Day: 2

Session: 2.2

Construction And Supervision (Section 5)

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

JICA EXPERT TEAM

OBJECTIVES

Upon Completion of the session, the participants will be able to

- Know about roles and responsibilities of Supervision consultant, contractor/mason and municipality
- Know about 3 stages of interim site inspections i.e. 1st,
 2nd and 3rd interim site inspection
- Know about how to apply and receive the interim site inspection certificates

OBJECTIVES

Upon Completion of the session, the participants will be able to

- Know about final inspection and receiving the completion certificate
- Know about special cases of completion certificates

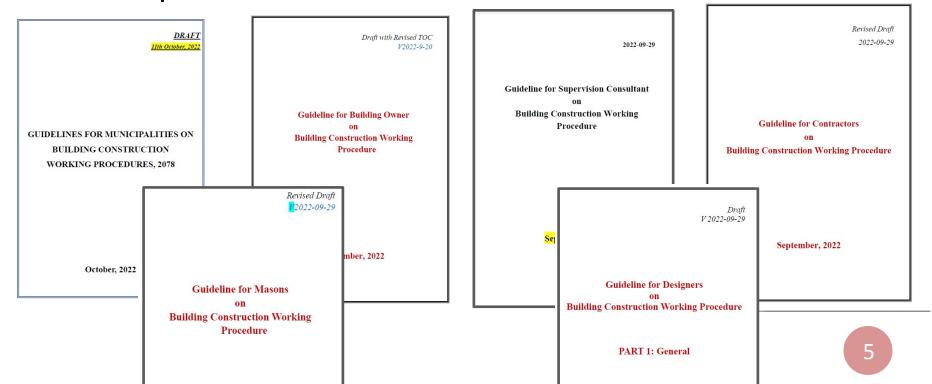
OBJECTIVES

Upon Completion of the session, the participants will be able to

- Know about provision of construction safety in the BCWP
- Know about the responsibility of construction safety for owners, contractors and supervision consultant

General Responsibility for Construction and Supervision

- Separate guideline have been published for the Masons, Contractors and Supervision Consultants.
 Such guidelines shall be considered as integral parts of this working procedure.
- Contains detailed responsibilities and procedure for construction and supervision of buildings in municipalities for each stakeholders



A) General Responsibility of Contractors

- Execute and complete the works and remedy any defects in accordance with the approved designs and drawings
- Full responsibility for the adequacy, stability and safety of all site operations and method of construction as per the approved designs & drawings.
- Prompt notice to the Supervisor, with a copy to the building owner, of any error, omission, fault or other defect in the design, which he discovers.
- Provide the record/photographs of the works to the Supervisor to prove that the building is constructed according to approved drawings.



B) Supervision Consultant's General Responsibilities

 Supervise the building works so that the works are carried out in accordance with the approved designs and drawings

 Give prompt notice to the Contractor, with a copy to the building owner, of any error, omission, fault or other defect in the works, which he discovers



B) Supervision Consultants' General Responsibilities

- Keep the essential record of the supervision works to prove that his supervision is compliant to the design documents
- In no case shall the Supervision Consultant instruct or allow the Building Owner or the Masons or the Contractor to carry out construction against the provisions of the prevailing laws & the building bye-laws

and the building code

 Terminate the supervision contract in case the Building Owner issues instructions to him/her against the prevailing laws, bye-laws and the building code

C) Municipality's General Obligations

- Conduct inspection whether any person, body or governmental body has built a building in consonance with the standards prescribed by the building code or not
- If the building is not in consonance with the standards prescribed by the building bye-laws and/or the building code, it may give necessary directive to the building owner with a copy each to the Contractor and the Supervision Consultants, and it shall be the duty of the building owner to abide such a directive
- Recommend to the NEC for taking actions as per prevailing laws against any consultant who is engaged in design or supervision of buildings against the building byelaws and/or building code

a) Commencement of the Building Construction Works

- After receiving the temporary certificate the building owner can begin the construction of the superstructure part of the building
- In case of Category A and B buildings, the owner must use registered contractors whereas for Category C and D buildings the building owner can use registered masons

Minimum qualification of each stakeholders for the corresponding category of building

	Category A	Category B	Category C	Category D
Designer (Degree)	Bachelor	Bachelor	Bachelor	Diploma
Supervision Consultant (Degree)	Bachelor	Bachelor	Bachelor	Diploma
Contractor/ Mason	Registered Contractor	Registered Contractor	Registered Mason	Registered Mason

b) Supervision Report by the Registered Supervision Consultant

- Prepare supervision report based on the standard format for each stage of construction works
- Perform material tests like concrete tests and other based on the scale of the building

