

Nasher Architecture & Landscape

Reference Guide

This guide is designed in two sections: Building and Garden. Topics are **highlighted** so you can quickly find those that interest you.

Nasher Sculpture Center

The Nasher Sculpture Center opened in 2003. The building faces Flora Street, the heart of the Dallas Arts District. Our front door aligns with entrances to the Dallas Museum of Art and the Crow Museum of Asian Art, creating a central public space for the visual arts and art festivals.

Building

In 1997, Raymond Nasher chose Italian **architect Renzo Piano** to design the museum. Nasher admired Piano's design for The Menil Collection and Cy Twombly Gallery in Houston, The Beyeler Foundation in Basel, and the Centre Pompidou in Paris. Nasher was captivated by Piano's concept of the museum as an oasis nestled into the chaos of downtown. Early in his career, Piano worked for Louis Kahn, architect for the original building of the Kimbell Art Museum in Fort Worth. Both architects masterfully diffuse the strong Texas sunlight to create an optimal environment for viewing art.

Piano's design imbues the location with an **archaeological ambiance**. The building is organized around six parallel stone walls, which run from north to south. Since the front and back walls and the ceiling are glass, the stone walls appear to stand alone. The walls appear to be preexisting remnants of an ancient Classical building, a noble ruin extant in the middle of Dallas. This design allows for a continuous visual connection between art, architecture and nature.

The design of the building entices the visitor to **enter**. The front and back walls of the building are glass. This allows passersby to see art inside the galleries and even glimpse the gardens out back. A lack of a curb and stairs further enhance the spirit of transparency and inclusion. By engaging with the life on the street, Piano creates an active relationship between the profane (the street) and the sacred (the Center).



Renzo Piano (left) with Raymond Nasher



Roman ruins from Renzo Piano Workshop's inspiration board



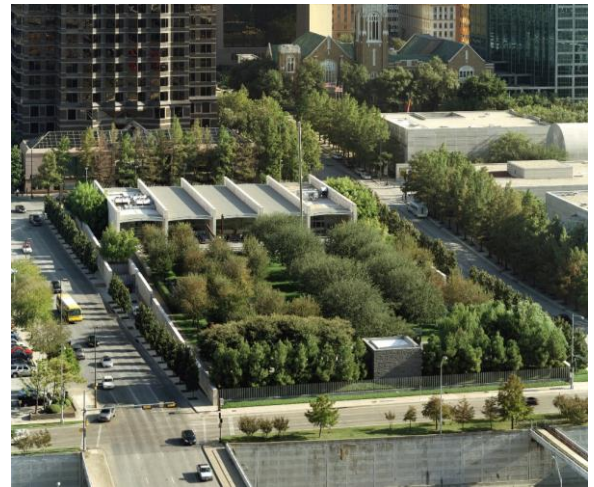
Sketch by Renzo Piano Building Workshop

The Nasher is located on a rectangular **2.4-acre lot**. The garden occupies two acres on the northern end. The building itself occupies about twenty thousand square feet on the southern end of the lot. However, the building has two levels and a total of 54,000 square feet. The upper level is slightly smaller than the lower.

The building's upper level is structured around six parallel walls made from Italian travertine stone. Each wall is 140 feet long, running from the street straight through to the garden. The walls and roof are longer than the interior of the building, extending out onto the terrace in the back and the sidewalk in front. This creates a smooth transition between the chaos of downtown and the calm environment inside the building.

These six stone walls are spaced to create five equally sized, parallel **pavilions** on the ground floor. The westernmost bay has an elevator, museum store, a small gallery area, and office space. The adjacent entry bay contains art, an exit to the gardens, and stairs to the lower level of the building. The next two bays are dedicated completely to exhibitions. The easternmost bay contains a smaller gallery and the café. A harmonious 2:1 ratio creates ambiance in the building. Each of the six bays is thirty-two feet wide and sixteen feet tall. Each block of stone in the wall is four feet wide and two feet high.

