



Consolidated Site Safety Plan (Includes all Safety Plan documents of ISG)



Bharat Heavy Electricals Limited
Industrial Systems Group
Prof. C.N.R.Rao Circle, Malleswaram,
BANGALORE 560 012
Phone: 080 - 23365096, Fax: 080 - 23562713

Regd. Office: "BHEL House" Siri Fort, New Delhi - 110 049.

Note: All documents issued from 2003 to 2006 are consolidated in this volume.



HSE Management System Manual

IS/HSE/CSSP/O1

CONSOLIDATED SITE SAFETY PLAN

DOCUMENT NO.	DESCRIPTION
IS/HSE/SSP/01	1. Details of Project
	2. Health, Safety and Environment Policy
	3. Roles of Site Personnel
	4. Safety Awareness & Training:
	5. Site Safety Inspection:
	6. Emergency Preparedness and Response Plan:
	7. Electrical Safety Inspection:
	8. Transportation and Material Handling Equipment:
	9. Erection of equipment:
	10. Commissioning of equipment:
	11. Use of Personal Protective Equipment (PPE):
	12. Housekeeping:
	13. Accident Investigation and Reporting:
	14. Protection against Fire
	15. Protection against Noise
	16. Welding Sets
	17. Civil / Structural Work
	18. FIRE FIGHTING PLAN
	19. NOISE STANDARDS
	20. List of Applicable Statutory / Regulatory requirements
Checklist / Formats / Guidelines	
IS-QII-4-409/010	SAFETY DECLARATION BY SUB-CONTRACTOR
IS:HSE:CL01	CHECK LIST FOR WORKING AT HEIGHT
IS:HSE:CL02	CHECK LIST FOR HOUSE KEEPING
IS:HSE:CL03	CHECK LIST FOR SCAFFOLDING
IS:HSE:CL04	CHECK LIST FOR GENERAL SAFETY INSPECTION
IS:HSE:CL05	CHECK LIST FOR HEAVY MATERIAL HANDLING EQUIPMENT INSPECTION.
IS:HSE:CL06	CHECK LIST FOR ARC WELDING TRANSFORMER
IS:HSE:CL07	CHECK LIST FOR DC ARC WELDING GENERATOR
IS:HSE:CL08	CHECKLIST FOR STAGING
IS/HSE/SSP/02	Hazards Risk & Preventive Measures at Construction Sites.
Dtd. 30.06.06	Guide lines for Resident Managers on Contract Labour, Safety & Accident Reporting System
Dtd. 30.06.06	List of Relevant Legislations applicable to Various Sites
IS:HSE:AIR:001	Accident (Personal injury / property damage) Report



HSE Management System Manual

IS/HSE/CSSP/O1

CONSOLIDATED SITE SAFETY PLAN

Annexures

IS-CW-01, Rev.01	Work instructions for Civil Work at Site
IS 3043-1987	Extracts from IS for Code of Practice for earthing
Copy No 18 07.12.06	Safety Manual – Health and Safety Plan for BHEL Power Sector
PSER : HSEOM: 004:02 Datd 25.11.02	Emergency Preparedness and Response Plan of PS ER
HSE / PPE Dtd 25.08.2006	Corporate Personal Protective Equipment (PPE) Safety Manual

Note:

1. This Site Safety Plan is to be used at all Sites. Project Specific Details and Site Organization Chart are to be added in Section –1.
2. The Checklists provided are to be used and maintained as records.
3. These documents and records are verifiable for compliance under Quality & HSE systems.



HSE Management System Manual

IS/HSE/CSSP/O1

CONSOLIDATED SITE SAFETY PLAN

1. Details of Project

1.	Name of the Project & Site	
2.	Job Number	
3.	Customer	
4.	Overall Scope of work: Design / Supply / Installation	Civil Structural Mechanical Electrical & Instrumentation Others
5.	Project Schedule	Starting Date: Completion Date:
6.	Erection & Commissioning Machinery / Tools / Instruments Required:	
7.	Sub-Contractor Details	Name of the Sub-contractor Job order No.: Duration of Completion:
8.	Name of BHEL Residence Manager	Attach Site Organization Chart of BHEL
9.	Designated Safety Officer of BHEL	
10.	Name of Sub-contractor person in-charge	Attach Site Organization Chart of Sub-contractor
10.	Designated Safety Officer of Sub-contractor	



HSE Management System Manual

IS/HSE/CSSP/O1

CONSOLIDATED SITE SAFETY PLAN

2. HEALTH, SAFETY & ENVIRONMENTAL POLICY

The Management is committed to be an environmentally sound company in its activities, products, services and to provide safe and healthy working environment to all employees as an integral part of business performance and strive towards zero accident through:

- Compliance with applicable Legislation and Regulations.
- Promoting the objective to minimize waste generation and to conserve/reduce/reuse resources such as raw materials, water and power.
- Enhancement of Environmental, Safety and Occupational Health awareness amongst employees, customers and suppliers by proactive communication and training.
- Continual improvement through periodical review of EMS and OHSAS to ensure its suitability, adequacy and effectiveness.
- Regular evaluation and proactive measures for prevention of accidents/ occupational diseases.
- Communication of HSE Policy to all employees and interested parties.
- Coordination with concerned agencies/regulatory bodies engaged in Occupational Health, Safety & Environmental activities.