Types of material tests to be performed based on the scale of the building

Type of Building	Category A	Category B	Category C	Category D
Less than or equal to 17m or 10,000 sq.ft.	Compressive strength test	Compressive strength test	Compressive strength test	TBD
More than 17m or 10,000 sq.ft.	Test of all major materials			

b) Supervision Report by the Registered Supervision Consultant

Sample Supervision report for 1st interim site inspection

Submitted to: Mahalaxmi Municipality

Ver. 2022/04/26 Date: (2021/12/10)

Building Owner	Saru Nyashur	Building permit date:(2021/11/01)						
Building permit no	MHL05				Contact no.	2835320934	200	
Designer Consultant	Lite Architects and Engineers				Contact no.	8735096565		
Location	Mahalaxmi	City	Lalitpur	Ward	6	Town	Imadole	

Supervisor consultan Ar. Animesh R. Bajracharya		Registered No.			Contact no.	9841696502	
Address	KMC	City	Kathmandu	Ward	5	Town	Kalopul

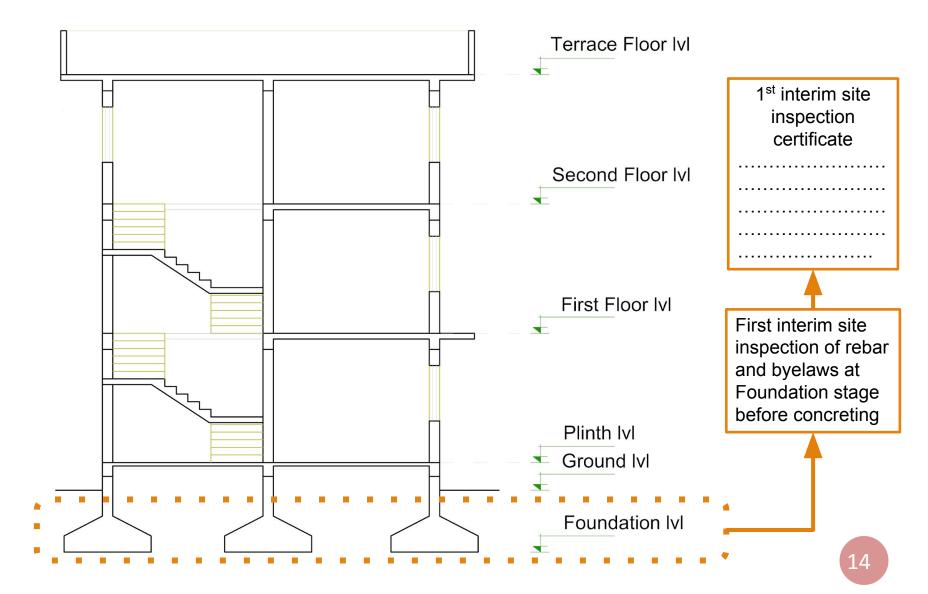
IV.	1st inte	erim site inspection items								
31	Layout details									
		There is no deviation on layout from approved design.				Α	B	С	Р	
		Number of columns	12	12		(A)	В	С	Р	
32	5	8 5	Foun	dation details					2	
	Type of founda	ation		6	1					
			c. Combin	ed with strap bea	m			-	*	
	Grid (1-A) or Foundation type which ever is applicable	Size of Foundation (LxB) (m)	1.6 x 1.6	1.62 x 1.62		Α	B	С	Р	
		Depth of Foundation (D)	1.68	1.2		Α	(B)	С	F	
		Reinforcement in Foundation mm @ c/c (eg. 12mm @ 150c/c)	12mm @ 150c/c	12mm @ 150c/c	III. C. F1		B		Р	
		Concrete cover (mm)	40	40	III. C. F1	Α	(B)	С	Р	
		For beam		ox.						
	8	Size of strap beam (B x D) (m)	0.36 x 0.53	0.36 x 0.53	: :	Α	(B)	С	Р	
		Reinforcement in strap beam N-Dia (in mm)(T) + N-Dia (in mm)(B)	4-16mm (T) + 3-16mm (B)	4-16mm (T) + 3-16mm (B)	III. C. F1. a	Α	B	С	Р	
		eg. (3-12mm (T) + 3-12mm (B))		0					5	
		Stirrups dia. & spacing Dia (in mm) @ spacing in mm c/c	8mm @100mm c/c	8mm @125mm c/c	III. C. F1. a	Α	B	С	F	

