Case Study Report

Spatial regeneration of abandoned railway areas under viaducts

from the perspective of enhancing the well-being of residents

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Abstract

The Songhu Railway was an important freight railway in Shanghai in 1920s, and parts of it have been out of service since 2000. Over the years, parts of it have been developed into industrial parks, while others have remained decaying. In 2021, the Shanghai Municipal Government decided to rejuvenate the left sections of the railway and a section under a viaduct located in Hongkou District, Jiangwan Town Street was selected for regeneration. In this case, we applied multiple methods to identify the current problems in the space that are detrimental to the well-being of the surrounding residents, including traffic and specific space use. Based on this, we have redesigned the space by restructuring the traffic system and increasing space function with the aim to create a comfortable social environment for different groups and to bring back the vitality of the site.

Keywords

Songhu Railway, Space under viaducts, Regeneration

1. Background

1.1. Program Origin

In recent years, urban regeneration has become increasingly popular in Shanghai, with a large number of dilapidated factories, traditional neighborhoods and other urban spaces with contemporary characteristics being implanted with new functions to return to public view. 2021, the Shanghai Planning and Construction Commission and the Office of Urban Governance jointly launched an urban regeneration initiative, selecting more than 100 urban public spaces as targets for this activity, including urban Streets, abandoned factories, neighborhoods entrances and exits, etc. A section of abandoned space under an elevated bridge in Jiangwan Town Street, Hongkou District, was also selected as the target of this regeneration program (figure 1).

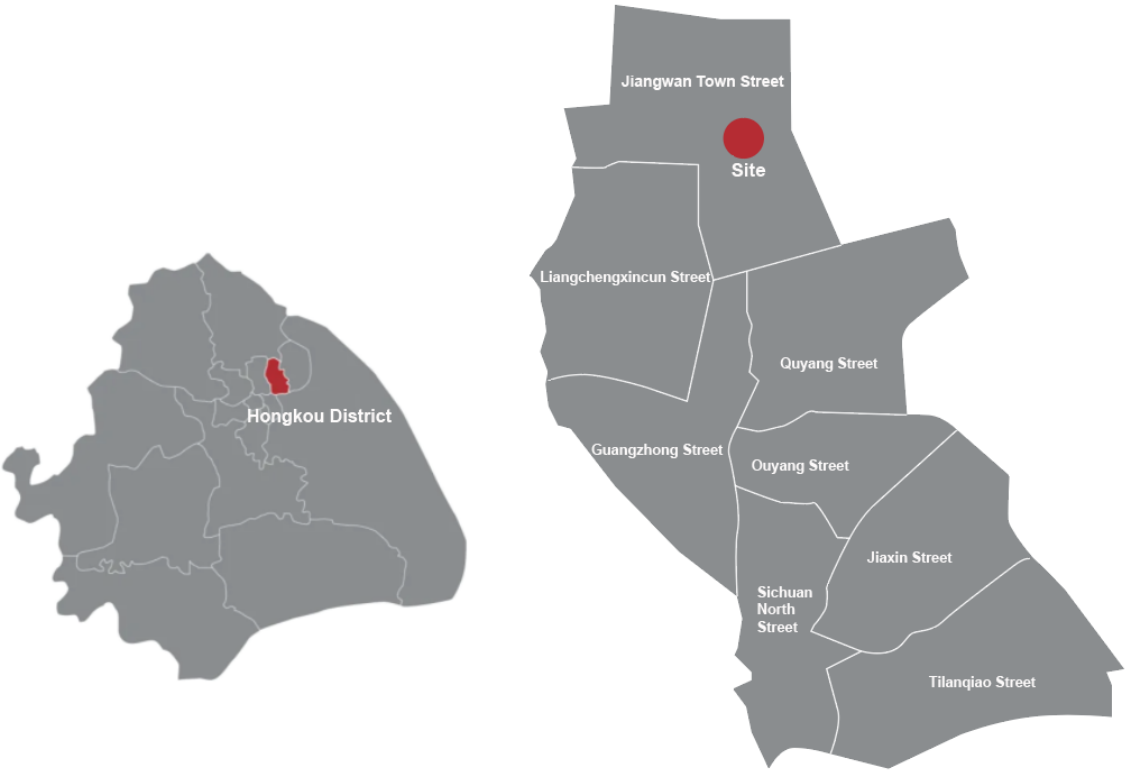

Figure 1. Site location. Source: Baidu.

