro-Hungarian administrative buildings. Some of the repair work carried out after this destruction, particularly by certain religious institutions and foreign humanitarian foundations, is frankly described by the State Party in the nomination dossier as being in contravention of recognized conservation principles. In addition, many new buildings are reported to have been erected that were not compatible with the requirements of an historic town centre.

State of conservation:

Since 2003, several reconstruction projects have been carried out in the historic centre of Mostar. The Old Bridge has been rebuilt under the auspices of UNESCO and the World Bank, and was opened to the public in the summer of 2004, after four years of work. Other restoration projects have been carried out with the support of the Aga Khan Trust, which has dealt particularly with mosques and some other buildings in the historic centre. Furthermore, Mostar has received financial and technical support from several sources, including the European Union, and a number of

projects are under way regarding the infrastructure and the urban fabric as a whole.

A detailed inventory of the state of conservation is an integral part of renewed nomination dossier (appendix 3.d). In summary: 79% of buildings are already in good condition.

Management:

A newly (December 29, 2004) established Agency in charge of the preservation and development of the Old City will from April 1, 2005 replace the Project Coordination Unit, PCU. The role of the Agency will be to continue the tasks not yet completed by the PCU.

With the revised nomination dossier, the State Party also submitted a management plan dated January 2005 which has been prepared for the historic town area. This Plan incorporates the 2001 Master Plan.

The City has expressed willingness to place more attention to the proper conservation management of the historic area.

Risk analysis:

At the moment, the most critical risk in Mostar relates to the challenge of reconstruction and the willingness and capacity of the authorities, the various contractors and sponsors involved in the process to respect the heritage value. The Management Plan needs to be used to inform judgments on the management of change.

Authenticity and integrity

On the basis of the test of authenticity, as defined in paragraph 24.b.i of the *Operational Guidelines for the Implementation of the World Heritage Convention*, there must be considerable reservations about the authenticity of Mostar. Much of the urban fabric was destroyed in 1992-1995, and has been the subject of major reconstruction activity or is still under reconstruction. The Old Bridge has been rebuilt as a copy, using mainly new material, though with the integration of some of the historic material especially on the surface. The proportion of reconstructed buildings is very high, and much new material has also been used.

The revised nomination dossier comments in a different way on the authenticity of materials and workmanship in the case of the various undertakings. Although some buildings are being rebuilt according to available documentation, others may be modernised and modified. There is fear that the typology and morphology of the historic fabric in some instances is being altered as a result. However the new (2005) Operational Guidelines gives a more detailed approach on this field, offering a series of "qualities" for testing authenticity.

In this light, the result of a test of authenticity is rather more positive. Looking as an example at the reconstruction of the Old Bridge, this is based on in-depth and detailed, multi-facetted analyses, relying on high quality documentation, and almost every required condition has been fulfilled. The authenticity of form, use of authentic materials and techniques are fully recognisable. The result is not a kind of invented or manipulated presentation of an architectural feature which never before existed in that form, rather the reconstructed bridge has a kind of truthfulness, even though in strictly material terms a considerable portion is not of identical or original pieces.

Furthermore, evaluating this reconstruction on a larger scale, namely as a key element of urban and natural landscape there is no doubt of a special kind of "overall" authenticity. It is also crucial to add, that the facsimile reconstruction has been not hidden at all. There are large expositions of remaining original material in a museum which have become an inseparable part of the reconstruction.

It must be stressed that this *reconstruction* of fabric should be seen as being in the background compared with *restoration* of the intangible dimensions of this property, which are certainly the main issue concerning the Outstanding Universal Value of this site.

As for integrity, there are certainly some losses; however the major point is not to introduce more alteration to the landscape/townscape in the form of new, or inappropriately renewed constructions.

From the historic point of view, the old town of Mostar could be seen as an urban archaeological site. In the area of the Old Bridge, there has been systematic archaeological documentation of the historic stratigraphy. This research previously focused only on a limited area. One of the tasks of the Management Plan is to cover a larger area. In a paradoxical manner, the result of war-damage has made it possible to investigate the ancient construction-methods in detail, which have highlighted the outstanding value of the Old Bridge construction.

Comparative evaluation

The old Mostar developed mainly in the Ottoman period, from the 16th century, and it was part of the Austro-Hungarian Empire from the 19th century. Its significance is related partly to the Ottoman period, partly to its integration with European cultures. A special feature has always been the Old Bridge, recently destroyed – and even more recently reconstructed.

The main centres of the Ottomans were in Turkey: Istanbul (inscribed on the World Heritage List in 1985; criteria i, ii, iii and iv), Bursa, and Edirne. It is these centres that best express the specificity of Ottoman architecture. The most renowned architect was Sinan Hoga, whose most outstanding works are in Istanbul and Edirne. He – or one of his closest followers - is also given as the designer of the Old Bridge of Mostar. The Ottoman residential architecture is well represented in the historic town of Safranbolu (World Heritage 1994; criteria ii, iv and v), in the north of Turkey. The Ottoman Empire extended well into south-east Europe, and there are thus several testimonies of their presence in this region, e.g. in Bulgaria and Yugoslavia. In Serbia, an old bazaar area in Stari Ras and Sopocani (World Heritage 1979; criteria i and iii) dates from the Ottoman period. In Bosnia, Sarajevo (also nominated in 1999 and not accepted for inscription on the World Heritage List) is comparable to Mostar, being an Ottoman frontier town on major communication and trade

routes and having retained significant traces of its Islamic past, despite the short but influential Austro-Hungarian occupation.

It is noted that the historic town of Mostar is not the only historic centre in Europe representing Ottoman influence. The exceptional features of this place were the almost perfect interrelation between natural and man made elements, with the Old Bridge represented a masterpiece of highly refined construction by Ottoman constructors. Unfortunately the recent destruction has also removed Mostar's most interesting architectural assets, such as the Old Bridge. Now, after the reconstruction and restoration of the main architectural elements of the site, it remains principally a place of memory, in the same manner as the Historic Centre of Warsaw (World Heritage 1980; criteria ii and vi). The State Party, in the revised nomination dossier, also compares the site with other post-catastrophe reconstructed sites in Italy and Germany. When Warsaw was inscribed, it was considered "a symbol of the exceptionally successful and identical reconstruction of a cultural property, which is associated with events of considerable historical significance. There can be no question of inscribing in the future other cultural properties that have been reconstructed." (World Heritage Bureau, May 1980; CC-80/Conf. 017/4).

However, although the case of Mostar has many similarities with above-mentioned cases, there are also differences. It is not only an 'exceptionally successful' reconstruction based on in-depth and detailed, multidisciplinary scientific researches, but it has also become a symbol of the reconciliation of coexistent local communities. The presence of leading international organisations with their experts and the involvement of local experts and craftsmen has resulted a large-scale international co-operation (which was not the case in Warsaw). The reconstruction of the neighbourhood of the Old Bridge as well as its destruction is associated with events of universal historical significance.

Outstanding universal value

General statement:

The principal interest of Mostar has been in its representation of Ottoman building traditions on a trade route in a frontier region, and the influence that the site has had from the Austro-Hungarian Empire and the Mediterranean. The Old Bridge has been its major monument. At the moment, however, after the destruction in the 1990s, the site has lost much of its old fabric. It is currently still in the process of reconstruction, however the major part of this effort is already realised, most spectacularly in the case of the Old Bridge. There has also been considerable contribution from the international community to this process, including UNESCO, the World Bank and the European Union, in addition to the support provided by individual countries. The international community has already given a strong support to the reconstruction, and the process is well on the way. The results will be visible in a few years' time.

