
WELCOME
TO
MY PRESENTATION

MYANMAR ENGINEERING SOCIETY

2015 - JSCE STUDY TOUR GRANT IN JAPAN
ITINERARY REPORT

Presented by
Ma Hmwe Kyu
ME (Civil), MTU
Structural Design Engineer
Aung Myin Thu Construction and Real Estate Development Co.,Ltd, Mandalay, Myanmar.

Objectives

- To share experiences and knowledge from my STG visit in Japan
- To present about itinerary report

Itinerary for five days stay in Japan

- First Day (Public Work Research Institute and Tokyo-Gaikan Expressway construction site, TAJRI-Area project)
- Second Day (Kajima Technical Research Institute and Construction site of JR Shinjuku Station Project)
- Third Day (Presentation for The 17th International Summer Symposium and Young Engineer Workshop at Okayama University and Reception at Okayama Castle)
- Fourth Day (Seto-Ohashi Bridges and Mizushima Port Bridge)
- Fifth Day (Sight Seeing – Tokyo Tower, Imperial Palace, Asakusa Buddhist Temple)

First Day

(14.9.2015)

Public Work Research Institute

Dam Hydraulic Laboratory (PWRI)

Dam Hydraulic Laboratory and Annex

- Japan has a long history of dam construction, maintenance and improvement. And has approximately 2,800 dams (higher than 15m) till now.
- High and large capacity dams have been constructed in this duration supported by economical and technological development.
- Dam Hydraulic Laboratory (L102m×B44m) and its Annex (L70m×B29m) are used for investigation of the hydraulic phenomena concerning dams' reservoirs and hydraulic facilities such as spillways, outlet works and intake systems.

The PWRI Geotechnical Centrifuge III

The PWRI Geotechnical Centrifuge III

- (1) It is a ideal to perform prototype model tests in order to clearly understand the complicated behavior of the ground, earth structure, foundation, building etc, and mechanism of the earthquake damage to them.
- (2) To improve the techniques and rationalize and construction of structure and to improve seismic stability of them. But it is practically too difficult to perform such large scale test.
- (3) This is one of the largest centrifuge in the world
- (4)A shaking table is mounted which is precisely simulate strong earthquake motion.

The PWRI Geotechnical Centrifuge III (Main Application)

- (1) Soil Liquefaction and ground flow
- (2) Seismic behavior of earth structure
- (3) Seismic behavior of underground structure
- (4) Stability of retaining wall and reinforced earth structure
- (5) Soil pile interaction
- (6) Effect of soil improvement techniques
- (7) Tunnel construction

Large Scale Three-dimensional Shaking Table (PWRI)

Shaking Table

- Large-scale three dimensional shaking table is to examine seismicity of the ground and civil infrastructure by simulating strong motion of large earthquake.

30 MN Universal Testing Machine

30 MN Universal Testing Machine

- The 30MN Large Structural Members Universal Testing Machine is used for compressive, tensile, and bending tests for full-scale or reduced-scale birdge members/components to evaluate the ultimate strength and the behavior to the failure.
- It was constructed in 1978 and the control unit was updated in 1991 and 2002 to improve the safety and the usability for operation.
- The machine has 4 compression cylinders and 1 tension cylinder for loading. Each compression cylinder, which is installed for 4 main columns, has its own displacement measuring unit and can be controlled individually

