EASING THE CROSSING

Marcelo Aflalo

ABSTRACT

The sole act of crossing an urban obstacle at a major Brazilian city requires unnecessary effort and risk for its citizens. Great avenues, rivers, train tracks and other urban cracks are barely served by bridges designed to serve motorized traffic without considering pedestrians and cyclists. Generic structures are dominant and carry no identity or aesthetical values and subtract the quality of the landscape from its viewers and users. This text leads to a proposal of the redesign and reuse of such equipment.

Palavras-chave

Crossing. Light Bridges. Reuse of Existing Structures. Timber.

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A TRAVESSIA FACILITADA

Marcelo Aflalo

RESUMO

O simples ato de atravessar um obstáculo urbano, nas grandes cidades brasileiras, exige um esforço desnecessário e traz riscos para os cidadãos. As grandes avenidas, rios, linhas férreas e outras grandes fissuras urbanas são parcamente atravessadas por pontes desenhadas exclusivamente para o trânsito motorizado, sem levar em conta o pedestre ou o ciclista. As estruturas dominantes são desprovidas de valores estéticos e drenam a identidade das cidades, subtraindo a qualidade da paisagem. Esse texto apresenta uma proposta de requalificação desses equipamentos.

Palavras-chave

Travessias. Pontes Leves. Reaproveitamento de Estruturas. Madeira.

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Crossing fast-flowing rivers and avenues, railway lines, and other obstacles in the urban layout is no easy task for pedestrians in large urban centers. In most Brazilian cities, what is a citizen's right presents itself as a secondary concession of public administration and urban design.

The coexistence between different modes of transport presupposes a rare social education, whose lack today opposes users of different tribes, adept in one way or another, warming unequal competition between the 8 million of licensed (or not) drivers and pedestrians, fueling the moodiness of cities.

Transposition presupposes displacement, movement, connection between parts or at least connection between two points, source and destination, which feeds intermittent flows.

Technicians and urban managers from Sao Paulo have always been treated poorly in this regard, for various reasons, whether due to cost or poor design, neglect of accessibility or excessive effort for the simple task of crossing a free span. The elegant and functional pedestrian walkways can be counted on one hand in Sao Paulo.

The elegance of the Ciccillo Matarazzo walkway (Figure 1), next to Ibirapuera Park, in Sao Paulo, contrasts with technical and inaccessible solutions that lead potential users to take risks crossing the crosswalks, between cars and motorcycles. Maximum irony is the Marcelo Fromer walkway, whose name is a tribute to the musician hit by a motorcycle where today is the walkway. Hard to reach, the walkway is still underused by the large mass of office workers in the dense neighborhood of Vila Olímpia.

Figure 1.
Ciccillo Matarazzo Walkway.
Source: Author's collection.

MERE TRANSITIONS AND REMARKABLE TRANSPOSITIONS

Abstract attributes are apparently not part of the urban managers' lexicon who value quantifiable substrates through bids and other forms of contract management. In a way, the so-called "works of art" – a term for such urban equipment as bridges and walkways – have little to do with the origin and nobility of these structures, true landmarks of urban identity in the world's major cities, like the Ponte Vecchio in Florence or the Pont Neuf in Paris.

Paris is a good example of bridges and walkways deployed for pedestrian and motor vehicle use (Figure 2). Each of these examples indicates their time and space by the materiality and design with which they were built. In all of them, the pedestrian either is considered a user with the same prerogatives as the vehicles with which he cohabitates or is exclusively served, with a privileged view of the unpolluted and dominant landscape in the Seine (Figure 3).

Figure 2.
Simone de Beauvoir Bridge.
Source: Author's collection.

