Creation of New Multi-Level Urban Space for the Northern Osaka Station Area Development

Masato Tanaka
Osaka Gas Co., Ltd., Japan

ABSTRACT

In this paper, "Hyper-shaft" which is a unique urban infrastructure and some novel ideas of multi-level space are created, and traffic infrastructure planning is examined to meet the concept about the Osaka Station north district development.

I have examined space devices of multi-layer / composition "shaft" and "loop" from the past. "Hyper-shaft" is an advanced urban infrastructure which is applied "shaft" and "loop" for a wider and more complex area.

In addition, as the concrete elements of urban infrastructure planning, I suggest "three large spaces" and "Umeda Central Park" at the station outskirts.

As for the traffic infrastructure, a formation consisting of both wide range and short distance traffic by bus and taxi is examined, and multi-level use of the station square is designed to make the formation possible. At the same time, basement usage of railroads and roads to make a certain room for passenger flows is also investigated in this article.

Not on a viewpoint of the manager side but on a viewpoint of the user side, I tackled these problems to make attractive city space throughout this examination.

1. THE PRESENT SITUATION OF OSAKA STATION NORTH DISTRICT AND PROBLEMS

1.1 The present situation of Osaka Station north district and viewpoints of examination

Osaka railway station is located in the commercial heart of Osaka, the second big city in Japan. Around Osaka station, we call the area Umeda, there are 3 subway stations and 4 railway stations which 2,500,000 people get on and off per day altogether. The target site occupies the north side of Osaka station, 24 hectares open, and is widely noticed as the last remaining large-scale redevelopment in Japan. Government, the landowner, is planning to sell the lot. The area is shown in Figures 1 and 2.

This area is planned to be a core of wide range traffic network and city functions, I push forward the examination from two following viewpoints

♦ A viewpoint of the design for district planning
  • How should we form a cityscape and urban space as the huge development in the center of Osaka?
  • What kind of citizen-based town planning should be taken in contrast to Osaka Station south district of high-density and high-use?
♦ A viewpoint of the space use of multilayer include basement
  • Cooperation / networking with the Osaka Station outskirts district where the underground use has been developed.
  • Three-dimensional networks and spaces of multilayer ; aboveground, ground and underground levels
1.2 Problems at the Osaka Station outskirts

- Although the underground space develops in station south district but its level constitution and passenger flows are congested. Station north district is undeveloped, so there is not a continuity of the north and the south.
- There is not a big open space to rest and gather around Osaka Station, and there is little green.
- As for Osaka Station, traffic infrastructure except railroad is very weak.

![Image 1](https://example.com/image1.jpg)  
Fig. 1. An aerial photograph of the area.

![Image 2](https://example.com/image2.jpg)  
Fig. 2 A map of the area.

2. CONCEPTS OF CITY PLANNING AROUND OSAKA STATION NORTH DISTRICT

2.1 Creation of a new axis to the north by extending the Midosuji trunk line, the city axis of Osaka

The Midosuji trunk line (road) is the city axis becoming a symbol of Osaka. By extending the Midosuji trunk line to the north, a new city axis will run from south to north through Osaka Station.

2.2 A network connecting the north and the south of Osaka Station

Construction of a line of flow which is not divided at the station is required. It is important to make a smooth instruction from the underground level of the station south to the ground level of the station north which is open and bright. A route that does not mix with other passenger flows in the station area and a pedestrian network that does not let you feel a pitch difference to an open space should be secured.

2.3 A large open space for a walker

Cities in Japan do not have an open space where people can gather. There is only a tiny open space at the Osaka station square. By arranging walker on ground and auto traffic underground, a big open space that does not divided by a road could be formed. We want to make the open space where people can gather, go back and forth, and communicate with each other.

2.4 Water and green space leading to Yodogawa-river

A consecutive large-scale urban greenbelt is secured to lead to the nature of Yodogawa-river that is another symbol of Osaka.
3. SUGGESTION OF NEW THREE-DIMENSIONAL SPACE

3.1 Examination in Kyobashi

The three-dimensional land use about Kyobashi area (another city in Osaka) was examined before, and the essence is as follows.

- SHAFT/LOOP: connector function of different space levels; "shaft" as a connection of a vertical direction, and "wide shaft (= loop )" as an open networking of each level. (Figure 3, left)
- A three-dimensional city planning system: In order to provide public spaces such as station square and walker network in multilayer, city planning should be executed three-dimensionally.

3.2 Progressive development to city scale="Hyper Shaft"

In Kyobashi, the shaft and the loop were suggested in comparatively narrow space. Osaka Station north district is huge space, so a general idea of new city infrastructure which expand a shaft-loop function to a scale of city is necessary. It is called "HyperShaft" (Figure 3, right). HyperShaft is defined to be a new city infrastructure which networks "shaft" / "loop" in each space in a very large area.