30 MN Universal Testing Machine

Tokyo-Gaikan Expressway construction site, TAJRI-Area project

Tokyo-Gaikan Expressway construction site, TAJRI-Area project

Tokyo-Gaikan Expressway construction site, TAJRI-Area project

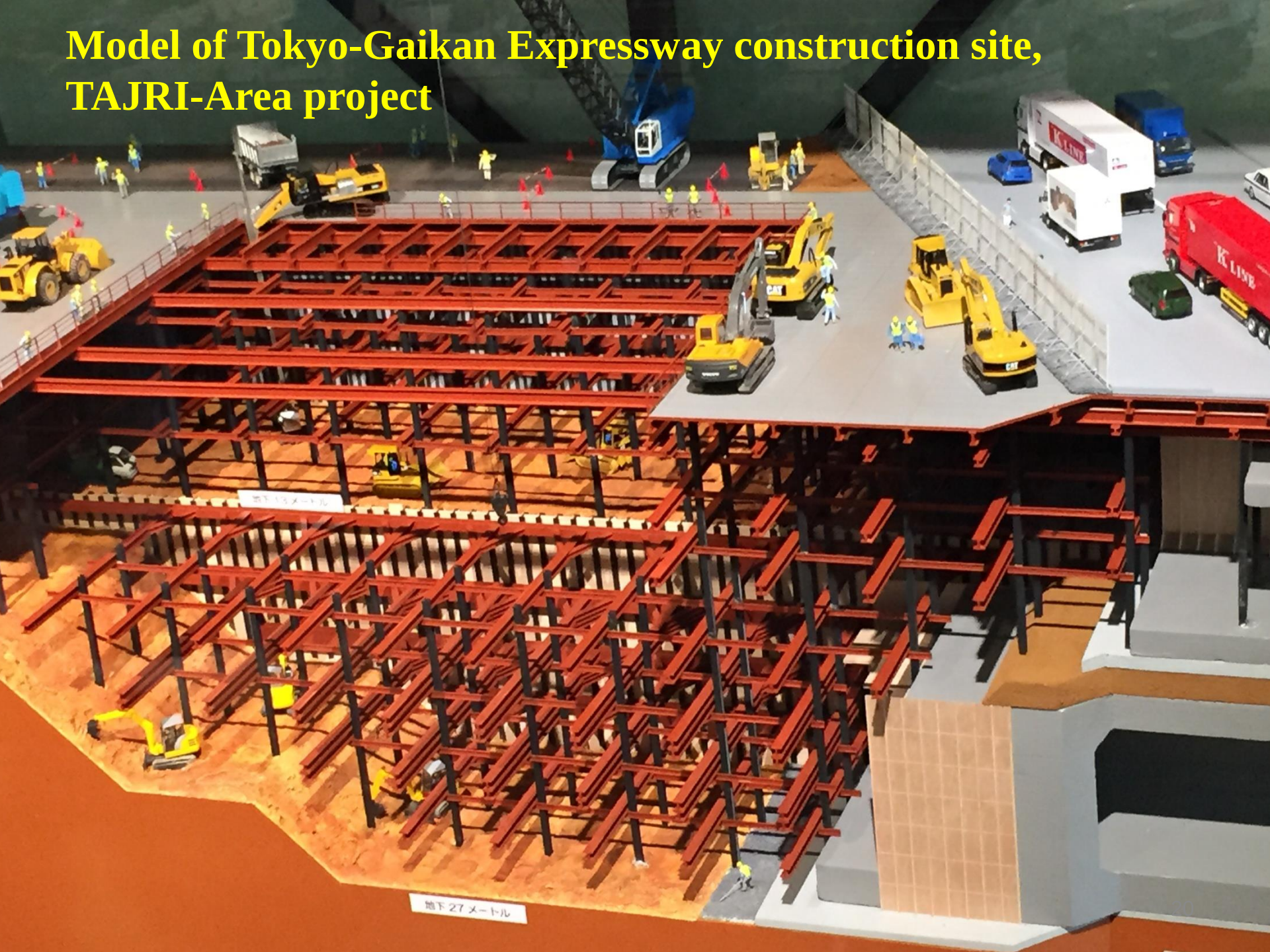
- The junction is made from many ramps that have different height and structure that are well constructed
- There are three construction methods ;

(1) The Open cut method

(2) The Shield tunneling method

(3)The Harmonica + Underpinning method

Model of Tokyo-Gaikan Expressway construction site, TAJRI-Area project



Model of Tokyo-Gaikan Expressway construction site, TAJRI-Area project

Second Day

(15.9.2015)

Kajima Technical Research Institute

Kajima Technical Research Institute

- There has two types of damper
- One damper is made with 6 rubber layers and steel plate used not only earthquake but also vibration, another type of damper is made with many steel plates layer and it can resist only for earthquake.
- Wind tunnel test
- Fire testing room (fire resistance timber structure)
- Artificial garden on the roof
- Large size wave basin in ocean and hydraulic laboratory
- That investigations were caused by earthquake, tsunamis, fires, storms and floods.