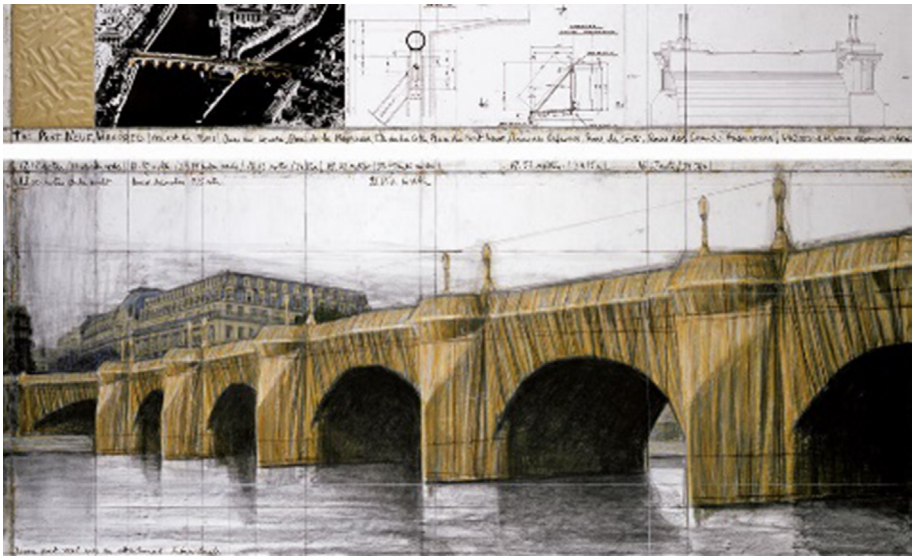


Figure 3.
Pont Neuf, Christo and Jeanne-Claude, 1985. Source: Wolfgang Volz.

The iconic Pont Neuf was the object of installation by plastic artists Christo and Jeanne-Claude, who by covering it with fabric subtracted an important piece of the Parisian landscape, thereby reinforcing its role as a landmark.

So-called urban "works of art" have many functions that go beyond their primary object of use and, on large avenues or rivers, are milestones of distance and visual recognition. A typical non-road urban bridge needs to meet some safety and comfort conditions if designed for pedestrians and vehicles: connecting two urban areas, creating an attractive exterior, demonstrating contemporary technical qualities and having a user-friendly structure (SALAMAK; FROSS, 2016).

MATERIALITY AND LANGUAGE

The materiality of bridges has accompanied the evolution and mastery of the various technologies acquired by human knowledge and, within this logic, there is a very clear technological and timeline: timber, stone, metal and concrete, when not combining some or all of these materials. This logic is beginning to lose its meaning in the contemporary world, precisely because of technology and the introduction of new concepts that combine environmental issues with more rational and efficient economic models. In addition, resuming the historical cycle of the domain of technology, timber has been gaining prominence in the design of these equipment. Why timber? Basically because it is the only renewable material in the entire construction chain, consuming little energy in its transformation and sequestering carbon dioxide in its mass, with results inversely proportional to those generated by the production of concrete and metallurgical industry, responsible for greater CO2 generation in the global atmosphere.

Since the Kyoto Protocol, European nations have mainly increased new technologies and intensified the use of timber to meet the goals proposed by the document. Contrary to popular perception, forest renewal and intensive planting contribute greatly to increased oxygen production and CO2 sequestration, as it is during growth that large trees are most efficient in this process. Sustainable management of native forests rejuvenates the forest cycle, and industrial plantations combined with agriculture allow for fairer and more ecologically sound economic cycles. This practice was advocated in 1990 by a group of scientists led by geographer Aziz Ab'Saber in the award-winning Floram project (PROJETO, 2013).

Industrial forests today account for only 1.5% of Brazil's entire forest area and are primarily destined for the cellulose industry, with a tiny portion destined for sawmill production, unlike in Europe, Japan or

Australia.

New technologies are based on industrial forests. The lamination of large pieces of timber, known since the early 1900s, has evolved immensely, allowing for lighter and stronger structures than conventional alternatives, and in some applications at considerably lower cost.

