EMERGENCY PREPAREDNESS PLAN (EPP)

Project: Construction of 4 No. Intermediate Lane Steel Truss Motor Bridge in km 4, 8 (HM 2-4&HM 8-10) & 12 at Nandprayag Ghat Motorway in District Chamoli Uttarakhand.

Prepared by: Manish Yadav (Safety Expert)
Date: 16/07/2025

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1. INTRODUCTION

The purpose of this Emergency Preparedness Plan (EPP) is to establish a formalized system of readiness, prevention, response, and recovery to ensure the safety of personnel, continuity of construction operations, and protection of assets in the event of an emergency during bridge construction in a high-risk geohazard zone. The project site, located in **Nandprayag (Chamoli District)** of Uttarakhand, lies within an environmentally sensitive and seismically active Himalayan region, which necessitates a multi-hazard approach to emergency planning.

This EPP is developed in accordance with:

- The **Disaster Management Act, 2005**
- **Indian Standard Codes** (IS 875, IS 456, IS 13920, IS 1893)
- **National Building Code (NBC)** guidelines
- **Ministry of Road Transport & Highways (MoRTH)** safety protocols
- **Uttarakhand State Disaster Management Authority (USDMA)** regulations

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2. SCOPE OF THE PLAN

This EPP is applicable to:

- All construction operations including substructure, superstructure, foundation, scaffolding, formwork, and falsework stages
- Labor colonies, material storage yards, approach roads, and site access points
- Equipment operations including cranes, batching plants, excavation machines, and temporary electrical installations
- The following emergencies:
    - **Seismic events**
    - **Landslides and slope failures**
    - **Fire and explosion hazards**
    - **Meteorological threats (floods, storms, cloudbursts)**
    - **Bridge-specific structural emergencies**

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3. OBJECTIVES

- Protect life and ensure safe evacuation of all site personnel
- Prevent damage to bridge components, machinery, and materials
- Minimize construction downtime and disruption
- Coordinate with local emergency services for rapid response
- Comply with relevant statutory and environmental regulations

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4. RISK IDENTIFICATION AND ASSESSMENT

4.1 Seismic Hazard

- Zone IV classification
- Potential for liquefaction, soil settlement, and superstructure oscillation
- Risk of falsework, formwork, and scaffolding collapse.

4.2 Landslide Hazard

- Triggered by rainfall or excavation
- May block access roads and isolate construction site
- Debris flow can damage bridge substructure or coffer dams.

4.3 Fire and Explosion Risk

- Hot works, flammable material storage, temporary electrical cabling
- Fire in labour colonies or machinery sheds

4.4 Hydrometeorological Risk

- Riverine and flash floods due to glacial melt, cloudbursts, and monsoonal rain
- Inundation risk to bridge foundations, machinery, or cofferdam

4.5 Bridge Construction Emergencies

These are technical emergencies that occur during erection or concreting phases:

- **Scaffold Collapse:** Improper bracing or overloading of staging and scaffold
- **Falsework Failure:** Faulty shuttering, inadequate load transfer during deck casting
- **Cable Snap or Equipment Failure:** Sudden release of pre/post-tensioned elements
- **Deck Displacement or Sag:** Incorrect launching operations
- **Girder Placement Errors:** Crashing due to lifting misalignment or wind load
- **Vibration Damage:** Induced by nearby heavy machinery or tremors

5. PREPAREDNESS AND PREVENTION STRATEGIES

5.1 Seismic Preparedness

- Design using ductile detailing and earthquake load factors
- Pre-casting in controlled zones where feasible
- Avoiding night-time concreting in high-risk periods
- Maintaining flexible connections in scaffolding and cranes

5.2 Landslide Risk Management

- Reinforcement using retaining walls, shotcrete, and ground anchors
- Real-time monitoring using inclinometers and rainfall gauges
- Restricting access to identified slide-prone areas during rainfall alerts
- Pre-staged bulldozers and excavators for clearance

5.3 Fire Prevention Measures

- Separation of hot work zones and fuel depots.
- Fire hydrants and Class A/B/C fire extinguishers at 30m intervals.
- Fire blankets, sand buckets, and chemical spill kits.
- Emergency shut-off valves for diesel and gas lines.