Meiji Jingu Shrine

Meiji Jingu Shrine

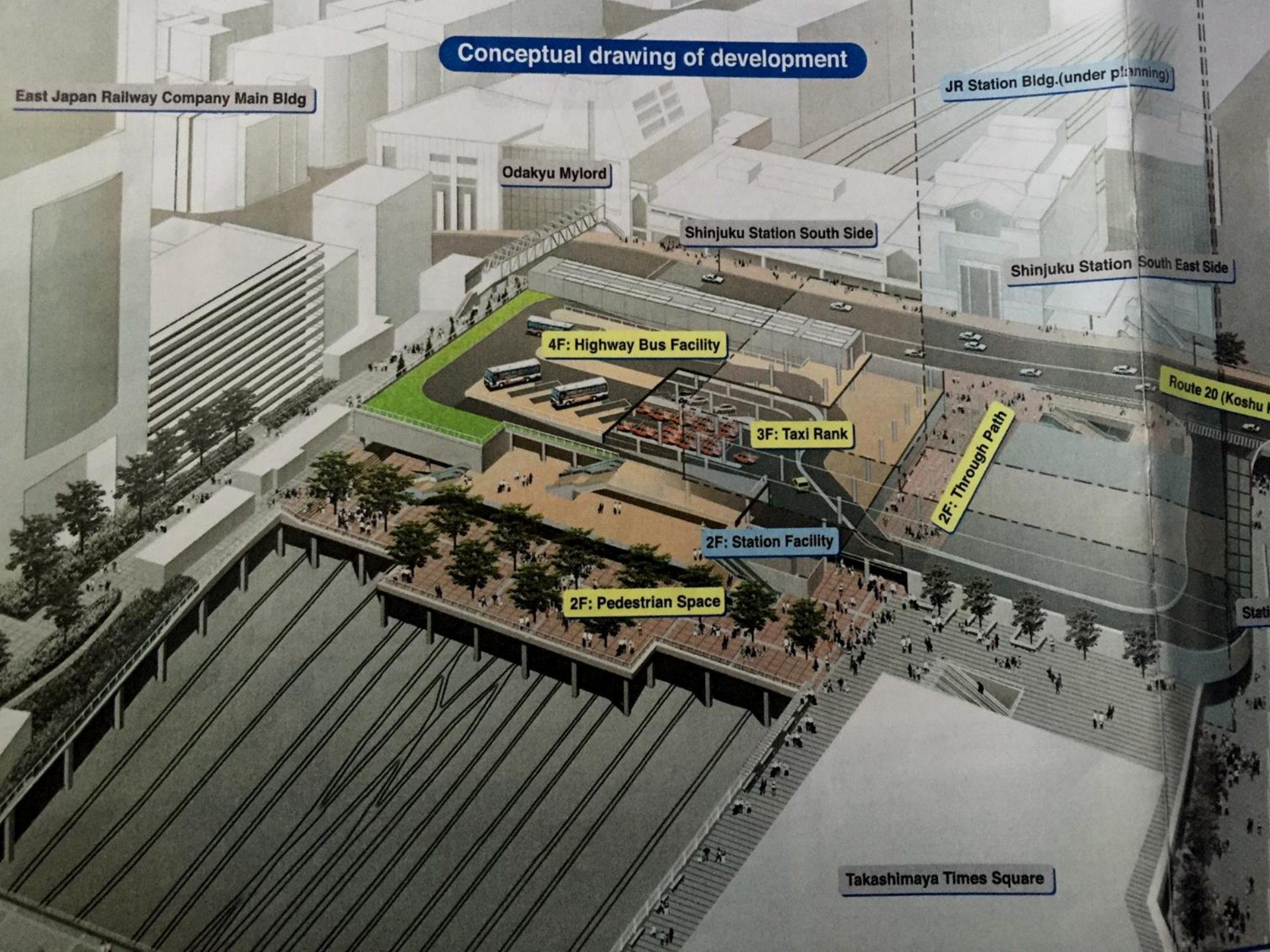
Shinjuku Station

Shinjuku Station

- Shinjuku Station is the nation’s largest-class terminal station, using 3.2 million passengers per day.
- That construction includes road, building, railway, highway and over bridges.
- In Shinjuku station, nearly 60,000 vehicles pass along Koshu Kaido Ave.
- The Shinjuku over bridge provide three lanes on each side, but one of them is essentially a parking lane for taxis to pick up passengers, as well as other parked vehicles
- After excluding taxis, as many as 200 ordinary vehicles parked on the curbside on an average weekday, and this number triples to 600 on national holidays.
- This congestion is so serve, hardly two lanes can keep open for through traffic.

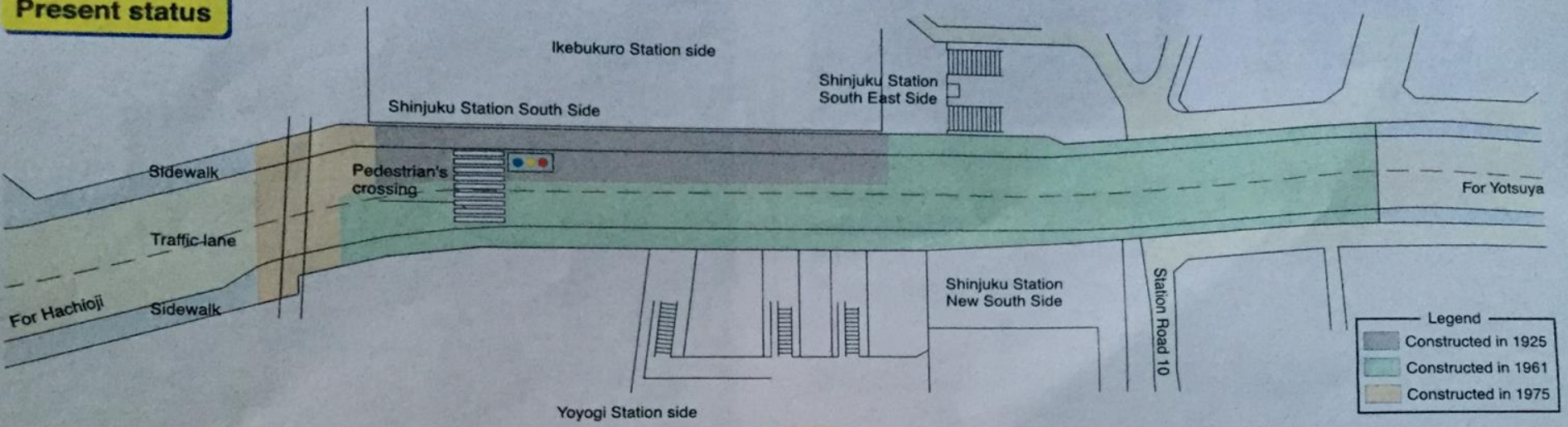
Shinjuku Station

- Construction starts in Feb. 2000
- Shinjuku JR building (tentative name)
- Shinjuku over bridge
- Upon the construction starts, service commencement within about ten years is target.

