

Design Commercial Complex, Considering Environment

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ABSTRACT

This study examines to design the commercial, official, and entertainment complex according to regional typological approach. The aim of this study is to create a pleasant environment for buying goods, receiving official service, entertainment and communication of human. In order to access the goal, the researchers' focused on the history of commercial and official in Iran. Moreover, the researchers investigate the evolution of the complexes during the history. The main objective of this study is to design the complex properly according to the regional typological approach. The researchers analyzed the site through different directions as follows a) the placement of building on the site b) the directions of building and entrances. The researchers tried to have the building that has the best harmony with the environment. The researchers received the most important tools from the site analysis. Physical planning determined required spaces and their measurements. It is obvious that the researchers considered the concept, view according to the site features in order to access the best concept and design.

Keywords: Commercial and Official complex center, regional typological approach.

INTRODUCTION

shopping center also called a shopping complex, shopping arcade, shopping plaza or galleria, is a group of shops built together, sometimes under one roof also, it is available to the public with variety of shops and units. (22) The term "typology" has its roots in the Greek and Latin languages and has been used in Western culture to refer to a specific group with a distinct characteristic or feature. In architecture and archaeology, typology has been used as a tool for classification and identification since the mid-18th century. In other fields such as biology, psychology, economics, and mathematics, typology plays an important role in categorization and understanding. The concept of evolution and the classification of species in biology, for example, heavily relies on typology. In this thesis, the focus is on the use of typology in designing a commercial administrative complex with a regional approach. (19) The problem statement discusses the importance of designing commercial complexes that provide a stress-free environment and meet the various needs of people. The success of a commercial system depends on its ability to sell products, which requires creating an attractive space for visitors. The design process involves analyzing environmental data, ideas, and standards to create a plan that meets all design issues. The article discusses the importance of commercial spaces in every community and how they have evolved over time due to cultural and economic changes. The design of commercial centers has become increasingly important in recent years to meet the various needs of buyers. The article also highlights the growth of chain stores and the competition between them in providing quality services to customers. The goal of this research is to examine the typology of regional architecture and related concepts such as harmonization with the surrounding environment, which naturally affects the design of commercial and office

buildings. The aim is to establish a proper and cohesive design process that is in line with the region. The research seeks to answer the following questions:

1. Has attention been paid to regional typology in the design of commercial and office buildings?
2. Should the design of commercial and office buildings consider the quality of spaces, their relationships with each other, and the introduction of new tools such as cars?

DATA ANALYSIS

Species and typology, space, and form are important in architecture. This subject has been used for about 200 years and is also applicable in Iran. However, rarely have the various aspects of it been explained. (19) Typology in architecture has been used for over two thousand years and has been addressed by ancient architects such as Vitruvius and Ghias al-Din Jamshid Kashani. (21) In Southern Europe and countries like Italy and France, typology is understood with a formal concept and numerical methods are also used, while in Northern European or Anglo-Saxon culture, typology and typological approaches are not used. In the 1990s, the topic of typology was discussed in universities such as Harvard, MIT, and Birmingham, resulting in dozens of articles. (19) Typology in Iranian architecture has been developed for three decades, focusing on common characteristics of buildings. A study on housing in the village of Kandovan describes features of rock houses, including number of floors, enclosed spaces, and placement of interior objects. (12) In the 1990s, the Islamic Revolution Housing Foundation and the Building and Housing Research Organization in Iran were interested in typology to improve practicality in housing design. However, there is a lack of clear definition of species and typology, and a clear framework for achieving species is also a challenge due to different criteria and methods used by different individuals and consulting companies. The function of the building, plan shape, and sharing of a building element are the basis of typology studies in Iranian research. (19) The world's climate is categorized into five types based on plant growth: tropical rainforest, hot and dry, warm and temperate, cold and snowy, and polar. Tropical rainforest has no cold season, hot and dry climates have little precipitation, warm and temperate climates have moderate temperatures, cold and snowy climates have snowfall, and polar climates have no warm season. The average temperature in the coldest month and warmest month varies for each climate type. (13)

Table 1: this table illustrates world's five main climate in field of plant growth and features and features in terms of vegetation.

Climate	Feature in terms of vegetation	Weather feature	Quantitative range of temperature	signs
Tropical	Rainfall and temperature are suitable for the growth of tropical forests	No winter	No month of the year is colder than $^{\circ}18$	a
Dry	It is not suitable for growing trees	Lack of rain	Rainfall is less than the needs of tree plants	b
Mild	Rainfall and temperature are enough for the growth of treasure forests	Mild winter	The coldest month is between -3 and 18	c
Cold	Rainfall and temperature are sufficient for the growth of conifers	Cold winter	The coldest month is -3 below	d
Polar	The tree does not grow due to the extreme cold	No summer	No month is above 10	e