The **travertine stone** was chosen because of its neutral color and low reflectivity. It creates a neutral palette to view the art. This travertine is composed of carbonate materials, formed from deposits in hot mineral springs in Italy. It has been cut horizontally, revealing layers of details in the formation of the stone. If you carefully observe the ends of the stone walls on the terrace, you can see that the stone has been matched around the corners of the columns. It was first assembled in Italy and shipped to Dallas in blocks, which were then reassembled on site. Each block was designated for a specific location in the wall. There was a concerted effort to keep the coloration consistent and not have any abrupt changes from one stone to the next. Stones on the exterior walls have been water blasted to remove the soft portions of the stone and emphasize the porous texture. Stones on the interior walls have been filled in and honed for a smooth finish. The fill is made of travertine that was crushed into a fine powder and mixed with white cement to form a paste. This smooth interior surface is created purposely to retain the color but not compete with the art. All stones inside the building are edged with natural grout, a traditional mixture of cement and sand. On the exterior stone, a waterproof silicone sealer grout was used, but it was finished with sand to create a matching surface texture.



Aerial view of Nasher Sculpture Center, 2005



View of Nasher Sculpture Center from Flora Street



Travertine on the exterior of Nasher Sculpture Center

Stone walls can be challenging in a museum. While the unadorned walls create a neutral background that emphasizes the sculpture, it does not allow the versatility of sheetrock. Art installers cannot drill holes in the stone to hang works or add electrical outlets. Instead, an art bar is visible along the length of each wall just above the stone. Pictures are suspended and secured using specialized hardware manufactured by Arakawa (Japan). Electrical outlets are located in the flooring. Security cameras and sprinklers are concealed in the ceiling structure.

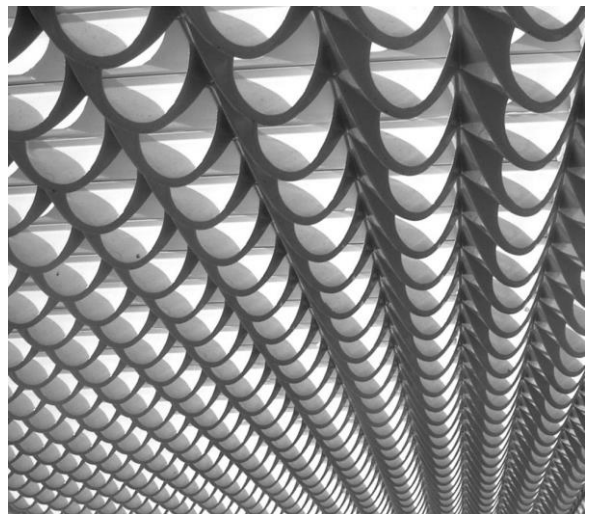
Piano designed the ceiling to allow natural sunlight to flow into the galleries, creating an optimal environment to view the surface, textures, and form of each sculpture. A sophisticated **sunscreen** blocks direct sunlight, only allowing soft northern light to enter the building. This creates a diffuse light that reveals the nuances of surface, texture, and form in the sculpture on view. The sunscreen is made from cast aluminum with oculi extending downwards and upwards, resembling a honeycomb. The exterior side of the sunscreen is reinforced, allowing maintenance personnel to walk on it. Each section can also be lifted to allow thorough cleaning of the glass underneath. The sunscreen and steel panels are finished in "origami white." If you wish to examine the sunscreen, a piece is available at the Front Desk.

Under the sunscreen, the **ceiling is glass**. Each glass panel is 4 feet by 16 feet, weighs 1,200 pounds, and is created with two pairs of half-inch glass panels, insulated by a one-inch air space vacuum-sealed between them. This creates a shatterproof moisture barrier. The glass panels are supported by stainless steel roads that are held in tension to bear the load. Beams in the roof run along the side of each glass panel at four-foot intervals, containing a heat trace to sense temperature and warm or cool the beams, preventing condensation. Each ceiling panel is also framed by a light track at four feet intervals, which allows the placement of a light fixture virtually anywhere in the space. All glass is fabricated with a low iron composition to make it remarkably clear. The ceiling is convex, allowing rain and leaves to naturally drain into the wall channels. Because the convex shape could become an issue in strong Texas winds, engineers designed the exterior framework to hold the roof up and hold it down, allowing for an inch of movement in either direction.