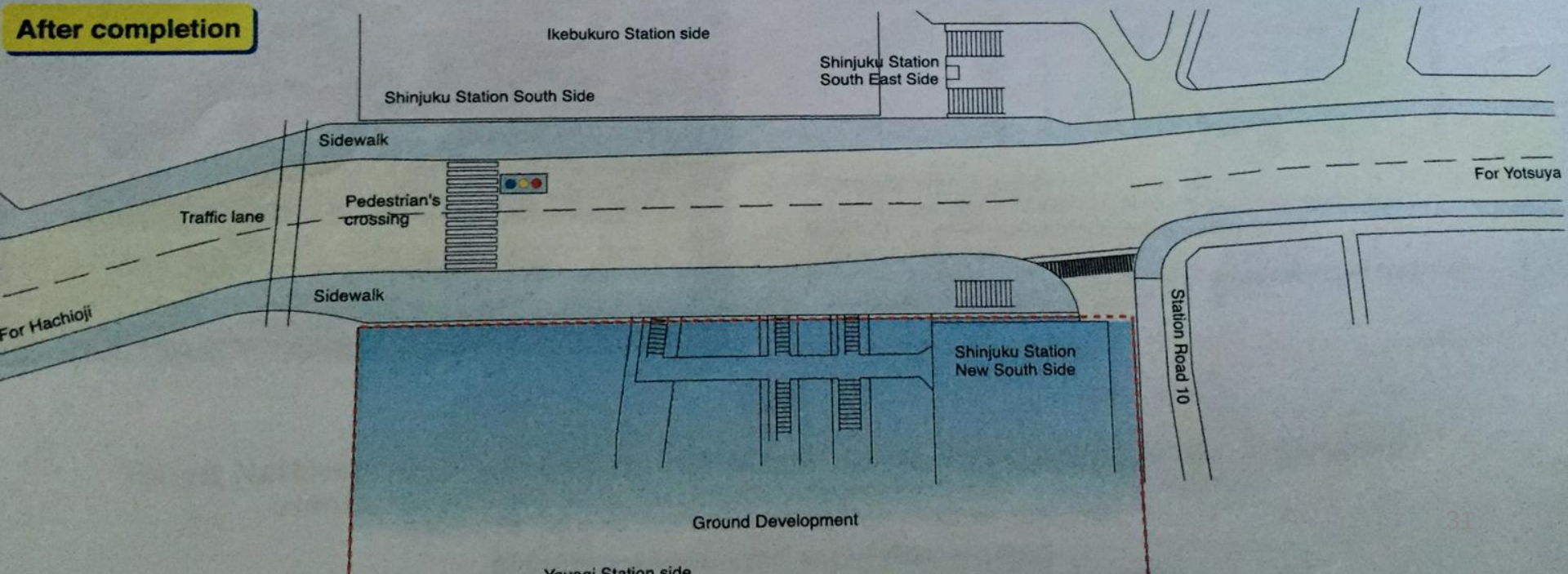

Conceptual drawing of development
East Japan Railway Company Main Bldg
Odakyu Mylord
JR Station Bldg.(under planning)
Shinjuku Station South Side
Shinjuku Station South East Side
4F: Highway Bus Facility
3F: Taxi Rank
2F: Through Path
Route 20 (Koshu
2F: Station Facility
2F: Pedestrian Space
Takashimaya Times Square

