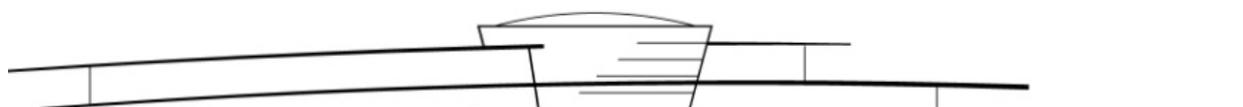


Pittsburgh Museum of Steel



Since the collapse of the steel manufacturing industry in the 1970s, the city of Pittsburgh, Pennsylvania has been going through a period of great change in an effort to revitalize the economy and sustain its steadily diminishing population. From its peak in the 1950s, the population of the city of Pittsburgh has been reduced from nearly 680,000 to a population of only 330,000 in the year 2000.

Having been at one time the world's largest producer of steel, Pittsburgh was largely uprooted by the collapse of its primary source of economic stability. The city was built on its metals manufacturing industry, most significantly during the civil war when the demand of weapons manufacturing caused a significant boom in the iron production industry, and again during the second World War when Pittsburgh alone produced 95 million tons of steel.

With the steel manufacturing industry all but vanished from modern day Pittsburgh, the challenge to design a museum of Steel in the city is a proposition which presents many interesting questions and cultural issues. From an historic standpoint, the idea of a museum is one which protects and preserves the past, providing passage for the subject through the present and into the future. This concept certainly finds legitimacy in the simple act of remembering the past, but without facilitating interaction with or supplying relevance for the subject of the museum's content in the present day, the museum cannot possibly succeed in terms of a progressive effort to reclaim and revitalize the post-industrial waterfront land that is present in Pittsburgh today.

The proposed site for the museum is located in the old industrial area east of the city center along the north-eastern shore of the Monongahela River. The area was once the center for steel production in the Pittsburgh area, and though the furnaces have been closed since the collapse of the industry, the site and surrounding area remain littered with these relics of the steel industry - relics of the city of Pittsburgh itself. From the historic standpoint outlined above, these objects are sufficient in and of themselves to preserve and protect the memory of the city's past. In terms of revitalization and reclamation, however, the challenge of designing a museum of steel in Pittsburgh is a challenge to not only reflect on the city's industrial past, but to also provide it with relevance in the post-industrial present and project into the future.

To address this challenge the proposal presented for the Museum of Steel in Pittsburgh is designed, in the broadest sense, to encourage interaction between the present day population of the city of Pittsburgh and the content of the museum and the surrounding area. The new building is situated at the southeast corner of the waterfront site and is complemented generously with public spaces that surround the building, anticipating and taking advantage of the intersecting circulation routes of the projected pedestrian river crossing to be constructed and the waterfront boardwalk proposed in the design. The building itself is situated as a gateway into the Carrie furnace historic site, with continuous public spaces around its exterior curvature, as well as interior public spaces that invite the public to enter the museum and visit the exhibitions or continue through to the historic site beyond.

The political and physical conditions for the Pittsburgh Museum of Steel share a striking similarity with those of the Guggenheim Museum designed by Frank Gehry in Bilbao, Spain. Both Pittsburgh and Bilbao are cities in a condition of regeneration after the collapse of the primary industries; Bilbao was at one time the wealthiest region of Spain until the slow decline of its steel production and ship building industries. The site of the Guggenheim shares the same post-industrial riverfront characteristic of the Pittsburgh Museum of Steel site, and the success of its public spaces lend it as a perfect model for this discussion. The continuous public spaces which surround the Guggenheim museum promote the site not only as a destination for museum goers, but for the public at large. The spaces are separate and distinct, but free flowing and well integrated with the building itself. Similarly in the proposal for the Museum of Steel, the exterior public spaces are integrated internally with the interior public spaces, facilitating unobstructed movement externally and internally on the site. In both examples, the arrangement of the public spaces not only promotes the museum as a destination in and of themselves, but also expresses a transitive quality and encourages the further development of the surrounding areas along the peripheral axes.



