

SAFETY PRACTICES IN CONSTRUCTION DEVELOPMENT CORPORATION LIMITED (CDCL) PROJECTS



13th December, 2019

*Conference Hall, Hotel Taj Tashi
Thimphu*

*Presenter- Sonam Phuntsho
Engineer (Civil)
Safety Unit*

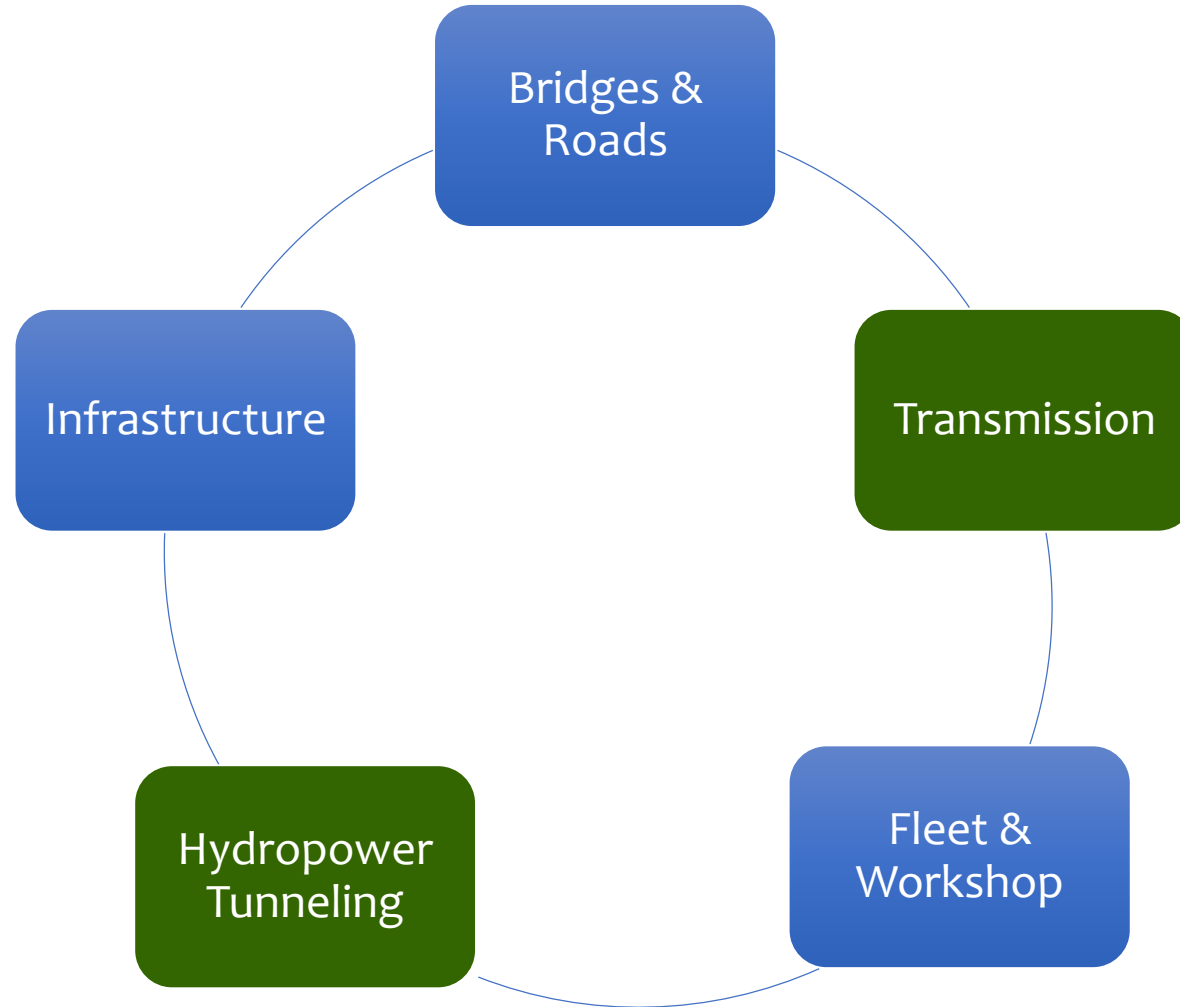


OUTLINE

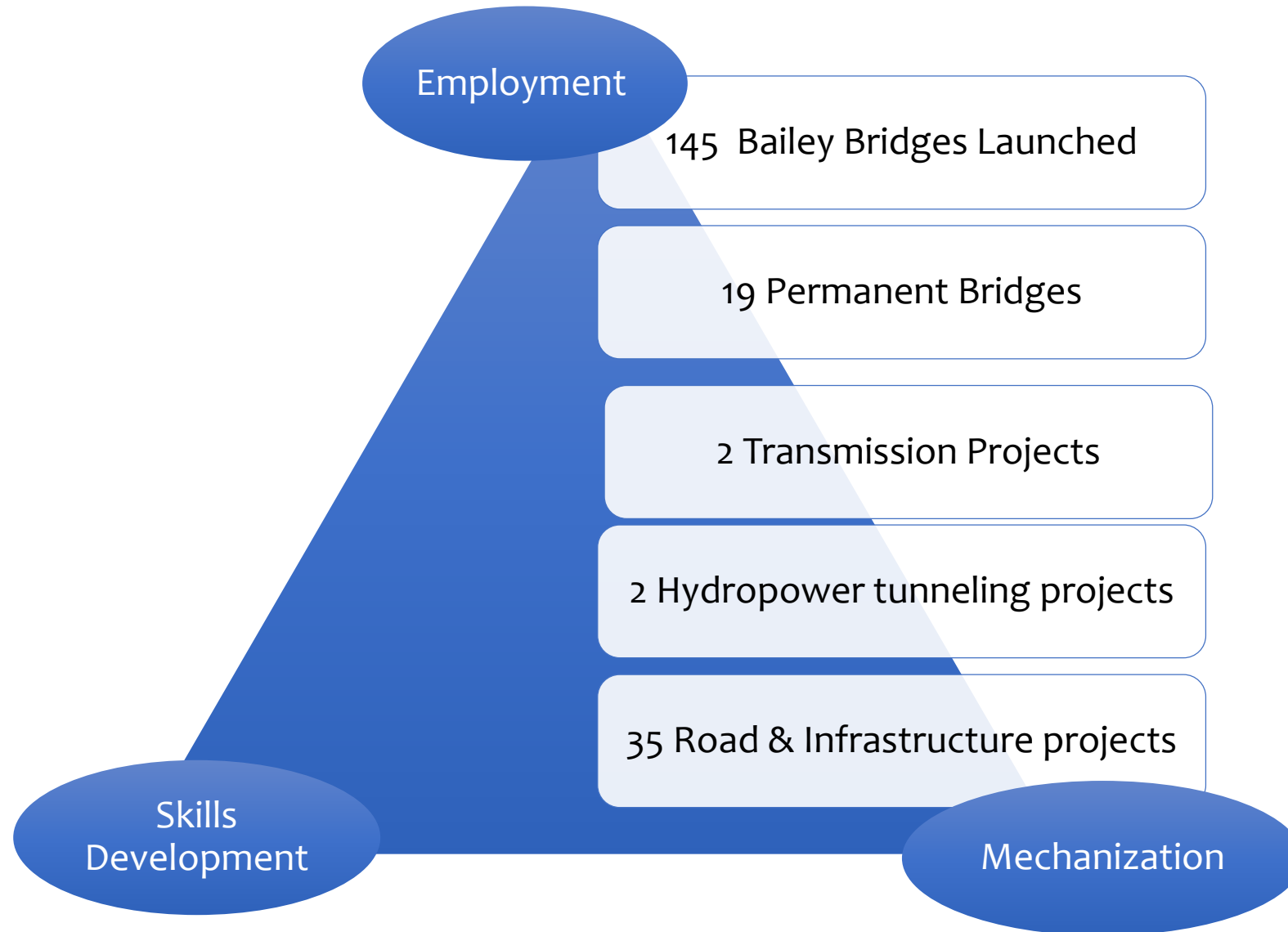
- ① CDCL Business Portfolio
- ② CDCL Policies and Guidelines on Occupational Health and Safety
- ③ Projects and Safety Practices in CDCL
 - ① Tunneling (Underground Works)
 - ② Bridges
 - ③ Transmission Lines
 - ④ Infrastructure & Township
- ④ Safety Awareness and Health Programs
- ⑤ OHS Trainings and Site Visits
- ⑥ Way Forward