Ground plan

Present status

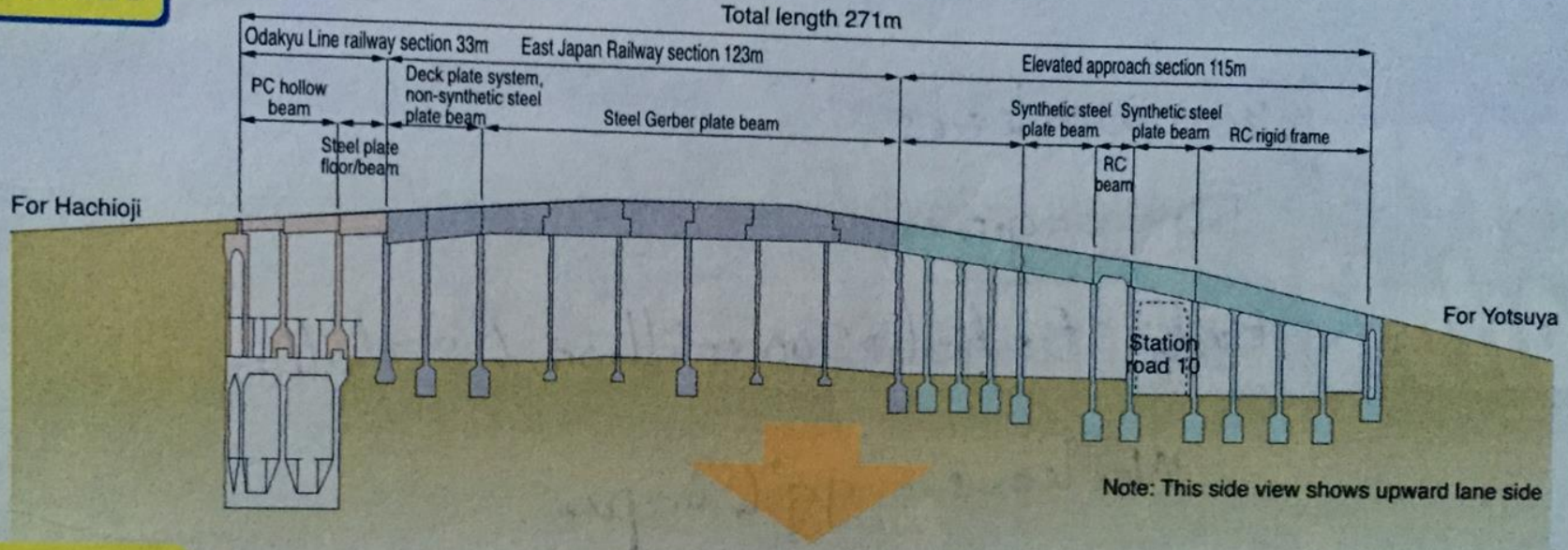


After completion



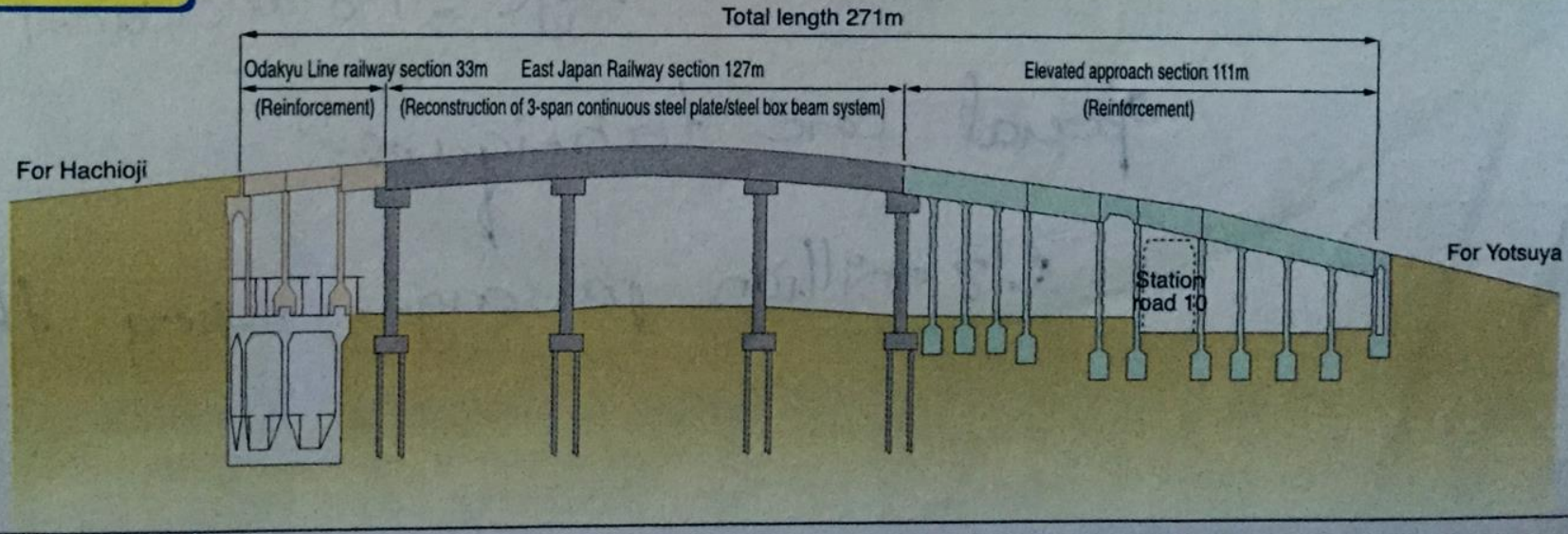