The site is a part of the Songhu Shanghai Railway, which was also called Wusong Railway in the past and was the first railroad in the whole China. The railroad was flanked by informal residential areas, and residents used to talk, sunbathe and other daily activities beside the tracks, when the railway not only assumed important transportation functions, but also was a public space carrying the daily lives of residents (figure 2). in 1997, the freight function of part of the Songhu Railway was suspended, followed by the opening of Metro Line 3 in Shanghai in 2000, and the elevated subway line passed over this section of the railway tracks. Then in 2016, the Shanghai Municipal Government carried out urban regeneration of the area around the railway, and the purpose of this renewal was to show the cultural value of the Songhu Shanghai Railway while stimulating the economic value of the land, and the first half of the space under the bridge was included in the scope of this transformation to become a commercial space. The new space and function of the space under the bridge was transformed into a commercial space, with the government's desire to revitalize the area.

Figure 2. Old photos of the space under viaducts.
Source:https://www.thepaper.cn/newsDetail_forward_1372054.

However, the fact did not develop as expected, the transformation of the space did not bring people to the area, except for a few white-collar workers from the neighborhood who came to buy coffee at noon every day, few residents rested in the area. After the regenaration, the property company of the industrial park

introduced businesses such as children's clothing stores, suit stores, model stores and gyms into the space under the viaducts but these businesses were not popular with the people in the neighborhood. The abandoned railway tracks, the old station hall and other railroad elements are placed in some inconspicuous spaces, and people won't know the history and culture of this place if they don't read the introduction at the entrance carefully.

2. Background

2.1. Methods

This report uses questionnaires, semi-structured interviews, site mapping and the PSPL method to study the current issues of the site and the activity needs of the surrounding people. Firstly, the team distributed 50 questionnaires to collect the opinions of different people about the space, including office workers in the industrial park, store owners in the space under the bridge and residents in the nearby neighborhoods. Secondly, we spent a week to interview the users of the space under the bridge at different times of the day, mainly about the mode of transportation, the frequency of using the space and some personal feelings about the use of the space. Finally, we selected four locations in the space under the bridge to conduct PSPL research at five time periods to observe the specific behavior of people in the space, so as to further study the relationship between the space and people's mutual use (figure 3).

Figure 3.On-site research and some mapping results.Source: Author.

2.2. Findings

After our research, we summarized the current problems into the following 3 areas:

First is the traffic. The site is a narrow strip space with the widest part of which is only 35 m. On the north and south sides are the city's main and secondary roads, there is a lot of traffic flow in peak time, and Memorial Road on one side of the site bears the huge pressure of traffic flow relief. Coupled with the fact that Memorial Road is an urban feeder road only 12m wide, the current section not only has no continuous

sidewalk, but also part of the space is occupied by non-motorized vehicles and stores along the street, making it dangerous to walk on both sides of the road. During our actual observation, we repeatedly found that people had to walk along the edge of the road without the oncoming traffic reducing their speed, and this situation was especially obvious during the morning and evening rush hours (figure 4).

Figure 4.People walking on the carriageway. Source:Author.

Second is the space. The total length of the site is 600m, with 18 bridge holes. The first regeneration only involved the first 10 bridge holes, and the remaining part is currently used as a parking lot by a nearby company. Through field surveys and interviews, we found that even after the renovation, the spatial use of the site is still not efficient, partly because the accessibility of the site is reduced by the inconvenience of transportation, and partly because the design of these spaces and facilities does not consider people's behavioral habits and usage needs (figure 5). For example, most of the residential areas near the site were built in the 7.80s, and there are more elderly residents, whose needs for public space functions are mostly focused on fitness and chatting, etc. Through the observation we found that elderly residents prefer to do their activities in the sunny streets of the community, even if there are no seats or fitness facilities on the streets. At certain times of the day, we found that some seniors walking their dogs and taking care of their children would stay here, but they stayed in the site for less than 30 minutes and mostly did small, single activities in a fixed location. Despite the fact that a middle school is located on the west side of the site, we found that almost no teenagers would come and stay here during the research period.

Figure 5. Insufficient space usage under viaducts. Source: Author.

