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Letter No: ARKS/PMU/24-25/16 **Date: 18.11.2025**

To,
The Authority Engineer,
Provincial Division
PWD, Pauri Uttarakhand

LOA No.- LOA NO: 417/15/BR/RFB-EPC/UGRIDP/2023

Reference: (Construction of 150M Span Intermediate Lane Motor Bridge & its approach over Nayar River for Badkholu village in District Pauri, Uttarakhand State)

Subject: Submission of Social & Environmental Plans.

Dear sir,

With reference to the above-mentioned work, we hereby submit the Environmental and Social Plans in compliance with the contractual requirements, for your kind review and approval. The details of the reports are as follows:

S. No.	File No.	Description
1	File no.1	Social Management Plan (C-SMP)
2	File no.2	Environmental Management Plan (C-EMP)
3	File no.3	Emergency Response Preparedness Plan (ERPP).
4	File no.4	Labour Management Plan (LMP)
5	File no.5	Occupational Health and Safety (OHS) Plan
6	File no.6	Sexual Harassment Prevention & Redressal Plan
7	File no.7	Stakeholder Management Plan
8	File no.8	Waste Management Plan (WMP)

This is submitted for your kind information and necessary action.

Best Regards

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Authorised Signatory

ARKS UNIVERSAL PVT.LTD.
(Authorised Signatory)

Encl: Senior Environment and Social expert, PIU (PWD) U-PREPARE Uttarakhand.

Emergency Response Preparedness Plan (ERPP).

Project: Construction of 150M Span Intermediate Lane Motor Bridge & Its Approach over Nayar River for Badkholu Village in District Pauri Garhwal, Uttarakhand

Prepared By: ***Kamaralam Mansuri (Safety Expert)***
Executing Agency: ***Provincial Division, PWD, Pauri Garhwal, Uttarakhand***
Project Location: ***Badkholu Village, District Pauri Garhwal, Uttarakhand***

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1. INTRODUCTION

This Emergency Response Preparedness Plan (ERPP) provides a comprehensive, systematic framework to ensure prompt, coordinated, and effective response during emergencies arising at any stage of the construction of the 150M Span Intermediate Lane Motor Bridge across the Nayar River at Badkholu, District Pauri Garhwal.

Given the project's location in a seismically active Himalayan terrain, the plan integrates technical, structural, and administrative controls for multi-hazard risk management.

The ERPP is formulated in compliance with the following statutory and technical references:

- The Disaster Management Act, 2005
- MoRTH Safety Manual, 2019
- IS 1893 (Part 1): 2016 – Criteria for Earthquake Resistant Design
- IS 13920: 2016 – Ductile Detailing of RC Structures
- IS 875 (Part 3): 2015 – Wind Load Considerations
- IRC: SP: 55-2014 – Guidelines on Safety in Road Construction Zones
- National Building Code (NBC), 2016 – Part 7: Construction Management Practices
- USDMA Regulations and Local Disaster Management Framework

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2. SCOPE OF THE PLAN

The ERPP encompasses the entire project life cycle, including:

- Foundation Works: Pile boring, well sinking, coffer dam installation
- Substructure: Pier, abutment, and retaining structures
- Superstructure: Girder fabrication, launching, deck slab concreting
- Approach Roads & Ancillary Works: Drainage, parapet, crash barrier, road pavement
- Auxiliary Facilities: Labor camps, material yards, fuel storage, batching plants, workshops
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Types of Emergencies Covered

- Natural Hazards: Earthquakes, landslides, flash floods, cloudbursts, high wind events
- Man-made Hazards: Fire, explosion, electrical faults, vehicular accidents
- Construction-Specific Emergencies: Crane failure, girder crash, falsework collapse, formwork failure, equipment malfunction

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3. OBJECTIVES

- To ensure protection of life, property, and environment during emergencies.
- To enable structured communication and coordination among project personnel and external agencies.
- To minimize structural and equipment damage through pre-planned response.
- To ensure compliance with MoRTH, IRC, and USDMA emergency management protocols.
- To ensure continuity of construction operations post-event through rapid recovery planning.

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4. HAZARD IDENTIFICATION & RISK ASSESSMENT

4.1 Seismic Hazard

- Project area falls under Seismic Zone IV (High Seismic Risk).
- Risks: Foundation instability, reinforcement displacement, formwork failure, suspended load hazards.
- Control: Ductile detailing, adequate anchorage, redundant staging supports, real-time vibration monitoring.

4.2 Landslide and Slope Instability

- Triggered by excessive rainfall or excavation.
- Consequence: Access blockage, damage to approach works, collapse of retaining systems.
- Control: Slope stabilization using shotcrete, soil nailing, and drainage trenches; continuous slope radar monitoring.

4.3 Fire and Explosion Risk

- Sources: Fuel depots, welding operations, bitumen heating, short circuits.
- Control: Segregation of ignition and storage zones, automatic fire suppression systems, flameproof electrical fittings.

4.4 Hydrometeorological Hazards

- River prone to flash floods due to cloudbursts or intense monsoon discharge.
- Impact: Scouring of coffer dams, submergence of machinery, material washout.
- Control: Riverbank protection bunds, flood diversion channels, and reinforced temporary platforms above HFL.