1. CDCL Business Portfolio



1. Milestones from 2010...



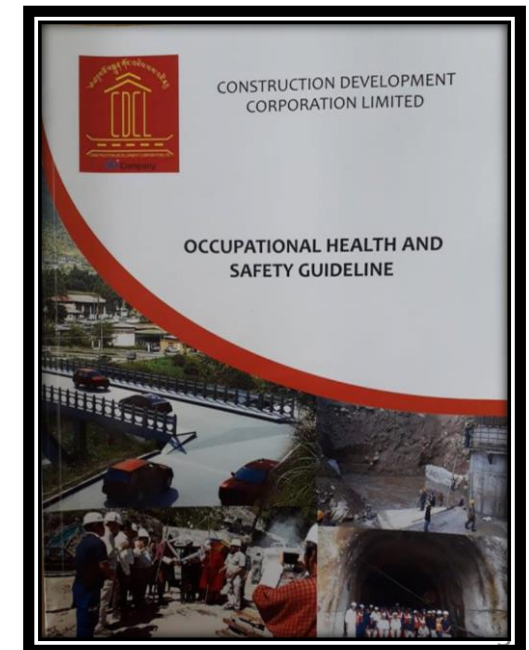
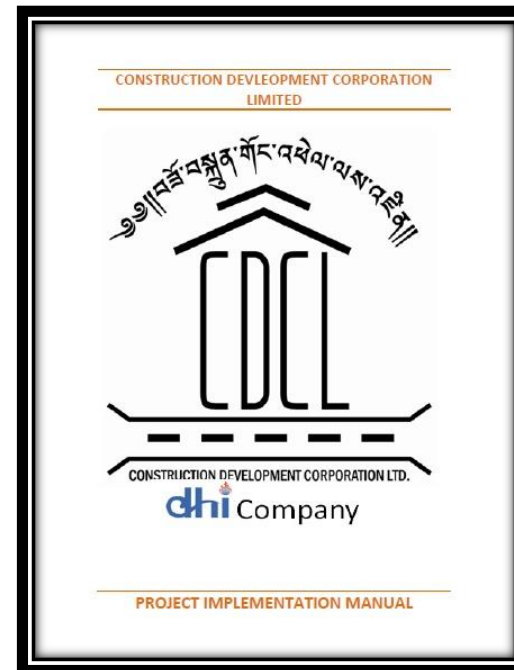
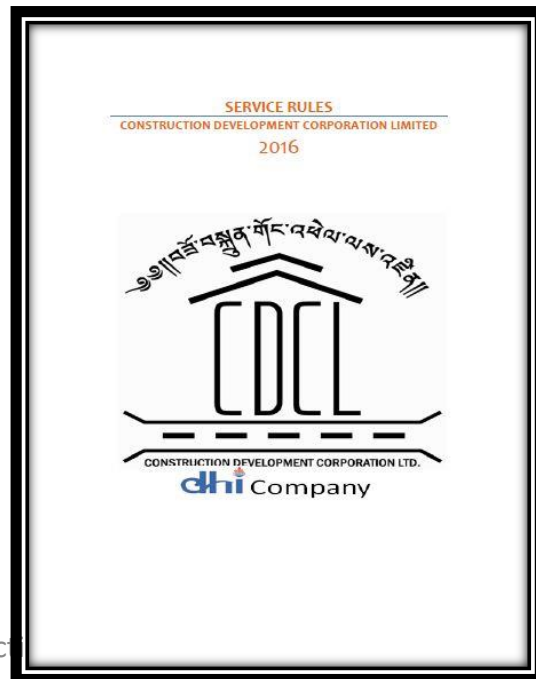
2. CDCL Policies and Guidelines on Occupational Health and Safety

Occupational Health and Safety Guidelines

Project Implementation Manual

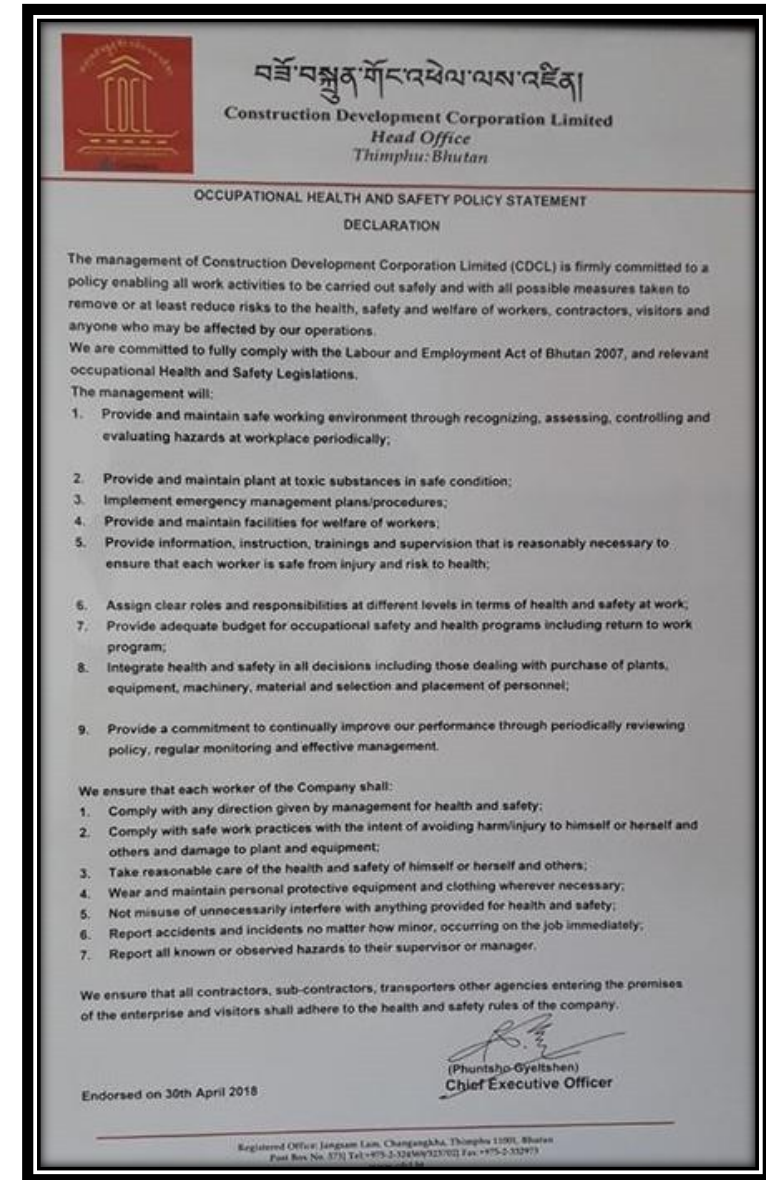
CDCL Service Rule

Inauguration of Safety Unit



2. CDCL Policies and Guidelines on Occupational Health and Safety

- CDCL OHS Committee
- CDCL OHS Policy Statement





2. OHS Practiced in CDCL

- Up to 3% of project cost implemented on OHS
- Instituted OHS Committee at respective projects
- Appointed Safety Officers at respective projects as per OHS guidelines
- Risk Registers maintained at project sites with identified risks and mitigation measures in place
- Uniforms and free meals for workers at project sites
- Insurance coverage for all workers – all 800 employees including daily wage workers