For various reasons, the inscription of Mostar has been delayed, and now the situation is gradually changing. The local authorities are taking steps to establish conservation management.

In the period between first nomination of this site and the present, the condition of the historic town of Mostar has been "work in progress". During that time, it was advisable to wait until the situation had been stabilised before deciding on eventual inscription. This point has now been reached and also the issues of site management have been addressed.

Much of the architectural fabric of the site had been severely damaged or destroyed. Some expert-reports indicated that the rebuilding had not always been correct. The revised nomination dossier is nominating a smaller, more concentrated area of the Old City. This extends only to the closest vicinity of the Old Bridge, containing the most conscientiously investigated and reconstructed and/or restored elements of the historic core area.

Evaluation of criteria:

In the revised dossier the State Party has proposed criterion iv, v and vi. Previously, ICOMOS has suggested that the property could be inscribed on the basis of criterion iv. Taking into account the current situation, however, all criteria can be reconsidered. The physical fabric has to a large extent been rebuilt, and what is visible will be substantially a product of the decades around 2000 AD.

4. ICOMOS RECOMMENDATIONS

Recommendation with respect to inscription

ICOMOS recommends that the World Heritage Committee adopt the following draft decision:

The World Heritage Committee,

1. Having examined Document WHC-05/29.COM/8B,

2. Recalling the decisions adopted by the Bureau of the World Heritage Committee at its 23rd session (UNESCO, July 1999), at its 23rd extraordinary session (Marrakech, November 1999), at its 24th session (UNESCO, June 2000) and its decision adopted at its 24th session (Cairns, December 2000) and the decision 27 COM 8C.33 adopted at its 27th session (UNESCO, July 2003),

3. Inscribes the property on the World Heritage List on the basis of ***criteria iv and vi***:

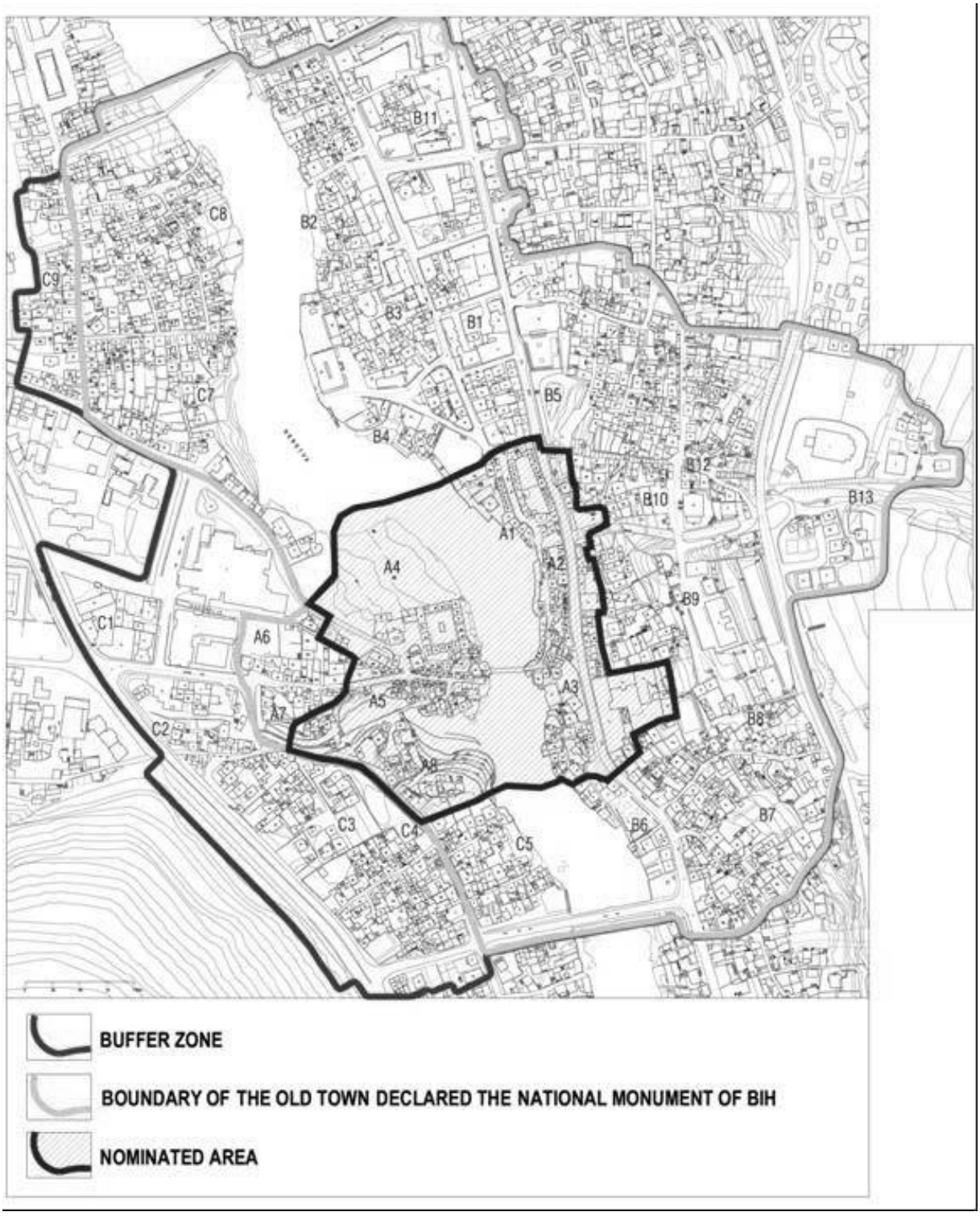
> ***Criterion iv***: The Old Bridge area of the Old City of Mostar, with its exceptional multi-cultural (pre-Ottoman, eastern Ottoman, Mediterranean and western European) architectural features, and satisfactory interrelationship with the landscape, is an outstanding example of a multicultural urban settlement. The qualities of the site's construction, after the extremely ravaging war-damages and the subsequent works of renewal, have been confirmed by detailed scientific investigations. These have provided proof of exceptionally high technical refinement, in the skill and quality of the ancient constructions, particularly of the Old Bridge.

Criterion vi: With the "renaissance" of the Old Bridge and its surroundings, the symbolic power and meaning of the City of Mostar - as an exceptional and universal symbol of coexistence of communities from diverse cultural, ethnic and religious backgrounds - has been reinforced and strengthened, underlining the unlimited efforts of human solidarity for peace and powerful co-operation in the face of overwhelming catastrophes.

4. Notes the changing of the name so that it reflects more properly the situation of the nominated area and which becomes: "The Old Bridge area of the Old City of Mostar".

5. Requests the State Party to fully and carefully implement measures laid down in the recently adopted Management Plan, and also to apply these approaches to the wider setting of the Old City in factors such as scientific research, restoration, new uses and, continuous monitoring.