Sample of supervision report

c) Interim inspection by Municipality

- i. First interim inspection by Municipality
 - Prepare the rebar and formworks up to the foundation
 - Supervision Consultant will prepare detailed reports of the works with appropriate photographs in standard formats
- Request for interim inspection and schedule appropriate date of inspection using e-BPS by the supervision Consultant
- Municipality inspects the reinforcement works as well as building bye-laws and provides the first interim site inspection certificate so that the work can be continued
- Stop the construction works and order for correction if any incompliancy is found

First interim inspection by Municipality



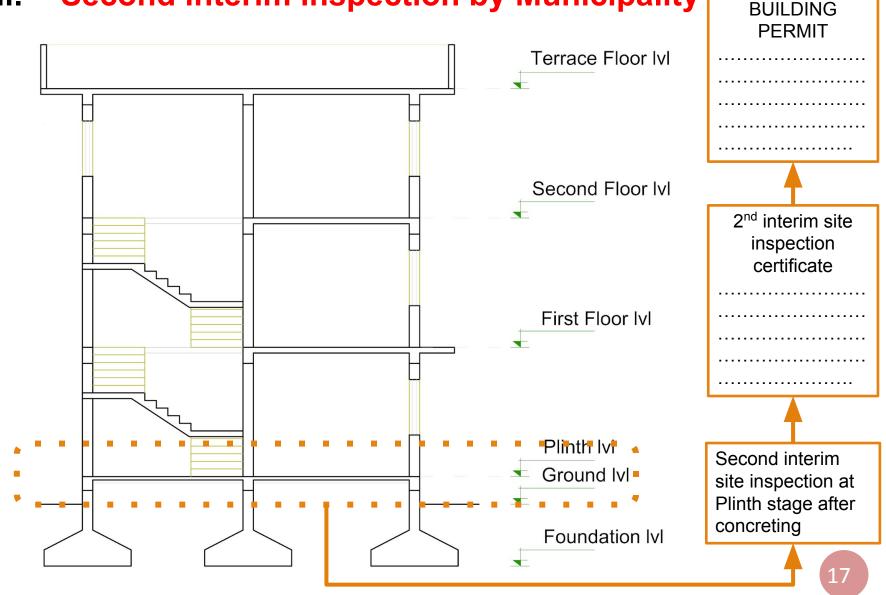
ii. Second interim inspection by Municipality

- Complete the construction works up to plinth level
- Supervision Consultant will prepare detailed reports of the works with appropriate photographs in standard formats and appropriate material test results like compressive tests of concrete for previously carried out foundation stages
- Request for interim inspection and schedule appropriate date of inspection using e-BPS by the Supervision Consultant

ii. Second interim inspection by Municipality

- Municipality inspects the construction work up to the plinth level for compliance with building bye-laws and building codes as per the approved drawings and provides the second interim site inspection certificate and the permanent building permit
- Stop the construction works and order for correction if any incompliancy is found

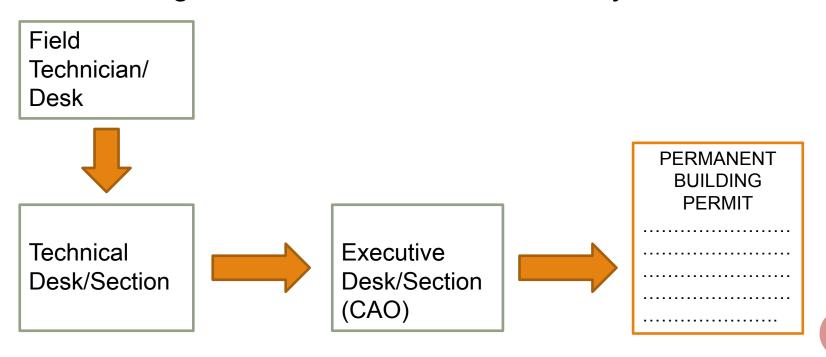
ii. Second interim inspection by Municipality



PERMANENT

d) Permission for the Construction of Superstructure

- Recommendation is received from the Technical Desk/ Section for the Permanent Building Permit
- CAO issues the Permanent Building Permit after confirming all the documents within 7 days



