

THE DIFFERENT REPRESENTATION OF GLASS AS A MATERIAL IN THE INTERIOR OF SHOPPING SPACES

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Abstract

Glass as a material is increasingly found in the modern interiors of shopping malls. Considering that the design of every commercial building aims to attract the potential buyer with its exclusivity, transparency, neatness, and attractiveness when displaying the products, glass is becoming a more common material that is used in arranging both the window and the interior itself in shops and shopping malls. How is represented and used glass in the interiors of commercial buildings and in what type and form it appears, is researched by analyzing many different shops in two shopping centers from the area of the capital of the Republic of North Macedonia, Skopje, which were built in different periods from 20th and 21st century. It is assumed that over time, the type, shape, and appearance of glass changed in many different segments in trade facilities. This paper will answer what type of glass, structure, way of processing, thickness; shape, and purpose of glass that were used in different periods in shopping spaces.

The research methods used in this paper are the qualitative method, the real analysis and the productive analysis, the method of observation and comparison, the generalization method, and the method of measuring in the stores.

Keywords: glass, glass products, interior, shopping center

1 Introduction

Glass is one of the oldest man-made materials in history, discovered by Egyptians and perfected by Romans (Postell 2012:235). Glass as a material in architecture is initially found in places where it is necessary to ensure transparency, respectively it is a material that allows the building to receive daylight, but also offers the possibility to close the space from external influences. As such material in buildings, it is initially used to fill construction carpentry, that is, windows and entrance doors. „ - There are hundreds of glass compositions as well as different coatings, colors, thicknesses, and laminates, all of which affect the way light passes through the material. “(Savic, Djuric 2017: 36). By changing the compositions of glass as a transparent material and increasing its resistance to weight and resistance to impact, glass in the interior of modern architecture is taking a greater part as a material that was once unimaginable for making segments with heavy loads such as shelves, protective fences, stairs, etc.

The way how the use of glass in interior public spaces have changed, will be considered during the analysis of two important shopping centers in the capital of the Republic of North Macedonia, Skopje.

Based on the theoretical part, according to the strength of the glass, today this material is divided into three groups: annealed glass, glass strengthened through heat, and fully tempered glass (Savic, Djuric 2017: 37). Tempered glass is the most common glass, used in many functions, while heat strengthened glass is at least twice as durable compared to annealed glass. Otherwise, tempered glass is at least four times stronger than heat-strengthened glass, which is used today in places where there will be a greater load.

The temporal differences in the use of glass in public buildings can be seen especially when comparing the old Trade City Center and the new East Gate Mall in Skopje.

The Trade City Center (GTC) is a building that was built along the Vardar River, with one façade facing Macedonia Square. The construction of the building started on October 11 year 1969, and it was put into

official use on April 27, 1973. The authors of this project were Zivko Popovski, Tihomir Arsovski, Zivko Gelevski, Dimitar Dimitrov, Blagoja Kolev, Radomir Lajović, and Lidija Markova. The surface of the building is set on two underground floors, a ground floor, and two upper floors. The building is specific because it is a half-open shopping center, that is, a shopping center that is covered but not closed on the sides.

On the other hand, East Gate Mall is a shopping center in the spirit of the new postmodern centers that offer the possibility of shopping, entertainment, and recreation to a large range of visitors in a physically completely closed building. The facility is located near the Vardar River, in the municipality of Gazi Baba, on the site of the former Skopje Fair. The authors of the building project are the architects Kerem Yazgan and Begüm Yazgan. The facility was finally put into use on October 29, 2021.

In what quantity, what kind of glass, and which thickness was used on constructing the first and the last public trade facilities, until today in Skopje, on its exterior and interior, will be the main purpose of the research of this paper.

2 Goal of the research

The main goal of this research is to obtain information about the usage of glass as a material in public facilities in Skopje, from the 1960s till today. Furthermore, in which interior and exterior elements it finds application and its physical features – width and type. Because the shopping centers need huge daylight and transparency as a whole, also considering the different interior elements and the shopping display windows, there are many variations of the usage of glass in different ways.