The roofs of the two end bays are not made of glass. This is because the spaces on top of those two galleries contain mechanical equipment. Boilers to heat water and an emergency generator are placed over the southernmost bay, and chillers are set atop the northernmost bay. These are only visible if you look down at the museum from an aerial view. The ceiling of the two end bays is made of steel, opaque and perforated, to insulate the noise of the mechanical equipment above.



Interior of gallery with painting hanging from hardware



Nasher roof system

During construction, a permanent framework of stainless steel was built to hold the stone blocks and ceiling panels. Each glass panel weighs 1,200 pounds, so the order of construction was undertaken with great care. The first task was to add the stone wall panels above ceiling level, so that the truss framework for the ceiling could be installed. One glass panel in the exact center of the building (Gallery I) was placed first. After that, panels were added in a spiral pattern. The last ceiling panels installed were at the outer walls of the building. As each panel was added to the building, equal weights were temporarily placed on the opposite side of the wall to keep it plumb and balanced. The weight of all of the glass panels, especially once the aluminum louvers are added, creates a very heavy load. They are held up by the stainless-steel rods that connect to the center point of each arch of the roof and to the tops of the walls of the building. Because steel has a high tensile strength, the steel rods don't need to be especially large to bear the load. (This is a similar phenomenon to the cables in suspension bridges.) All of the beams that connect the roof together are artfully constructed out of cast stainless steel and are blasted with glass beads to make them sparkle. The visual effect is reminiscent of the detailing on ships. This is not surprising, given that Renzo Piano was raised in and still lives in Genoa, which has a maritime history that goes back for centuries.

After the glass panels were installed, the structure was ready to receive the interior stone panels. Each stone's edge is about 2 inches thick and has a pencil-sized groove that fits onto the steel framework. Each stone is supported on four sides by the wire frame, and the stones can be replaced individually.

The oak floor was installed after the ceiling and walls were in place. Several layers of material are located under the visible three-quarter-inch custom oak panel flooring. Directly beneath the oak is a three-quarter-inch plywood substrate, providing a surface suitable for nails. Under that, one and one half inches of vermiculite deadens sound. Next, a five-inch concrete topping slab fitted with adjustable screeds allowed contractors to create the most level flooring surface possible. The bottom layer is a twelve-inch structural pan slab, on which rests the building's piers. In order to accommodate heavier sculptures, the ground level of the building was designed to carry a 200 pound-per-square-foot load, whereas a typical office building is designed for only 80 to 100 pounds per square foot. The weight limit can be further increased by spreading the load.

Due to the complexity of the construction, Architect Mark Wamble of Houston was hired as a local representative. He was on site at least twice a week during construction to facilitate communication between Piano's Italian offices and the Nasher.

From the entry hall, a pair of stairways descend to the lower level, joining to form a single stairway halfway down. These floating stairways blend in seamlessly, constructed from glass and the same white oak as the floors. On the lower level, a smaller gallery creates a safe environment for the display of light-sensitive works. The lower level also contains additional public areas: a classroom, restrooms, and water fountains. Behind security doors lies more office space, a sculpture conservation studio, a catering kitchen, and mechanical equipment. There is limited area for art storage, requiring the use of an off-site facility.



Interior finishes of galleries



Stairway to Lower Level Gallery

The largest room in the lower level is Nasher Hall (the **auditorium**), which seats up to two hundred guests. To create a more pleasing acoustical environment for musical events, velvet panels can be rolled down to cover the stone walls. The auditorium floor is level, creating a flexible space that may be set up with round tables seating up to 180 for meals. The outside wall of the auditorium is glass and can slide completely inside the adjacent bay, opening the room to an outdoor stepped terrace to accommodate larger crowds.