Building design should use natural resources, minimize environmental impacts, optimize water management, incorporate vegetation and surrounding landscapes, use sustainable materials, and align with cultural values. (5) Architecture should take into account the climate, natural resources, and environmental impacts. It should use sustainable materials, blend with green spaces, and consider local landscapes. Climate elements and geographical conditions should be considered. Outstanding architecture prioritizes stability, beauty, comfort, and human well-being. (5) Sustainable architecture focuses on using renewable materials, environmentally friendly designs, and selecting suitable locations for buildings. It aims to reduce negative impacts on nature and improve living conditions by considering environmental and economic factors in urban design and architecture. This approach can contribute to protecting the environment and enhancing people's lives. (17) Climate scientists use a variety of indicators to determine the climate of a location, including measures of dryness, relative humidity, temperature, evaporation, transpiration, wind speed, precipitation, and more. These indicators help scientists understand the unique climate characteristics of different geographical latitudes. (17) Local climate has a big impact on human activities and daily life. It affects things like agriculture, heating and cooling of homes, and the air quality in cities. Humans have made changes to the local climate intentionally or unintentionally. This makes the local climate very important for our well-being and the way we live. (1) The formation of an urban heat island in large cities creates a dome of air that causes a significant temperature difference and air pollution, making it an environmental problem. (1) Climatology is the study of climate, its factors, and applications to solve societal problems for human resources. (9) Applied climatology is the utilization of climate data archives to address social, economic, and environmental issues in industries like agriculture, energy, and industry. (17) Climatic architecture involves designing buildings that are suitable for the environment and selecting appropriate materials, while also incorporating methods to reduce heat loss, wind impact, and utilize solar energy while protecting from intense solar radiation. (17) Climatic architecture designs utilize natural forces and coordinate with the surrounding environment to create a suitable natural environment for users. (13) Climatic design implementation is a building approach that aims to decrease heating and cooling expenses by utilizing natural energy flows to provide comfort in buildings. (15) To achieve the goal of designing a comfortable building, it is necessary to investigate the climatic conditions of the location and design the building structure accordingly. (9) Reducing economic costs is crucial for preserving natural resources and ensuring their efficient and sustainable use. (1) (1) Iran's climate is influenced by latitude, altitude, and the presence of mountain ranges. The country's location between 35- and 40-degrees north latitude, along with its high plateau and limited low-lying areas, contributes to its diverse climate. The moderating effects of the Caspian Sea and the Persian Gulf are limited due to the presence of the Alborz and Zagros Mountain ranges. Iran's climate can be categorized into four main types: moderate and humid along the southern shores of the Caspian Sea, cold in the western mountains, warm and dry on the central plateau, and warm and humid along the southern shores. These diverse geographical features result in varying climatic conditions across the country. (13) The semi-tropical regions in Iran experience very dry air due to the influence of migratory winds and high-pressure areas, impacting human comfort and building design. Intense direct sunlight, mostly cloudless skies, and low humidity lead to wide temperature fluctuations, with surface temperatures reaching up to 70 degrees Celsius in summer and dropping rapidly at night. The central plateau, the largest region in Iran, has warm and dry weather conditions, characterized by harsh winters and hot summers, with semi-desert areas due to scattered topographical features. (13) The ranges and foothills of the highlands

and central mountains benefit from moist winds, creating relatively moderate climates compared to the depressions, but the dryness increases as we move from west to east. (14) The central, eastern, and southeastern depressions of Iran have a dry desert climate with significant temperature variations between seasons and within the day, and the Dasht-e Lut region is known for having the lowest relative humidity and being the hottest area in the country. (13) Residents of warm and dry regions have developed several architectural strategies to cope with the challenging climate. These include using materials with high thermal capacity, compact and dense building designs, maximizing shading, adobe or clay roofs, whitewashing external surfaces, minimizing windows, preventing air infiltration, creating inner courtyards for moisture and protection, and orienting buildings to minimize heat penetration. It's essential to consider solar position and local wind patterns for optimal design. (13) The impact of wind on buildings primarily affects natural ventilation and indoor air temperature, influencing the comfort of occupants. Wind creates pressure differences on exterior walls, driving airflow for ventilation. Temperature differences within the building have minimal impact on airflow compared to the effects of wind. (13) Ventilation is crucial for cooling buildings. Without proper ventilation, the indoor air temperature can become as warm as the exterior walls. The color of the exterior walls, window size, and shading devices all impact indoor air temperature. Buildings with dark-colored walls or large windows without effective shading devices tend to have warmer indoor air. On the other hand, buildings with light-colored walls, average heat capacity materials, and effective shading devices have lower indoor air temperatures. Therefore, ventilation plays a significant role in cooling a building, especially in relation to these factors. (13) In cold climates, ventilation is important for controlling indoor air quality and providing necessary oxygen, while minimizing the entry of cold, dry outside air to prevent discomfort and skin irritation. Adding moisture to indoor air is essential. In hot climates, ventilation is needed to facilitate evaporative cooling by circulating air around the body, especially in warm and humid areas, where the speed of airflow is crucial for comfort. (13) In hot and dry regions, minimize natural ventilation during the day to reduce heat gain. Low air velocity is sufficient for cooling through evaporation. Open windows at night for ventilation, but window size should be minimized to reduce heat gain. Buildings on pilings receive less dust and sand in areas with sandstorms. (13) The shape of a building affects its coherence with climatic conditions. Cold weather compresses building form, while intense sunlight elongates it. The best building form loses the least energy in winter and receives the least heat in summer, making a square plan ideal. However, this may not apply to older buildings with small windows but is relevant for modern buildings with large glass sections. (13) The form of large buildings is more influenced by internal factors rather than climate conditions. However, some general principles can be followed such as using closed and compact forms in cold regions, east-west axis forms in moderate regions, round and compact shapes in hot and dry regions, and freely drawn east-west axis buildings in hot and humid regions. Tall buildings are preferred in cold and hot and dry regions. (13) The amount of solar energy that enters a building through windows depends on the type of shading used. External shading devices allow only 10% of solar radiation to pass through, while internal shading devices can allow up to 70%. Without any shading, around 90% of solar radiation enters the building. (13) Sunlight passing through windows has a significant impact on indoor temperature, especially with direct sunlight. The use of lightweight building materials and glass surfaces in modern architecture exacerbates this issue. The amount of radiation passing through glass depends on the angle of incidence, and the thermal effect of direct sunlight can be significant if windows are unshaded or shades are ineffective. This heat is stored indoors and can cause a considerable increase in indoor

temperature. (13) The impact of window direction on indoor temperature is influenced by natural ventilation and window shading. Effective shading and airflow can mitigate the effect of window direction, but unshaded windows and lack of airflow can lead to significant temperature changes. The type of building material also plays a role, with lightweight materials being more sensitive to the impact of window direction than heavy materials. (13) Shading devices on windows prevent direct sunlight from reaching the glass, reducing heat generated by solar radiation. Outer shading is more effective as heat transfer through glass is rare. Inner roller blinds allow direct solar radiation to enter and heat up the interior space. (13) Choosing appropriate building materials based on climate is crucial. The ideal materials vary depending on the climate, with thermal capacity and resistance being key factors. Heavy materials are best for daytime use in hot and dry areas, while high thermal resistance and no thermal capacity materials are best for warm and humid areas. (13) When selecting building materials for warm regions, consider factors like temperature, fluctuations, and solar radiation absorption. Thermal resistance and capacity are important features, with insulation and a heavy material layer being ideal for walls. Combining heavy building materials and thermal insulation reduces indoor air temperature and concrete walls with high thermal capacity and insulation layers are good for naturally cooling a building. (13) The geography of Tehran province, with the Alborz Mountain range in the north and a desert plain in the south, significantly influences its climate. Altitude affects temperature and precipitation, with higher rainfall in the north and lower in the south. The rainy season is from October to February, and the hottest months are June, July, and August. Prevailing winds, such as the westward wind and desert winds, can impact air quality in the region.