Naturally, evolution was not only technological but also of design, with thin, winding structures (Figures 4,5 and 6) resulting from the accumulation of knowledge about the material, the learning about how to protect it from the weather, the development of more efficient connections, both in timber and other materials, and above all the recognition of the benefits generated by the use of timber

Figure 4.
Montmorency Bridge, Québec, 2010. Source: Nordic Structures.

Figure 5.
Essing Walkway, Germany, designed by Richard J. Dietrich, 1986. Source: Brüninghoff (1993).

Figure 6.
Walkway in Stuttgart, 2019.
Source: Knippers Helbig.

Another major breakthrough has been made with regard to the scale that new lamination technologies have allowed. Beams with 70 meters in length are viable, although for transport reasons it is not simple to move (NATTERER; HERZOG; VOLZ, 1994).

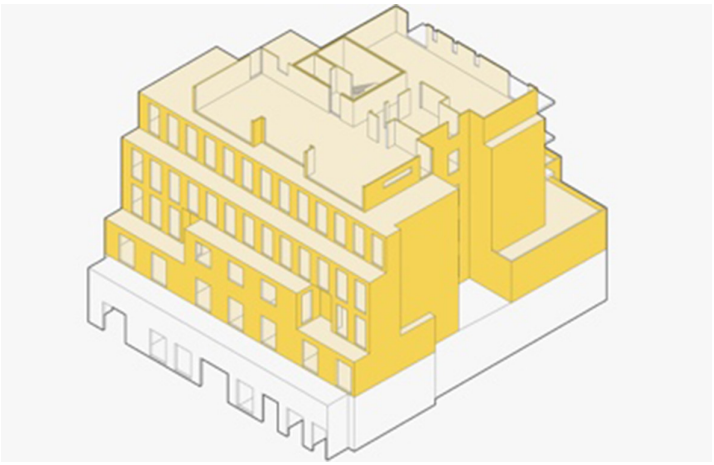
These timber-based compounds have also brought new paradigms in strength, working flexibly against seismic or wind and water movement.

RECOVERY OF EXISTING STRUCTURES

The lightness provided by the new timber compounds has allowed a possibility not until recently considered as an alternative of urban re-qualification. Large concrete structures are demolished to make larger ones that are more suitable for land use and occupation, or simply for the rapid obsolescence of both the design and the materials with which they were built.

The recent announcement of a building in Vancouver, designed by architect Shigeru Ban, opens a new field for the requalification of urban structures without the demolition of the existing structure, reducing considerable environmental impacts caused by waste disposal and the huge energy consumption between the demolition, transport and reconstruction of a new building using conventional techniques. The building has a hybrid structure, combining one concrete and one laminated timber structure and mixing its use between housing and commercial areas. In London, the former structure of a cinema served as the basis for the construction of a small mixed leisure and entertainment building (cinema and restaurant) and five residential floors, built in CLT and

cross-glued timber boards, fully machined in digital machines, forming a structural mesh that eliminates pillars and beams during the assembly process (Figures 7 and 8).



Figures 7 and 8.
Pitfield Street, Waugh Thistleton, 2019. Source: Author's Collection and Waugh Thistleton Architects.

Naturally, the analogy with bridges is limited by structural differences as a function of use, horizontality and load distribution. Even so, the attitude denotes a radical change in the reading of the built landscape. Buildings using mixed systems and materials indicate the likely future of sustainable construction, reducing waste and environmental impact on the planet (KAUFMANN, 2012).

Redeeming the lost values during our recent intervention on the planet seems to be the path to follow, and this includes the freedom of formal choice and its materialization within healthy environmental values. As Juhani Pallasmaa (2006) notes, both formal poverty and empty excess, as well as the intellectualized abstract contribute to the impoverishment of the intrinsic meaning of architecture.

The industrialization of components and the rationalization of processes complete the list of design attitudes to be considered in any field of architectural production, since the landscape is composed of everything that surrounds us, mineral, vegetable or animal.