Side view

Present status



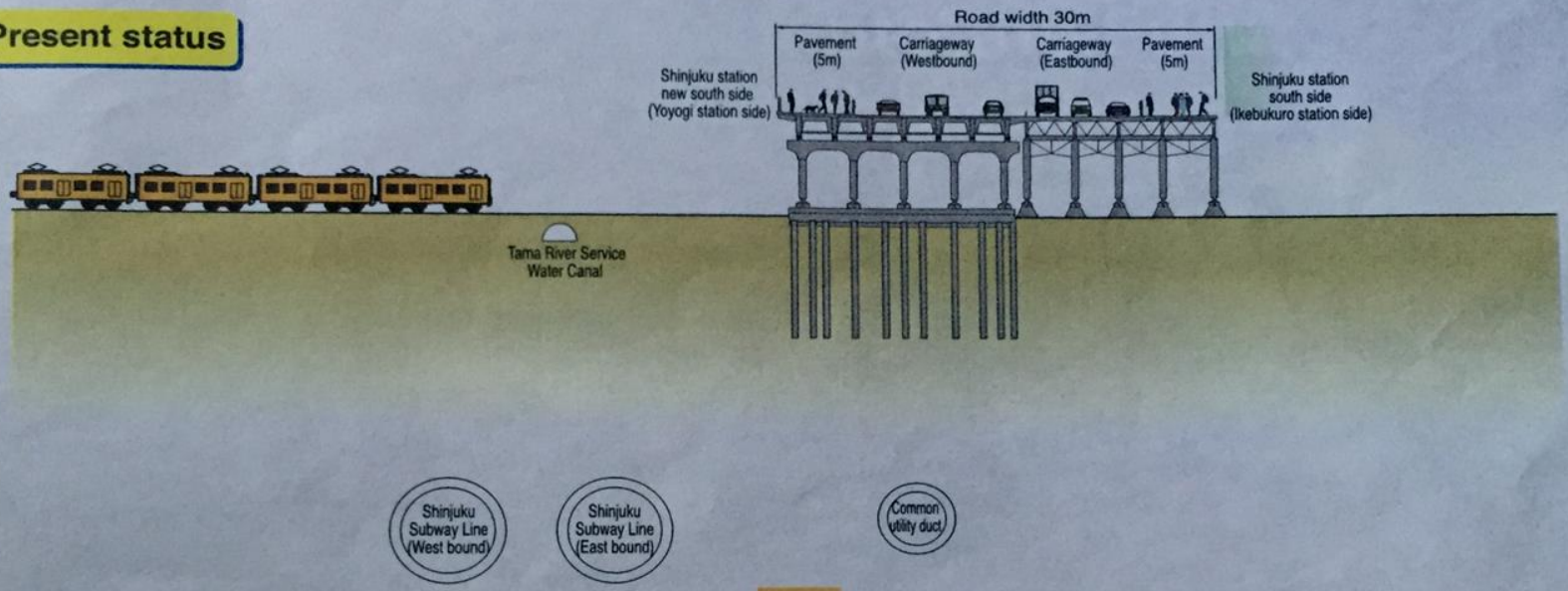
Note: This side view shows upward lane side