2. CDCL Policies and Guidelines on Occupational Health and Safety

- Separate budget planning
- Minimum Personal Protective Equipment (PPE)
- Minimum safety gadgets provided to the workers
- Adequate facilities are provide for the welfare of the employees.
- Sign and symbols are provided for the outsiders or the visitors



2. CDCL Policies and Guidelines on Occupational Health and Safety

- Start of the Day
- Workers are gathered 15 minutes prior to work start.
- Day starts with 5 minutes morning exercise
- As per the work plan supervisor identifies the risk areas and provides information and instruction to ensure health and safety at work



2. CDCL Policies and Guidelines on Occupational Health and Safety

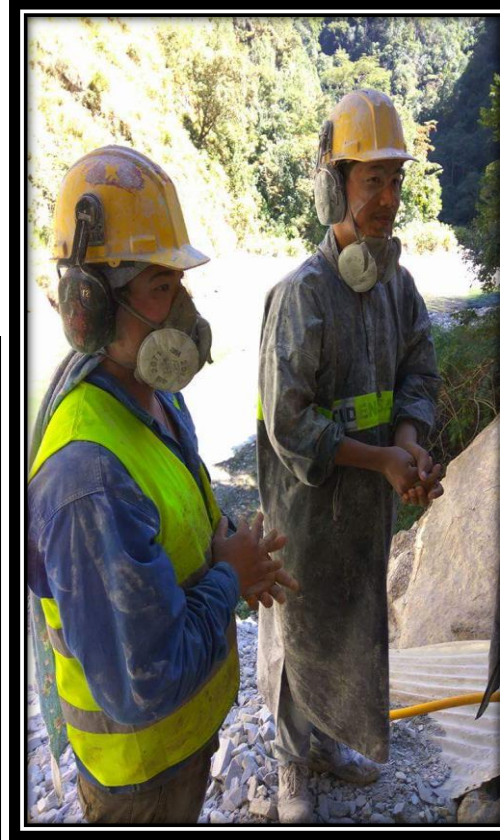
- Safety Gathering



3. Construction Safety Practices in CDCL Projects

1. Tunneling Projects (Underground Works)

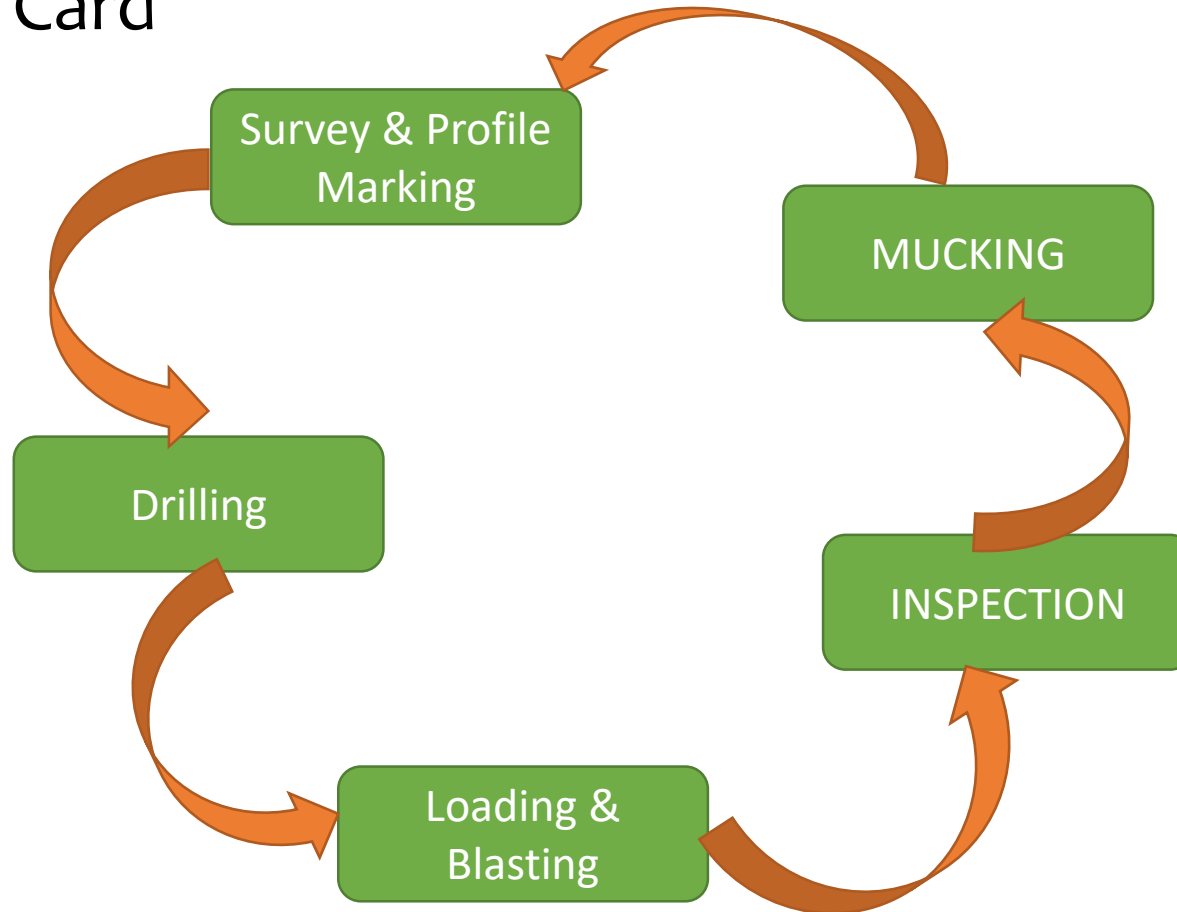
- Personal Protective Equipment



3. Construction Safety Practices in CDCL Projects

1. Tunneling Projects (Underground Works)

- OK Card



CONSTRUCTION DEVELOPMENT CORPORATION LIMITED DEPARTMENT OF HYDROPOWER HYDROPOWER CONSTRUCTION DIVISION	
OK CARD	
Date: _____	
1. SURVEY AND PROFILE MARKING	
1.1 Time: (a) From: _____	To: _____ (b) Hour: _____
1.2 Pull (m): _____	1.3 Face RD (m): _____