5.4 Storm/Flood Preparedness

- Elevation of electric panels and gensets above HFL (High Flood Level)
- Sandbag embankments and diversion channels around river-adjacent works
- Prepositioning of diesel-powered pumps and sump pits
- Safe housing of critical materials (cement, admixtures) on plinths

5.5 Bridge Construction Emergency Protocols

- **Pre-task Risk Assessment (PTRA):** Mandatory before lifting or pouring operations
- **Staging Load Checks:** Follow IS 2750 and design for dynamic wind and seismic loads
- **Backup Falsework Plans:** Secondary support under active deck sections
- **Erection Monitoring:** Total station, plumb bobs, and inclinometers during girder placement
- **Emergency Stopping Zones:** Cranes and lifters equipped with drop-lock brakes
- **Toolbox Talks:** Mandatory before all high-risk operations

6. EMERGENCY RESPONSE FRAMEWORK

6.1 Activation Protocols

- Site Safety Officer shall initiate Level I (on-site), Level II (site + external), or Level III (disaster) alerts
- Horn blast or public address system announcement
- All activities stopped and evacuation begins immediately

6.2 Evacuation Procedures

- Routes displayed at all workstations and labor camps
- Assembly points established at:
    - Upstream of the bridge (safe from flood)
    - Elevated flat area near batching plant
- Headcount performed by assigned muster leaders

6.3 Bridge Incident Response

- **Scaffold/Falsework Collapse:** Immediate clearing of debris, suspension of nearby activities, shoring of unstable structures
- **Structural Failure During Launching:** Use emergency jacks and stabilize through counterweights
- **Deck Fall or Slippage:** Lock all movement, notify design consultant, initiate safe removal
- **Girder Crash:** Close access to the impact zone, stabilize cranes, call design review team

6.4 Communication Strategy

- Radios for internal use, satellite phones during network outages
- Dedicated Control Room with contact links to:
    - SDRF
    - NDMA
    - State PWD
- Loudspeaker and siren systems tested weekly

6.5 Medical & Rescue

- 3 certified paramedics per shift
- Fully stocked trauma care kits
- Fire-resistant stretchers and spinal boards
- Tie-up with Gopeshwar District Hospital and airlift coordination (if required)

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7. ASSIGNMENT OF RESPONSIBILITIES

Role	Responsibilities
Project Manager	Authorize emergency protocols; liaison with external agencies
Safety Officer	Hazard mapping, incident reporting, command drills
Equipment In-Charge	Verify all lifting gear and scaffolding integrity
Medical Coordinator	On-site treatment, transport, and medical recordkeeping
Evacuation Marshal	Ensures clearance of all personnel; maintains muster sheets
Communication Lead	Manages alerts, notifications, and control room operations
Worker Teams	Report anomalies, follow chain of command, assist evacuations

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8. TRAINING, DRILLS & SIMULATIONS

- Monthly emergency drills including night drills
- Semi-annual mock disaster (multi-hazard) simulation with local police and fire brigade
- Certification for crane operators, welders, and falsework erectors
- QR-based identification badges with emergency instructions

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9. EMERGENCY CONTACT DIRECTORY.