3 Research Method

The selection of the shopping centers was made according to the period of construction of the shopping centers, The earliest shopping center in Skopje - Trade City Center (GTC) which started functioning in 1973, and the latest shopping center East Gate Mall also in Skopje, which officially opened in 2021. This choice of the buildings and their stores inside for research will allow perception of the differences of using the glass as a material in exterior and interior design, in public facilities for about 50 years. The research will also consider the new changes and renovations that have happened through the years in the Trade City Center (GTC), and the data will be considered on the use of glass as a material in its authentic appearance, both in the designing of the whole building and in its stores.

The research methods used in this paper are: the real analysis and the productive analysis, the method of observation and comparison, the generalization method, and the method of measuring in the stores. Furthermore, the type and the width of the glass are measured by gauge for glass UV transmittance and glass transparency meter and also by gauge for the thickness of layers of glass and foil in the contents of the glass packag.

4 Results

4.1 Representation of glass in the Trade City Center Skopje at the time of construction

The Trade City Center Skopje (GTC) is a significant building that was built as part of the new Skopje, after the catastrophic earthquake in 1963. The importance of the building is distinguished by the fact that it is right next to Macedonia Square and gives the feeling of a perfectly social-cultural and urban integrated building in the heart of the city.

Trade City Center as a 50 years old building, have dramatically been changed through the years of usage. The types of the stores have been changed since new international brands arrived in Skopje. Analyzing the

interior design how it was and is today, since the first opening, interior design and furniture have changed and replaced totally. Different specific stores have opened, new trends arrived and each of them has its own unique interior furniture and design.

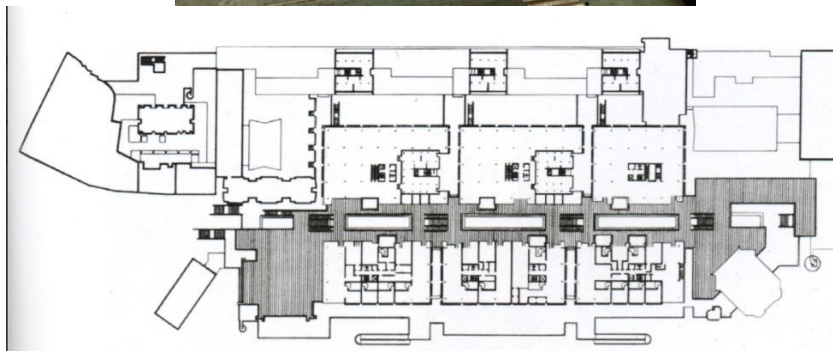


Fig. 1. City Shopping Centre Skopje. Source: <https://architectuul.com/architecture/gtc-shopping-mall>. [Available until 30.05.2023]

Fig. 2. Ground floor of City Shopping Centre Skopje. Source: <https://marh.mk/%D0%B3%D1%82%D1%86-%D1%81%D0%BA%D0%BE%D0%BF%D1%98%D0%B5-%D0%B6%D0%B8%D0%B2%D0%BA%D0%BE-%D0%BF%D0%BE%D0%BF%D0%BE%D0%B2%D1%81%D0%BA%D0%B8-%D1%82%D0%B8%D1%85%D0%BE%D0%BC%D0%B8%D1%80-%D0%B0%D1%80%D1%81/>. [Available until 14.07.2023]

4.1.1 Representation of glass in the stores at the time of construction

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Fig. 3: Glass tiles inside a store 1973s. Source: <https://www.youtube.com/watch?v=UaLYOCxER28>. [Available until 30.05.2023]

Fig. 4: Glass separation of stores today. <https://twitter.com/qLCzMvqanTogTqp/status/1348022739177758720/photo/1>. [Available until 14.07.2023]

4.1.2 Representation of glass in protective fences today

The circulation inside the building takes form in a rectangular shape, which is open in the middle with a gallery and gives the possibility of an upper view towards the ground floor. This opening is surrounded by a metal fence, placed in a concrete parapet, a detail constructed since the first use. The same type of fence appears as protection towards the exterior of the building.