The third is culture. Although cultural symbols such as trains and stations were implanted in the first renovation, these elements are more of a marketing tool for nearby stores and people can hardly link them directly to the Songhu Railway (figure 6)." Such trains are everywhere in the cultural and creative elements nowadays, and people tend to stop and take a picture, that's all", said the venue's security staff. The original designers didn't seem to think of a better way to deal with the abandoned section of the railway, and just planted some landscape trees on both sides for people to take photos. But in fact, few people will notice

the railway track, because it is connected to the front part of the space by a narrow and winding road, and people seldom notice that there is a real history about the Songhu Railway on the inner side of the site (figure 7).

Figure 6.Railroad culture industrial park.Source: Author.

Figure 7.Unobtrusive abandoned railway tracks.Source: Author.

3. Solutions

The new design scheme takes into account the lack of a complete pedestrian system at the site, **firstly, in terms of traffic**, through the adjustment of the overall road section of Guangji Road, commuter and fitness walkway are added on the road side and inside the space under the bridge respectively (figure 8). The fitness trail under the viaducts connects different functional spaces, and a number of entrances to the

space are set up along the road side in conjunction with company entrances to improve the accessibility of the site. In addition, we added barrier-free ramps and handrails at each entrance and exit, and added fluorescent convex guidance signs on the ground inside the site to facilitate the use of the space by the disadvantaged (figure 9). The commuter walkway on the other side is mainly to ensure the continuity of people walking by opening the space occupied by stores and adjusting the width of the lane to facilitate the movement of people.

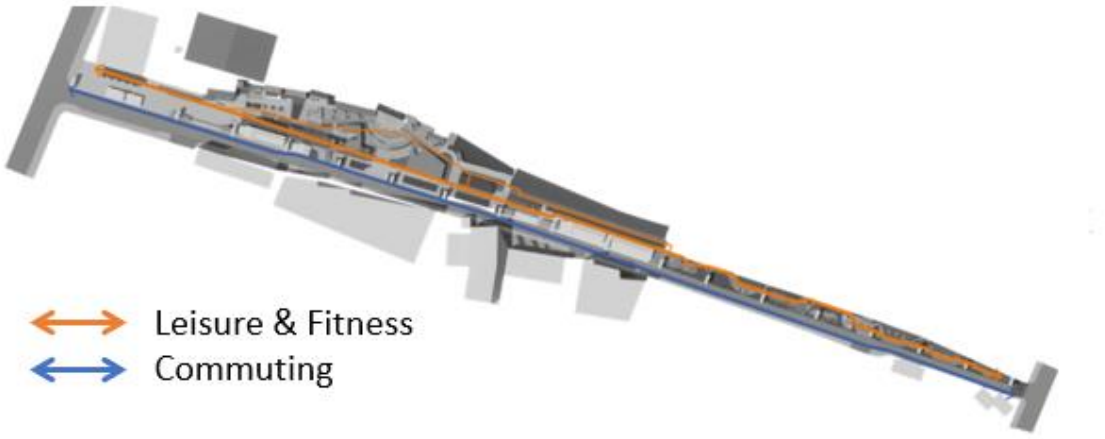

Figure 8.Design of a new pedestrian system for the site.Source:Author.

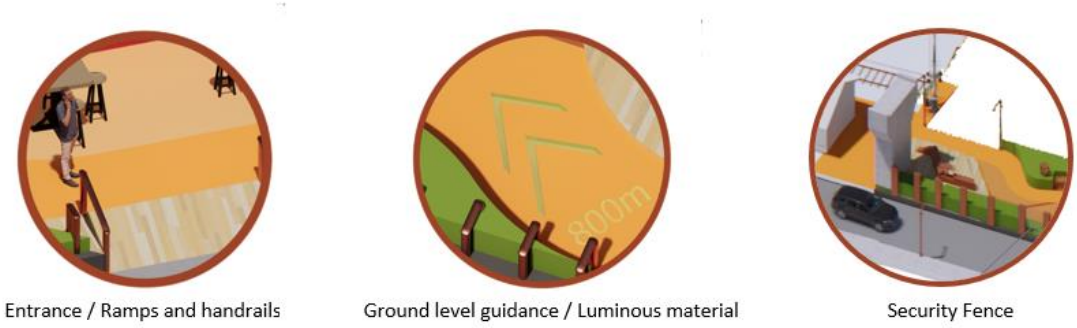

Figure 9.Barrier-free facilities.Source:Author.