(13) Tehran province in Iran is characterized by mountainous, foothill, and plain regions. The elevation decreases from north to south, with the highest point being the Central Alborz mountains. The province's topography greatly influences temperature and humidity variations. (13) Tehran is situated between 51° and 52° east longitudes and 35° and 36° north latitude, with an elevation of 1026 to 1650 meters. It is surrounded by mountains to the north and east, with a central plain irrigated by rivers. (13) Tehran is situated in a valley surrounded by the Alborz Mountain range to the north, creating a natural slope from north to south and from east to west. This geographical layout results in obstacles of varying elevations surrounding the city from the north, east, and southeast. (13) The vegetation in Tehran is influenced by its climate, topography, and resources. The northern areas, with over 300 mm of annual rainfall, support natural and cultivated forests, primarily featuring pine, oak, and almond trees. (13) Natural hazards in Tehran include earthquakes, droughts, floods, landslides, plant pests, locusts, and storms. Active faults and limited water resources are key natural causes, while human activities also contribute to exacerbating these hazards. (13) Tehran is susceptible to earthquakes due to its location on active faults and its high population density.

The city has taken measures to widen streets to improve escape routes. Additionally, Tehran faces flood risks, particularly in the northern region, due to residential construction and loss of vegetation cover. Mitigation efforts include constructing sewerage networks, widening channels, dredging streams, and planting trees along riverbanks. (13) Designing buildings based on climate principles can lead to more uniform urban structures, reduced energy consumption, and improved living environments. Common climatic recommendations for construction consider factors such as sunlight radiation, humidity, precipitation, freezing, temperature, and wind direction. In Tehran, the city's high sunlight radiation, with the sun

appearing for 14 hours during the longest days and 2837 hours annually, makes it suitable for utilizing solar heating systems for comfort. (13) Tehran's relative humidity affects thermal comfort and bioclimatic conditions. Green spaces, artificial lakes, parks, and waterways impact the distribution of humidity in the city. Rainfall is highest in December-January, with an average monthly maximum of 49mm and a maximum annual rainfall in 24 hours of 23.4mm. (13) Tehran experiences its coldest month in December with a high number of freezing days. Website entrance design and building construction should consider the maximum sunlight radiation in winter, soil frost depth, roof edge protection, and appropriate building materials. The temperature fluctuation in Tehran over the past 25 years has been 55.4 degrees, with an annual average of 37 degrees, which is influenced by geographical position and altitude. (13) The Tehran International Exhibition weather station experiences its warmest month in July with an average temperature of 35 degrees Celsius. Conversely, January is the coldest month with an average minimum temperature of 7.0 degrees Celsius. The period of warmth lasts from June to the end of August. (17) Tehran's winds are classified into four groups: northern, western, southern, and southeastern. The northern wind is beneficial for the urban environment, while the western and southeastern winds are undesirable due to their dust and dirt content. (13) In the design of office buildings, changing the systems and methods of office equipment is essential. Innovative and mechanized administrative methods have a significant role in improving the administrative system, including speeding up tasks, reducing bureaucracy, and saving time and costs. The use of technology as an efficient tool and mechanized methods in the development and increase of effective work efficiency are crucial. (24) Administration refers to a particular social system in which individuals collaborate to achieve specific goals and make decisions. This system does not have a specific physical form and is defined based on its performance. (16) Administration refers to a particular social system in which individuals collaborate to achieve specific goals and make decisions. This system does not have a specific physical form and is defined based on its performance. (6) The text discusses the history and types of commercial centers in Iran, focusing on the development of bazaars during the Sassanid period. It explains that the word "bazaar" originates from ancient Persian and describes how bazaars were established in urban and rural areas, eventually becoming covered with gates and doors. The different types of bazaars are outlined, including permanent bazaars, temporary bazaars, and urban marketplaces. (3) The text discusses the markets in large and medium-sized cities that existed in the center of each neighborhood. These markets consisted of several shops such as grocery stores, butchers, fruit shops, bakeries, carpentry, and tailoring to provide for the daily and weekly needs of the neighborhood residents. The markets had two types of neighborhood spaces: open squares and passageways. Markets can be examined from three perspectives: architectural, urban planning, and social. (3) Markets are characterized by high ceilings, arched roofs, and attractive spaces. They are considered the economic heart of the city and serve as vital lifelines, hosting not only commercial activities but also important urban facilities and social spaces. (8) Commercial centers are divided into 5 groups based on their scope and influence: International Markets, National Markets, Regional Markets, Local Markets, and Bazaars. Traditional markets are also categorized based on the type of goods, and some cities are famous for specific products. (6) Iranian traditional markets vary based on climate, including flat desert-edge markets with domed roofs, cold mountain markets resembling desert-edge architecture, warm markets with wooden roofs and ventilation, and moderate, humid markets with sloping roofs influenced by regional architecture. (13) Traditional cities in Iran had various functional spaces, including caravanserais, storage places for goods, communication spaces, prestigious market sections,

workshops, covered spaces for office work, commercial houses, market paths, intersections of main paths, gathering places, open squares for ceremonies, mosques, coin-making establishments, spaces for poetry and mourning ceremonies, religious schools, bathhouses, water storage with ventilation systems, sports spaces for wrestling, and coffeehouses for leisure and socializing. (3) Establishing a commercial center involves finding a suitable location and conducting economic and population analyses. The location should have necessary facilities and accommodate planning needs. Economic studies should consider access to highways, population growth trends, per capita expenditure, and potential impact on existing stores. Population density is directly related to the need for commercial units. Predicting future population is also important. (6) Establishing a commercial center involves finding a suitable location and conducting economic and population analyses. Visual factors such as attractive elements in the design of the commercial center, advertising, and pedestrian traffic are important in creating attraction for visitors. The design of the exterior facade of stores, types of entrances, and layout of products are also important considerations in creating an attractive commercial center. Assessing household income and the status of existing stores in the area are also important factors to consider. (8) Proper lighting and music enhance the atmosphere of indoor and outdoor spaces. Central courtyards should be strategically located and designed to be the center of attraction. Markets and passages should create an intimate environment with durable materials. Skylights and wall windows add attractiveness. (6) In summary, creating a pleasant atmosphere through lighting, music, temperature control, and artwork is important in shopping centers. Advertising and pedestrian traffic also play a significant role in attracting customers. Non-visual factors such as appropriate services and reasonable prices are also important. Storage of goods may be centralized in large shopping centers. Shopping centers offer both service and commercial activities, including banks, clothing stores, supermarkets, and more. (8) Three research studies have been conducted on architecture and design in Iran. Dr. Mimarriyan and Tabarsa (2012) discussed the types and classification of architecture, including its presence in Iran. Pedram Ehsani (2014) focused on the design of commercial and administrative complexes, examining the evolution of shopping centers in Iran and introducing a physical program for Kurdistan province. Aida Sadaght Pishah (2009) explored the history and types of markets in Iran and discussed the design regulations and standards for commercial centers, using Shiraz's markets as a case study.



