## Taichung Green Museumbrary Project: Architecture

**Project overview**

Transparent Cultural Forest of Freedom, Aesthetics, Knowledge Flow, and Exploration.

Taichung Green Museumbrary is Taiwan's first venue combining a municipal art museum and public library. Opening at the end of 2025, it sits on the northern edge of Taichung Central Park, with a floor area of about 58,000 square metres.

The architecture features eight interconnected yet independently articulated volumes, forming an integrated space for both museum and library. It expresses a new cultural identity through openness, transparency, and fluidity. In harmony with its environment, the large volumes are divided into smaller, human-scale cubes and wrapped in a silver-white façade that reflects and softly echoes the surrounding park and cityscape, blending into context. Elevated structures create shaded, multi-layered plazas beneath, inviting greenery, breeze, and sunlight. With entrances from all directions—city or park—the building welcomes visitors into an open, inclusive cultural space, offering a new architectural landscape inspired by nature.

Learning here goes beyond the written word; it includes appreciating art. By merging the distinct qualities of knowledge and art with accessible information, the building supports varied experiences. Inside, spaces of different scales—exhibition rooms, reading areas, public zones—rise and fall, converge and disperse. This rhythm enriches the interplay between knowledge and art. Visitors of all ages and backgrounds find their own ways to engage, forming personal links between learning and daily life. Here, people encounter knowledge, art, and nature in spontaneous ways and experience culture with comfort, ease, and elegance amid the rhythms of contemporary life.

**Location**

Taichung Green Museumbrary is located in Central Park of Taichung City, Taiwan. This plan is based on the integrated redevelopment of the former airport and its surrounding areas, with major adjacent projects including the Shui-Nan Transit Center and the Convention Center. Taichung Green Museumbrary sits at the northern edge of Central Park, which serves as a key link connecting Greater Taichung's network of urban green corridors and natural open spaces.

Central Park functions as an ecological node and corridor, designed through an interconnected network of terrain, water features, and greenery within the site. By leveraging its inherent ecological landscape character and its role as a large-scale regional ecological corridor, Central Park is envisioned to act as both a connector and a stitching element in the city's ecological environment.

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| **Key milestones** | International Design Competition: 2013<br>Architectural Design Phase: 2014–2018<br>Construction Phase: 2019–2024<br>Interior Design Phase: 2020–2021<br>Interior Construction Phase: 2023–2025<br>Completion: July 2025 |
| **Project specifications** | Total Floor Area: 57,996 sqm<br>Exhibition Space Area: 3,685 sqm<br>Collection Storage Area: 2,573 sqm<br>Educational Space Area: 2,213 sqm<br>Reading Area: 9,360 sqm |

**Architectural features and key facts**

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| **Structure** | Basement Structure: The basement adopts a flat slab (beamless) concrete design to provide a smooth appearance and generous clear height. The parking area uses a flat slab foundation to minimise excavation, while the collection storage area employs a raft foundation with excellent waterproofing and moisture resistance, combined with backfill to counteract buoyancy forces. The isolation and damping system reduces the number of columns needed for the above-ground structure, enhancing flexibility in the basement layout and improving overall parking efficiency.<br><br>Above-Ground Structure: The above-ground structure uses a steel system combined with isolation and dampers to absorb earthquake forces, reduce steel consumption, and create lighter, taller, and more open spaces. The floor system employs a “grid beam” design to distribute vertical loads in two directions and support large spans. The rigid frame system provides sufficient stiffness and strength to resist wind and seismic loads while maintaining continuous, transparent open spaces and façades facing the park. Wind load design is validated through wind tunnel testing, and seismic design follows the 2,500-year return period standard with dynamic response spectrum analysis and time-history checks to ensure structural safety and resilience. |
| **Façade** | The project’s exterior wall system adopts a dual-layer composition: an inner layer of high-performance low-emissivity glass or metal cladding, and an outer layer of aluminium expanded metal mesh with approximately 40% openness. The inner glass layer provides excellent thermal insulation and light transmission, effectively reducing solar heat gain and enhancing indoor comfort. The outer aluminium expanded mesh, with its light, veil-like quality, softens the building’s overall massing and creates a transparent, open appearance. Its design allows outdoor views to filter into the interior, fostering visual interaction and connection between indoor activities and the surrounding park, reinforcing the open, inviting character expected of a cultural facility within a park setting.<br><br>The outer aluminium expanded mesh features an upward-tilted, highly shielding profile with a satin-like form that opens downward, improving shading performance by about 16% compared to traditional horizontal systems. In addition, the perforated mesh structure reduces wind pressure loads, while its porous design helps balance upward and downward wind flows, minimising façade wind loads and negative roof pressures, thereby enhancing the overall wind resistance and structural safety of the building envelope. |