RECONECTING THE MARGINS: THE CASE OF THE CIDADE JARDIM BRIDGE

The Roberto Zuccolo Bridge, fortunately better known as Cidade Jardim, was built in 1967, linking the region developed by Cia City, on the banks of the rectified Pinheiros River, with the Morumbi region, near the Jockey Club of Sao Paulo. Like all bridges that cross the great rivers of Sao Paulo, it was designed primarily for use by motor vehicles and

has a minimum area for pedestrians or cyclists to cross in unfavorable and uncomfortable conditions. Even considering the putrid state of the waters of Sao Paulo's rivers, we still have a resilient landscape and a potential for vegetation and animal life that signal a possible short--term recovery. It is therefore desirable that these bridges be refurbished and fulfill essential functions as described above.

In addition to the equipment itself, we have as supporting features, among the obstacles that make it difficult to use the Cidade Jardim bridge, the ramp access of the cars that come and go to the marginal and the crossing across the avenue over the bridge deck.

Figure 9. Map, without scale. Source: Aflalo, 2018.

Figure 10.
Photographic survey: existing situation. Photos from July 1, 2018. (a) he situation of the existing chute with the separation of vehicle and pedestrian / cyclist lanes; (b) the temporary access of the bicycle path is being made by metallic staircase; (c) as crosswalks are the only way to cross the chute to the access the ramp access; (d) partially closed access in an area without crosswalks; (e) ramp access near the CPTM (Metropolitan Trains Company of Sao Paulo) station; (f) access by stairs or elevator near Parque do Povo; (g) steps to access the pedestrian bridge; (h) non-existent pedestrian crossing with very high risk near the Jockey Club ramp access.
Source: Author's collection.

A PROPOSAL

Taking as a premise the maintenance of the existing bridge and the use of lightweight materials, it is proposed to create transpositions for pedestrians and cyclists, expanding the existing board and connecting it with the edges and ramp access of its surroundings.

Bicycle lanes do not connect under normal conditions, only on Sundays and holidays, which is also the case with pedestrian access. There is a design-quality access walkway that connects the CPTM station with the Parque do Povo (People's Park) but that does not connect the access ramp areas.

The addition of a lightweight wooden structure to the bridge deck adds quality to the river crossing, but does not solve the continuity of the pedestrian and cyclist route. Therefore, it is necessary to articulate these extensions with additional walkways that establish the connection between the ramp access and the surrounding neighborhoods.

Figure 11. Walkway in Tauberbischofsheim, Germany, 2009. Source: Miebach Engineering.

Figure 12. Map without scale. Source: Aflalo, 2018.

Figure 13.
Illustration, without scale.
Source: Aflalo, 2018.

The continuity of the crossing is also the continuity of the landscape, and this includes vegetation and urban furniture, which can be inserted into the proposed artworks.

The chute for pedestrians and cyclists becomes a green chute, mitigating the impact generated by traffic on the existing board. Lighting plays a key role in expanding safe use and designing the landscape of bridges with striking features of day and night (Figure 14).

The model can be replicated, with variations, on most bridges in Sao Paulo, which may benefit from accessibility, urban referential marking and, ultimately, identity.

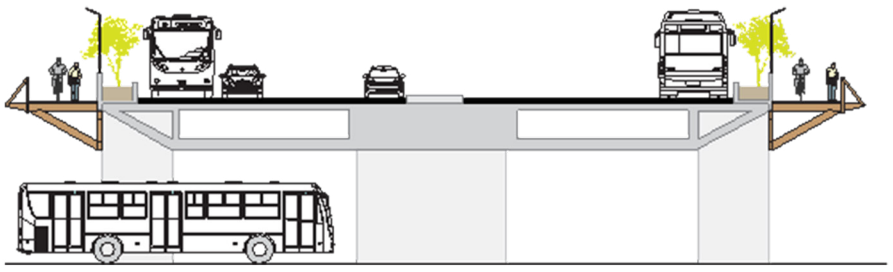


Figure 14.
Cidade Jardim bridge cross section.
Source: Aflalo, 2018.