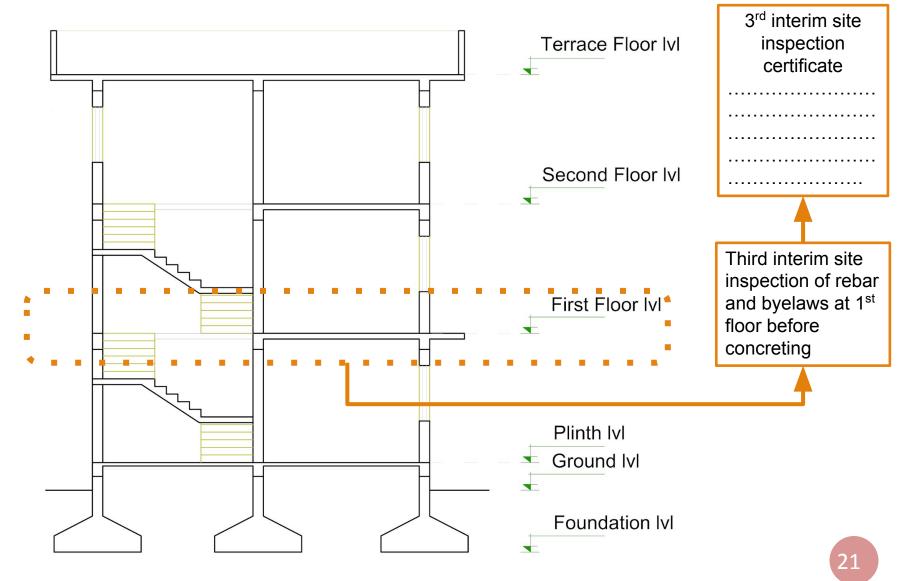
a) Third interim inspection by Municipality

- Prepare the rebar and formworks up to 1st floor level
- The supervision Consultant will prepare detailed reports of the works with appropriate photographs in standard formats and appropriate material test results like compressive tests of concrete for previous stages (columns/beams)
- Request for third interim inspection and schedule appropriate date of inspection using e-BPS by supervisor

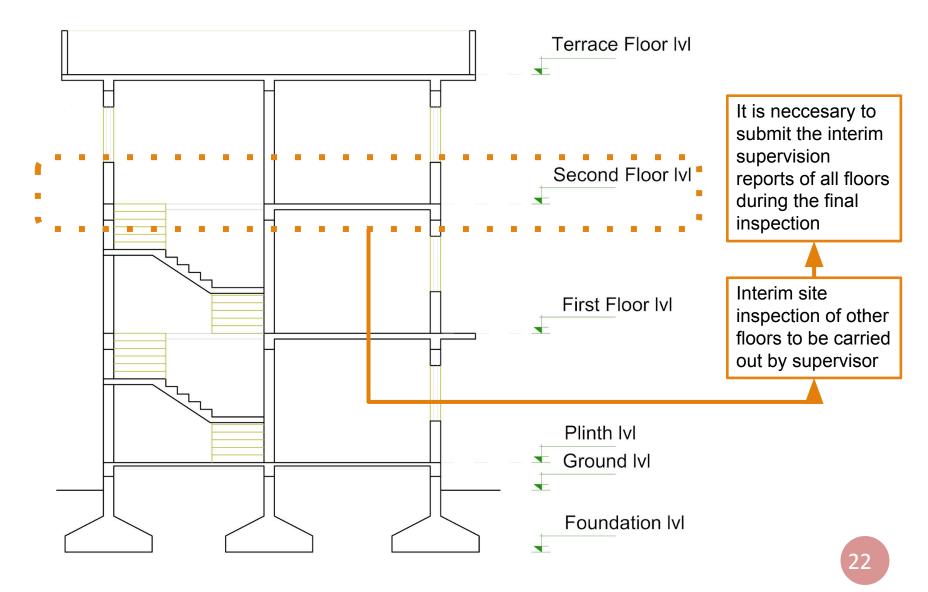
a) Third interim inspection by Municipality

- Municipality inspects the reinforcement works as well as building bye-laws and provides the 3rd interim site inspection certificate so that the work can be continued
- Stop the construction works and order for correction if any incompliancy is found

a) Third interim inspection by Municipality



Interim inspection by Municipality



a) Final inspection by Municipality

 The construction work of the building should be substantially completed including at least a one coat of paint on the inside and outside, construction of spetic tanks and soak pits and repair of surrounding infrastructures that were affected