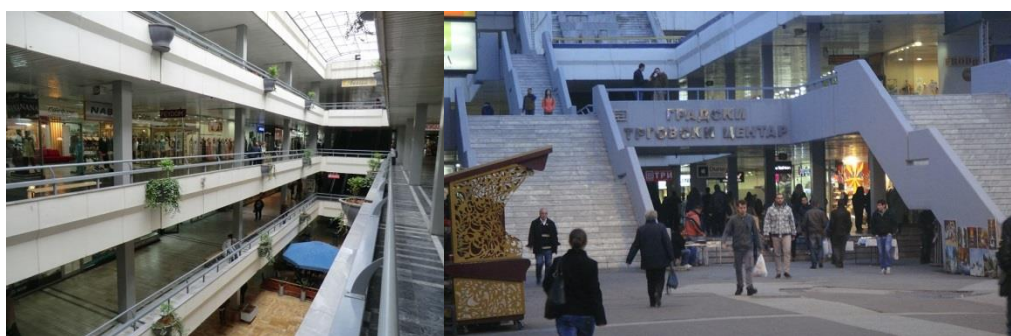


Fig. 5 & 6: Protection fences

Source: <https://architectuul.com/architecture/gtc-shopping-mall/media/5e8ae34b-7670-4309-a11a-07ea6d7b5e1b>. [Available until 30.05.2023]

Nevertheless, the glass is also used as a material for fences, precisely at the last floor, but research shows that it was added by the period of 2019-2020 years.



Fig. 7: Glass as a protective fence at the City shopping center (GTC). Source: <https://www.alamy.com/gradski-trgovski-centar-gtc-city-trade-center-from-1973-skopje-north-macedonia-image452669057.html>. [Available until 30.05.2023]

4.1.3 Representation of glass in the role of railings on a staircase

In the original architectural plan project of the Trade City Center, glass is not found as a material for making stair railings. It is a fact that a vertical elevator was added to the building, which is fenced with a glass

surface, but the data shows that the elevator was installed by the year 2000. The railings of the Trade City Center are mainly by a wall made of concrete or a concrete wall with a metal handrail on top.



Fig. 8: Stair concrete railings in City Shopping Centre. Source: <https://architectuul.com/architecture/gtc-shopping-mall/media/5e8ae3c2-7e88-4010-9a15-036a6d7b5e1b>. [Available until 30.05.2023]

4.1.4 *The glass in arranging the interiors of the stores*

Mainly, in the original interiors of the stores since the first years of usage of the building, glass is minimally used. The research in the buildings and the collection of archived data shows that, apart from the window display in the interior itself, glass is almost not used at all, for reasons that at that time glass was considered a high-risk material that is easy to break and can lead to unwanted injuries.

Often, glass as material appears as the final layer of a retail counter in stores, that is, as a coating on an already made desk of wood or wooden materials. This use of glass appears for easy maintenance of the desk, because it is resistant to chemical cleaning, as well as resistant to water and moisture. Ordinary glass with a thickness of 4 mm is used for this purpose.

An exhibition counter with a glass surface also appeared in certain sale stores, but it is glass that is placed in a wooden frame as the main structure of the interior element. The role of the glass on this type of exhibition counter is to enable the transparency of the displayed products that are for sale. Most often, such counters are used to display jewelry and fashion accessories.

Today, the interior of the stores in the City Trade Centre has changed, trying to follow the new international trends of high transparency and postmodern furniture. Because the building is not new, each display window has an obvious structure where the glass is hinged, a detail that is minimized in newly constructed buildings.

4.2 *Representation of glass in East Gate Mall Skopje*

East Gate Mall Skopje is the postmodern shopping center, built on the location of the former Skopje Fair. This new shopping center includes important brands from the fields of fashion, entertainment, catering and represents an interesting turning point for different categories of visitors at any time of the year.



Fig.9: East Gate Mall – Skopje. Source: <https://www.diplomacyandcommerce.rs/east-gate-mall-to-open-a-new-centre-of-fashion-and-entertainment/>. [Available until 30.05.2023]

4.2.1 Representation of glass in the design and construction of the stores

The stores are physically separated by fully glazed windows. The possibility of different types of glass enables large entrance areas, which in some stores are mechanically moved, and in others electrically driven. The glass appears in different thicknesses and there are glasses with a thickness of more than 1 cm. The glass is highly transparent, and some stores use it as an advertisement spotlight that also presents the video advertisement and allows transparency of the interior of the store.

Stores that contain highly valuable products are displayed after a double glass, the reinforcement of which is improved with a protective film between the two glasses. The specificity and diversity of the storefronts is that the frame in which the glass is hinged is reduced to minimum dimensions and also is inside the ceiling, to get the impression of a complete glass wall.