Nasher Hall (auditorium) with velvet panels in place

The **loading dock** is also located on the lower level. Since the Nasher has no service area on the ground level, large trucks are brought down on an elevator to the dock. This heavy-duty, stainless steel lift takes advantage of technology normally used to move aircraft. Large gates raise and lower to the height of the truck. This enables items to be loaded in a secure environment without taking up valuable garden space. Since the dock is open to the air, rolling doors have been installed to maintain the precise environmental conditions inside the building, along with a secondary curtain of plastic, similar to those used in refrigerated units in grocery stores. Doors and pathways are all eight by ten feet so that a large sculpture, carried on a forklift, can be accommodated. The facility manager's office is in this area of the building.

A tremendous amount of creative energy was put towards concealing **maintenance and security devices** in the building. Along the edges of the flooring in each pavilion, an eight-inch wide wooden louver allows air flow to heat or cool the space. The gallery floors and louvers are crafted from white oak. Since the louvers are part of the floor, care has been taken to locate them out of the walkway and keep the spaces narrow enough to avoid problems with high heeled shoes. All duct work is located in the ceiling of the lower level, and the air flows through the system and out of the wood louvers into the ground floor. Air returns through a slot at the top of the wall. There are no large air grills. The Nasher has a low pressure, low volume system, which eliminates any blowing or rustling noise. Boxes that contain wiring are located under the gallery floors, along with outlets concealed with small panels that can be removed for access.

Distinctive white, hanging **light fixtures** can be seen throughout the museum. These were chosen by Renzo Piano and manufactured by iGuzzini (Italy). The green LED **exit signs** were designed by architect Mark Wambel of Interloop—Architecture and fabricated for the Nasher. Their creation required the collaboration of several experts. First, a specialist designed a circuit board that was placed in a specially carved acrylic board. After an electrician wired it, an ornamental metals expert created the metal plates that support the sign. Transformer boxes were installed behind the stone walls. After the lights were tested and approved by Underwriters Laboratories, the City of Dallas and the Fire Marshal both added their approval. The signs were installed nine months after the Nasher opened.



Custom EXIT sign

Garden

Raymond Nasher and Renzo Piano collaborated with California-based landscape architect **Peter Walker** to design the garden. Nasher believed in Walker's ability to create an aesthetically pleasing garden that would function as an outdoor sculpture museum. Walker's expertise included knowledge of appropriate regional plantings as well as irrigation and drainage technologies. After consulting with Piano, Walker chose a minimalist, rectilinear design to complement the building. He believed this inherently enhanced the quality of silence and meditation.

The Nasher Garden echoes the geometric interior structure of the building, which is organized around six parallel walls. Each wall extends outside of the building onto a back terrace. Although the walls end on the terrace, a continuation of each wall is suggested in the structure of the garden. Some walls become rows of trees. Other walls become sidewalks which end abruptly in the thick carpet of green grass, encouraging visitors to walk freely. The garden becomes a reflection of the building, creating a seamless flow between the indoor and outdoor galleries. While it is possible to glimpse the entire garden, visitors cannot see all of the artwork from one location. The space is divided into separate viewing areas that highlight each sculpture. Many pieces are permanently on view, and some are rotated.

An expansive **terrace** of South African *verde fontaine* granite is located between the building and the garden. The building's glass ceiling, sunscreen, and stone walls extend fourteen feet onto the terrace, creating a smooth transition from the Texas weather into the building. From the terrace, visitors can view the entire garden. Wheelchair-accessible openings in the walls allow visitors to traverse the width of the building on the covered terrace. On the east side of the terrace, cafe seating extends outside with umbrellas. The terrace continues onto a 16-foot bridge over a water feature. On the west side of the terrace, an open-air tiered garden is flanked by two stairways down to the lower level auditorium. Granite pathways in the garden allow for the use of forklifts and other machinery for moving large sculpture. These also provide an ADA-compliant path for visitors.

The garden is slightly below street level, framed by a high wall constructed from the same travertine stone as the building. The lot slopes downward at a 2% grade as it moves away from the building. Visitors can move from the terrace into the garden on wide steps, which extend the width of the building.