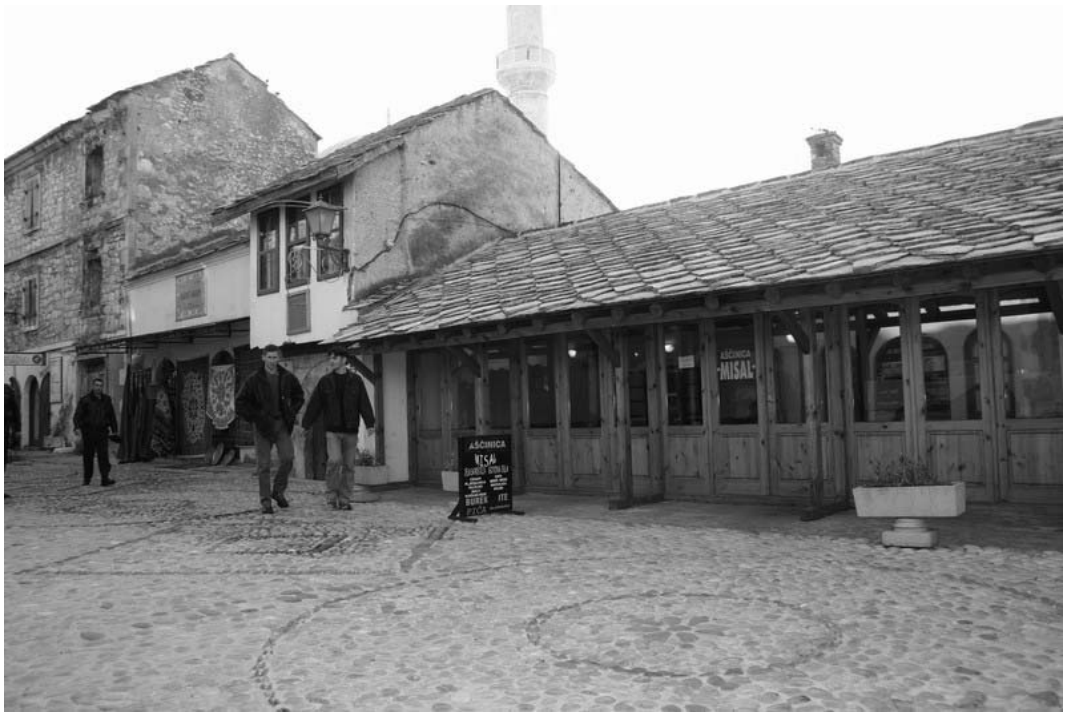
ICOMOS, April 2005



Map showing the boundaries of the nominated property

View of the Old Bridge from the river (1997)

Aerial view of the Old Bridge (2005)



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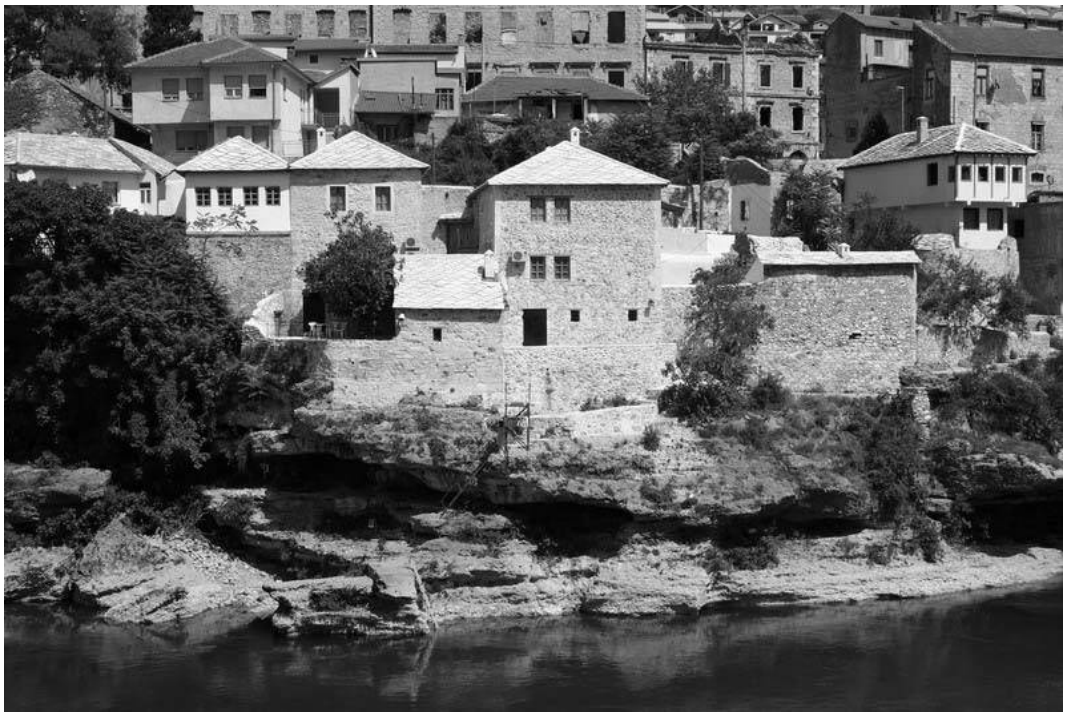


Ramica Street Area

Mostar (Bosnie Herzégovine)

No 946 rev

1. IDENTIFICATION

État partie : Fédération de Bosnie et Herzégovine

Bien proposé : La vieille ville de Mostar

Lieu : Canton de Neretva-Herzégovine

Date de réception : 15 juillet 1998 avec des informations supplémentaires reçues le 14 janvier 2002 ; proposition d'inscription révisée soumise le 27 janvier 2005

Catégorie de bien :

En termes de catégories de biens, telles qu'elles sont définies à l'article premier de la Convention du Patrimoine mondial de 1972, le bien proposé est un *ensemble*. Aux termes des *Orientations devant guider la mise en œuvre de la Convention du patrimoine mondial*, il s'agit d'un secteur d'une ville historique vivante (2005).

Brève description :

La ville historique de Mostar, nichée dans une profonde vallée fluviale, est une ancienne ville frontière ottomane qui s'est développée aux XVe et XVIe siècles, et a connu une courte période austro-hongroise aux XIXe et XXe siècles. Mostar se caractérise par ses vieilles maisons turques et par le vieux pont, conçu par un architecte célèbre, Sinan. Dans les années 1990 cependant, la majeure partie de la ville historique et le vieux pont ont été détruits. Dans les dernières années le vieux pont a été reconstruit et de nombreux édifices de la vieille ville ont été restaurés ou reconstruits.

2. LE BIEN

Description

La zone proposée pour inscription s'étend sur les deux rives de la Neretva, avec le pont au centre.

La rivière Radoboija est très importante pour la ville. Elle se jette dans la Neretva sur sa rive droite et offre une source d'eau qui accompagna le développement urbain. De ce cours d'eau partaient des petits canaux d'irrigation sur lesquels tournaient des moulins à eau.

Le bazar se trouvait au centre de la ville qui s'étendait des deux côtés de la rivière, les deux parties étant reliées par le pont. À partir de là partait un dédale de rues qui formaient les *mahalas*. Ce système a été considérablement modifié pendant la période austro-hongroise avec la construction de nouveaux quartiers selon les principes européens d'urbanisation ainsi que des nouveaux ponts sur la rivière.

La zone proposée pour inscription et sa zone tampon renferment de nombreux bâtiments historiques importants. Sur les treize mosquées d'origine construites aux XVIe et XVIIe siècles, sept ont été détruites au cours du XXe siècle pour des raisons idéologiques ou par les bombardements. Une des deux églises orthodoxes du XIXe siècle a disparu et la synagogue du début du XXe siècle a été gravement endommagée pendant la Seconde Guerre mondiale, puis transformée en théâtre.