 Supervisor will prepare detail reports of the works with appropriate photographs in standard formats of all pervious floors and appropriate material test results like compressive tests of concrete for previous stages

a) Final inspection by Municipality

- The report will also include a copy of 1st, 2nd and 3rd interim inspection certificates.
- The Final inspection report should be filled online unlike the previous inspections
- Request for final inspection and schedule appropriate date of inspection using e-BPS by supervisor

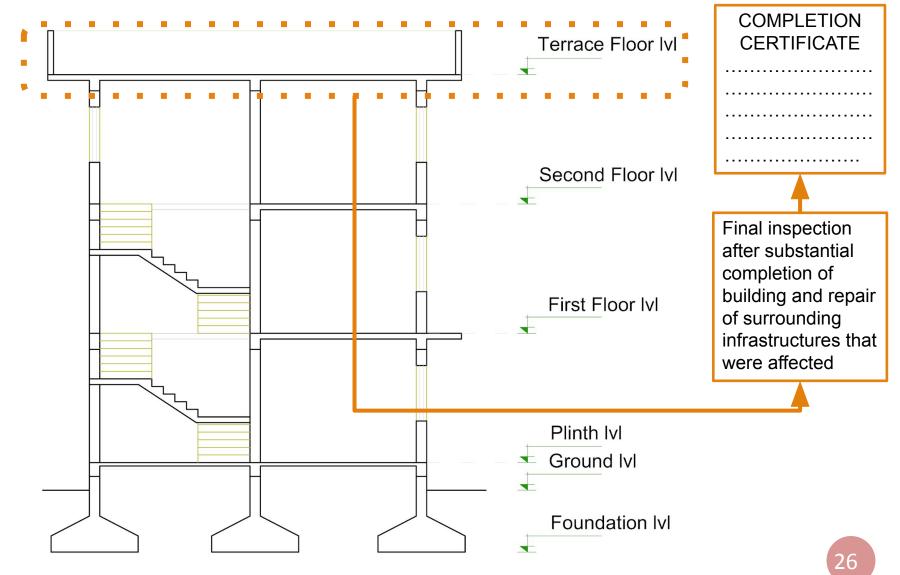
a) Final inspection by Municipality

 Municipality inspects the completed building as well as surrounding infrastructures for any remaining works and provides the completion certificate if all the works are completed and as per approved drawings

 Stop the construction works and order for correction if any incompliancy is found



a) Final inspection by Municipality



b) Special Case of Completion Certificate

i. Partial Completion Certificate: If the building is partially completed as per approved drawings and the building owner does not wish to carry out the construction of the upper storeys of the building or when the building owner wants to withhold the construction of upper storeys for some time due to some unfavourable conditions, the owner can apply for Partial Completion Certificate

b) Special Case of Completion Certificate

ii. Refusal of Recommendation to the Utility Agencies: Unless the building owner gets either the building construction completion certificate or the building construction partial completion certificate, the municipality shall not issue a recommendation for electricity supply connection to the NEA, for water supply connection to the water supply authority, for the selling of the building and land properties and for keeping the land and building mortgage in a bank or financial institutions.

b) Special Case of Completion Certificate

iii. Extension of Time Period for the Permit to Construct the Building:

- The construction period for the completion of the building is 2 years after receiving the permanent building permit.
- If the work is not completed within this time then the owner shall apply for an extension for another 2 years by paying 5% fee before the expiry of the original building construction period.
- If the work is not completed within the extended period as well, then the building permit will be invalid and the owner must reapply for the permit from the beginning.

- b) Special Case of Completion Certificate
- Amendments to the Submitted Designs & iv. **Drawings**: In case the building owner wants to carry out some changes in the submitted designs, drawings & documents during the approval process, the building owner shall re-submit the revised designs, drawings and other documents for approval. And after getting approval for the building permit, the building owner shall re-submit the revised designs, drawings and other documents for approval with revision fee as per the financial regulation of the Municipality.