Fig. 3. An idea of the shaft and the loop (left), the concept of HyperShaft (right).

4. EXPANSION TO THE STATION OUTSKIRTS

4.1 The thing which is necessary for “entrance” of Osaka

- A space for people where they can make themselves at home
- A symbol which becomes an honour of Osaka
- Space and function connecting the south side and the north side of Osaka Station

4.2 Three big open spaces

Here, I suggest three big open spaces around the station. The details are in Figure 4 and 5.

- A huge underground space: A space which guides you from the established underground mall of the station south to the station north side.
A large atrium: It’s a big space which includes the shafts and the loops linking the ground and the basement level, and is covered by a transparent canopy. There is a great turnout in it with rest and ease. A new station of subway will be built under this atrium.

The great slope "Osaka": A gentle slope that leads people from the south’s underground mall to the ground level of north gradually. It can be used as a stage for various performances and an outdoor theater which contributes to charm up the city.

5. DEVELOPMENT AS OPEN SPACE

5.1 Umeda Central Park

A large-scale green field “Umeda Central Park” is created in station north side and it realizes three city functions thereby. In other words,

• New creation of "rest and ease/amenity characteristics of space": The Central Park will change Umeda area that has been a town given priority to "function" and "effectiveness" into a town priority to "humanity". People can rest, become an ease, and interchange each other in this park. Outdoor-live broadcasting, art events, and various festivals are always performed in it. And it is the place where various people, concerned with here such as a person working in this town, a tourist, a person coming to play, a living person, gather in it. It links not only each institution within this district but also various buildings of neighboring areas organically and works as a core interchange which brings up opportunities of communication and cooperation in Umeda area.
• Creation of a new city axis extended to Yodogawa-river for pedestrians: The new north-south city axis should be an axis for person. It can be possible to regain “pleasure to move around”, that had been lacked in Umeda area, by creating seamless walker’s line of flow from the underground shopping mall of Osaka Station south side to Yodogawa via Umeda Central Park. In addition, arranging buildings on both sides to surround Umeda Central Park secures a view to the north direction (Figure 6).

• The Central Park creates a symbol cityscape which is worthy for a doorway of a worldwide fame city and becomes an identity of Osaka.

Fig. 6. A cross section of people’s flow from the station south to Yodogawa through the Central Park.

5.2 Methods to create Umeda Central Park

It is not easy to secure such a large-scale open space on ground level in such a downtown area. But integration of management without being particular about a public-private site border can make large green tract of land lying across both public and private site. Subterranean part of Umeda Central Park is used as a large scale parking lot connecting with neighboring building’s subterranean part so as to use the space of the inner city effectively. This basement parking lot is constructed across both public and private site and is integrated to operate together. So it becomes a functional and useful parking lot that can be accessible not only from the underpass road but also from underground parts of private-sector buildings (Figure 7).

Fig. 7. Creation methods of Umeda Central Park (the ground plan of the Park (left), Ground level (center), Underground level (right)).
6. TRAFFIC INFRASTRUCTURE

Suggestions to improve the convenience of the Central Park which assumes walker’s space priority.

6.1 Partially abolition of the Kujo-Umeda Road (Figure 8)

By abolishing the Kujo-Umeda Road which located between Osaka Station and Osaka Station north district, people can move from station south side to north side very easily and safety. It is very difficult to abolish the city planned road in Japan, but it's worthy to wrestle with to obtain safety and convenience for pedestrian. Abolition of the road may cause a delay in auto traffic; the east-west trunk roads should be constructed as showing below.

6.2 Establishment of East-West trunk roads (Figure 8)

Osaka Station north district does not have a trunk road crossing east and west now. The East-West Roads are got ready in this development. By underpassing Umeda Central Park, these roads never divide Central Park and Osaka Station into parts and keep the walker’s space comfortable

6.3 Establishment of the traffic station (Figure 9)

Concentration of traffic of bus and taxi is assumed in the Osaka Station north side by this redevelopment. To cope with this, a traffic station will be installed in Osaka Station north district. Furthermore, multi-level usage of traffic station makes it possible for a coach to direct access with Hanshin Expressway and depart/arrive easily.

7. FUTURE PROBLEMS

In order to realize the above plan, problems are highly piles up such as examination of city planning, finance, an enterprise of the project, and so on. Other problems are:

- Railroad construction: Construction of railroad and underground station is planned in this area, and examinations such as a supply of a fund, maintenance technique, a linear plan are necessary for it.
- Establishment of a structure of the area management system and its manager
- How to make a device of creation of turnout

The business competition is carried out in near future, and then the development will suddenly progress. We should examine the issues above with taking the initiative leading and concentrate our best efforts on.