

The Project for Promotion of Nepal National Building Code Compliance for Safer Building Construction (NBCC)

Newsletter Volume-5, May 2024

[Project Introduction]

In Nepal, there are Building Codes and By-Laws. If you build a house in compliance with them, the house will be earthquake-resistant. When you want to build a house, you have to submit drawings and other necessary documents to the municipality and get a building permit. The municipality carefully checks whether the drawings comply with the Building Codes and By-Laws or not. Therefore, if you build a house according to the approved drawings, your house meets the Building Codes and By-Laws which makes earthquake-resistant house.

However, we can see houses are constructed without following the approved drawings while some building owners build their houses without getting a building permit from the municipality. Buildings that are not constructed as per the approved design & drawings can be more damaged during an earthquake and may endanger the neighbors' houses.

To improve this situation, Ministry of Urban Development (MoUD) started the NBCC Project with the support of JICA (Organization of the Japanese government). The NBCC Project aims to increase the construction of earthquake-resistant houses by improving the procedure for applying for construction permits to municipalities

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[1. Outline of the Training in Japan]

In the NBCC Project, training was conducted 2 times for the officers of the central government and local government in Japan related to the Project in order to enhance their knowledge of building construction and bring their experience to work for the Project. The training detail is as follows:

Major Goal

Through the building regulation system, Japan's efforts in technical training, and observation of building construction sites, etc., the participants will consider measures to address the challenges Nepal faces regarding legal compliance and building quality management.

Sub Goals

1. To experience the building confirmation operations (organization, number of staff, contents of operations, etc.) for building applications by local governments and third-party organizations.
2. To experience and understand the scale and content of research on earthquake resistance at research facilities of various sectors (national government, third-party organizations, and private general contractors).
3. To experience material management methods, construction methods, inspection methods, and reporting methods to ensure seismic performance.
4. To experience the technology, scale, and quality control system related to improving earthquake resistance performance by touring buildings and exhibition facilities that introduce the latest seismic isolation technology.

Duration

1st Training: 22nd July, 2022 – 6th August, 2022

2nd Training: 21st January, 2024 – 3rd February, 2024

Trainees

MoUD, DUDBC, Municipal Officers from Lalitpur Metropolitan City, Tokha Municipality, Tarakeshwor Municipality, Dakshinkali Municipality, Mahalaxmi Municipality, Suryabinayak Municipality and Bagmati Rural Municipality.

Main Trainers

Ministry of Land, Infrastructure, Transportation and Tourism (MLIT), Tokyo Metropolitan City, Yokohama City, designated certification / inspection organization, private architecture / construction companies, private rubber company, ready-mix concrete plant, rebar processing plant, etc.



Figure 1: Lecture at MLIT



Figure 2: Site Visit to Rebar Processing Plant

[2. Building Confirmation and Inspections in Japan]

In the training programs, there were lectures on building confirmation and inspection from Tokyo, the capital of Japan, and Yokohama, the second largest city in Japan, few of those lectures were introduced below.

In Nepal, while the mainstream structure of new buildings after the 2015 Earthquake has shifted from masonry construction to reinforced concrete structure, many constructions were different from building design drawings without compliance of NBC/By-Laws especially in terms of beam column joint, concrete mix ratio and concrete test piece sampling.

Japan has Building Standards Act (BSA), which has General Provisions & Building Codes, and the compliance rate of it can be seen as high. For example, final inspections rate has been kept around 95% more than a decade in Japan, and the number of buildings which violate the BSA was 88 in 2022 in Yokohama City though the city had approximately 890,000 buildings.

However, this does not mean that the compliance rate has been kept high ever since the BSA was established. In figure 3 black line shows the trends in final inspection rate in Japan, and it says that the final inspection rate was 38% in 1998. There are many factors that may have contributed to the improvement in this rate, one of which is the efforts of Government of Japan and Local Governments.

Before 1998, Building confirmation/inspections could be implemented by only building officials placed in local governments (see blue line in figure 3). After that the Japanese Government approved designated certification/inspection bodies which are private organizations to do such things instead (see red line in figure 3).

In addition, the following activities conducted by Tokyo Metropolitan City and Yokohama City have also contributed to raise the compliance rate.

- Requesting a financial institute to use an inspection certificate as a condition for finance loan.
- Implementing patrols at construction sites.
- Sending inspection information before the scheduled interim inspections.

- Issuing the interim inspection certificate with a sticker of it and instructing to attach it to the signboard obliged to be installed at the construction site. (Fig. 4)
- Conducting on-site inspections, warnings to stop construction when illegal building construction or illegal land development is discovered.