- b) Special Case of Completion Certificate
- v. Building not complying to the Submitted Designs & Drawings: If the building does not follow the approved drawing but is within the parameters of building bye laws and building codes then the owner shall resubmitt the design drawings as per the actual construction along with a justification as to why the actual construction deviated from the approved drawings in the first place

- b) Special Case of Completion Certificate
- vi. Provisions for Additions of Storeys to the Approved Building: The building owner is required to obtain fresh building permit for the addition of storeys to the existing building provided it is within the parameters of building byelaws and codes.
 - Such addition of storey can be for previous partially completed building and other building which prove that they are structurally sound to carry the additional load
 - A retroffitting design can also be proposed to support the structural integrity due to additional load

- b) Special Case of Completion Certificate
- vii. Provisions for Additions of Storeys to the Existing Buildings Constructed before the Enactment of Building Bye-laws/ Building Codes: The building owner can apply for the addition of storeys to the existing building provided an experienced engineer deems that it is possible for addition of floors with or without retroffiting within the parameters of building byelaws and codes.

b) Special Case of Completion Certificate

viii. Permission for Changing Occupancy Type: The building owner can apply for change of occupancy type of the building before, during or after the completion of the building provided that a detail technical report should be submitted by a qualified engineer analyzing the design, seismic vulnerability, field report, building byelaws and building codes

b) Special Case of Completion Certificate

ix. Permit for the Transfer of Building Permit Owner:

- If the building owner has been changed due to selling, due to the sale or transfer of the property rights due to some reason, such as sale, mortgage, sub-division to the legal owners, etc and the new owner requires the building permit to be issued in the name of new legal owner, then the municipality shall change the name of the building owner in whose name the original building permit was issued to the name of the new legal owner of the building and land plot.
- All the supporting documents shall be properly verified by the municipality.

b) Special Case of Completion Certificate

x. Cancellation of the Building Permit:

- The building permit issued by the municipality shall be automatically cancelled in case the building is constructed not following the approved designs and drawings and in non-conformance to the building bye-laws and building code.
- A list of such buildings is sent to the Mayor through the CAO for further action based on whether or not it follows the building By-Laws and building codes
- Heavy fine will be imposed for those building which does not follow the By-Laws and codes including partial demolition

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Building Completion Certificate

- b) Special Case of Completion Certificate
- xi. Application Fee for special cases: The fee for amendments or changes to the designs and drawings will be as per the provisions stipulated by the financial act of the municipality

a) Construction Safety of the Workers, Supervisors & Contractors:

 The safety of construction site is the responsibility of the Building Owner or the Contractor based on contract conditions.

- All safety gears, PPE, first aid kit shall be readily available on site
- The checklist of construction safety is maintained by the supervision consultant in the supervision report



a) Construction Safety of the Workers, Supervisors & Contractors:

II.	Construct	ion safety information							
11	Materials store	They are segregated as to kind, size, and length such that they are safe against falling.	,	Properly segregated		A	ВС	Р	
		Piles higher than one meter is stepped properly.		Properly stepped	(4)	0	в с	P	
12	etc,	Stored in conformity with the relevant regulations.		Properly stored conforming to regulations		A	ВС	Р	
13	Explosives such as detonators, gun powder, gelatins, etc.,	Stored in conformity with current regulations for the storage and handling of explosives.		Not used in site yet		A	ВС		
14	All glass	Sored, cut to size and made ready in a separate, dry and covered yard. The floor of the glass store shall be covered with gunny bags to prevent workers slipping on a smooth floor.		Not used in site yet		Α	ВС		
15	Dumping the materials	Before it from mechanical equipment (eg, vehicle, crane etc.),the operator/driver shall ensure the safety of persons and properties.		Safety of persons and properties confirmed		A	в с	P	
	Passageway	Over one meter wide.		Confrimed	Ď	Α	ВС	Р	
16		Not be obstructed.		Not obstructed		A	в с	Р	
17	Near a public place	Fence and suitable warning signs are provided.		Signs have been provided		A	ВС	Р	
	Fire Fighting	Adequate fire Fighting equipment is provided.		Confrimed		(A)	ВС	Р	
18		The enough number of fire escapes is providedMinimum of one fire escapeOver four storeys building has two fire escapesAn additional fire escape per 500 square meters of plinth area.		Not used in site yet as it is just in foundation stage		Α	в с		
		An adequate number and type of fire extinguishers are placed.		Confrimed		A	ВС	P	
19	Safaty	Safety helmets(hard hats), goggles, mask, gloves, safety boots, safety belts, ropes and oxygen masks are provided, as		Confrimed	25	A	в с	Р	

Sample of construction safety checklist in Supervision report

b) Construction Safety against Deep Excavations and Earth Filling Works:

 For the excavation of the foundation, arrangements shall be made against the possibility of caving in of soil, rise in water table and settlement of adjoining areas and structures.