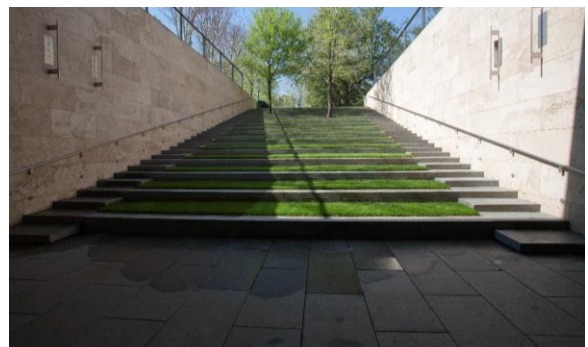
Peter Walker (left) and Renzo Piano consider an early model for the Nasher Garden



Nasher Garden

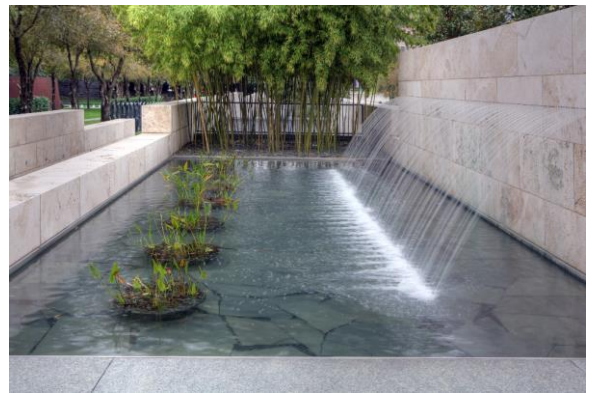


Interior galleries of Nasher Sculpture Center with view of Terrace and Garden



Terraced Garden leading from Nasher Hall to Garden

ADA-compliant ramps with ADA-issued handrails run along each side wall. The garden itself is ADA-compliant, with no cross slope over 2.5% and no slope over 5% grade. The back wall of the garden consists of deeply tiered beds of plants, extending well above the average visitor's head. The lower elevation, water features, and trees help mitigate the sounds of the city. Raymond Nasher's concept for this garden was for visitors to be free to travel in any direction, moving from one work of art to another as they see fit.



Over 200 mature trees fill the garden. Each tree has an individualized drainage system underneath it to remove excess moisture. Twelve mature live oaks were transplanted from an area near Houston, and weighed about 80,000 pounds total when they were planted in 2003. These provide year-round shade. The other large trees in the garden are cedar elms. This deciduous tree allows more sunlight to enter the garden in the winter, when it benefits both visitors and grass. Weeping willows frame the water features along a boardwalk, while crape myrtles and seasonal flowers add color. Magnolias from South Carolina and tall stalks of bamboo accent the exterior walls. Holly shrubs define viewing spaces for the sculpture. Peter Walker included several water features in his design. Pencil-sized streams of water cascade from the outer wall near the café, splashing into pools containing flowers. Bubbling fountains rise from three rectangular ponds at the back of the garden. Walker has created a serene and beautiful space to contemplate art in downtown Dallas.



Water features in Nasher Garden

The lawn utilizes sports field technology. A 20-foot culvert in the bedrock provides adequate drainage even during strong Texas rains. Piers support heavier works of art, extending ten feet into the bedrock. About four feet below finish grade is a drainage system, which is covered by a layer of special earth fill consisting of a mixture of about six ingredients, including peat moss, and light concrete aggregate balls hold moisture near tree roots. These ingredients are specially mixed at Living Earth in Irving, Texas. This layer varies from three to four feet thick throughout the site. On top of the earth fill is a twelve-inch layer of sand with little strands of fiberglass reinforcing it to provide great compressive strength. Natural bridging prevents sand from migrating downward and creates a water floor through the system without the use of special filter fabrics. Finally, zoysia grass is planted in soil on top of the sand.

Granite plinths hide the service equipment required to maintain the garden. These also function to delineate spaces for art within the garden and act as benches for visitors. These plinths are about 18 inches high, four feet across, and vary in length. They conceal the sprinkler valves, junction boxes for additional lighting, and other technical items. This design ensures that visitors do not encounter small boxes all over the garden that one might trip over or find distracting.



Sculpture placed on granite plinth