Aerial photograph of the Guggenheim Museum



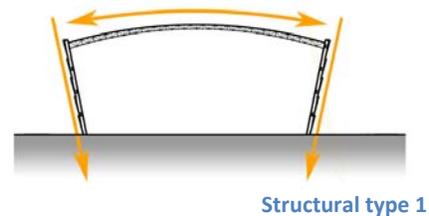
Site Plan for the Museum of Steel

The internal organization of the Museum of Steel is also derived from this challenge to create present day relevance for the historic content of the museum through public interaction. There are two separate and distinct organizing elements in the proposal presented: the first being the primary volume of the demonstration gallery, and the second

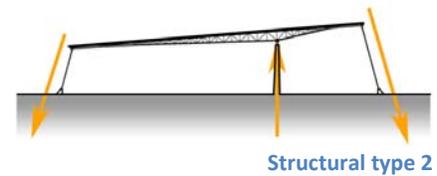


being the structural spine which separates the public galleria from the ticketed access areas of the exhibition spaces. The central demonstration gallery is an open three storey public space and acts as a hinge in the formal organization of the project, providing exposure for both passive and active participation in the demonstrations presented while simultaneously acting as the core element around which all the various program areas are arranged. The conical volume forms a link between all the various program areas, connecting the ticketed access areas of the theatre and exhibition spaces to the staff support areas and the public areas of the galleria, restaurant, and retail. The secondary element of the spine is superimposed upon the primary volume and passes through the center, relegating the public galleria and service elements to the public side of the building and designating the spaces adjacent to the Steel Industry National Historic Park as exhibition spaces.

The two organizing elements of the central demonstration gallery and the secondary spine also inherently describe two distinct structural strategies which work to express the versatility of steel as a building material. The first, an inverted cone, works to express the compressive strength of steel, which is reflected aesthetically in the corten steel cladding and the solidity of the central volume. The austerity of the external facade, however, is betrayed by a surprisingly light interior made possible by the large span capabilities of the space frame skylight which opens the entire volume to the sky above. The second, a single spine, suggests a see-saw type structured supported in the center by an upward force and countered at its extremes by balanced downward forces. The centralization of the structure and resulting



liberation of the facade in this way allows for a lightness and flexibility which works in a compositional contrast with the solidity of the primary volume and presents a clear expression of the of the tensional strength of steel as a building material.



Due to the mass consumption of fossil fuels which is involved in the steel manufacturing process, the city of Pittsburgh had reached a point of environmental crisis by the end of the Second World War. Since that time, multiple civic initiatives have been put in place for clean air and civic revitalization in the city. The proposal presented for the Museum of Steel in Pittsburgh, in accordance with these principles, makes use of passive strategies for energy conservation through the buildings form, orientation, and material selection. The buildings curved form is derived largely from the need to maximize daylighting and solar gain during the winter months. By curving the spine of the building and orienting it due south, daylight and direct solar gain are achieved from sunrise to sunset, while the choice of stone floors for the public galleria which traces the entire exterior edge of the building provides significant thermal mass to maintain the heat in the winter months and to absorb unnecessary heat during the summer months. Large overhangs prevent excessive heat gain, while the slanted ceiling of the spine element provides controlled movement of hot air and stack effect as an effective additional method to cool the building during the summer months. Due to the contribution that the steel industry has made to the global climate issues today, sustainable design becomes essential and it is only through the incorporation of these principles that the steel industry's relevance can be sustained itself and projected into the future in the city of Pittsburgh.

The challenge of designing a museum of the steel industry in Pittsburgh becomes something entirely different when it is proposed as a catalyst to future development. The museum must not only protect and preserve the past, but it must also provide relevance to the present and project it into the future. The proposal for the Museum of Steel in Pittsburgh, through its siting, form, organization, and the passive design strategies that it incorporates, represents the steel industry in a relevant and accessible position to the present day, and projects a progressive future through sustainable consumption.