 For deeper excavations such as multiple level basements or excavations in very weak soil, provisions of sheet pile walls, concrete protection piles or other geotechnical measures shall be made

b) Construction Safety against Deep Excavations and Earth Filling Works:

- The Building Owner shall use the technology of deep foundations such piles with full technical support of a geotechnical engineer so as to avoid detrimental effect to the adjoining property such as vibration during driving, soil upheave, caving in from sides, high water accumulation, etc
- It is strongly recommended to insure surrounding properties before starting the deep excavation works
- If any problem arises due to the excavation work, the building owner shall rectify such problem on its own cost

c) Construction Safety of Adjoining & Public Properties:

- In case there is any possibility of settlement or damage to the adjoining properties due to the excavation or construction activities carried out by the building owner, the building owner shall carry out insurance against safety of such structures prior to the commencement of the excavation work.
- The building owner shall take all measures for the protection of public properties such as public roads, electricity and telephone lines, sewer lines, cables, drains, etc due to the construction work



c) Construction Safety of Adjoining & Public Properties:

- In the event of any damage to such structures or properties, the building owner shall bear the cost to rectify the damages done and pay compensation to the owners of the respective private & public properties.
- The completion certificate shall be issued only after the maintenance of the public infrastructuress.





Day: 2

Session: 2.3

Action on Unethical Activities by the Consultants (Section 9)
Punishment to the Defaulters (Section 10)
Municipal Committees for the Guidance & Support for Bye-laws
& Building Code Implementation (Section 14)

The Project for

Promotion of Nepal National Building Code Compliance for Safer Building Construction

JICA EXPERT TEAM

OBJECTIVES

Upon Completion of the session, the participants will be able to

- Know about the action that the municipality takes towards designer and supervisor for unethical activities
- Know about the Punishment to the Defaulters i.e. building owners who fail to follow the BCWP
- Know about the formation and roles of the three
 Municipal Committees for the Guidance & Support for Bye-laws & Building Code Implementation

Action on Unethical Activities by Professionals

- a) Warning Letter at the First Occurrence of Unethical Activity:
 - At the first instance of notice of occurrence of unethical activity by the Designer such as the building design non-complying with the building bye-laws and/or the building code or by the Supervision Consultant such as the submission of Supervision Report not complying with the actual field condition or falsifying quality test reports, municipality shall issue a written warning letter to the Designer or the Supervision Consultant

First instance of unethical activity by Designer or Supervisor

WARNING LETTER!!!

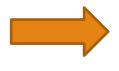
(Reminding not to repeat the offense)

Action on Unethical Activities by Professionals

b) Black-listing at the Second Occurrence of Unethical Activity:

 When the Designer or the Supervision Consultant is found to have done any unethical activity for the second time even after the issue of the warning letter, the municipality shall blacklist the Designer or the Supervision Consultant for a period of 1 year debarring the Designer or the Supervision Consultant from working in the municipality. Names will also be removed from the registered lists.

Second instance of unethical activity by Designer or Supervisor



BAN FOR 1 YEAR

(From consultant works in the municipality and removal of name from the registered list)

Action on Unethical Activities by Professionals

- c) Recommendation for Action from NEC at the Third Occurrence of Unethical Activity:
 - Municipality shall recommend to the Nepal Engineering Council for taking actions as per prevailing laws against any design consultant certifying any building design which has been submitted but not complying with the building byelaws and/or building code or against any supervision consultant falsifying the actual construction and/ or submitting false report on quality and/or details of actual construction in the field

Third instance of unethical activity by Designer or Supervisor

RECOMMEND ACTION BY NEC

- a) Investigation on Building Construction & Punishment to the Defaulters
 - The Chief Administrative Officer may depute a technician or a staff at any time to investigate whether a building already constructed or on-going construction in the municipality has been constructed after getting building permit from the municipality or not,
 - Or,
 - Whether such building complies with the building bye-laws and/or building codes or not and whether such construction has encroached on public land, roads, canals, temple, drains, sewers, courtyards, ponds, etc or not.

a) Investigation on Building Construction & Punishment to the Defaulters

- Investigating officer deputed shall submit the report along with a recommendation within a period of 15 (fifteen) days from the start of deputation date. Similarly, the Chief Admin. Officer shall submit such report to the Mayor within a period of 7 (seven) days after the date of submission by the technician or staff
- If the report submitted shows that the building is being constructed or has been constructed without getting building permit or in violation of the approved designs and drawings, the Mayor shall give order to immediately stop such construction. Furthermore, the Mayor shall give order to partly or completely demolish the building.