3. Roles of Site Personnel:

Resident Manager:

- Ensuring that HSEMS requirements are implemented and maintained at sites. He shall have commensurate authority and organisational freedom in that regard.
- He shall report on the performance of the HSEMS to the MR for review.
- Identification and evaluation of Environmental Aspects & Impacts, Occupational Health & Safety Hazards and assess Risks at Site.

Duties & Responsibilities of the Designated Safety Officer at Site:

- To advise on safety aspects to all personnel at site including sub-contractors.
- To carry out Site safety inspection in order to observe the physical conditions of work and the work practices and procedures followed by Sub-contractors and to render advise on measures to be adopted for removing the unsafe physical conditions and preventing unsafe actions by sub-contractor's personnel.
- To organize / verify the availability of personal protective equipment
- To investigate select accidents
- Co-ordinate hazard and risk management
- Obtain Safety Declaration from Sub-Contractor.
- Impart Safety Training to sub-contractors and BHEL Personnel working at Site.

4. Safety Awareness & Training:

Safety Awareness and consciousness among workers, supervisors and executives is imparted by the Designated Safety Officer of BHEL / Sub-contractor. This is done by way of following.

- Talk on Safety issues as per Site Safety Plan



HSE Management System Manual

IS/HSE/CSSP/O1

CONSOLIDATED SITE SAFETY PLAN

- Posters and Notices at prominent places
- Display of warning boards
- Creating awareness and response for emergencies like Fire, Shock, accidents, dangerous occurrences and on First-aid, Emergency assistance agencies and their contact telephone numbers etc.
- Use of Personnel Protective Equipment

5. Site Safety Inspection:

Designated Safety Officer will inspect the site on Daily basis

- To identify unsafe conditions and unsafe actions by the labourers and bring to the notice of sub-contractor. The main objective of the Daily Inspection is to rectify the potentially dangerous situations and avoid occurrence of any incident.
- To suggest suitable remedial action to correct the unsafe conditions / acts.
- To use appropriate checklists IS:HSE:CL01 to CL08 to verify and record the safety observations.
- To follow the *Copy of Safety Manual – Health and Safety Plan for BHEL Power Sector (07.12.06 copy no. 18) issued on 26.12.06* and available at site.

6. Emergency Preparedness and Response Plan:

- Use the **Emergency Preparedness and Response Plan IS/HSE/EPR/01** available at site together with PS & Customer.
- First aid kits are to be kept in the site office or the locations in the vicinity of work place. The kit is to be maintained. Records of FIRST AID treatment given to be maintained in a register.
- Whoever first notices the accident occurrence shall immediately notify the same to Designated Safety Officer / Other BHEL executives.
- Determine the area of accident and organize for evacuation of the personnel.
- Organize for sending the injured person to nearby First-aid / Health Center / Hospitals depending on the emergency.
- In the event of fire organize for extinguishing the fire using the apparatus available and for major fire notifies the local / nearby Fire Station.

7. Electrical Safety Inspection:

- All the electrical distribution system, sub system, relevant protection unit at electrically powered machines and tools are inspected periodically including earthing at two points, to avoid electrical shocks.
- Checklist for House keeping -IS:HSE:CL02 and General safety inspection -IS:HSE:CL04, is used for periodical inspection.
- For safe operation all the Electrical portable tools and devices are connected with Earth Leakage Circuit Breaker (ELCB) protection at Distribution Board and continuity of earth connection is to be ensured.
- The ELCBs are tested periodically and records of such tests are maintained.

	<h1 style="text-align: center;">HSE Management System Manual</h1>
IS/HSE/CSSP/O1	CONSOLIDATED SITE SAFETY PLAN

- After each inspection the filled up check list date wise is to be retained by Resident Manager.

8. Transportation and Material Handling Equipment:

- Checklist of Inspection of Material Handling Equipment - IS:HSE:CL05 shall be used and records are to be maintained.

9. Erection of equipment:

- The instructions given in Erection Manual IS: EM-1 to IS:EM-5 in FIVE Volumes are to be followed during erection of equipment. SAFETY MANAGEMENT AT ERECTION SITES is elaborated in Document No. IS; EM-4/1 (Erection Manual Issued on 24.01.1995).
- Wherever Checklists are provided, the same shall be used and records are to be maintained.

10. Commissioning of equipment:

- The instructions given in Commissioning Manual IS-QCM in SIX Volumes are to be followed during Commissioning of Standard equipment.
- Wherever Checklists are provided, the same shall be used and records are to be maintained.