1.4 Profile marking: _____	1.5 Alignment: _____
1.6 Slope: _____	1.7 Drill hole marking (No.): _____
1.8 Team: _____	
(a): _____	(b): _____
(c): _____	(d): _____
2. DRILLING	
2.1 Time: (a) From: _____	To: _____ (b) Hour: _____
2.2 No. of drill holes: _____	2.3 Length of drill hole (m): _____
2.4 Driller _____	
(a): _____	(b): _____
(c): _____	(d): _____
3. LOADING AND BLASTING	
3.1 Time: (a) From: _____	To: _____ (b) Hour: _____
3.2 Explosive Type: _____	3.3 Explosive Quantity (kg): _____
3.3 Detonator: (a) Nonel (No): _____	(b) Electric (No.): _____
3.4 Team: _____	
(a): _____	(b): _____
(c): _____	(d): _____
4. INSPECTION	
4.1 Time: (a) From: _____	To: _____ (b) Hour: _____
4.2 Misfire (No.): _____	4.3 Marking misfire: YES / NO
4.4 Explosive Removal: YES / NO.	4.5 Explosive Quantity: _____
5.6 Detonator Removal: YES / NO.	5.7 Reason if No.: _____
5.8 Marking for Scaling: _____	5.9 No. of significant Block: _____
6.0 Obnoxious Gas: YES / NO.	
6.1 Team: _____	
(a): _____	(b): _____
(c): _____	(d): _____
5. MUCKING	
5.1 Time (a) From: _____	To: _____ (b) Hour: _____
5.2 Quantity of muck: _____	
(a) Power Tiller Load: _____	(b) Wheel Barrow Load: _____

3. Construction Safety Practices in CDCL Projects

1. Tunneling Projects (Underground Works)

- Gas Monitoring
- Adequate Ventilation
- Advance Equipment
- Communication System