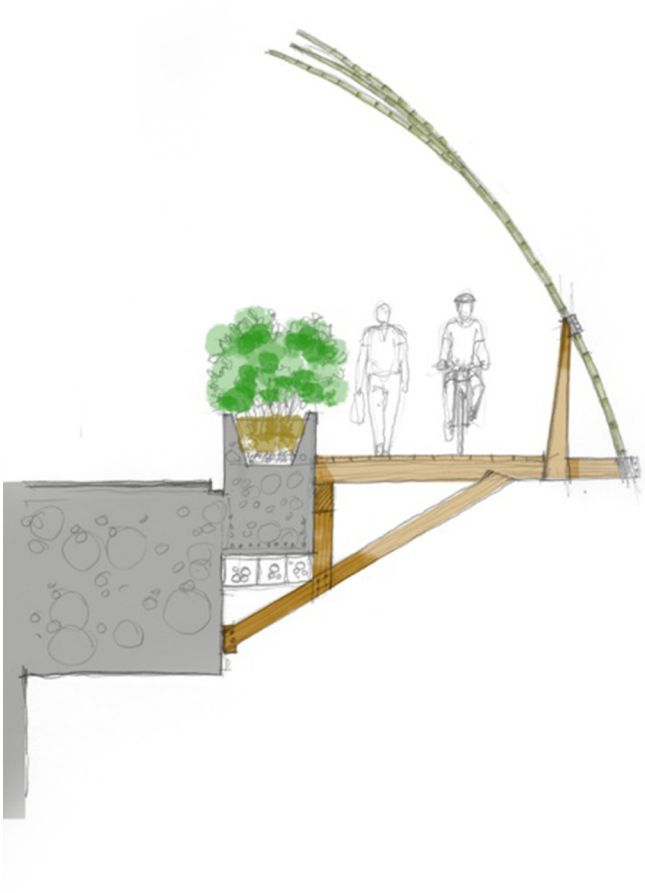


Figure 15.
Cross-sectional study suggesting constructive system with protection / shading in bamboo, without scale.
Source: Aflalo, 2018.

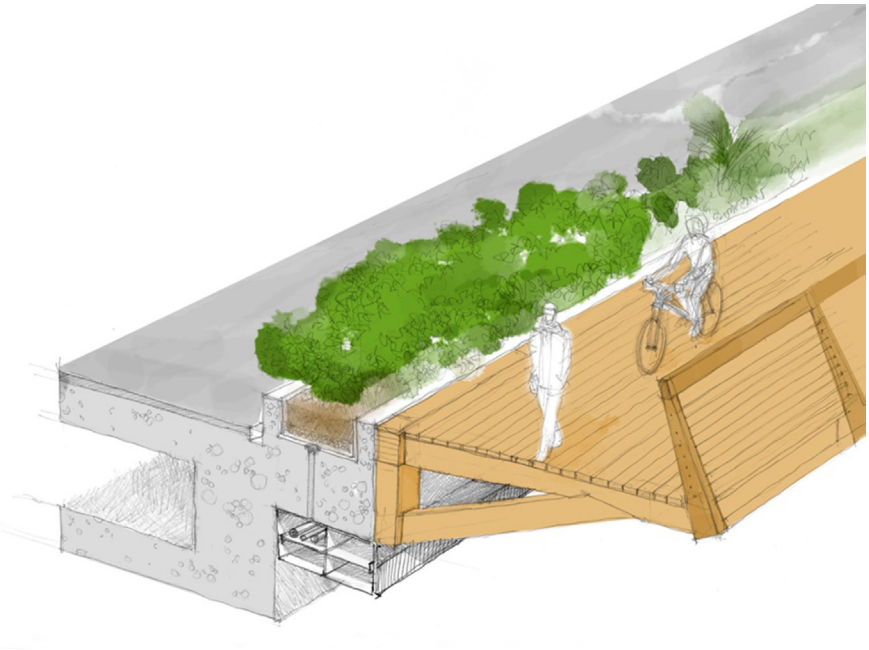


Figure 16.
Isometric section indicating the use of the existing crosswalk as a buffer between the runway and the walkway, without scale.
Source: Aflalo, 2018.