After completion

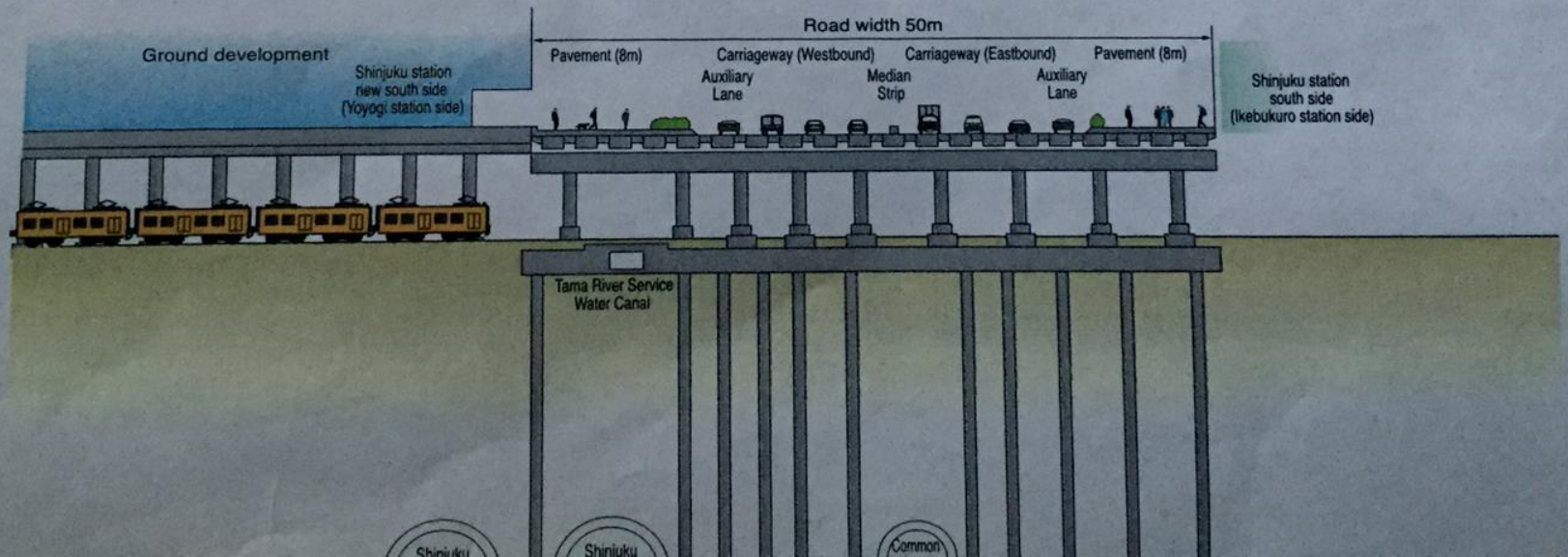


Standard cross section

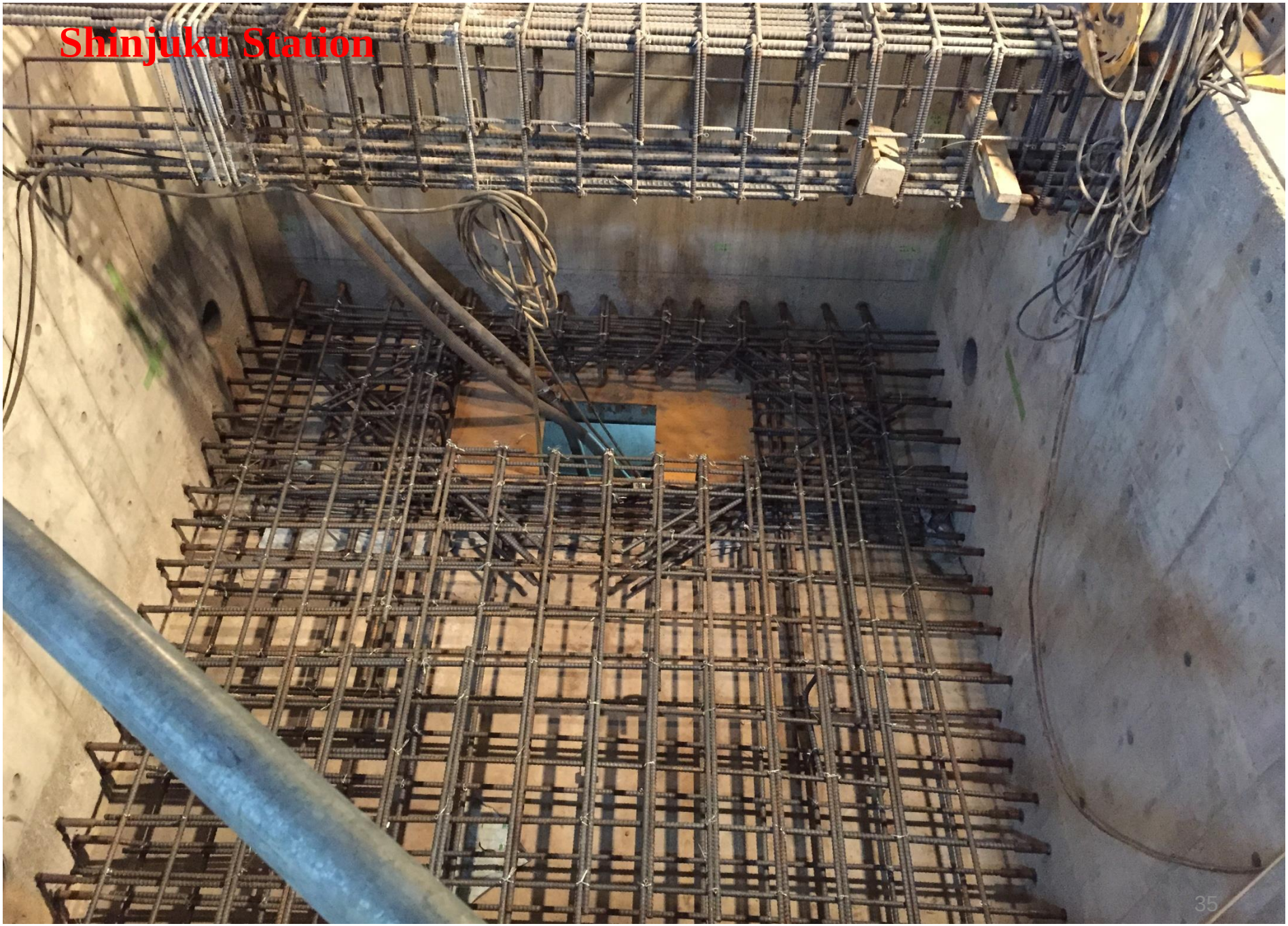
Present status



After completion



Shinjuku Station


Shinjuku Station

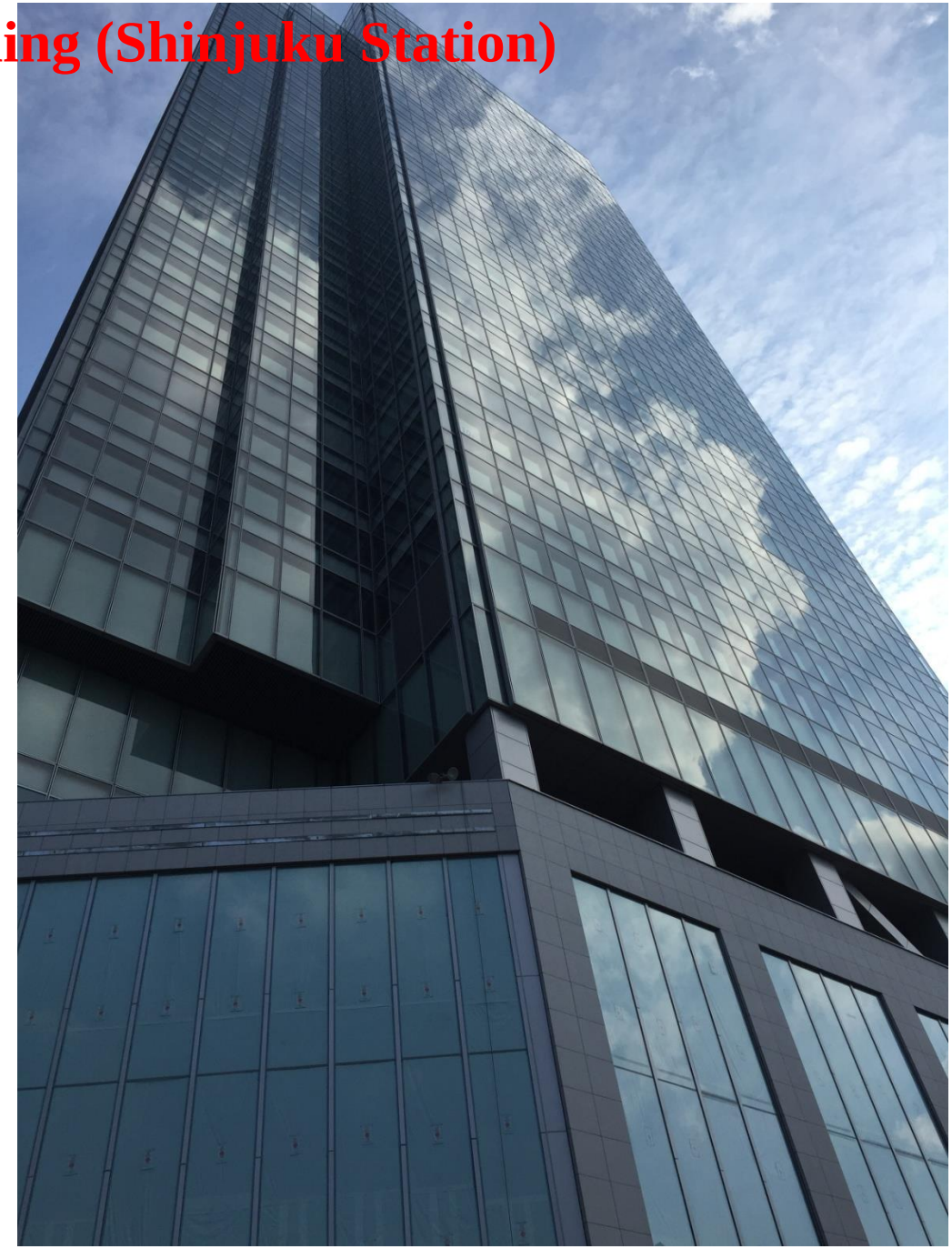

Shinjuku Station


Shinjuku Station

Shinjuku Station

Office Building (Shinjuku Station)

Office Building (Shinjuku Station)



At Site Office of Shinjuku Station Project

Third Day

(16.9.2015)

International Summer Symposium

- JSCE International Summer Symposium brings together young civil engineers from over 20 countries every year. Over 100 papers are presented annually.
- The main objectives of the Symposium are to provide a platform for young engineers to examine technological advances and issues, to share their ideas and research projects, and to encourage them to find research partners and teams across languages and distance.
- It is an excellent opportunity for young civil engineers to discuss their research projects, to acquire new perspectives and to network with their peers.

Presentation at 17th International Summer Symposium

Presentation at 17th International Summer Symposium

Short Presentation at Young Engineer Workshop

With JSCE members and Young Engineers who come from different countries

Reception at Okayama Castle

Fourth Day

(17.9.2015)

Seto-Ohashi Bridge

Seto-Ohashi Bridges

There are 10 steps of that bridge construction. They are;
(1) underwater blasting
(2) underwater excavation
(3) setting of caissons
(4) casting the underwater concrete
(5) casting the concrete in air
(6) erection of tower
(7) cable erection
(8) girder erection for the suspension bridges