Remote Control
Shotcreting



3. Construction Safety Practices in CDCL Projects

1. Tunneling Projects (Underground Works)



Special Lighting



Lighting on the
access way

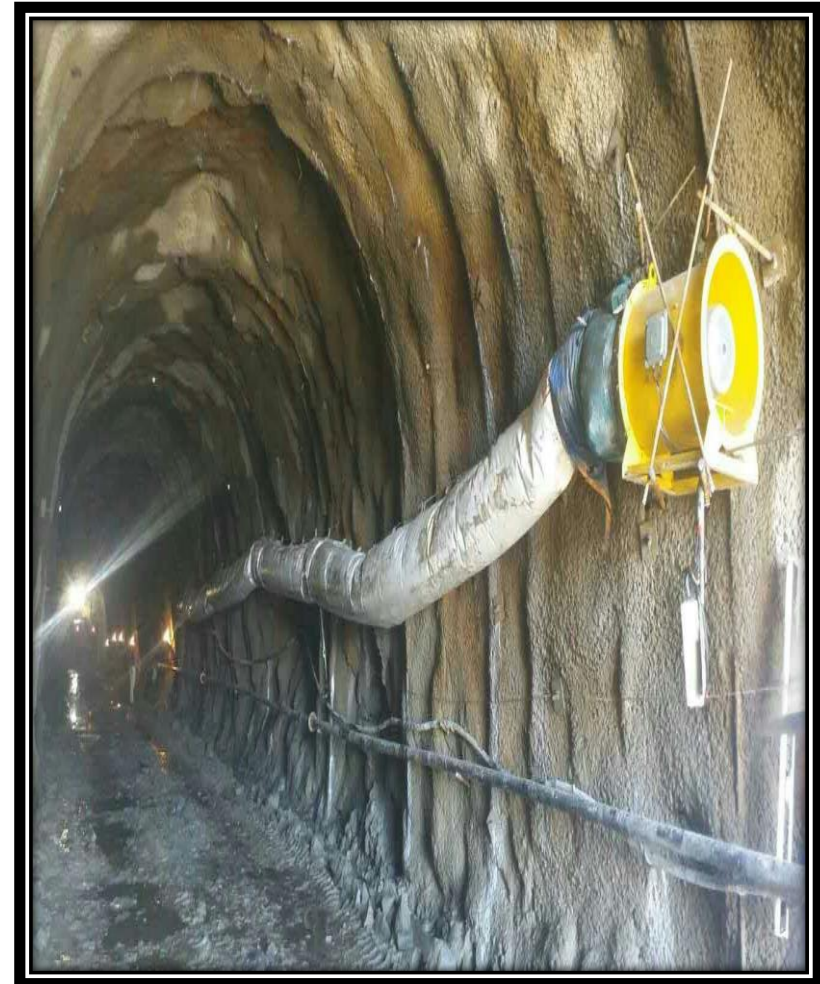


dhi Company

3. Construction Safety Practices in CDCL Projects

1. Tunneling Projects (Underground Works)

- Defuming at Nikachhu HEP



3. Construction Safety Practices in CDCL Projects

2. Bridge Projects

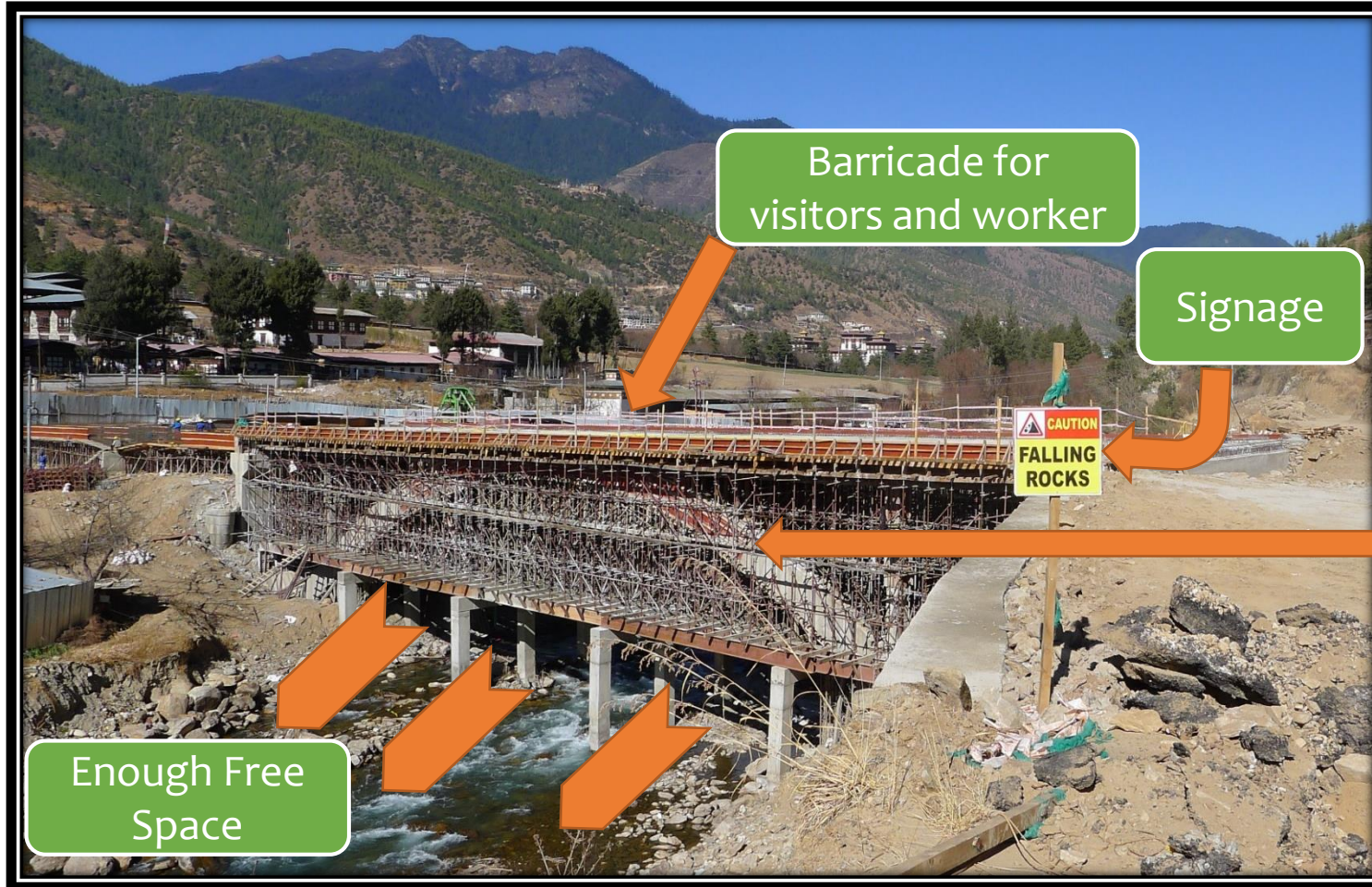
- Site Barricades



3. Construction Safety Practices in CDCL Projects

2. Bridge Projects

- Staging Works and Free Space

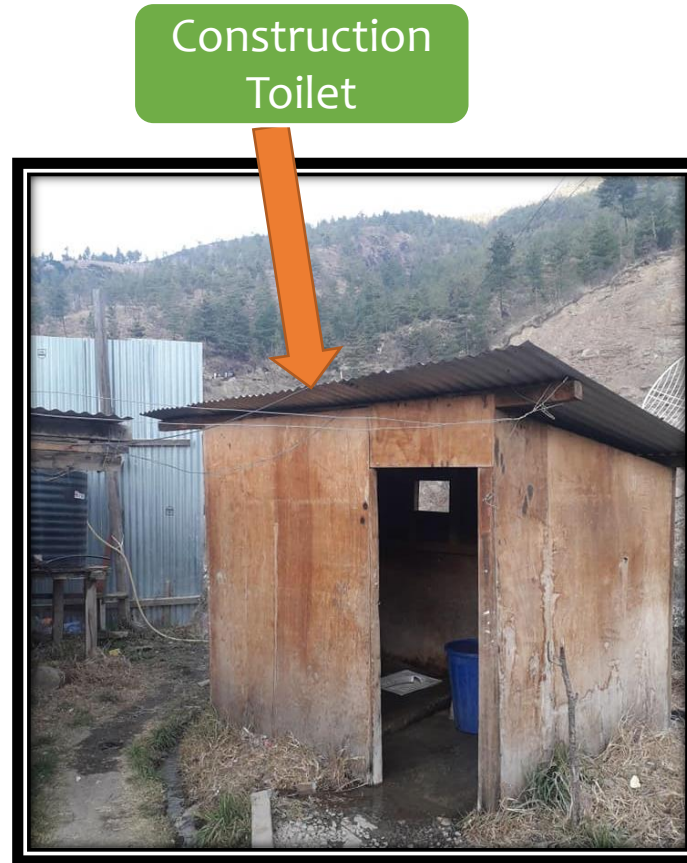


MS Pipe
Scaffolding



3. Construction Safety Practices in CDCL Projects

2. Bridge Projects



3. Construction Safety Practices in CDCL Projects

2. Bridge Projects

- Safety PPE in Bridge Sites



SamdrupJongkhar
Bridge



Golden Masher
Hatchery



SamdrupJongkhar
Bridge



3. Construction Safety Practices in CDCL Projects

3. Transmission Projects



Lhabsang



Cautionary Signage



1. Safety Helmet
2. Safety Shoes
3. Safety Gloves
4. Safety Harness Belt
5. Uniform

66 kV DC Jemina



3. Construction Safety Practices in CDCL Projects

4. Phuentsholing Township Development Project





3. Construction Safety Practices in CDCL Projects

4. Phuentsholing Township Development Project