Figure 1: complex centers' sites

Figure one and two: (Name of the complex: tooba / employer: Haidar khalesi and partners / infrastructure area: 105000 square meters) West landscape of tooba complex is toward the (Chitgar Lake and Persian Gulf artificial lake). Besides to vicinity of the complex and due to favorable weather and expansion of urban space have increased the population plus, easy access and proximity to the Chitgar subway is another advantage of this complex. Figure three and four: (name of the complex: shahrak-e gharb / location: western town of Tehran / chief architect: Farzad daliri / land area: 5600 square meters / infrastructure area: 7000 square meters) This project includes 16 floors and 7000 square business space in fact, design is combination of classic and modern Iranian design. Complex building not only includes shops, in fact there are restaurants, playgrounds and fast food. All business units designed with the maximum amount of light and space which is suitable for any task and work. Unique combination of two architectural styles caused the existence of columns and shapes that made the building beautiful and 8 meters entrance leads enormous central place that is inviting costumers. Figure five: (complex's name: central world / location: Bangkok Thailand / infrastructure area: 429500 square meters). Central world was opened in 1990 however, in 10th of May 2010 due to anti-government protests and the fire had been closed. Complex includes 495 units, fivestar hotel, community center, office tower, and parking building. Before rename the complex central world plaza in 2002 and central world in 2005 it was introduced as central trading complex. Figure six: (name of the complex: pars complex) pars complex has been known as greatest and the most modern business and commercial complex of Iran established in a field with area of 27000 square meters also, infrastructure more than 210000 square meters in area with exclusive access is under construction. According to mass of the project this complex designed exclusively to be a good role model for other projects with multipurpose. Pars complex has advantages like private and public parking, commercial, business, cultural, sports units, roof gardens which are able for society and 12 flats (5 underground and 7 normal flats) all of these advantages made perfect place for investigation. Sizeable units' height is about 4-5 meters on the other side, small units' height is about 3 meters also, it depends on services and height could bring issues for customers and employees. Units are not based on natural light they have artificial light and mechanical air conditioning system plus, height of the original floor from the ground is 4,5-5 meters and the upper one is 3-4,75 meters also, big shopping places use 0,02 of floor area for shells and counters and the rest for 15 persons in each 10 square meters at the end, all of yards should have entrance and exit doors with distance. (20) The minimum height and width of the entrance on the ground floor is 3700 meters plus, Access to firefighting equipment must be provided, and the circulation diameter for these equipment is 17 meters. The maximum distance of any point from the entrance must be 25 meters also, the width of the main exits and customer passages must be 1070 meters for the first 200 people, and for every 15 meters, the width should be increased by the width of the previous section. If there are 2 exits, the width of each must be sufficient for all occupants of the store. Furthermore, the entrance to the passage is approximately 5.3 meters high and wide. Exits are considered to lead to a courtyard when the entrance or passage is approximately 4 meters wide or two passages each have a width of 5.3 meters. The width of the exit should be 5.1 meters and, in the basement, it should be 1.1 meters. The total capacity of all doors is equal to the discharge of every 100 square meters or a portion of the floor area equal to 30.0 meters net width, in the upper floor, the minimum width is equal to the width of the staircase plus, the capacity of the corridor under normal conditions of movement is $P/m^3/0$. P/m means people per square meter. In conditions of higher population density, people are not always able to move at their natural speed and cannot even overtake those who move more slowly. The

acceptable population density history for designing people's circulation areas is P/m 4.1 and the floor area in commercial complexes on the ground floor can be up to 100% of the building footprint. Commercial lands located in city centers are only allowed to carry out commercial activities up to the fourth floor, and from the fourth to the seventh floor, the complex includes administrative-commercial, mixed, or a combination of both activities. The width of doors are as follows: up to 500 people = 1 meters per each 120 people / up to 1000 persons = 1 meter per 150 persons / more than 1000 people = 1 meter per 200 people / corridor and doors = around 1,5 meters. (20) Placement of each store is directly influenced by the final talents of the business plus, a greater number of passers-by in front of the shop the more efficient the business is. Sidewalks between parking to complex should be designed to deter casual walking plus, all units need showcase to display their goods and showcase should be visible from variety of points and angles. Connection with car parking (vehicles) is an important element plus, employees' parking should be organized. Minimal standards for parking by federation of chain stores in order to meet the needs for maximum of shopping recommended: for places which car ownership is low = 4 parking spots / for places which car ownership is average = 5,25 parking spots / for places which car ownership is high = 6,50 parking spots. Gap between parking or station and main stores should be around 0-200 meters moreover, availability of parking has to be easy. (20) Services must be available with maximum potential receive and transmittal (unconsumed products and empty boxes) (20) Vertical and horizontal circulation is an essential element which is related to costumer and goods actually, horizontal circulation is internal passage which leads to vertical circulation and places such as elevators and it has to be proper to interest costumers to move along the units and make them visit next floor. (20) Middle yards have to attraction for costumers and make memories in their mind for ever to remember it in fact, the most of complexes include beautiful yards with species like glass dome, statue fountains, flower arrangement, special stair cases, elevators with glass walls and graphic designs which are very substantial elements. If complex has multiple yards when they are designed differentiated from each other they make exotic scene. The flow of traffic of shoppers in shopping centers is very important and should be optimized through proper design. Design strategies such as designing broken angles in the walkways, installing escalators and elevators, and setting up attractive kiosks can help improve the flow. The installation of kiosks should be done with consideration of the appropriate size and location. Overall, optimizing the flow of traffic in shopping centers can help enhance the comfort and convenience of shoppers and improve the productivity of stores. (20) Restroom services and customer access in a restaurant should not be accessible from the street side, and entry should be through designated areas, not through stairways. (20) The storefront is a section of a shop that is used to display goods to costumers. These storefronts can be open or enclosed with a glass back wall. The size of the storefronts depends on the type of goods and can range from 10% to 60% of the shop's surface area. Access to the storefronts is necessary for decorating and arranging them and should be quick and easy. The storefront, as a small exhibition to attract customers, must have an appropriate shape, form, view, and light. (20) In the design of commercial and office complexes, optimizing escalators and escape stairs is essential. The distance between steps should not be suitable for only two people of larger build, as this can pose safety risks by causing physical contact and insufficient balance during movement. Additionally, the distance between the handrail and the wall should be coordinated with the thickness of larger individuals' limbs and the inner diameter of smaller individuals closed or semi-closed hands. Please translate the following text into English, considering the specialized nature of the article. (20) In the design of commercial and administrative complexes, optimization of the escalators and emergency