Plusieurs hôtels de voyageurs de l'époque ottomane subsistent aussi, avec d'autres bâtiments de la même période de l'histoire de Mostar, tels que des fontaines et des écoles.

Les bâtiments administratifs appartiennent tous à la période austro-hongroise et présentent des styles néoclassique et sécessionniste.

Il reste quelques villas de l'époque ottomane (XVIIIe siècle et début XIXe siècle) qui présentent les principales caractéristiques de cette forme d'architecture : entrée, étage supérieur réservé à l'habitation, cour pavée, véranda sur un ou deux niveaux. Les villas de la fin du XIXe siècle sont toutes de style néoclassique.

Quelques anciens bâtiments industriels et commerciaux subsistent également, en particulier des boutiques basses en bois et pierre, des entrepôts en pierre et un groupe d'anciennes tanneries bâties autour d'une cour. Là encore, les bâtiments commerciaux du XIXe siècle sont essentiellement de style néoclassique.

Certains éléments des premières fortifications sont encore visibles. La tour Hercegusa date de la période médiévale, tandis que les défenses ottomanes sont représentées par les tours Halebinovka et Tara, les tours de guet surplombant l'extrémité du vieux pont, et une portion des remparts.

Histoire

L'occupation humaine sur la Neretva, entre les hauteurs du Hum et les pentes de la Velez, remonte à la préhistoire, comme en témoignent les enceintes fortifiées et les nécropoles. Les vestiges de la présence romaine sont enfouis sous la ville actuelle.

On sait peu de choses de Mostar au Moyen Âge, mais les basiliques chrétiennes de la fin de l'antiquité sont toujours utilisées. Le nom de Mostar apparaît pour la première fois dans un document de 1474, du nom des gardiens du pont, les *mostari* : cela fait référence à l'existence d'un pont de bois qu'empruntaient les soldats, les commerçants et les autres voyageurs pour se rendre dans la ville marchande située sur la rive gauche de la rivière. À l'époque, c'était le siège d'un *kadiluk* (district avec un juge régional). Du fait qu'elle se trouvait sur la

route commerciale entre l'Adriatique et les riches régions minières du centre de la Bosnie, la bourgade s'étendit de l'autre côté du pont sur la rive droite de la Neretva. Elle devint la première ville du sandjak de l'Herzégovine et, avec l'arrivé des Ottomans, le centre du gouvernement turc.

La ville fut fortifiée entre 1520 et 1566 et le pont reconstruit en pierre. La deuxième moitié du XVIe siècle et le début du XVIIe furent les périodes les plus importantes du développement de Mostar. On construisit des bâtiments religieux et publics tels que des mosquées, une *médersa* (école islamique) et un *hammam* (bains publics). Ces constructions se trouvaient sur la rive gauche de la rivière, dans un ensemble religieux (*kullia*). Dans le même temps, de nombreux bâtiments commerciaux et privés, organisés par quartier, appelés les *mahalas* (résidentiel), et le bazar, furent érigés.

La Bosnie-Herzégovine fut d'abord occupée (1878) puis annexée (1908) par l'Empire austro-hongrois. C'est à cette époque que de nombreux bâtiments administratifs, militaires, culturels et chrétiens furent construits. Ils étaient essentiellement bâtis sur la rive droite, où un nouveau quartier s'est élevé selon le plan *Rondo*. Ce quartier est très différent de celui de la rive gauche où la ville a grandi en s'accrochant aux pentes des collines, formant des rues étroites et des espaces publics occupés par des marchés (*pazar*), des lieux de loisir (*mejdan*), et de prière (*musallah*). À l'époque, une voie de chemin de fer et de nouvelles routes reliaient Mostar à Sarajevo et à l'Adriatique.

De 1992 à 1995 la ville fut gravement endommagée au cours de la guerre en Bosnie et Herzégovine et la plupart du centre urbain fut laissée à l'état de ruines et le vieux pont fut détruit. Depuis 1998, des projets de restauration majeurs ont été menés dans le centre de la vieille ville et notamment la reconstruction du vieux pont a été réalisée.

Politique de gestion

Dispositions légales :

La ville historique de Mostar est protégée par la loi de 1985 sur la protection et l'utilisation du patrimoine culturel, historique et naturel de Bosnie et d'Herzégovine, les statuts provisoires de 1996 sur la ville de Mostar et la loi de 1998 sur l'eau. En 1998 le conseil municipal de Mostar a voté une série de règlements relatifs à la réhabilitation et à la conservation des bâtiments dans la zone protégée de la ville, interdisant toute intervention non autorisée. De plus, le 7 juillet 2004, la zone historique urbaine de Mostar a été classée comme monument national de Bosnie et Herzégovine. Ce classement lui confère le plus haut niveau de protection légale.

Structure de la gestion :

Les formes de propriété de la zone proposée pour inscription sont variables – organes gouvernementaux, communautés religieuses, institutions et particuliers.

Au niveau national, le contrôle général est exercé par le Centre du Patrimoine de Bosnie et d'Herzégovine qui se trouve à Sarajevo. La responsabilité directe au niveau régional incombe à l'Institut pour la protection du Patrimoine Culturel Historique et Naturel, situé à Mostar. Cet organisme collabore avec l'Institut de l'Urbanisme et de la Planification de l'Espace basé à Mostar et la municipalité de Stari Grad, et travaille aussi étroitement avec la Fondation du vieux Mostar et le centre de recherche pour l'Histoire, l'Art et la Culture Islamique d'Istanbul (Turquie). Il travaille également avec la Fondation Aga Khan et le *World Monuments Fund* qui soutiennent une équipe de six jeunes professionnels travaillant à la mise en œuvre du plan de conservation et à la surveillance de projets de restauration spécifiques au nom de l'Institut de Mostar.

Toutes les demandes d'autorisation de projets entrant dans le cadre des dispositions municipales doivent être soumises à la municipalité de Stari Grad. Elles sont ensuite étudiées par l'Institut pour la protection du Patrimoine Culturel, Historique et Naturel qui soumet ses recommandations à la municipalité qui prend la décision finale (par le biais de son unité de coordination du programme pour la reconstruction du vieux pont).

Le 29 décembre 2004, afin de renforcer la coordination des activités dans la vieille ville, le conseil municipal de la ville de Mostar a établi une agence chargée de la préservation et du développement de la vieille ville qui entre en fonction le 1er avril 2005. Cet organe remplace l'ancienne unité de coordination de projet (UCP) de 1999.

Un plan de réhabilitation de l'UNESCO a été entrepris en 1997 et la Fondation Aga Khan a, elle aussi, produit un plan directeur et entrepris des études approfondies pour la réhabilitation de monuments importants et de quartiers sur les deux rives.

La Fondation Aga Khan pour la culture et le *World Monuments Fund* ont soutenu la gestion de la préparation détaillée du plan d'amélioration des quartiers, du plan directeur de la vieille ville et du plan stratégique pour la zone centrale urbaine de Mostar.

Le conseil municipal de la vieille ville a adopté ces plans dans le cadre du « plan directeur » le 10 mai 2001. (Après la suppression des municipalités le 15 mars 2004, l'autorité a été transférée à l'administration de la ville).

