A Study on Space Reorganization / Use Strategy for Municipal Renovation - An Example of Yaesu Area at Eastern Side of Tokyo Station

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ABSTRACT

Yaesu area at the eastern side of Tokyo station is very good in terms of condition of location as a strategic point of traffics. However, compared with surrounding areas, the area has been tending to decline. Thus, “Municipal Underground Space Use Research Group” attempted to propose a renovation of this area utilizing the underground space. In this study, as a picture of future creation of Yaesu area, we propose to create an attractive town which is superior in the spectacle, environment, disaster prevention, and interchange by “regeneration of street culture” and “creation of ground central function”. On the ground, a space for relaxation and interchange among people which is enriched with water and green is created. For the purpose, a space network where persons, objects and information move is formed in the shallow underground and disaster preventive functions are installed in the deep underground. In the deeper underground, we plan to install a large-scale lifeline and discharge equipments of wastes.

1. INTRODUCTION

Yaesu / Kyobashi / Nihonbashi area (hereafter, Yaesu area) (Fig. 1) locates at the eastern side of Tokyo station which is the center of Tokyo, the capital of Japan, and has a superior condition of location on traffics. In this area, multiple ideas to create a town in conjunction with the arrangement of traffic facilities such as the re-arrangement of obsolete Tokyo Metropolitan Expressways causing problems on the spectacle and the connection of Toei Asakusa line to Tokyo station have been presented. Since this plan becomes for a large scale of municipal renovation with re-arrangement and use of the underground space, we, “Municipal Underground Space Use Research Group”, studied about how to realize it from diverse viewpoints such as construction techniques.

2. CONCEPT

In creating a town in this area, it is kept in mind to create an attractive regional characteristics with competitive abilities against Marunouchi, Ginza, Nihonbashi and others in the central area of Tokyo
and play a role as a trigger to renovate the central area which will become internationally acceptable as the face of the capital including these areas.

Thus, as a concept for creating a town, based on the history of the area, the followings were set from the viewpoint as the entrance of Capital Tokyo.

Concept: “Regeneration of street culture” and “Creation of grand central functions”

(1) Regeneration of street culture

It is aimed at coordinating with Ginza, Nihonbashi and Marunouchi areas to regenerate the street culture utilizing alley-like spaces as a town for commoners which had existed old time in this area.

The direction of the east and west from Marunouchi to the coastal region is positioned as a new axis to play a leading role on the regeneration of the central area of Tokyo by effective use of the underground space.

The street culture with characteristics along alleys and roads is regenerated by these means and the function as the entrance of Capital Tokyo is developed by effective use of the underground space while the areas of the east and west direction are coordinated.

(2) Creation of grand central functions

Yaesu area is one of great traffic bases, where there are four subway lines and five underground stations and JR Tokyo station mainly around Yaesu street. It is attempted to create a new municipal underground space as a more functional station by setting a grand central station (hereafter, GCS) becoming a core at the central part.

As an important base for Tokyo which bears to succeed the culture to the future, to succeed Japanese good cultures to next generations and maintain safe and comfortable environments continuously in the future, important functions which GCS should have are following three points:

a) The function as a central station where smooth transfers are made as a main traffic point and people wait with composure, meet or part.

b) The function which is gentle to people just as people including aged persons and foreigners want to visit whenever they come to Tokyo.

c) The strong disaster preventive function to ensure the safety of lives at urgent times of disasters and to support the early restoration of Capital Tokyo.

These facilities consist of four layers of the ground part, shallow underground part, deep underground part and deeper underground part.

(3) Concept of target annual (about 50 years later)

Various high-rank plans / related plans have been being considered with the goal to realize them 10-20 years later. We propose a grand design of this area comprising these (Under the grand
design, the recreation of this area is attempted in a stepwise manner with making the best use of emergency projects of arrangements for recreation of the city and related projects are made the best)

3. CONCEPT OF THE USE OF UNDERGROUND SPACE

(1) Ground part
Gentle devices for all people are installed everywhere by introducing a universal design with full of water, green and wind as a relaxation and interchange space for people visiting the center of Tokyo. A green axis continuing with the Miyuki street, where temporary housing facilities can be built for victims and persons with difficulties in returning their homes at the times of disasters, are also formed.