Fig. 10, 11 & 12: Glass on display stores in East Gate Mall – Skopje. Source: the author.

4.2.2 Representation of glass in protective fences

The circulation inside the building takes form in a rectangular shape, which is open in the middle with a gallery and gives the possibility of an upper view towards the ground floor. This opening is surrounded by a glass fence, that is fully transparent; it is a double-layer safety glass with a safety film between the layers. The full load capacity of the protective fence is achieved by fixing it in the lower part of the floor. This detail gives a feeling of openness, transparency, and freedom.

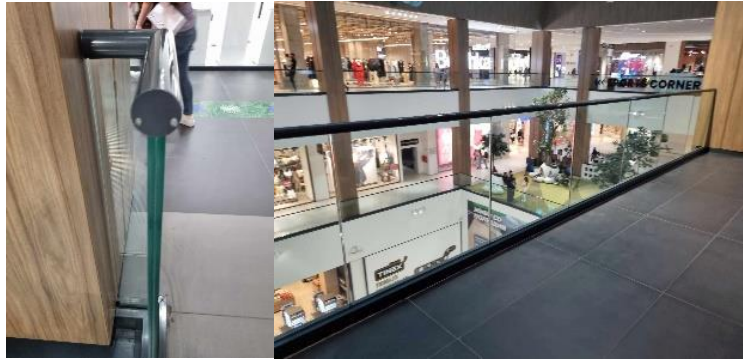


Fig. 13 & 14: Protective railings in East Gate Mall – Skopje. Source: the author.

4.2.3 Representation of glass in the role of a railings on a staircase

The main vertical movement in the building is designed by a large number of elevators, as well as escalators for vertical communication. Glass as material is also appeared at all the protective fences on the escalators in this shopping center.



Fig. 15: Glass as a railing in an escalator in East Gate Mall – Skopje. Source: the author.

4.2.4 The glass in arranging the interiors of the stores

After researching the stores, presentation rooms, and advertising spaces that are represented in East Gate Mall Skopje, one gets the impression that glass is represented in all different ways of the interior design. Glass appears on the counters which are very often made completely by glass, completely glass shelves, completely glass separate parts in the form of boxes that serve to present new models, valuable unique pieces. The stores that are intended for jewelry and fashion accessories are made entirely of glass, which offers the opportunity to highlight the products in the foreground. Glass also appears on some floors of stores that are exposed to heavy loads. „ - By combining it with other materials such as plastics we can enhance its properties and mend some of its inherent flaws. Examples include glass that can block out UV-rays, glass that resists bullets, and glass that will not shatter.“ (Leydecker, 2013:157).



Fig. 16, 17 & 18: Glass implemented in the interiors of stores in East Gate Mall – Skopje. Source: the author.

5 Analysis and Discussion

There are 12 types of glass in architecture and interior: float glass, tempered glass, laminated safety glass, bulletproof glass, wired glass, glass brick, air layered glass, low-e glass, impregnated glass, stained glass, enamel glass, and mirror (Elinç, 2022:120). From the conducted research, it is concluded that float glass with different thicknesses was mostly used throughout the interior, including the display windows. The glass tiles were also used in this Trade City Center. While, in the latest version of public facilities - the East Gate shopping mall, during construction float glass was used as the most common type of glass, laminated safety glass in the fences, bank counters, and mirror glass in the interior of the shops as a decorative element, if in the display windows tempered glass and laminated safety glass.

The research of the two buildings gave data that over 50 years, glass has significantly increased its use in the interior of shopping centers. The increased representation is due to the change in the structure of the glass and the technological possibility to make it a safe security material while maintaining its main role of providence, transparency, and purity. Another reason is the new trends in trade spaces – huge transparency and reflection.

The lack of technological possibility limited architects using the glass in the past and they used it with strict caution because uncontrolled use could lead to unwanted accidents and injuries. The technological process of creating glass that is resistant to firearms encourages the ideas of interior designers to use it as a material for highly stressed elements, security elements, and protective elements. The possibility of using the glass without additional elements of the frame and connecting elements gives the possibility of forming completely transparent frames and elements, and all this to enable the highlighting of the products, the penetration of light, transparency, and luxury. At this point, luxury is an element of attraction, which seduces people to visit more and more of these public facilities, thus achieving an economic benefit.

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