À l'époque de la première proposition d'inscription, il n'existait pas de plan de gestion global en vigueur pour le centre historique de Mostar.

La proposition d'inscription révisée était accompagnée d'un plan de gestion daté de janvier 2005 qui a été préparé pour la zone de la ville historique. Ce plan comporte des chapitres sur la direction, les finances, l'urbanisme et la mise en œuvre.

Le Comité d'experts internationaux nommé par l'UNESCO fut chargé d'examiner l'important matériel technique en vue des projets d'investissements futurs.

Ressources :

L'État partie a soumis le détail du projet pilote pour le patrimoine culturel préparé par la Banque Mondiale pour le vieux pont et la ville de Mostar ainsi que d'autres documents relatifs aux actions futures de conservation et de gestion de la vieille ville. Toutefois, la gestion locale de la ville sur le long terme reste à établir, et les ressources nécessaires à indiquer. La tâche de développer et de mettre en œuvre un système financier durable a été confiée à l'agence nouvellement établie.

Justification émanant de l'État partie (résumé)

Mostar est le fruit de l'interaction entre un phénomène naturel et la créativité de l'homme au cours de l'histoire. Les caractéristiques des paysages culturels du sud-est de l'Europe sont un phénomène universel qui appartient à l'humanité tout entière. La valeur culturelle et historique du vieux Mostar offre une harmonie totale entre les structures bâties et l'environnement naturel de la Neretva. L'agglomération urbaine est née au XVIe siècle, à l'apogée de l'Empire ottoman, autour du vieux pont, merveille technologique de ce temps révolu.

Au cours des siècles, des vagues successives d'expressions artistiques et plastiques ont embelli la vieille ville, en particulier à la fin du XIXe siècle et au début du XXe siècle, sous l'influence de l'Empire austro-hongrois et de l'architecture d'Europe centrale.

Le développement durable de la région a été mis en péril par les destructions humaines et les dévastations causées par la guerre. Mostar a toujours suscité l'intérêt du public tant au plan local qu'au plan international, comme en témoignent de nombreux documents historiques et ce, jusqu'à nos jours, où se manifeste à nouveau un regain d'intérêt. Des études ont été menées sur les origines des différents styles ainsi que sur leur expression, leur harmonie dans l'espace et leur préservation.

La protection, l'entretien, la réglementation et la relance de l'activité du centre historique supposent l'engagement d'un processus à long terme. Jusqu'à présent, les études portant sur ce sujet se sont limitées à quelques comptes-rendus succincts, quelques références littéraires éparpillées et quelques interventions à des conférences. Pour toutes ces raisons, au nom des principes relatifs à l'importance de la préservation des vestiges matériels du passé, en particulier le patrimoine architectural, et aussi à cause de l'impression erronée que cette partie de la ville n'est plus d'actualité et doit disparaître du paysage historique, l'UNESCO et la communauté internationale doivent accepter la justification de cette proposition, d'autant plus que les vestiges préservés de la vieille ville offrent aussi un caractère urbain. Ils ont été intégrés au tissu urbain de la ville de Mostar comme faisant partie intégrante de la culture européenne. Le centre historique et les zones environnantes symbolisent la vie civilisée. Cela justifie presque automatiquement l'existence de la ville comme l'une des sources premières de l'identité et de l'histoire commune de la Bosnie et de l'Herzégovine.

La destruction de la ville a privé le visiteur cosmopolite du repos de l'âme et du corps qu'offrait cette ville, et de la possibilité de plonger dans son propre passé. Le paysage urbain vivant de Mostar est une classe à ciel ouvert pour les jeunes et le lieu pour eux où évaluer leur propre destinée.

[Remarque : Précédemment, l'État partie n'avait pas précisé pas les critères sur la base desquels il proposait l'inscription du bien sur la liste du Patrimoine mondial. Dans la proposition d'inscription révisée, les critères iv, v et vi sont proposés.]

3. ÉVALUATION DE L'ICOMOS

Actions de l'ICOMOS

L'inscription de Mostar a été proposée pour la première fois en 1999, mais elle a alors été différée. Une mission de l'ICOMOS s'est rendue sur le site en octobre 2000, et l'ICOMOS a alors décidé d'appuyer l'inscription en tant que cas particulier, comme une « contribution positive à la protection et à la gestion de ce patrimoine multiculturel exceptionnel ». Néanmoins, la proposition d'inscription a été différée en vue d'une vérification complémentaire du plan de gestion et de sa mise en œuvre par le Bureau en 2000, puis à nouveau par le Comité en 2003. Un autre expert de l'ICOMOS s'est rendu à Mostar en mars 2003. Depuis cette date, aucune mission spécifique n'a été menée par l'ICOMOS. Toutefois, des rapports de situation établis par des membres de l'ICOMOS en visite à Mostar lui ont été communiqués.

L'ICOMOS a préparé la présente évaluation à partir d'un grand nombre de sources différentes, notamment le dossier de proposition d'inscription révisé et un grand nombre de rapports détaillés et pertinents, écrits et oraux.

Conservation

Historique de la conservation :

Les premières étapes de l'histoire de la conservation de Mostar remontent à 1872, lorsque le Grand vizir promulgua un décret « interdisant l'exportation d'antiquités et la destruction des bâtiments anciens ».

La vieille ville a subi de graves dommages pendant la Seconde Guerre mondiale. Une série de lois votées entre 1945 et 1965 fournissent la base d'une politique de conservation des bâtiments historiques et leur étude scientifique. Plusieurs institutions chargées de ces questions ont été créées à Mostar. Un certain nombre de grands projets de restauration ont été entrepris pendant cette période, entre autres, la reconstruction de la *médersa* de Koski Mehmed Pasha et du vieux pont. Les travaux se sont poursuivis dans les années 1970 et 1980, avec la reconstruction d'autres édifices. En 1986, la restauration de la ville historique a reçu le prix Aga Khan de l'architecture.

Les hostilités qui se sont déclarées au début des années 1990 ont entraîné la destruction systématique d'une grande partie de la vieille ville par les bombardements et

les incendies en 1992-1995, accompagnée d'une déstabilisation structurelle du bâti et des détériorations dues à l'abandon. Parmi les structures totalement ou partiellement détruites, il y avait le vieux pont avec ses tours, les anciens entrepôts et magasins près du pont, toutes les mosquées à coupoles, de nombreux autres bâtiments islamiques et un certain nombre de bâtiments administratifs austro-hongrois. Certains des travaux de reconstruction réalisés après ces destructions, en particulier par des institutions religieuses et des fondations humanitaires étrangères, sont clairement décrits par l'État partie dans le dossier de proposition comme étant contraires aux principes reconnus de la conservation. De plus, de nombreux bâtiments nouveaux qui ne répondent pas aux exigences d'un centre ville historique auraient été érigés.

État de conservation :

Depuis 2003, plusieurs projets de reconstruction ont été réalisés dans le centre historique de Mostar. Le vieux pont a été reconstruit sous l'égide de l'UNESCO et de la Banque Mondiale et a été ouvert au public à l'été 2004, après quatre années de travaux. D'autres projets de restauration sont en cours, avec le soutien de la fondation Aga Khan. Ils concernent plus particulièrement les mosquées et certains autres édifices du centre historique. De plus, Mostar a reçu un soutien financier et technique provenant de plusieurs sources, notamment de l'Union Européenne, et divers projets sont en cours de réalisation sur les infrastructures et, plus globalement, le tissu urbain.