(2) Shallow underground part
Areas surrounding Yaesu is networked as a space where persons, objects, and information move. Mobile equipments for passengers are installed among main stations and an underground network for automobile ways which cars coming to the town, cars for distribution and long-distance buses are usable is arranged.

(3) Deep underground part
Center of disaster-prevention information at the times of disasters, evacuation spaces, functions for continuing works, and functions as places for arrival and departure of substituted transportations are introduced and reserve spaces for materials and drinking waters prepared for the times of disaster are ensured.

(4) Deeper underground part
The connection of the deeper depth life line from the coastal region enables to have functions to supply materials and discharge a large amount of wastes filling in the central area of Tokyo at the time of disaster. As such, the life line plays a core role in the early restoration of Capital Tokyo.

4. CONCEPT OF THE NETWORK

(1) Network of public transportation
Public transportations include railways and buses and in this area, JR Tokyo station and four subway stations including Shinkansen are present (Fig. 4).

a) The terminal functions are reinforced by introducing new railways from the coastal region or reorganization.

b) Express movable system for passengers needing to change trains are introduced.

c) Among existing subways, the arrangement and unification of the underground space with renewals of obsolete facilities are conducted.

(2) Network of roads

a) Arrangement of underground automobile ways
Cars for distribution and general cards in this area are led to trunk roads which are constructed with underground two layers at the underground. The underground automobile roads are arranged with underground two layers under the trunk roads.

The network of these underground automobile roads enables to make the southern and northern blocks existing at both the sides of Yaesu street a counterclockwise loop (Fig. 5).

b) Arrangement of a network of underground parking spaces
Parking lots and spaces installed as mandatory ones in each building are consolidated and arranged at the underground level with two layers. Reduction of traffics on the ground and traffic congestion for parking is attempted by connecting among the underground automobile ways with two layers and parking spaces at each block.

c) Treatment of distributions
Functions of distribution centers in the area are shared by placing distribution bases at parking
lots and spaces in each block and effectively utilizing the underground parking spaces networked. This arrangement enables to reduce the traffic amount related to distributions in the area and improve the comfort of the underground space.

Fig. 4. Construction of Underground integrated station, Grand Central Station = GCS and image of coordination with each railway station

Fig. 5. Underground automobile-ways network.

(3) Network of walkers
   a) Introduction of fast movable means for walkers
      For the purpose of taking aged persons into consideration and visitors' going around a wider area, equipments assisting walkers to move comfortably are introduced at each level of the ground, underground first layer and second layer. The attractiveness of the area is improved by ensuring to install highly convenient movable means which any person is usable at multiple sites.
   b) Underground network of walkers
      Existing underground ways, concourses of subway stations, underground parking lots and spaces and private facilities where customers gather (underground towns and department stores) are connected to structure a network of underground ways, ensure traffic lines of walkers with surrounding areas and improve the moving situation by continuity of stations.

(4) Network of marine transportation
   A plan for arrangements of waterside spaces and marine transportation is proposed as follows:
   a) A network of marine transportation mainly with tourists is introduced at the Nihonbashi river and Mamejima river (a wide-range routes such as Tokyo Disney land, Odaiba, Haneda airport, and Asakusa , tour routes of circulation type such as Kudan, Ochanomizu, and Akiwabara, and others).
   b) Water stations for water buses, taxes, slow boats and others are opened as water base spaces near Kamejima bridge of Nihonbashi.
   c) Towns along rivers are created while regeneration of water, revival of watersides and spectacles are taken into consideration. Especially, networks of water routes are introduced at trunk roads.

Fig. 6. Current spectacle.

Fig. 7. Repaired spectacle of the ground and underground spaces.
5. CREATION OF SPECTACLE AND ENVIRONMENT

(1) Regeneration of spectacle
   a) Establishment of guideline for streets
      The unification of wall lines and skyline and greening the frontages and repairing the
      spectacles are promoted (Fig. 6).
   b) Re-arrangement of comfortable environments on the ground
      The regeneration and greening of the spectacle of Nihonbashi river and the regeneration of the
      space with small streams at Sotobori are planned. It is aimed at expanding spaces for walkers on
      the ground by making Yaesu line of Tokyo Metropolitan Expressways general roads. Reduction of
      becoming a heat isle land and creation of wind ways are planned.