a) Investigation on Building Construction & Punishment to the Defaulters

- If the building has been constructed by altering the approved designs & drawings but without getting such alterations approved from the municipality prior to the construction work, municipality shall impose a fine and issue order to partly or completely demolish the building
- Before taking actions against the defaulters mentioned above, the Mayor shall give sufficient opportunity to the defaulters to submit its clarifications and defense on the construction carried out

b) Appeal against the Action by the Municipality

- If the owner is not satisfied with the actions taken, such person or institution may file an appeal in the District Court for the cancellation or review of the decision within a period of 35 (thirty five) days from the date of issue of order from the municipality
- The verdict from the District Court shall be the final on the appeal made by the person or the institution



c) Demolition of Unauthorized Buildings/ Structures and Recovery of Demolition Cost

- The Building Owner shall undertake demolition of the whole building or its part thereof within a period of 35 days from the date of decision by the District Court in line with municipalities decision
- In case no such appeal for the cancellation or review of the municipality decision has been filed, the Building Owner shall undertake demolition of the whole building or its part thereof within a period of 35 days from the day of expiration of the appeal filing period



a) Municipal Coordination Committee for Building Bye-laws & Building Code Implementation

 In order to facilitate and provide policy level guidance for the effective implementation of the building bye-laws & building code in the municipality, municipality shall constitute a Municipal Coordination Committee for Building bye-laws and Building Cod Implementation consisting of the following structure:

The Mayor- Coordinator
The Chief Administrative Officer- Member
Building Code & Construction Permit Sub-section Chief Member
Ward Chairpersons- two nominated members
Urban Infrastructure & Technical Section Chief- Member
Land Management & Building Regulation Section Chief- Member
Secretary

Other experts & Office chiefs- Invitee Members

a) Municipal Coordination Committee for Building Bye-laws & Building Code Implementation

The roles & responsibilities of this committee shall be:

- Monitoring on the implementation of building bye-laws
 & building code
- Provide policy level guidance to the sections
- Facilitate for the implementation of building code & building bye-laws in the municipality
- Formulate capacity building programs for the implementation of building code & building bye-laws

b) Municipal Technical Committee for Building Code Implementation

- In order to facilitate and solve various technical issues encountered during the implementation of the building code, municipality shall constitute a Municipal Technical Committee for Building Code Implementation consisting of the following structure:
- Land Management & Building Regulation Section Chief-Coordinator
- Building Code & Construction Permit Sub-section Chief- Member
- Urban Infrastructure & Technical Section Chief-Member
- Building Code Unit Chief- Member Secretary
- Other experts & Office chiefs- Invitee Members

b) Municipal Technical Committee for Building Code Implementation

The roles & responsibilities of this committee shall be:

- Monitoring on the implementation of building code
- Provide technical support to the municipalities on the issues related to the building code implementation

c) Municipal Design Review Committee for Building Code Implementation

For buildings having more than 10,000 sq. ft in total floor area or more than 17 m in height or having complex nature in terms of configuration or construction technology or buildings of national importance or which may be landmark buildings, municipality shall carry out detailed review of architectural, structural, sanitary & HVAC and electrical designs with the support of the Design Review Committee consisting of the following structures:

- Building Code & Construction Permit Sub-section –chief Coordinator
- Building Bye-laws Unit Chief- Member
- Urban Infrastructure & Technical Section Chief-Member
- Representative from Nepal Engineering Association (NEA) or its local chapter
- Representatives from Society of Nepalese Architects (SONA)
- Representative from Universities or Local Engineering Colleges
- Representatives from Structural Engineers' Association of Nepal (SEANep)
- Representatives from Local Office of Nepal Electricity Authority
- Representative from Project Implementation Units of DUDBC
- Structural Designer or Chief of the Building Code Unit- Member Secretary

c) Municipal Design Review Committee for Building Code Implementation

- Municipality shall invite the designers to make detailed presentation of the submitted designs, drawings and details on architectural, structural, sanitary & HVAC, electrical, fire safety, solid waste management & disaster management aspects on a first come first serve basis
- After receiving the comments and suggestions from the review committee in written form from the municipality, designers shall make necessary modifications & alterations including any supporting documents

c) Municipal Design Review Committee for Building Code Implementation

- Municipality may request the designer to make more than one presentation depending upon the complexity and the level of work done by the designer.
- The building By-Laws section & building code sections shall finalize their recommendation for building permit after verifying that all comments & suggestions made by the review committee have been addressed by the designer in the final submitted designs & drawings

Thank You