Construction
Site Barricade



Construction Site
Waste Segregation



3. Construction Safety Practices in CDCL Projects

4. Phuentsholing Township Development Project



Ambulance
Vehicle



Construction Site Toilet



dhi Company

4. Construction Safety Practices in CDCL Projects

1. Safety Awareness

- Safety Awareness Program
- Sensitization on CDCL OHS Guideline





4. Safety Awareness and Health Programs

1. Safety Awareness

Hazard Identification, Risk assessment and Risk control (HIRARC)

1. Spot the Risk (Hazard Identification)
2. Assess the risk (Risk Assessment)
3. Make the changes (Risk Control)



4. Safety Awareness and Health Programs

1. Safety Awareness

1. Risk Assessment calculation

- $R = (P) \times (S)$, where
 - R = Risk
 - P= Probability of occurrence
 - S = Severity of effect (consequence)
- Probability of occurrence could ranges from hourly, daily, monthly to yearly
- Severity of effect using accident pyramid



4. Safety Awareness and Health Programs

1. Safety Awareness

Risk Assessment Matrix :

(3X3, 4x4, 5x5)

			Severity				
			Low Consequences			Very Severe	
			1	2	3	4	5
Probability	High	5	5	10	15	20	25
		4	4	8	12	16	20
		3	3	6	9	12	15
	Low	2	2	4	6	8	10
		1	1	2	3	4	5

Risk Level

High risk (16-25)

Immediate danger that must be dealt with urgently.