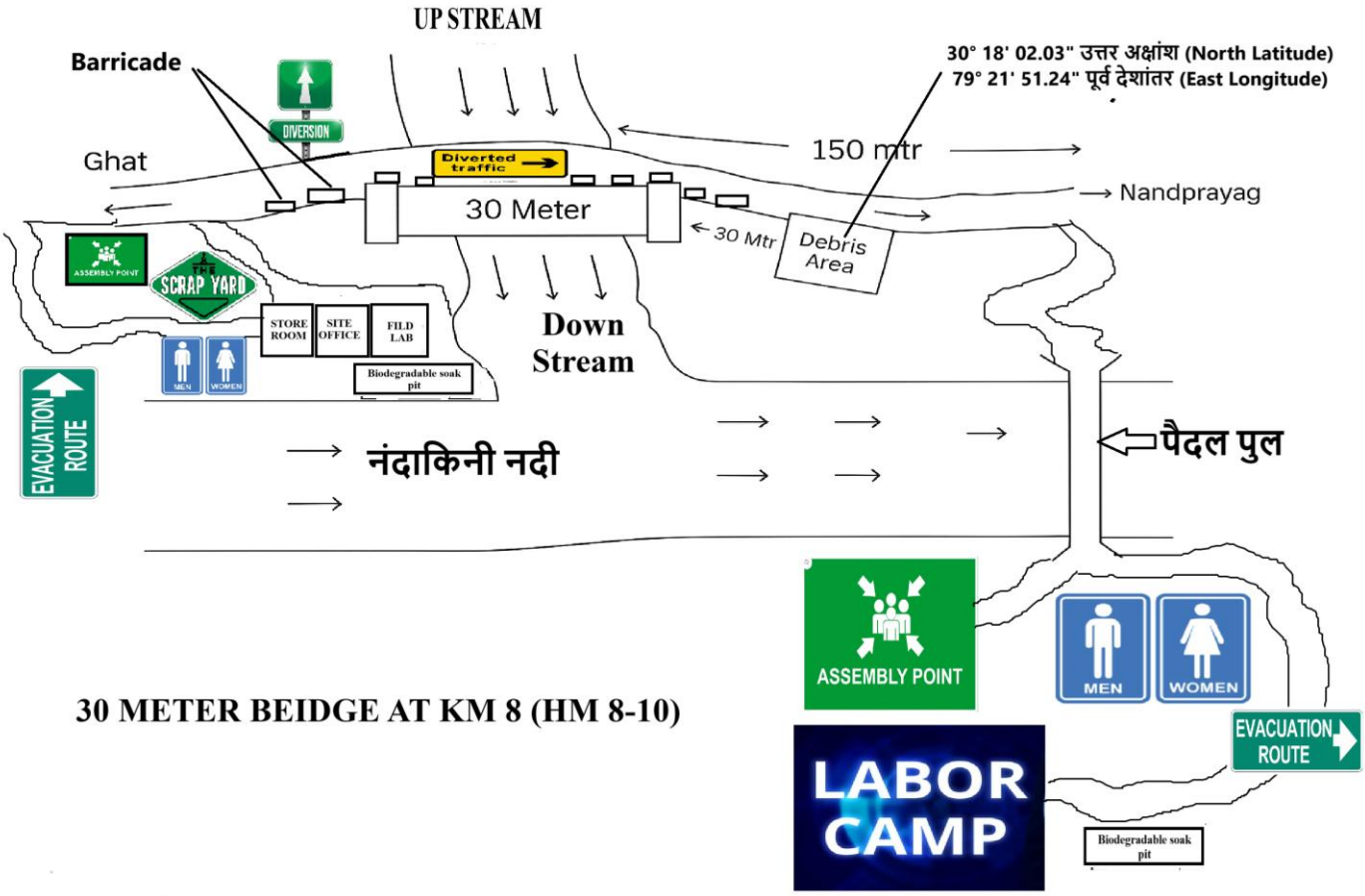
Agency/Organization	Contact Person	Number
Local Emergency Lead	Mr. Johny Kumar	9761371689
Hospital – Gopeshwar	Emergency Desk	102 / 9927889775
Fire Department	Fire Station Gopeshwar	101
Police Department	Police Station, Ghat	100
SDRF Office – Chamoli	Duty Officer	1077

Certified by:

Name: Manish Yadav (Safety Expert)

Signature: 

Date: 15/07/2025



30 METER BEIDGE AT KM 8 (HM 8-10)