For walkways connecting the access ramps to the viaduct, the topographic configuration allows minimal earth movement to create traffic flow chutes without the need for a very high or very arched structure that would make accessibility difficult. Like the Zapallar walkway near Santiago, designed by Enrique Browne, a lightweight and partially pre-assembled structure, the transposition can be done with minimal urban impact (Figure 17).

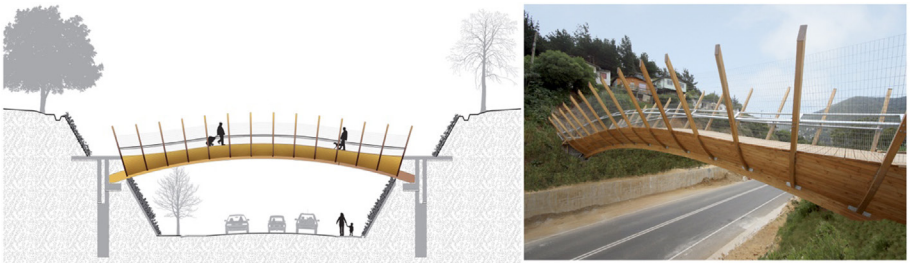


Figure 17.
Zapallar Walkway, Chile.
Source: Author's collection.

In the proposed model, the walkways can be pre-assembled and installed on site with flow interruption for less than six hours. A structural axis is supported by reinforced concrete beams and suspended on a cable-stayed central axis guided by four pillars anchored at the ends of the structure (Figures 18 and 19).

Figure 18.
Lateral elevation schematics, without scale. Source: Aflalo, 2018.