In terms of space and culture, first of all, according to the actual needs of different users, the space is divided into three parts which are: sports and entertainment area, informal office area and cultural and leisure area, and each functional area is set up with functional transition space (figure 10).

Figure 10.Functional zoning of the site.Source:Author.

No. 16-18 bridge holes are sports and recreation areas, with flexible and detachable fitness and children's equipment to provide daily activities for residents of different age groups. At the entrance of No. 18, wall paintings about the history of the Songhu Railway are added, and appropriate lighting design is applied to strengthen the identity of the entrance (figure 11).

Figure 11.Design drawings #15-18.Source:Author.

No. 14-15 bridge holes is an informal office area, serving the needs of small-scale discussions and temporary offices of the surrounding office population. By putting in flexible intelligent office facilities and continuous semi-enclosed seats, the space is blocked from the peripheral lane to a certain extent, and at the same time, the design of landscape and facilities echoes the cultural elements of the Songhu Railway, reinforcing the railroad culture through the railroad walkway, street lighting and the appearance design of the cultural wall. A small convenience store is set up under the bridge at the junction of No.15 and No.16 bridge holes to provide breakfast and other daily consumption services (figure 12).

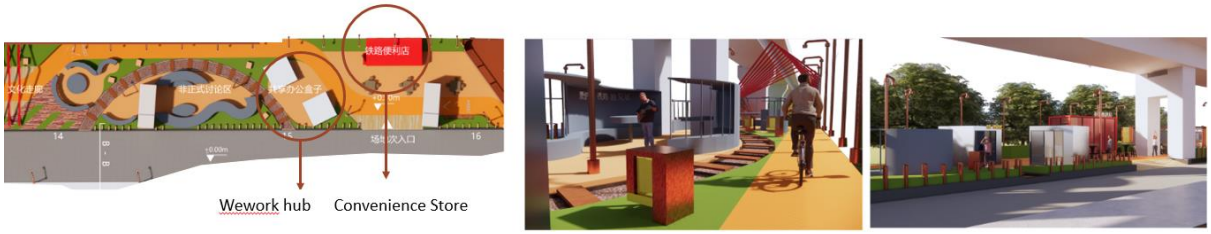

Figure 12.Design drawings #14-15.Source:Author.

In order to ensure that the green area under the bridge is not reduced, the No. 12-14 bridge holes are set up as a green landscape garden under the viaducts, highlighting the cultural nature. The Songhu railway cultural pavilion is inserted to echo the railroad carriage element in the front of the site. A demountable railroad cultural corridor is set up in the transition area to let people know more about the history of Song-Shanghai Railway through lighting and appearance design. Luminous material ground signs are placed on the ground of the site to facilitate people's leisure at night (figure 13).

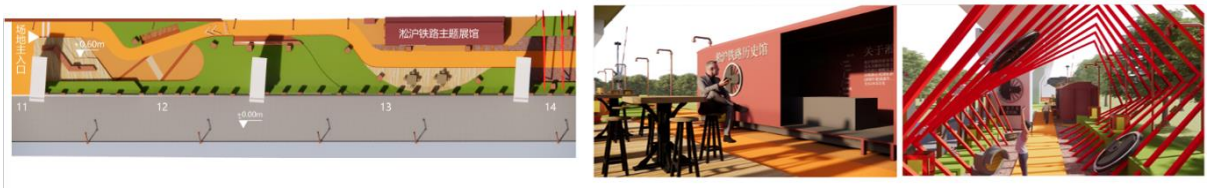

Figure 13.Design drawings #12-14.Source:Author.

On the other hand, we also sorted out the space of the first half of the industrial park, re-planned the walking path by adjusting the building layout and adding a second-floor platform to link node spaces and cultural elements, and strengthened the identity of the entrance and exit of the creative space by reducing some of the container buildings along the road (figure 14).