(9) girder erection for the cable-stayed and truss
(10) finishing operations

Seto-Ohashi Bridges

Seto-Ohashi Bridges

•The central route, Seto-Chuo Epressway & JR Seto-Ohashi Line is for both highway and railway are about 39 kilometers and 32 kilometer respectively.

• This route consists of six long span bridges (Shimotsui-Seto Bridge, Hitsuishijima Bridge, Iwakurojima Bridge, Yoshima bridge, Kita Bisan-Seto Bridge, and Minami Bisan-Seto Bridge)

•The upper and lower decks of the stiffening girder are for highway traffic and railway.

•These six long-span birdges are called Seto-Ohashi Bridges

Seto-Ohashi Bridges

Seto-Ohashi Bridges


Mizushima Port Bridge

Mizushima Port Bridge

Mizushima Port Bridge

- Bridge type - 6 span composite box girder bridge
- Bridge length - 417m (on the center line)
- Span length – 56m+4@72m+71m
- Effective width – vehicle lane 8m+ sidewalk 2.5m
- Road is infrastructure project which aims to strength its logistics functions connection between the production base in Mizushima area and the physical distribution base in Tamashima area

Fifth Day

(19.9.2015)

Tokyo Tower

- Open in 1958
- Height of tower is 333m self-supporting tower.
- The Tokyo Tower is taller than the 320m Eiffel Tower in Paris, making a major landmark in Japan.
- Weight 4000 tons, much lighter than the Eiffel Tower, this is a strong, lightweight steel tower.
- Main observatory level is 150m and the special observatory level is 250m

At Tokyo Tower and Asakusa Temple

Tokyo Tower (Lookdown Window)

Asakusa Temple

At Asakusa Temple

Night View of Odaiba

Rainbow Bridge and Odaiba Statue of Liberty


Thanks for Your Attention