stairs should be considered. The distance between the steps is not suitable for the comfort of two individuals with large physiques, and the movement of the stairs, physical contact, and lack of sufficient balance can pose a safety risk. Furthermore, the distance between the railing and the wall should be coordinated with the thickness of the hands and the inner diameter of the hands in a closed or semi-closed position. The height and width of the stairs should also be determined according to the height and size of individuals' feet. In external walls with exits to the outside, approximately two sets of stairs, one of which is at a distance of 25 meters, are required from every floor. Adjacent rooms should have one set of stairs within a distance of less than 15 meters. (23) The travel conveyor with a similar width to an escalator has been designed. Its slope angle is 8.5 degrees and the maximum speed is 0.9 meters per second. At angles of 12-8 degrees, the maximum speed is 7.5 meters per second. Its capacity for transporting people is similar to that of an escalator. (20) The elevators should meet the needs of people with disabilities. The height of the easy buttons should be 134/2 centimeters, the emergency buttons should be installed at a height of 76/2 centimeters from the ground, and the top buttons should be spaced 212/9 centimeters apart. The centerline of the telephone should be installed at a maximum height of 121/9 centimeters from the floor of the elevator car. The maximum distance traveled by the elevator is 25 meters and the maximum speed is 1 meter per second. The minimum waiting space for each elevator is 150*150. (20) According to regulations, the maximum length of a ramp is 9 meters and the maximum slope is one-twelfth for a landing. The distance between the landing and the ramp should be such that it not only provides adequate space for the landing but also allows enough room for turning towards the ramp without entering the landing space. For sloping surfaces with a length of 3 meters, the maximum slope is 8.33%. (20) The store shelves should be accessible and placed in visible areas for easy classification and display of items and the height of shelves should be determined based on accessibility and the size of shorter costumers, plus the shoe fitting area should be designed to accommodate the seated body size of costumers. The size of dressing rooms should be coordinated with different body positions of humans. Backrests with suitable height for horizontal distances should be coordinated with the maximum depth and width of tall individuals. (20) The average size of jewelry, watch, and eyewear stores is approximately 20 square meters, with a portion of the store allocated for display cases. Additionally, a photography unit requires around 30 square meters of space, including a main hall and two rooms for customer photography and film development. (20) The units of cargo transportation are such that, due to the large volume of products, sales, and waste, they require a larger space and access to a cold storage and secondary access. The average required area for these units is 50 square meters. (20) The stationery stores, bookshops, and printing shops require display cases and shelves to showcase their products. These businesses allocate around 30 square meters of space for displays, along with storage areas. Newspaper vendors operate in smaller spaces like kiosks. Typing and printing shops, which fall under this category, require larger spaces, averaging around 50 square meters, to accommodate their equipment. (20) Food retail stores, including supermarkets for protein products, butchers, poultry and fish shops, and dairy stores, need more than 50 square meters of space. These shops allocate over 50% of their space to refrigerated display cases and open shelves. Commercial units like taxi dispatch centers, dry cleaners, men's salons, and women's salons also require a space of more than 50 square meters. Hair salons and taxi dispatch centers typically require an additional area for a pantry and temporary rest area. (20) These units provide necessary sanitary services such as hygiene supplies and pharmacies. The average size of these units is 30 square meters and they have glass showcases and shelving. (18) The units like these provide all types of clothing, from

underwear to shoes, to the public. The average size of these units is 30 square meters and includes a showcase and a fitting room. (23) These units include kebab shops, coffee houses, and pizza shops that offer various hot meals to customers on-site. They should have suitable space for cooking (kitchen), storage space for food ingredients, and secondary access for servicing these areas. The main dining area should have a calm and appealing environment to attract customers, and the size of this space can vary from 20 to 200 square meters. (23) Food counters have specific dimensions, including the space behind the counter, the width of the counter, and the front of the counter. The height of the counter is approximately 7.106 centimeters. The distance between the seat surface and the underside of the counter, as well as the distance between the knee and the floor, and the distance between the thigh and the counter, are also crucial. The footrest height should be designed to match the 7.106-centimeter height, and the height of the footrests on the seat is 8.17 centimeters. The backrest height ranges from 8.50 centimeters, and the seat's footrest is positioned at a higher height. It seems logical to install a separate footrest for individuals in a standing position. (20) In the design of dining spaces, specific dimensions for the counter, chair, table, and the distance between them should be considered. The distance between the table and chair should be a minimum of 61 centimeters, and between two chairs should be a minimum of 45 centimeters. The distance from the back of a wheelchair to the table should be between 61-76 centimeters. Wheelchair seating should accommodate the turning radius and other mobility features, moreover the height of the seating should provide support for the knees to reach the ground. Coordination between the movement space and the service area is also crucial. (20) The minimum distance between the shoulders of a man and a woman is 54 centimeters, and by adding the size of a child to it, we will have a maximum distance of 1.98 centimeters. Additionally, the maximum width of the body is a primary measurement plus, the minimum distance between the shoulders of a man and a woman is 54 centimeters. When adding the size of a child, the maximum distance is 1.98 centimeters. For healthy customers and individuals sitting in a wheelchair, the minimum distance is 14.91 centimeters. The final dimensions for a wheelchair are 7.106 x 5.3 centimeters. The minimum required distance in front of shelves for negotiation and accessing items is 4.91 centimeters. Additionally, a distance of 4.152 centimeters is sufficient for two people to move side by side. Please note that these measurements are based on the given context and may need further clarification or adjustment depending on the specific industry or situation. (20) The distance between food display cases should be 189 centimeters to accommodate the passage of two shoppers and a person sitting on a wheelchair. The distance between seating in beverage stalls should be at least 61 to 74.5 centimeters also, the distance between the counter and the back area of beverage stalls should be at least 75 centimeters. Cultural differences determine the distance between individuals in beverage stall seating areas. The density of seating in beverage stalls should provide comfort for customers while preventing them from colliding with each other. Every 30 centimeters of counter space is equivalent to accommodating 1.5 individuals along its length. (20) The housing sector needs practical solutions to address issues like long construction time, short service life, and high costs. By implementing new building systems and materials, construction can be optimized, housing production increased, and favorable implementation conditions achieved. These changes will also attract more private sector investments in infrastructure, especially in housing, and help the government meet its housing sector goals. It is necessary to investigate the need for reducing the weight of buildings in order to minimize the impact of earthquakes and mitigate the resulting losses and damages. To achieve this, the use of lighter materials and the implementation of innovative building systems to reduce the weight of the structure and