Medium risk (5-14)

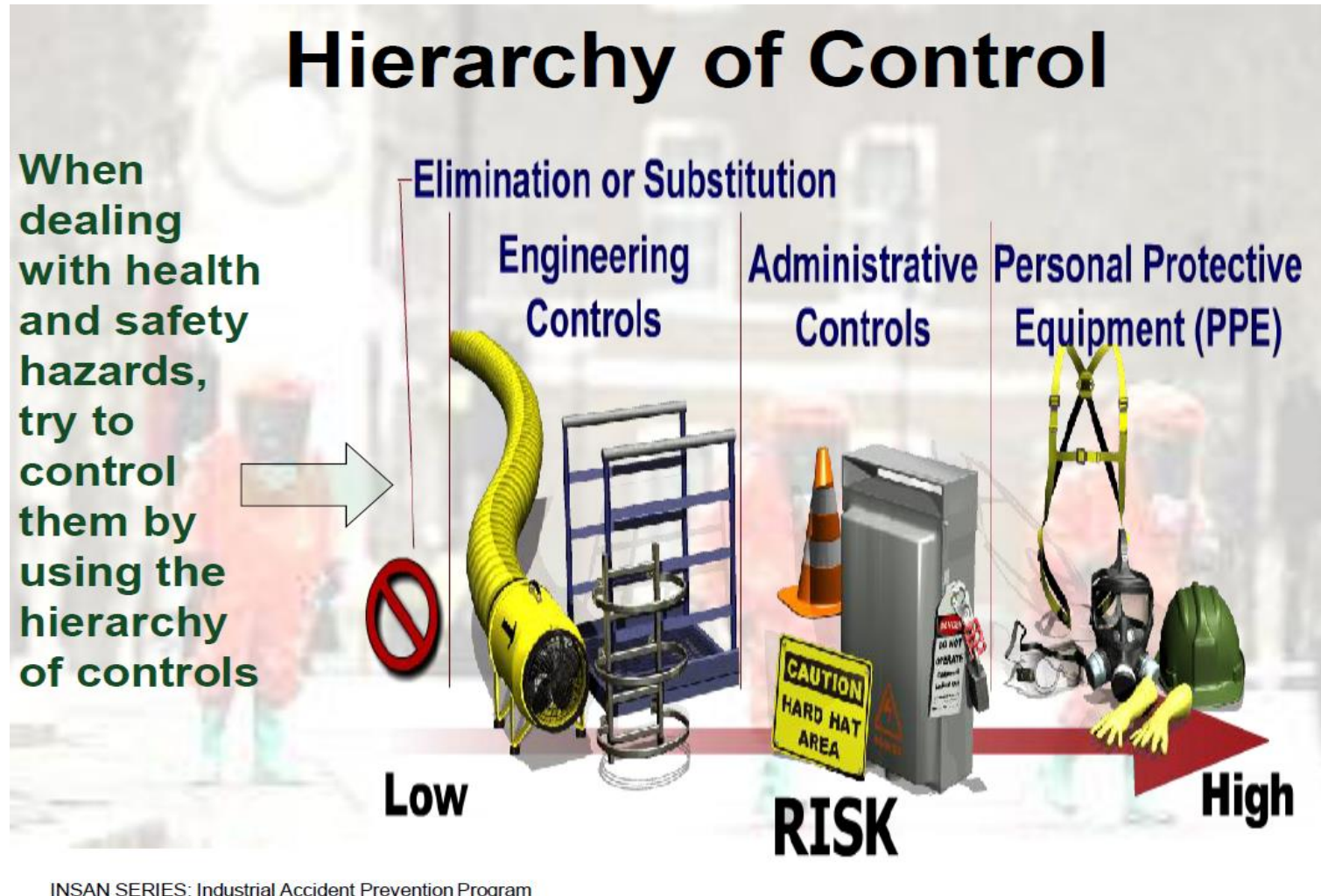
Potential danger that must be dealt with as soon as possible, but not necessarily immediately. It needs to be followed up quickly, before it progresses.

Low risk (1-4)

Does not present an immediate danger but should be dealt with or noted and monitored as a possible danger in the future.

4. Safety Awareness and Health Programs

1. Safety Awareness



4. Construction Safety Practices in CDCL Projects

2. Health Programs

1. First Aid Training Total of 239 First Aider



4. Construction Safety Practices in CDCL Projects

2. Health Programs



4. Safety Awareness and Health Programs

2. Health Programs

1. Health Screening
Conducted on 22nd November, 2019
2. Measles and Rubella Injection at Project Sites



5. OHS Training and Site Visits

1. Occupational Health and Safety Trainings

1. OHS Training to the project engineers and supervisors – 5 Days



5. OHS Training and Site Visits

1. Occupational Health and Safety Trainings

1. Construction Safety Training and Site Visit in PTDP



5. OHS Training and Site Visits

2. Construction Safety Site Visits

1. Occupational Health and Safety Site Visit to Kolkata Underground Metro Station Construction





6. CDCL OHS Way Forward

- To get certified in ISO 45001:2018
- Proper monitoring and implementation of OHS guidelines
- Improve technical expertise in OHS
- OHS related data recording and reporting system in CDCL ERP
- Collaborate with relevant agencies