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4.5 Construction-Specific Emergencies

Activity	Potential Hazard	Control Measure
Girder Launching	Crane overturning, cable snap	Proof load test, outriggers, wind speed < 30 km/h
Deck Concreting	Falsework collapse	Load test, redundant staging, inspection before pour
Excavation	Sidewall failure	Proper benching, shoring, drainage management
Piling/Well sinking	Entrapment, gas emission	Ventilation, safety harness, gas detector use

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5. PREPAREDNESS & PREVENTION STRATEGIES

5.1 Seismic Preparedness

- All RCC elements detailed per IS 13920: 2016 for ductility.
- Suspension of concreting and girder launching during seismic alerts.
- All tall equipment anchored using base clamps and guy wires.

5.2 Slope and Landslide Risk Mitigation

- Real-time rainfall gauge linked to alert system.
- Use of retaining walls, gabion structures, and shotcrete stabilization.
- Restriction of heavy equipment on approach roads during rainfall >50 mm/hr.

5.3 Fire and Explosion Preparedness

- Storage of fuel within bunded enclosures with 110% capacity.
- Installation of ABC fire extinguishers every 25 meters and near each hot-work point.
- Emergency fuel shut-off valves on all storage tanks.

5.4 Flood and Storm Management

- Electrical panels mounted 0.6 m above HFL.
- Installation of diesel-operated submersible pumps for dewatering.
- Sandbag walls and earthen bunds around material storage areas.

5.5 Construction-Specific Safety Protocols

- Pre-Task Risk Assessment (PTRA) mandatory before any critical lift.
- Crane stability certificates as per IS 13367 and Form-III documentation.

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- Wind speed anemometers installed at launching points.
- Safety nets and catch platforms during deck concreting.
- Toolbox safety meetings before every shift.

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6. EMERGENCY RESPONSE FRAMEWORK

6.1 Emergency Classification

Level	Description	Authority for Declaration
Level I	Localized incident, manageable internally	Site Safety Officer
Level II	Multi-point impact requiring external support	Project Manager
Level III	Major disaster (landslide, flood, structural failure)	District Administration / SDRF

6.2 Evacuation Procedures

- Evacuation Routes: Displayed on site maps, marked with fluorescent signage.
- Assembly Points:
    - Elevated platform near site office (above HFL)
    - Open ground near labour camp for mass gathering
- Headcount: Conducted by Muster Roll Officer after each evacuation.

6.3 Incident-Specific Response Plan

Emergency Type	Immediate Response
Falsework Collapse	Barricade zone, remove loose staging, rescue trapped personnel using hydraulic jacks
Girder Crash	Isolate site, secure lifting system, inform design engineer and PMU immediately
Fire	Cut power, use Class ABC extinguishers, isolate fuel zone
Flood	Stop work, shift equipment to higher ground, initiate dewatering operations
Earthquake	Evacuate to assembly area, no re-entry until safety clearance

6.4 Communication Protocol

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- Primary Mode: VHF radios, site PA system, mobile network
- Backup Mode: Satellite phone (for remote outage scenarios)

- Command Centre: Located at Site Office, supervised by Safety Officer
- Weekly siren testing and log documentation.

6.5 Medical and Rescue Provisions

- On-site first aid room with oxygen cylinder, trauma kit, and spine boards.
- Ambulance stationed at site 24×7 with driver and trained first-aider.
- Tie-up with District Hospital, Pauri for emergency evacuation.
- Coordination with SDRF for aerial or ground rescue operations when required.

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7. ROLES & RESPONSIBILITIES

Designation	Key Responsibilities
Project Manager	Approves ERPP, liaises with district authorities, ensures compliance
Safety Officer	Implements plan, conducts mock drills, updates hazard register
Site Engineer	Monitors field implementation, ensures worker compliance
Equipment In-Charge	Maintains log of cranes, compressors, electrical panels
Medical Coordinator	Provides emergency medical care, maintains stock and records
Evacuation Marshal	Leads personnel movement, maintains muster rolls
Communication Lead	Activates sirens, issues alerts, manages external coordination

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8. TRAINING, MOCK DRILLS & SIMULATIONS

- Monthly on-site drills simulating earthquake, fire, and flood emergencies.
- Biannual full-scale mock disaster exercise involving SDRF and Fire Department.
- Mandatory safety training for operators of lifting machinery, welders, scaffolders.
- Safety Induction Program for all new entrants and visitors.

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9. EMERGENCY CONTACT DIRECTORY

Agency / Organization	Contact Person	Contact Number	Remarks
Local Emergency Lead	Mr Pradeep Kumar	9045792436	Site-level emergency coordinator
District Hospital, Pauri	Emergency Desk	102	Trauma and critical medical response
Fire Department, Pauri	Station Officer	101	Fire emergencies
Police Department, Pauri	Duty Officer	100	Law enforcement and site access
SDRF Office, Srinagar Garhwal	Duty Officer	1077	Specialized rescue operations
Power Department	Duty Officer	01346-252116	Power isolation and electrical support

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10. DOCUMENTATION & RECORD KEEPING

- All incidents, drills, and inspections shall be logged in Form ER-01 to ER-05.
- Safety audit reports to be submitted monthly to Executive Engineer (PIU).
- ERPP to be reviewed quarterly or after any significant incident.
- Records retained for minimum three years post-project completion.

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11. CONCLUSION

The Emergency Response Preparedness Plan establishes a resilient system for anticipation, prevention, and rapid response to emergencies.
Implementation of this plan is mandatory for all project personnel, contractors, and subcontractors, ensuring safety integrity throughout the project's execution phase.

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