Un inventaire complet de l'état de conservation fait partie intégrante du nouveau dossier de proposition d'inscription (annexe 3.d). Pour résumé, 79 % des bâtiments sont aujourd'hui en bon état.
Gestion :

Une nouvelle Agence, créée le 29 décembre 2004, en charge de la préservation et du développement de la vieille ville à partir du 1er avril 2005, remplace l'unité de coordination de projet (UCP). Le rôle de l'Agence sera de poursuivre les tâches laissées inachevées par l'UCP. Joint au dossier de proposition d'inscription révisé daté de janvier 2005, l'État partie a également soumis un plan de gestion préparé pour la zone historique. Ce plan intègre le plan directeur de 2001.

La ville a exprimé sa volonté de consacrer plus d'attention à la bonne gestion de la conservation de la zone historique.

Analyse des risques :

Pour l'instant, le principal risque à Mostar concerne la difficulté de la reconstruction et la bonne volonté et la capacité des autorités, des divers entrepreneurs et des sponsors impliqués dans le processus à respecter la valeur du patrimoine. Le plan de gestion devrait être utilisé comme outil d'information sur la façon de gérer le changement.

Authenticité et intégrité

Sur la base du test d'authenticité, tel que défini au paragraphe 24.b.i des *Orientations devant guider la mise en œuvre de la convention du patrimoine mondial*, des réserves importantes quant à l'authenticité de Mostar sont émises. Une grande partie du tissu urbain a été détruit en 1992-1995, a été l'objet d'une intense activité de reconstruction et est toujours en cours de reconstruction. Le vieux pont a été reconstruit comme une copie de l'original, essentiellement avec des matériaux nouveaux, quoiqu'il y ait eu des tentatives pour intégrer une partie des matériaux historiques, notamment en surface. La proportion de bâtiments reconstruits est très élevée, et beaucoup de nouveaux matériaux ont été utilisés. Le dossier révisé de proposition d'inscription commente en des termes différents l'authenticité des matériaux et de la façon pour les divers projets. Bien que certains bâtiments aient été reconstruits selon la documentation disponible, d'autres peuvent être modernisés et modifiés, et l'on craint une altération de la typologie et de la morphologie du tissu historique dans certains cas. Toutefois, les nouvelles *Orientations devant guider la mise en œuvre de la Convention du patrimoine mondial* (2005) donnent une approche plus détaillée dans ce domaine, proposant une série « d'attributs » permettant d'évaluer l'authenticité.

Dans cette perspective, le résultat du test d'authenticité est plutôt plus positif. Considérant comme un exemple la reconstruction du vieux pont, celle-ci repose sur des analyses détaillées, complexes et approfondies de documents de qualité et sur le respect de presque toutes les conditions. L'authenticité de la forme, et l'utilisation de matériaux et de techniques authentiques sont entièrement reconnaissables. Le résultat n'est en rien une présentation inventée ou erronée d'une architecture qui n'aurait jamais existé, mais bien plutôt une reconstruction fidèle à l'original, même si les matériaux utilisés ne sont pas, loin s'en faut, ni tout à fait identiques ni ceux d'origine.

De plus, pour évaluer cette reconstruction sur une plus large échelle, à savoir en tant qu'élément principal du paysage urbain et naturel, il ne fait aucun doute qu'il règne une authenticité « globale ». Il faut ajouter également que la reconstruction à l'identique n'a pas été du tout dissimulée. Les éléments d'origine sont exposés dans un musée et font partie intégrante de l'effort de reconstruction.

Il convient de souligner que cette *reconstruction* devrait être considérée en arrière plan face à la restauration des dimensions immatérielles de ce bien, certainement la question principale eu égard à la valeur universelle exceptionnelle de ce site.

Quant à l'intégrité, il y a certainement eu des pertes. Cependant, l'essentiel est de ne pas introduire plus de changements au paysage urbain et naturel sous la forme de nouvelles constructions inappropriées.

D'un point de vue historique, la vieille ville de Mostar pourrait être considérée comme un site archéologique urbain. Aux alentours du vieux pont, il y a eu une documentation archéologique systématique de la

stratigraphie historique. Cette recherche s'était exclusivement concentrée sur une zone limitée. Une des tâches du plan de gestion est de couvrir une plus vaste zone. De manière paradoxale, les dommages de guerre ont permis d'entreprendre une recherche approfondie sur les anciennes méthodes de construction, qui a révélé dans toute son ampleur la valeur exceptionnelle de la construction du vieux pont.

Évaluation comparative

L'ancienne ville de Mostar s'est principalement développée à la période ottomane, à partir du XVIe siècle, et a fait partie de l'empire austro-hongrois à partir du XIXe siècle. Son importance est en partie liée à la période ottomane, et en partie à son intégration aux cultures européennes. Le vieux pont, récemment détruit et aujourd'hui reconstruit, a toujours été l'un de ses traits distinctifs.

Les principaux pôles ottomans se trouvaient en Turquie : Istanbul (inscrite sur la Liste du patrimoine mondial en 1985 ; critères i, ii, iii et iv), Bursa et Edirne. Ce sont dans ces centres que s'exprime le mieux la spécificité de l'architecture ottomane. Sinan Hoga, dont les travaux les plus exceptionnels se trouvent à Istanbul et à Edirne, était le plus célèbre des architectes. On lui attribue aussi – à lui ou à un de ses plus proches disciples - le vieux pont de Mostar. L'architecture résidentielle ottomane est bien représentée dans la ville historique de Safranbolu (Patrimoine Mondial 1994 ; critères ii, iv et v), au nord de la Turquie. L'empire ottoman a pénétré jusque dans le sud-est de l'Europe, et la région abrite donc plusieurs témoignages de sa présence dans cette région, par exemple en Bulgarie et en Yougoslavie. En Serbie, un ancien bazar à Stari Ras et à Sopocani (Patrimoine Mondial 1979 ; critères i et iii) date de la période ottomane. En Bosnie, Sarajevo (également proposée pour inscription en 1999 mais refusée) est comparable à Mostar en ce qu'il s'agit d'une ville frontière ottomane placée sur les principales voies de communication et de négoce, qui a conservé d'importantes traces de son passé islamique en dépit d'une occupation austro-hongroise courte mais lourde d'influences.

On note que la ville historique de Mostar n'est pas le seul centre historique d'Europe représentant l'influence ottomane. Les caractéristiques exceptionnelles de ce lieu résident dans la relation quasi-parfaite des éléments naturels et ceux construits par l'homme, le vieux pont représentant un chef d'œuvre d'une construction hautement raffinée, dû aux bâtisseurs ottomans. Malheureusement, la destruction récente a éliminé les éléments architecturaux les plus intéressants de Mostar, tels que le vieux pont. Aujourd'hui, après la reconstruction et la restauration des principaux éléments architecturaux du site, la ville reste essentiellement un lieu de mémoire, à l'instar du centre historique de Varsovie (Patrimoine Mondial 1980 ; critères ii et vi). L'État partie, dans le dossier de proposition d'inscription révisé, compare également le site avec d'autres sites reconstruits à la suite de catastrophe, choisis en Italie et en Allemagne. Lors de l'inscription de Varsovie, on l'a considérée comme un « symbole de la réussite exceptionnelle d'une reconstitution à l'identique d'un bien culturel qui est associé à des événements ayant une signification historique considérable. Il ne saurait être question d'inscrire à l'avenir d'autres biens culturels reconstruits » (Bureau du patrimoine mondial, mai 1980 ; CC-80/Conf. 017/4).