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| **Landscape** | The landscape design extends the greenery of Central Park by integrating building volumes of varying heights and angles, expanded metal mesh façades, sky gardens, and rooftop plantings to create a three-dimensional “green island” network. The planting strategy emphasises native Taiwanese tree species, ensuring harmony with the adjacent Central Park landscape and strengthening on-site greenery to connect seamlessly with surrounding green spaces. Around the building masses, carefully composed groups of trees in varying heights create a rich, layered, and welcoming “culture forest” atmosphere. |
| **Sustainability** | The core design concept of Taichung Green Museumbrary is to integrate seamlessly with Central Park’s natural environment. Elevated building volumes create open breezeways that channel northern urban airflow toward the southern park by day and release cooler air at night, offering shaded, comfortable, people-friendly outdoor spaces reminiscent of sitting beneath large trees.<br><br>Staggered, elevated forms enhance the natural light environment and shading. The façade combines metal mesh, low-emissivity glass, and operable curtains to reduce solar heat gain. Roof and wall insulation are carefully planned with low U-values and rock wool to minimise radiant heat and mitigate urban heat islands.<br><br>Open breezeways maximise natural ventilation while supporting a well-balanced microclimatic wind environment, reducing daytime dependence on air conditioning. High-efficiency HVAC systems, including inverters, VAV, VWV, and geothermal features, are designed to reduce cooling energy use by over 60%.<br><br>Sustainable site strategies include permeable green spaces, planter beds, and permeable paving to manage runoff, ease public drainage loads, and support rainwater reuse. Efficient indoor lighting with electronic ballasts maintains low energy use.<br><br>The project targets Taiwan’s “Gold Level” label for the Green Building certification and Intelligent Building certification, demonstrating strong commitments to energy savings, carbon reduction, and ecological harmony as a sustainable cultural landmark for Taichung. |
| **Fusion spaces** | Due to the integration of the municipal library and museum within a single cultural facility, “fusion spaces” are created to blend activities. The concept brings together the physical and virtual, the visual and the literary. These fusion spaces serve not only the functional needs of both the library and the museum, but also encourage spontaneous encounters between visitors and culture. |

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| **Shaded plazas** | By lifting the building mass, shaded plazas on the ground floor are seamlessly connected to the park. The courtyard between the buildings channels breezes from the park side, allowing them to flow smoothly through the shaded plazas toward the city side. As a result, these plazas consistently offer a comfortable public space for citizens. In addition to creating a tranquil zone within the park, they also provide a flexible setting for large events and public activities. |
| **Main entrance** | Located at the center of the building mass on the ground floor, this semi-outdoor space is enclosed only by aluminium expanded metal mesh. A glass bubble house functions as the service center, while another serves as the entrance to the basement spaces. This area serves as a security checkpoint for the Museumbrary and also functions as an event venue and waiting area for visitors.<br><br>At the heart of the space is a large pond constructed from stainless steel with a mirror finish. The still water moves gently with the wind, creating beautiful reflections that enhance the welcoming atmosphere. The mist and humidity from the water feature help lower the perceived temperature, providing a more comfortable transition for visitors before they enter the fully air-conditioned interior. |
| **Exhibition spaces** | Museum lobby: Concrete floor, 27-metre-high ceiling with aluminium expanded metal, 660 sqm, Natural daylight<br><br>Exhibition room A: Concrete floor, 9.5-metre-high ceiling with gypsum board + paint finish, 625 sqm, Natural daylight<br><br>Exhibition room B: Concrete floor, 4.2-metre-high ceiling with gypsum board + paint finish, 930 sqm<br><br>Exhibition room C: Concrete floor, 10.9-metre-high ceiling with membrane, 930 sqm, Natural daylight, Skylight<br><br>Exhibition room D: Concrete floor, 4.0-metre-high ceiling with gypsum board + paint finish, 625 sqm<br><br>Exhibition room E: Concrete floor, 5.0-metre-high ceiling with gypsum board + paint finish, 625 sqm, Natural daylight |

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| **Reading spaces** | Library lobby: Carpet floor, 7-metre-high ceiling with aluminium perforated panel, 1,243 sqm, Natural daylight, Skylight<br><br>Teenager reading area: Carpet floor, two spaces at the 2nd floor with a 2.4-metre-high and 10-metre-high freeform ceiling with gypsum board + paint finish, 465 sqm, Natural daylight<br><br>Children reading area: Carpet floor, 8-metre-high freeform ceiling with gypsum board + paint finish, 1,021 sqm, Natural daylight<br><br>Periodicals & Newspapers: Carpet floor, 2.9-metre-high freeform ceiling with gypsum board + paint finish, 465 sqm, Natural daylight<br><br>Digital HUB: Carpet floor, 10-metre-high freeform ceiling with gypsum board + paint finish, 1,021 sqm, Natural daylight<br><br>Reading Area (Art): Carpet floor, 4-metre-high freeform ceiling with aluminium perforated panel, 1,051 sqm, Natural daylight<br><br>Reading Area (Literarature): Carpet floor, 4-metre-high freeform ceiling with aluminium perforated panel, 1,010 sqm, Natural daylight<br><br>Reading Area (Categories 5-7): Carpet floor, 4.5-metre-high freeform ceiling with gypsum board + paint finish, 782 sqm, Natural daylight<br><br>Reading Area (Categories 0-4): Carpet floor, 6.3-metre-high freeform ceiling with aluminium perforated panel, 1,045 sqm, Natural daylight<br><br>All reading areas will be equipped with sun-shading sheer curtains that both block direct sunlight and maintain clear views of the outdoor landscape. |
| **Collection Learning Space** | Through a glass window facing the collection storage room, visitors can glimpse the stored items from this space. By showcasing them, the design conveys knowledge about the collection and achieves the educational goal of “opening up the storage.” |