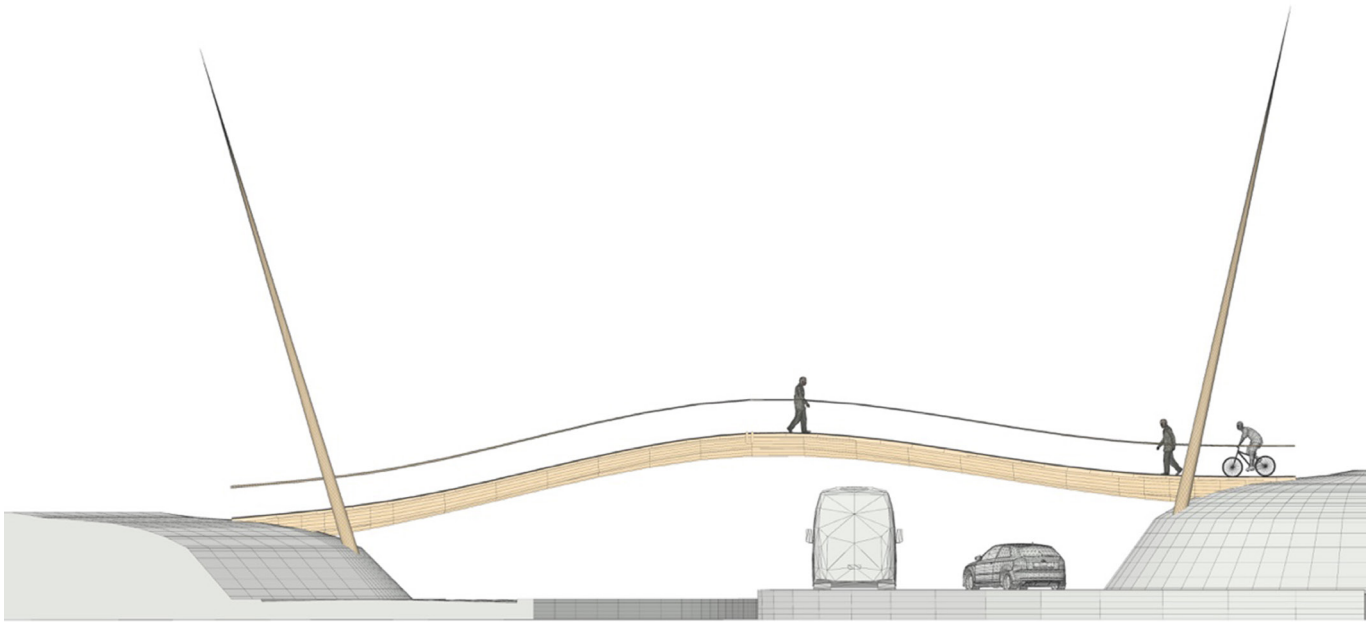


Figure 19.
Lateral elevation schematics, without scale. Source: Aflalo, 2018.

The timber architecture presupposes a specific detailing to prevent water accumulation, so all parts have small slopes, gaps between parts and protection over structural parts (Figure 20).

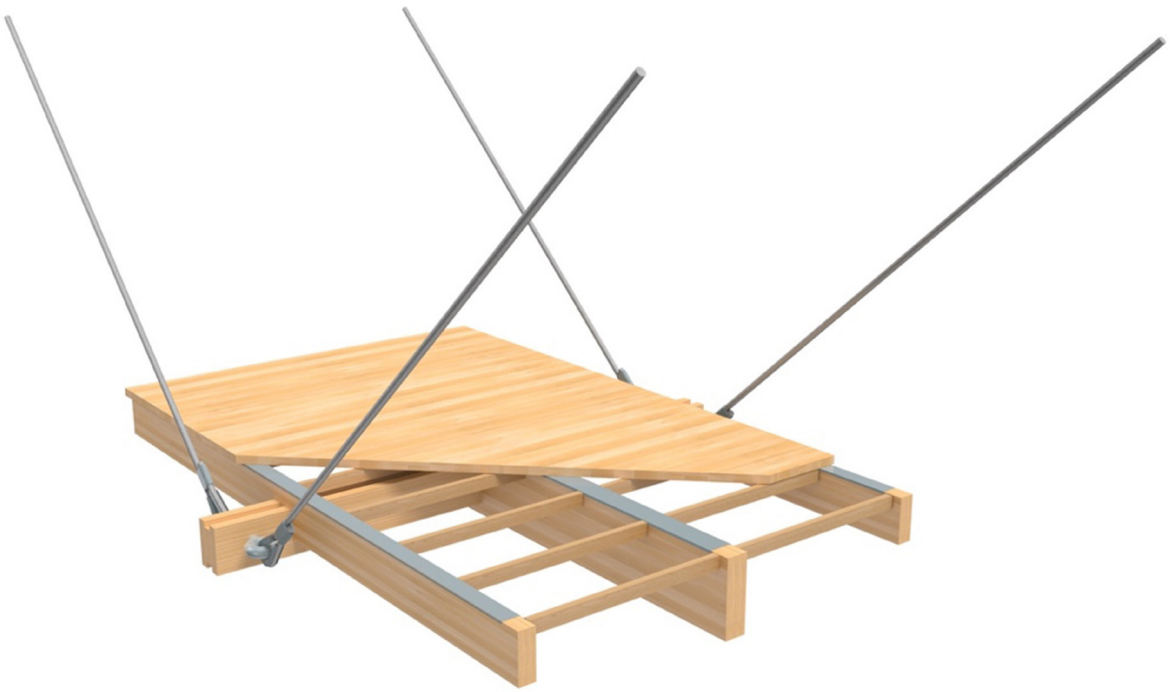


Figure 20. Constructive detail. Source: Aflalo, 2018

Much is discussed about the use of timber in urban works of art, but the reality is that concrete is far of the promised perpetuity, for several reasons that do not fit this text, whose focus is to point out viable alternatives to the use of urban equipment.

The timber, on the other hand, is well known and its useful life has been recognized for centuries, with equipment around the world in operation for over two hundred, three hundred years.

Why do not investigate its viability?

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