Bien que le cas de Mostar montre de nombreuses similitudes avec les biens mentionnés, il existe toutefois des différences. Il ne s'agit pas seulement d'une reconstruction « exceptionnellement réussie », basée sur des recherches scientifiques pluridisciplinaires approfondies et détaillées, mais c'est aussi un symbole de la réconciliation des communautés locales qui coexistent. La présence de grandes organisations internationales et de leurs experts et l'engagement d'experts et d'artisans locaux a eu pour résultat en une coopération internationale à grande échelle (ce qui n'a pas été le cas à Varsovie). La reconstruction du quartier du vieux pont ainsi que sa destruction sont associées à des événements qui touchent à l'histoire universelle.

Valeur universelle exceptionnelle

Déclaration générale :

Le principal intérêt de Mostar réside dans sa représentation des traditions de construction ottomane sur une route commerciale dans une région frontière, et dans le métissage des influences austro-hongroises et méditerranéennes. Le vieux pont était son monument majeur. Désormais, après la destruction des années 1990, le site a perdu beaucoup de son ancien tissu urbain. Il est toujours en cours de reconstruction, bien que cet effort soit déjà réalisé dans sa majeure partie, le cas le plus spectaculaire étant le vieux pont. On note également une contribution considérable de la part de la communauté internationale et notamment de l'UNESCO, de la Banque Mondiale et de l'Union Européenne, outre le soutien individuel qu'apportent divers pays. La communauté internationale a apporté un appui sans faille à la reconstruction, déjà bien avancée. Les résultats seront visibles dans quelques années.

Pour diverses raisons, l'inscription de Mostar a été retardée, et la situation évolue aujourd'hui progressivement. Les autorités locales prennent des mesures pour mettre en place la gestion de la conservation.

Dans la période qui sépare la première proposition d'inscription du site et la proposition d'inscription actuelle, l'état de la ville historique de Mostar a été considéré comme un « ouvrage en cours ». Pendant cette période, il était recommandé d'attendre que la situation se stabilise avant d'envisager une inscription éventuelle du site. Cette étape est aujourd'hui atteinte. De même, les problèmes de gestion du site ont été traités.

Le tissu architectural a été gravement endommagé, voire détruit. Des rapports d'experts ont indiqué également que la reconstruction n'avait pas toujours été correcte du point de vue historique. Le dossier révisé

propose l'inscription d'une zone plus restreinte de la vieille ville. Elle ne concerne que le voisinage immédiat du vieux pont et comprend les éléments les plus soigneusement étudiés, reconstruits et/ou restaurés du centre historique de la ville.

Évaluations des critères :

Dans la proposition d'inscription révisée, l'État partie propose les critères iv, v et vi. Précédemment, l'ICOMOS avait suggéré l'inscription sur la base du critère iv. Au vu de la situation actuelle, il conviendrait cependant de reconsidérer tous les critères. Le tissu physique est dans une large mesure reconstruit et le résultat visible sera, fondamentalement, un pur produit du tournant du XXe siècle.

4. RECOMMANDATIONS DE L'ICOMOS

ICOMOS, avril 2005

Recommandation concernant l'inscription

L'ICOMOS recommande que le Comité du patrimoine mondial adopte le projet de décision suivant :

Le Comité du patrimoine mondial,

1. Ayant examiné le Document WHC-05/29.COM/8B,

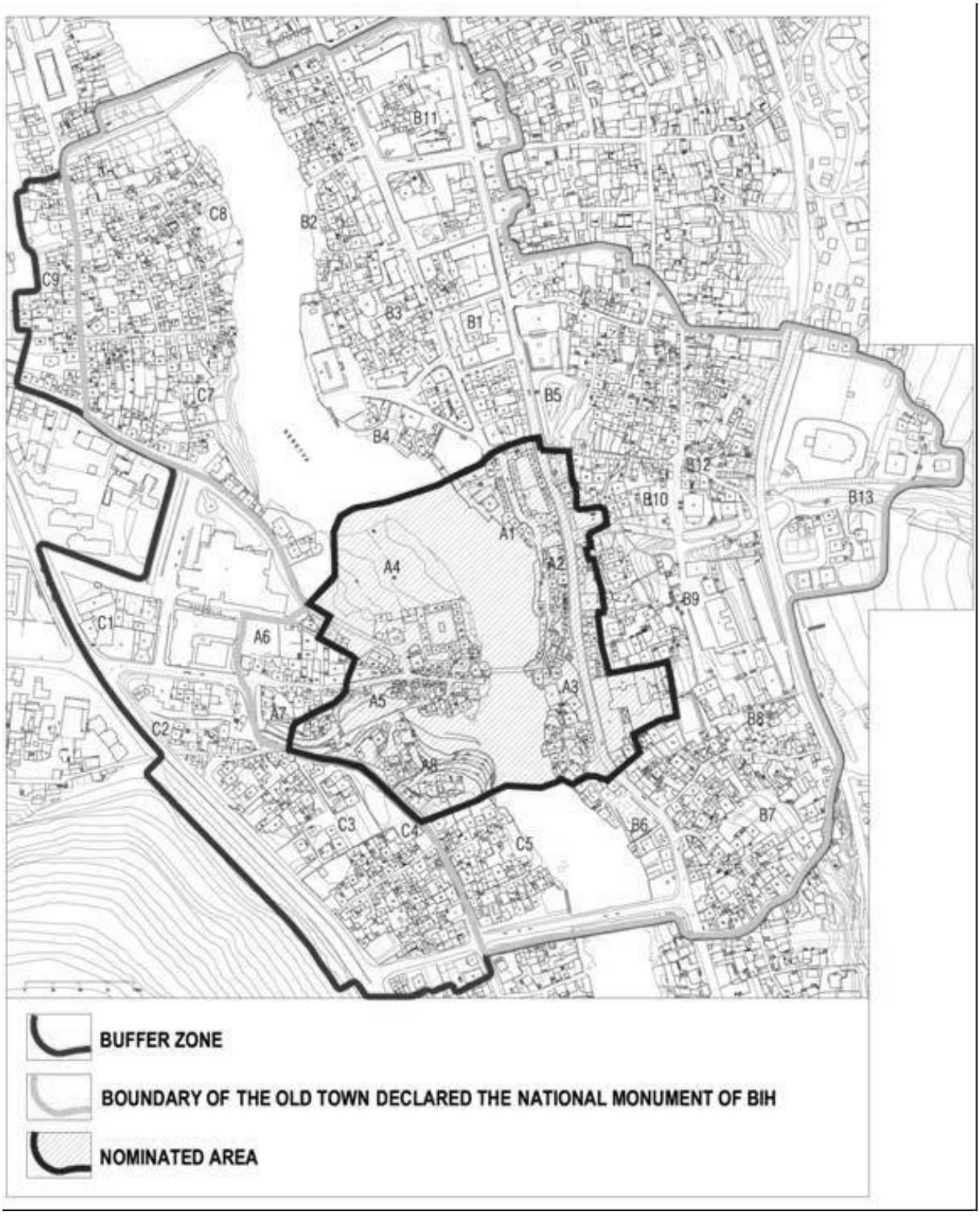
2. Rappelant les décisions du Bureau du Comité du patrimoine mondial adoptées au cours de sa 23e session (UNESCO, juillet 1999), de sa 23e session extraordinaire (Marrakech, novembre 1999), de sa 24e session (UNESCO, juin 2000) et sa décision adoptée à sa 24e session (Cairns, décembre 2000) et la décision 27 COM 8C.33 adoptée à sa 27e session (UNESCO, juillet 2003),