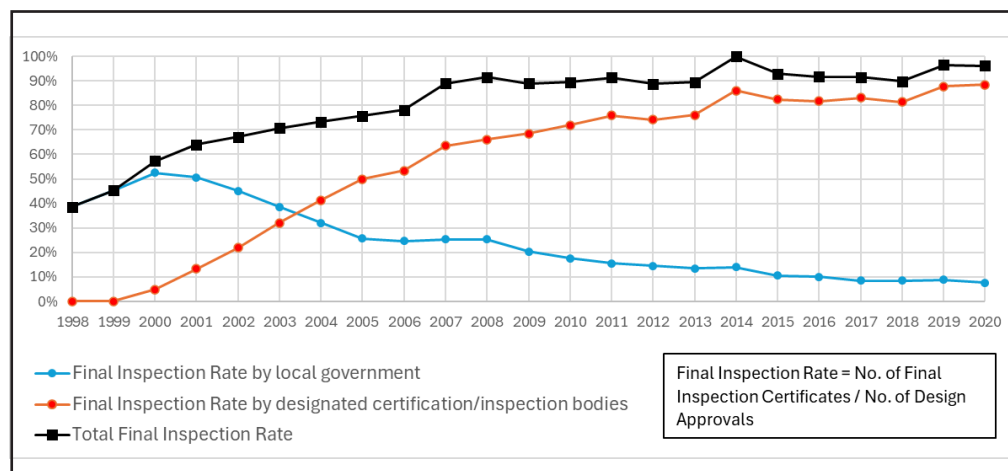


Figure 3: Trends in Final Inspection Rate



Figure 4: Signboard of Confirmation Certificate at Construction Sites & Sticker of Final Inspection Certificate

[3. Inspections at Construction Sites in Japan]

In the 2nd training, we also went to 2 construction sites, Fukagawa Gatharia, which is a new RC building and Toyosu 4-2 Urban Development Plan B Wing, which is a new Steel building in order to know how to ensure the quality of the new buildings, to know construction works, etc.

The main inspections and its contents explained by the contractors are described below.

<RC Buildings>

- Bar Acceptance Inspection

This inspection verifies that the specifications of the rebar materials are in accordance with the design specifications. The contractors check the steel inspection certificate, which includes the name of the purchaser, quantity, mass, chemical composition, tensile test values, and other specifications and manufacturing performance values, to confirm that the quality of the delivered rebar materials meets the standard.

- Bar Arrangement Inspection

This inspection checks whether the rebar is correctly placed, whether the number of rebars is correct, whether there are any misalignments, and so on. Using a measuring tape and rebar marker, the assembled rebar is checked to ensure that it matches the drawings.

- Concrete Acceptance Inspection

In Japan, concrete is made at a concrete manufacture plant and transported to construction sites by mixer trucks. Concrete delivered to the construction site is inspected for slump, air content, strength, etc. to ensure proper quality before being used.

<Steel Buildings>

- Bolt Tightening Inspection

This inspection checks that the bolts used to assemble the steel frame are properly tightened. The rotation angle of the nuts and any forgotten tightening are reviewed.

- Groove Inspection

This inspection checks that the grooves are correct before welding and confirms that the welding work can be performed to meet the required quality.

[4. Recent Project Events]

- 2 days workshop on e-BPS, roles and responsibilities of municipal officers as per updated BCWP was held at Tarkeshwor Municipality from 28th February to 29th February, 2024.
- 4th Joint co-ordination committee (JCC) meeting was held on 3rd April, 2024.
- Level up training for master trainers on design checking and inspection was held from 9th May to 10th May 2024 at DUDBC.
- 2 days workshop on e-BPS, roles and responsibilities of designer and supervision consultant as per updated BCWP was held at Tarkeshwor Municipality from 13th May to 14th May 2024.

[5. Introduction of the Project Members]

In this newsletter, we introduce some members and staff of the project. Other members and staff will be introduced in the next volumes.

Mr. Debendra Dev KHANAL

(Engineer, Building Code Section, DUDBC)

He is an engineer in the Building Code and By-laws Section of DUDBC.



The Building Code will be fully implemented only if the structure is constructed in the field under the supervision of an engineer in accordance with the drawing prepared in compliance with the National Building Code.



Beautiful scenery and strong building. e-BPS supports long-lasting fixed assets in Nepal.

Mr. Yusuke TANAKA

He is responsible for building information management.

Mr. Seiichiro FUKUSHIMA

He is responsible for building structure and design checking.



Building safer structures is the first step to realize resilient city.



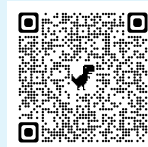
Securing building permits is made easy with e-BPS, ensuring transparency and convenience for building owners.

Ms. Preksa NEWA

She is responsible for system development and implementation of e-BPS system.

Please visit the Project Website

You can access to the page after the registration.
<https://sites.google.com/view/nbcctraining/home>



Registration



Website



Implemented by Ministry of Urban Development
Department of Urban Development and Building Construction
Technical cooperation Japan International Cooperation Agency
<https://dudbc.gov.np/en/detail/domain-menu/1973?parent=1862>