(2) Promotion of truisms
   a) Revival of the history and traditions
      The regeneration of the famous bridge, “Nihonbashi”, is planned and historical buildings are
      preserved.
   b) Re-finding of tourism resources and making tourism routes
      The revival of water transportation accompanying the regeneration of Nihonbashi river is
      planned with the revival of street culture such as by naming of streets.

(3) Repairing of ground and underground spectacles and public and private unified utilization
   a) Interface between the ground and underground
      The unification between the ground and underground is planned by open spaces such as squares
      continuing the ground and the underground.
   b) Opening partial private spaces as public spaces
      To reinforce diverse nodal functions, underground partial private spaces are used publicly by
      giving incentives to the civilians. As such, contributions for improvement of convenience and
      formation of streets are aimed at (Fig. 7).

6. INTRODUCTION OF DISASTER PREVENTIVE FUNCTIONS

(1) Arrangement of disaster preventive cores
   GCS as a “disaster-preventive core” is positioned as a “UCP” function (Urban Continuity Plan), a
   function to protect the center of Tokyo with the restoration of business functions as well as
   stockpiles and evacuation spaces at the times of disasters.
   a) Improvement of disaster-preventive functions
      High disaster-preventive functions are introduced (such as structure, equipments, guide signs,
      countermeasures against flooding and others).
   b) Preparation for temporal evacuation and persons with difficulties in returning their homes
      Underground stockpile spaces for temporal evacuation spaces, water, foods, medical products
      and others are ensured.
   c) Preparation for rescue activities
      Activity bases such as block disaster-preventive organizations, Self-Defense Force, volunteers
      and others are arranged. Ground traffic networks in the area are unified. Efficient
      transportations of rescue materials are conducted by deeper depth infrastructions (Wide-are
      disaster preventive bases, near-stockpile facilities and others).
   d) Preparation to provide information
      The coordination between one-stop information providing spaces and trunk information
      infrastructures is attempted.
   e) Preparation for stable supply of energy
      The coordination with basic life lines is ensured.
   f) Others (Functions of continuity plan of the central area of Tokyo and others)
      As sharing information with disaster-preventive town creation organizations is strived, making
      work continuity plants of surrounding companies is promoted.
(2) Ensuring disaster-preventive evacuation spaces
    Because the arrival and departure of cars are easily in underground facilities which are build under public roads and underground parking spaces are arranged, the underground facilities are arranged as disaster-preventive bases.
    a) Ensuring of the flow
        Illumination, escape guiding lights and emergency electric power supply are arranged.
    b) Functions of stocks of materials and foods for use at the time of disaster and parking of emergency cars
        Stocks of materials and foods for use at the time of disaster and ensuring parking spaces for support cars and work spaces are conducted.
    c) Functions of disaster-preventive information centers
        Information about damage and restoration situations are collected and informed and notification means to the administrative agents (optic fiber telecommunication network) are arranged.
    d) Arrival and departure places of substituted transportation means
        Persons who are difficult to return their homes are transferred by substituted transportation means. Thus, stop spaces such as bus stops are ensured.

7. SUMMARY AND FUTURE SUBJECTS

This area has played a core role in commercial businesses representing Japan as a town for merchants for about 400 years since Edo era. In regenerating this area which tends to decline in comparison with surrounding areas in the 21st century, this area cannot be regenerated as a historical area unless the rich potential and regional resources are utilized and new structures and systems are also combined.

It is required for this area which has been formed with systems prioritizing economic values symbolically and progressively to consider of how to combine the aspects of the spectacle, environments, disaster prevention and interchange to improve the value of the municipal space for changing from the quantity to the quality which is required for the 21st century and enriching quality of life.

The regeneration of the central area of Tokyo is planned by regenerating this area with the revival of the street culture and the creation of the grand central functions which utilize the underground space.

In the future, to realize “the regeneration of the street culture” and “the creation of the grand central functions”, we will study more specifically and request related persons widely to understand our proposals and cooperate it.

REFERENCES