3. Inscrit le bien sur la Liste du patrimoine mondial sur la base des ***critères iv et vi****:*

> ***Critère iv*** : Le quartier du vieux pont de la vieille ville de Mostar, avec ses caractéristiques architecturales multiculturelles exceptionnelles (pré-ottomanes, ottomanes de l'Est, méditerranéennes et d'Europe occidentale), et ses relations satisfaisantes avec le paysage environnant, est un exemple remarquable d'une occupation urbaine multiculturelle. La qualité exceptionnelle des constructions du site, après les ravages extrêmes causés par la guerre et les travaux de restauration qui ont suivi, est confirmée par des recherches scientifiques approfondies. Ces dernières témoignent du raffinement technique exceptionnel, du savoir-faire et de la qualité des constructions anciennes, en particulier celle du vieux pont.
>
> ***Critère vi*** : Avec la « renaissance » du vieux pont et son environnement, la force et la signification symboliques de la ville de Mostar – en tant que symbole universel et exceptionnel de la coexistence de communautés d'origines culturelles, ethniques et religieuses différentes – sont renforcées et confortées, soulignant les efforts illimités de la solidarité humaine pour la paix et une coopération solide face à des situations catastrophiques écrasantes.

4. Note le changement du nom du bien afin qu'il reflète plus précisément la situation de la zone proposée pour inscription et qui devient : « Le quartier du vieux pont de la vieille ville de Mostar ».

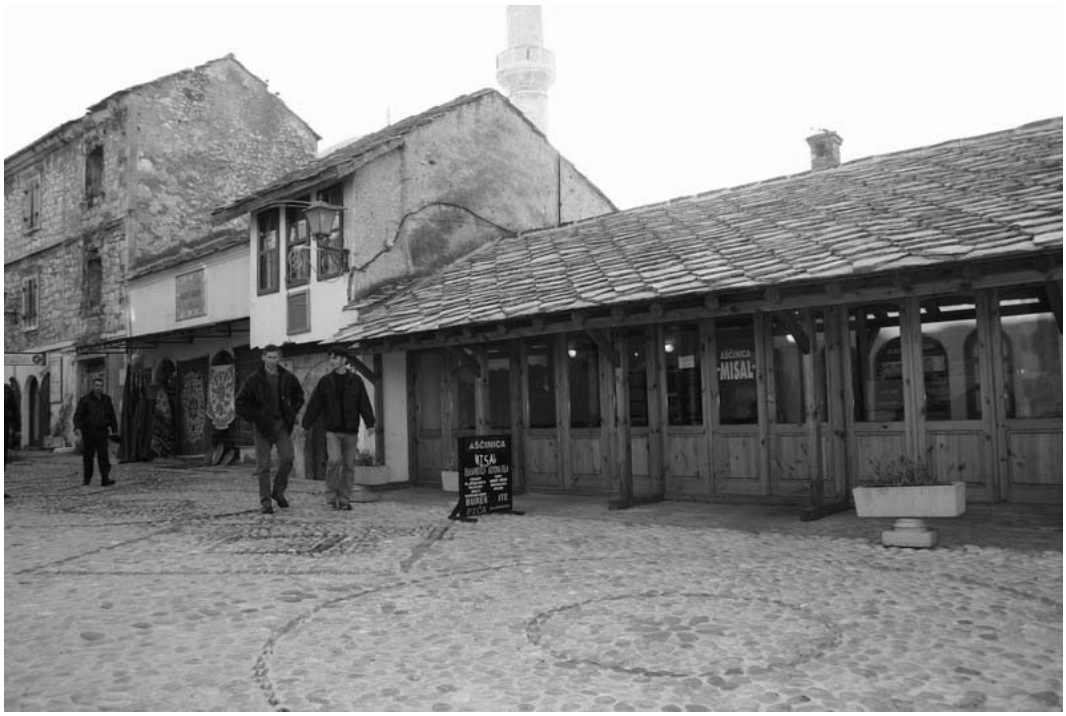
5. Demande à l'État partie d'appliquer les mesures définies dans le plan de gestion récemment établi de manière complète et rigoureuse et d'exercer cette démarche dans le reste du centre historique de la vieille ville, au travers de recherches scientifiques, de restaurations, de nouvelles utilisations et d'un suivi continu.



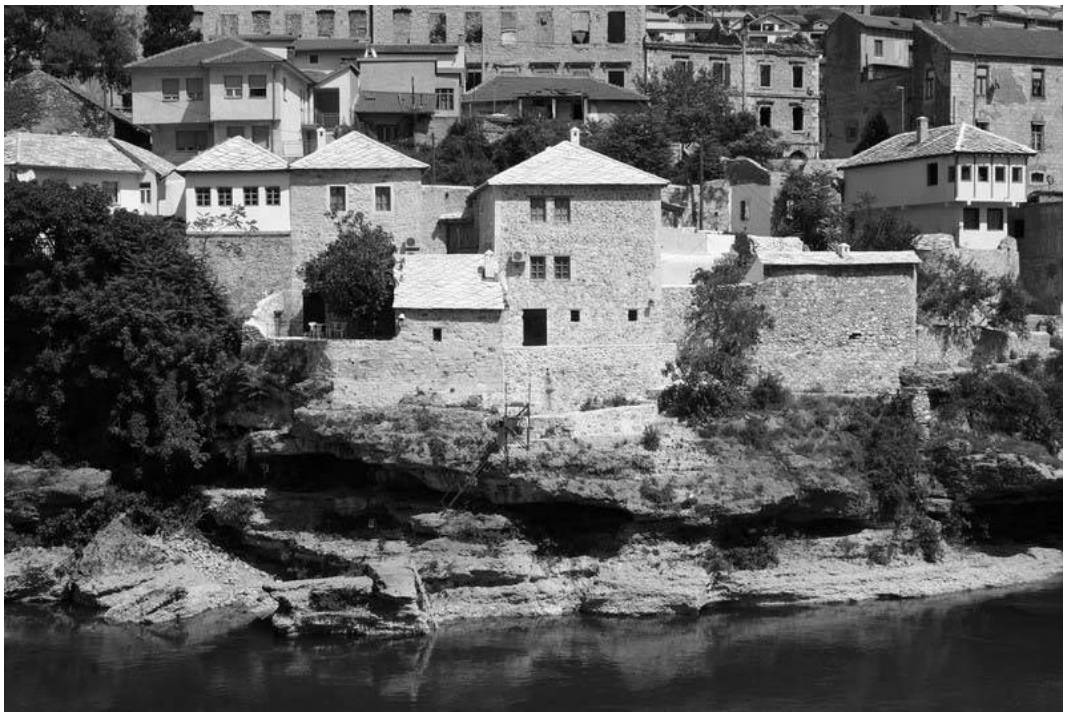
Plan indiquant la délimitation du bien proposé pour inscription

Vue du vieux pont depuis la rivière (1997)

Vue aérienne du vieux pont (2005)



Nala Tepa



Zone de la rue Ramica