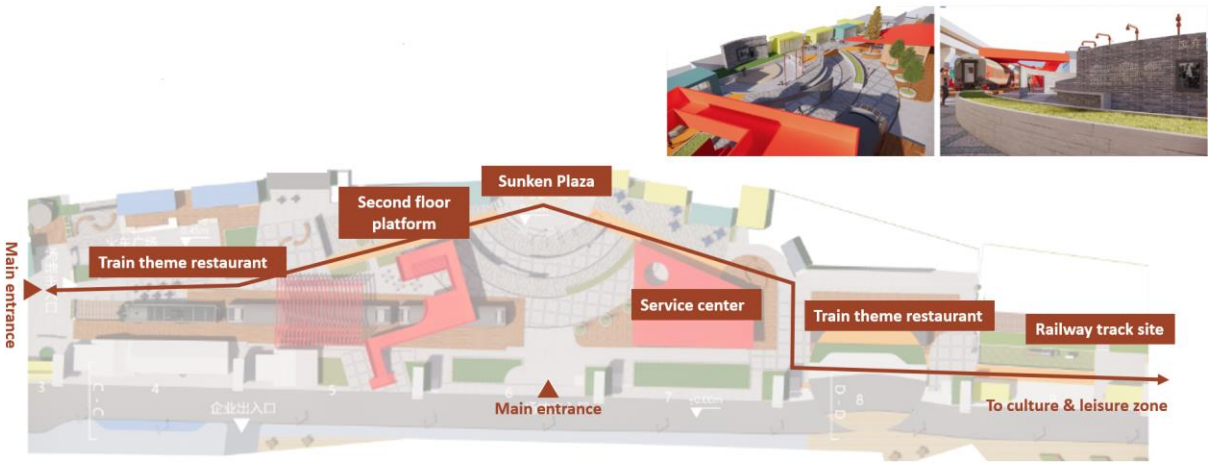

Figure 14.Design drawings #3-10.Source:Author.

4. Impacts and Implications

This case study is based on an actual project of teams, and is an in-depth exploration of the transformation of the space under viaducts. During this period, we explored the way to transform the commercialization of the space through field surveys and found some phenomena that may affect the physical health of the surrounding people during the research. Based on this, we proposed solutions in terms of traffic, space and culture to complete the overall revitalization of the space and its culture (figure 15).

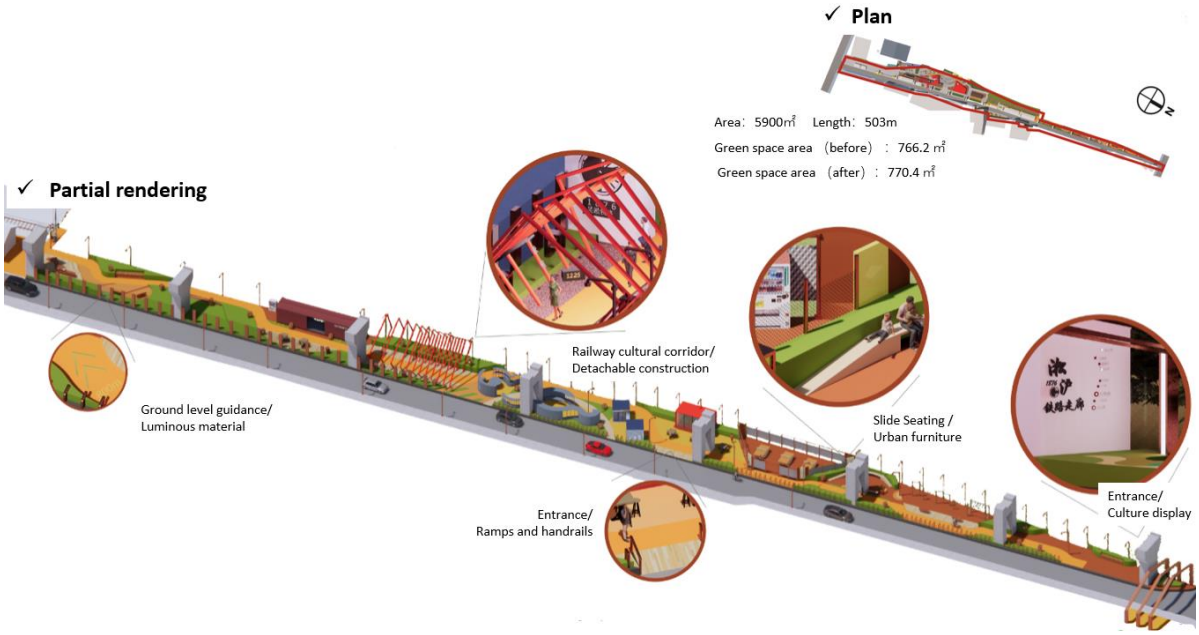

Figure 15.Partial rending #11-18.Source:Author.

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