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The Thesis Submitted for the Degree of M.Sc (in the field of Architecture Studies of Iran)

Assessment of Climate Factors Affecting Architecture and Urban Fabric in Historical Neighborhoods of the Hot and Humid Climate (*Case Study: Historical Fabric of the Bushehr Port*)

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The issue of climate and its importance is one of the necessities of today's architecture and urban design; in such a way that the users of the spaces face serious problems if they ignore the climate in the design of these areas. In these spaces, a lot of energy must be consumed to provide thermal comfort, which leads to many consequences such as increasing costs, reducing energy resources, increasing global heat, etc. In terms of design, architecture and urban fabric are necessary and necessary, and this issue is noticeable in the historical context of Bushehr. Bushehr is one of the southwestern cities of Iran, which, due to its location in a hot and humid climate, has a strong need for cooling in most of the year. Therefore, energy consumption in this city is very high during the hot seasons. The historical architecture of this port, which is related to the Zand and Qajar periods, has subtleties and details in the design which seems to have made this area more favorable than other parts of the city in terms of thermal comfort. Previous studies on historical context of Bushehr have either focused on the cultural and social issues of the historical context, or in the case of focusing on climatic issues; they have examined this area qualitatively. In other studies, in case of quantitative and numerical investigation, analyzes have been done on single samples or specific architectural elements. Therefore, the need to deal with the urban context along with the architecture and quantitatively is evident. Therefore, the purpose of this research is to measure the climatic factors affecting the architecture and historical urban fabric of Bandar Bushehr to check their effectiveness in order to use and inspire them in today's architecture and urban design. In this regard, a quantitative and qualitative combined method has been used to advance the research goals. The section of theoretical studies and the regulation of research literature have been done using qualitative studies and part of the field studies that are related to the urban context have been obtained through environmental measurements and quantitative data analysis. The collected information was done through documentary studies, using books, articles and reliable internet sources. In part of the research, according to the necessity of the study, direct observation, interviews and environmental measurements were used through accurate environmental stress measuring devices. The results of the research showed that Bushehr's architecture and historical urban fabric has a harmonious intertwining that was formed in response to the region's climate. By analyzing the findings of the architectural part, it was determined that the climatic functional spaces in the fabric of Bushehr are completely appropriate to the climate of the region; in this way, the Shanashir has the function of creating more speed for the wind flow and changing its direction inside the building in addition to its shading function, Tarmeh and porticoes are also a space for sucking wind into the building. The Mahtabi spaces in the historical fabric of Bushehr were built to create more wind flow in the floors and the yard space has a great effect on adjusting the thermal comfort conditions compared to the open spaces outside due to creating an exhausting state. In the urban fabric section, the results are as follows: although The space of the Meydan and the Meydancheh does not have a favorable condition in terms of thermal comfort, but in terms of climate, they serve the passageways and buildings to suck the wind into the passageway and then into the buildings. Among the passages, those with a greater ratio of width to height have better performance and among these passages, the ones that are smaller in height and width provide the best performance in terms of thermal comfort. On the other hand, due to the trapping of heat, the Sabbat passages are not considered among the desirable passages in Bushehr port.

Key words: Thermal Comfort, Hot and Humid Climate, Architecture and Historical Urban Fabric of Bushehr Port, Wind Flow, Relative Humidity, Air Temperature.