enhance seismic safety are required. To reduce building weight and mitigate earthquake impact, methods such as using lightweight materials, optimizing dimensions of load-bearing structures, and placing heavy loads on lower floors can be employed. These strategies aim to minimize the effects of earthquakes on the building. Reducing the weight of a building can lead to significant cost savings, environmental benefits, and increased resilience to seismic forces. Common construction methods in Iran include load-bearing walls and steel or concrete skeletons. However, adopting new lightweight materials and construction methods can help reduce a building's vulnerability to earthquake effects. This shift can result in savings in building materials, energy, and environmental impact. It is important for these changes to be adapted to the country's technical and economic capabilities, taking into account its unique characteristics. By embracing new building systems and innovative materials, Iran can achieve a more sustainable and resilient built environment while also reducing construction costs and environmental impact. The Thermomur building system utilizes polystyrene components that are filled with concrete and reinforcement bars to create a strong and unified structure. This system offers several benefits including faster construction, easy implementation, cost reduction, cohesive building integration, and efficient energy utilization. It is suitable for both residential and commercial buildings and also helps save on transportation costs. Prefabrication of components in a factory or on-site offers the possibility of rapid construction without heavy machinery, flexibility in architectural design, creation of larger and cleaner spaces, adherence to environmental standards, resistance to lateral forces and earthquakes, optimization of energy consumption, reduced material weight and worker accidents, and installation by skilled or unskilled workers, resulting in construction speed more than 4 times faster and a reduction in time and cost that executed. Moladi is a unique building system technology developed in South Africa that is specifically designed to produce affordable houses for those who cannot afford to buy a house. This system offers several advantages for building affordable houses, including efficient use of resources, short construction time, minimal skill requirements, and reduced capital investment. The system utilizes reusable plastic molds that comply with building standards and regulations, which are used to construct walls and other building components. The mixture used to fill these molds has excellent strength and permeability properties, providing thermal and sound insulation once hardened in addition, The Moladi building system utilizes 300x300 millimeter panels that are filled with a mixture of river sand, cement, water, and additives. This mixture quickly hardens and possesses strong and permeable properties, making it resistant to water and moisture. Once hardened, the mixture provides thermal and sound insulation. The molds used in the system can be easily removed and are employed for constructing walls and other building components. This building system utilizes versatile molds that can be used for constructing residential buildings of different sizes and heights. It is a cost-effective system with materials that are environmentally friendly and can be returned to nature. The buildings constructed using this system can be easily and quickly produced and installed, and they provide favorable thermal and acoustic conditions. This system has been used in various countries, not only for houses but also for schools, clinics, workshops, and industrial and agricultural applications. The Super frame construction method, originating from Japan, is a modern approach suitable for high-rise residential buildings. It employs prefabricated load-bearing sections to ensure control over building movements during earthquakes and energy absorption. Structures constructed using this method are reliable and suitable for habitation. It is recommended as an economical and technical approach for constructing high-rise residential buildings in the Iran. The super frame system consists of components that are small-sectioned columns located within the building

plan, which only bear vertical forces (including dead and live loads without earthquake forces). The small section of these columns within the plan allows for optimal utilization of the building spaces. These columns are implemented in a prefabricated manner. In each facade of the building, 2 columns are considered, and a total of 8 main columns (SC) with a larger section are used to transfer seismic forces only axially to the foundation. These columns are also implemented in a prefabricated manner according to their performance. Seismic forces are transferred through the main beams (Beams Super: SB) at the top of the building onto these columns. Main shear walls are the primary component of earthquake-resistant structures in the I-shaped shear wall system. These shear walls, which are located in the core of the building, are placed on the foundation at the bottom and connected to the main beams (SB) at the top. Shear walls are executed in situ concrete, with high-strength concrete used in the lower sections of the walls. The floor diaphragms are constructed as a single diaphragm in the form of a slab without any beams between them. These floors transfer seismic forces from the floors to the central core (shear wall) of the building. This type of roof construction has many advantages, as the absence of high beams increases flexibility in the plan and does not create any obstacles for installing building services. In the upper part of the building structure, four large-section beams are placed on the main columns. These beams are connected on one side to the shear wall and on the other side simply placed on the main columns. During an earthquake, when the shear wall becomes active and transfers displacement to the main column, the main beams only transfer vertical forces to the columns. Mechanical energy absorption devices (dampers) are placed between the main beams and columns to absorb seismic energy and reduce building movements caused by external loads. The Super frame system utilizes pre-made columns and facade walls, with a sliding formwork for the shear wall and two-level slabs for the ceilings. It accommodates water, sewage, and gas pipelines within the interior section, while vertical communications are positioned alongside the shear wall. Although ceiling execution may take time, the use of pre-made columns allows for faster completion of other sections. Innovative technologies for earthquakeresistant buildings include flexible design, stronger vertical elements, simple and uniform layouts, nonstructural details that prevent detachment, and minimizing obstruction to structural movement during seismic events. The building plan should be simple and symmetric, with less damage-prone vertical elements. The formation and expansion of Tehran's District 6 began during the Pahlavi I era, with the southern edges of the district taking shape with the construction of various centers. Yusefabad and Amirabad neighborhoods were built in the first ten years of 1335, considered part of the northern fringe of Tehran. From 1335 to 1345, the congested part of District 6 became denser, and empty lands between Yusefabad and Amirabad were built up, and numerous secondary streets were formed. The comprehensive plan for Tehran's 25-year development was approved in 1347, leading to significant developments in Tehran's urban development and District 6 from 1345 to 1355. Many important centers and buildings were constructed during this period, including the Ministry of Agriculture building, Army Hospital No. 1, Higher School of Commerce, IranAmerica Society, Miami Hotel, National Iranian Television, Ice Palace, Drug Addicts Rehabilitation Center, Pahlavi Foundation High School, St. Louis Elementary and High School, Sa'ei Park, Farah Park, Tehran University, Thousand-Bed Hospital (Imam), Carpet Museum, Vali Asr Square, and National Iranian Oil Company. (22) The chosen site for the commercial and administrative complex is located on Keshavarz Boulevard, a centrally located area with historical significance and tourist attractions. The site's dimensions are 12,000 square meters, making it suitable for a complex with both administrative and commercial functions. The urban landscape in Tehran is generally lacking

consideration for environmental factors, but the proposed complex aims to address this by integrating the local environment and visual harmony into its design. The complex is planned to have separate sections for commercial and administrative purposes, effectively utilizing the existing space

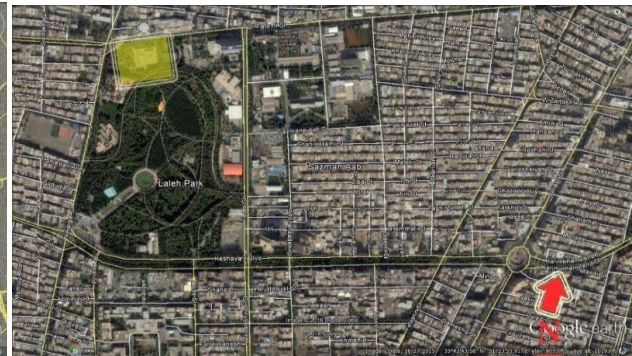


Figure 2: Architecture project site Figure 3: Project site and geographic location

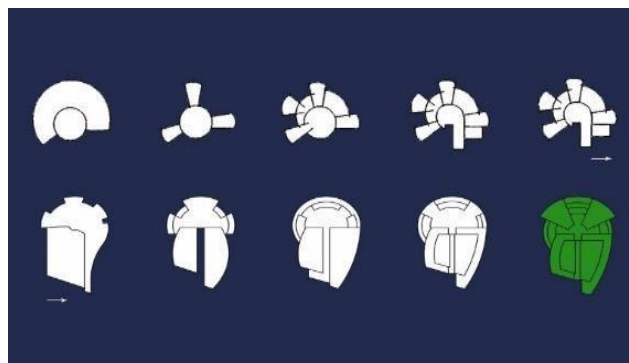


Figure 2: Basic concept

The chosen design concept for the complex involves using a natural element, specifically the pearl, to establish a connection between humans and nature. The pearl was transformed into a whistle or boxing glove, and volume number was selected for further design and drawing of detailed plans. The design concept involves using a natural element, specifically the pearl, to establish a connection between humans and nature. The pearl was transformed into a whistle or boxing glove, and volume number was selected for further design and drawing of detailed plans.

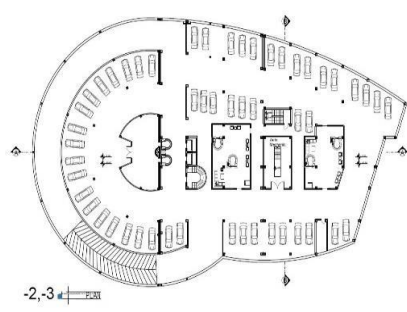


Figure 5: Plan site

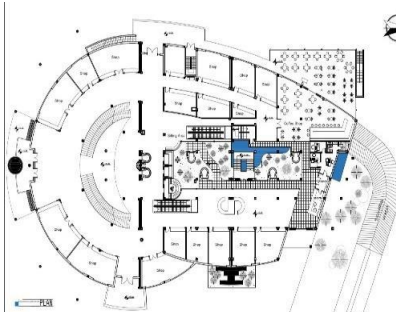


**Figure 6: Parking floor plan minus one
minus two**

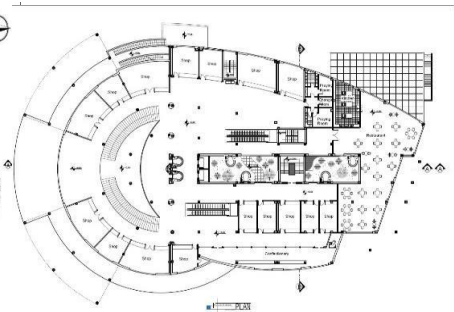


Figure 7: parking floor plan

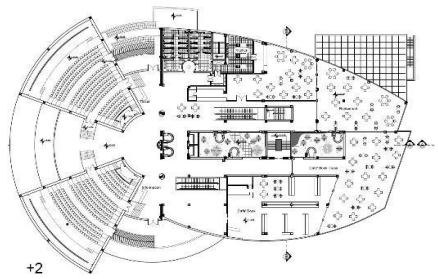


Figure 8: Parking plan minus three,

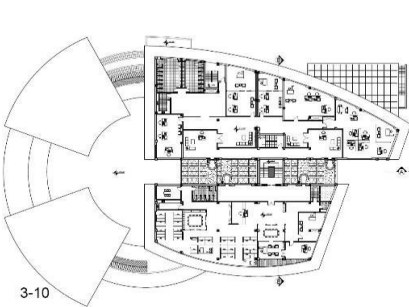


Figure 9: Commercial ground floor, Figure 10: First commercial floor

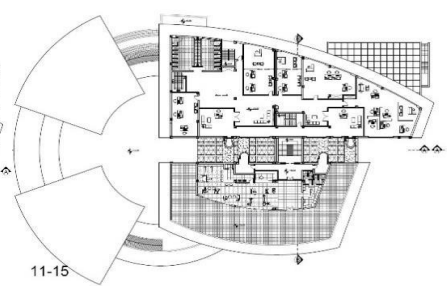


Figure 11: The second floor and cinemas, Figure 3: Official

Figure 13: Official and official club

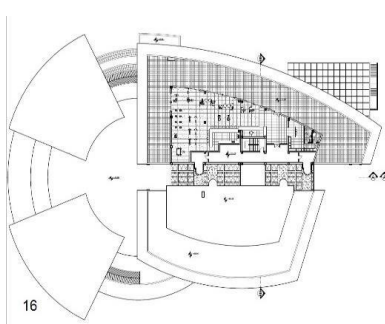


Figure 14: Official club

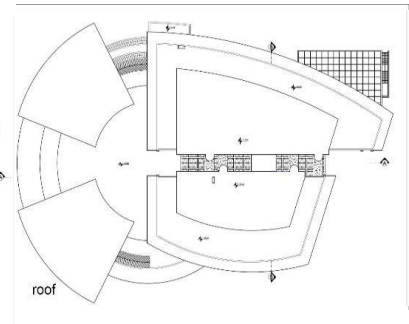


Figure 15: Roof plan

Figure 4: Columnarization

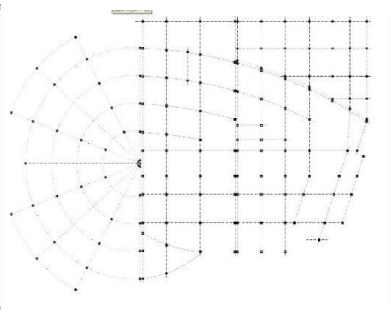


Figure 17: Axial classification of column

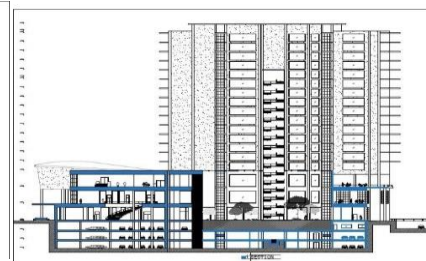


Figure 18: Longitudinal section columnarization

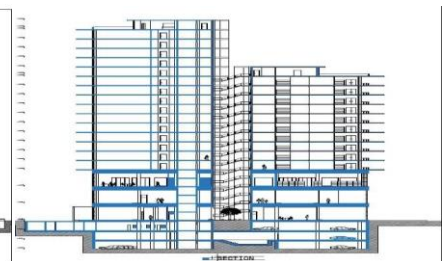


Figure 19: Cross section of the building placement



Figure 20: North view

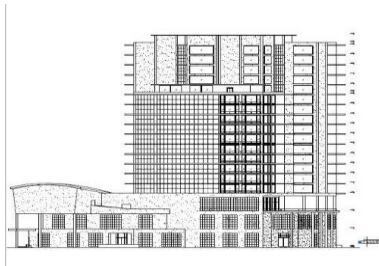


Figure 21: East view

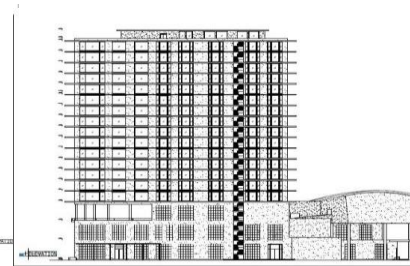


Figure 22: West view

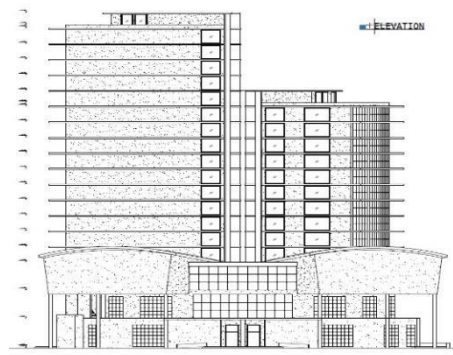


Figure 5: South view

The design of the complex focuses on reducing fossil fuel use and mechanical equipment by harnessing natural energies on the site. This is achieved through harmonious design with the climate. Specific strategies include installing an air washer for ventilation, incorporating flower boxes and greenery for natural airflow, and designing spaces to optimize natural light from different facades through the use of terraces. These measures aim to minimize reliance on artificial lighting and promote a comfortable, energy-efficient environment.

Office	10 floors, each unit 750 squares meters, and 15 floors, each floor 960 square meters.
Cinema	2 units
Emergency and regular stairs	1 unit each for each tower
Elevator	2 units for each tower
Escalator	Up to the second floor for commercial use
Restrooms : 18 on the second floor for commercial use	18 on the second floor for commercial use
Bookstore: on the second floor for commercial use	On the second floor for commercial use
Food court: on the first floor	On the first floor
Restaurant	On the first and second floors
Café	On the first floor

DISCUSSION AND RESULTS

The results of the project were summarized in this chapter, along with the conclusions drawn from them. Additionally, suggestions for further study in this field are provided at the end.

1-Acquaintance with the last proficiency and methods of organizing the shopping centers in order to plan or design business centers or office complexes in your own accord. 2-Being privileged by modern and daily services of business centers in order to improve hospice plus the tract safety.3-Achieve substantial abilities for the purpose of raise essential attractions for design the project.4-Investigate and study similar projects furthermore, use necessary achievements.

The main goal of plan any type of shopping centers is:

1. Compensate lack of purchase by presenting exclusive services for offering their (shops) products coherently and defined way.

2. The plans will be designed proportionally to people's needs.
3. Diagnose business spaces in historical tracts of Iran. In fact, being familiar with proficiency of organization of space could able to revive that kind of facilities and services which had been vanished through the time by considering contemporary needs of consumers and life; moreover, by serving with higher quality could bring comfortable and easier life.
4. Transform dilapidated or sparse sections and stores to multitude sections.
5. Considering to absence of qualified shopping center in the area plus, condition of business centers in the mentioned zone. It is expected this shopping center meets the needs of civilians who live in this area; plus, they deserve flawless modern shopping center.
6. A space with functional diversity, spatial attractions, and multifaceted features that allow for all behaviors that make a collective space enjoyable for individuals.
7. A space with attractive internal visual elements, where the external view initiates the customer's action to buy and the interior view continues this movement.
8. A space with attractive non-visual elements such as providing appropriate services to customers, facilities such as separating traffic types, and environmental factors such as music and air conditioning.
9. Creating a dynamic and enjoyable environment to meet the needs of all ages.
10. Creating a space with architectural features and using different elements in defining the space.
11. The three factors of expertise, law, and technology are very influential and important. In every country, attention must be paid to all three simultaneously and considered in all decision-making stages.
12. Given the priorities of Iranian society, each of the three factors of expertise, law, and technology has the greatest impact on the proposed pattern. It is obvious that in other societies with different social orientations and intellectual paradigms, results will be much different from those obtained in Iran.

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