11. Use of Personal Protective Equipment (PPE):

- The PPE in use shall conform to IS or other relevant standard and the same shall be discarded in case it is damaged or worn out.
- Wherever Checklists are provided, the same shall be used and records are to be maintained.
- *Soft copy of Corporate Personal Protective Equipment (PPE) Safety Manual Document No. HSE / PPE Dtd 25.08.2006 available at site to be followed.*

12. Housekeeping:

- The Housekeeping Checklist IS:HSE:CL02 available in this document shall be followed and records are to be maintained.

13. Accident Investigation and Reporting:

- *Guide lines for Resident Managers on Contract Labour, Safety & Accident Reporting System issued on 30.06.06 needs to be referred.*
- The Investigation findings shall be reported to Designated Safety Officer, Concerned Project Manager and MR at Head quarters for taking proper preventive action to avoid such accidents in future.
- The Accident / Incident Reporting format IS:HSE:AIR:001 to be followed



HSE Management System Manual

IS/HSE/CSSP/O1

CONSOLIDATED SITE SAFETY PLAN

14. Protection against Fire

- This is elaborated in Document No. IS; EM-4/1 (Erection Manual Issued on 24.01.1995) SAFETY MANAGEMENT AT ERECTION SITES.
- The GENERAL SAFETY INSPECTION Checklist - IS:HSE:CL04 available in this document shall be followed and records are to be maintained.
- **FIRE FIGHTING PLAN** Extract from: Chapter 4 – Internal Appliances of Fire Protection Manual Issued by Tariff Advisory Committee Bombay as elaborated below is to be followed for finalizing the requirement of fire extinguishers at site.

15. Protection against Noise

- The Equipment used at Construction site must follow the acceptable ambient noise level as detailed below in **NOISE STANDARDS**.

16. Welding Sets

- Whenever Welding sets are brought by the contractor to site, the healthiness of the equipment is to be checked and inspected and the record is to be maintained as per the checklist IS:HSE:CL06 and CL07.

17. Civil / Structural Work

Wherever Civil work is involved the following work instructions / checklist are to be referred and followed.

- **Work Instructions for Civil Work at Site** – IS:CW:01, Rev:01, Dated 04.09.1996.
- Checklist for Scaffolding IS:HSE:CL03
- Checklist for Working at Height IS:HSE:CL01
- *Checklist for Staging IS: HSE: CL 08*
- Formats for Field Quality Plan IS:CW:01, Rev.02, Dated 15.05.1997.

18. FIRE FIGHTING PLAN

Extract from: Chapter 4 – Internal Appliances of Fire Protection Manual Issued by Tariff Advisory Committee Bombay.

Class of Fire	Suitable type of appliances
A. Fire in ordinary combustible (wood, vegetable, fiber, paper etc.)	Chemical extinguishers of soda acid, gas / expelled water and anti-freeze types and water buckets.
B. Fires in flammable liquids, paints, grease, solvents etc.	Chemical extinguishers of Foam, Carbon Dioxide and Dry powder type and sand buckets.



HSE Management System Manual

IS/HSE/CSSP/O1

CONSOLIDATED SITE SAFETY PLAN

C. Fire in gaseous substances under pressure	Chemical Extinguishers of Carbon Dioxide and Dry Powder Type.
D. Fire in reactive Chemicals, active metals	Special type of Dry Powder extinguishers and sand buckets.
E. Fire in electrical equipments.	Chemical Extinguishers of Carbon Dioxide and Dry Powder Type and sand buckets.
Clause 4.1.3.2	One 9 litre Water / Sand Bucket for every 100 sq.metre area
Clause 4.1.3.5.1	One no. of Not less than 2 kg, Dry Powder CO ₂ extinguisher within 15 metres of apparatus for rooms containing electrical transformers & switchgear.
Clause 4.1.3.5.2	One no. 5 kg, Dry Powder CO ₂ extinguisher within 15 metres of Motors / other Electrical equipment.

The following example will illustrate the method of determining the number of fire extinguishers required to give adequate protection for a given property:

Light engineering workshop (light hazards).

Area: 315m X 112m = 35300 sq.m

Type of fire:

1. Class A Fire due to normal combustibles
2. Class B Fire due to existence of spray painting process and storage of flammable liquids
3. Class E Fire due to two electrical DB and motors

Number of appliances

Basic protection

353 buckets and

59 water type extinguishers

OR

90 Water type extinguishers if buckets are dispensed with.

For Class B fires 2 Water type extinguishers are replaced by 2 Foam Extinguishers.

For Class E fires 6 Dry Powder Extinguishers are provided. Thus the total no. of fire extinguishers are

Water type: 88

Foam type: 2

Dry powder type: 6

TOTAL 96

Reference Standards for Fire Extinguishers:

Sl.No.	Standard / Year	Description
1.	IS940 : 1989	Specifications of Portable fire extinguisher, water type (gas cartridge)
2.	IS2171 : 1999	Specifications of Portable fire extinguisher, Dry powder (Cartridge type)



HSE Management System Manual

IS/HSE/CSSP/O1

CONSOLIDATED SITE SAFETY PLAN

3.	IS2878 : 1986	Specifications for Fire extinguisher, Carbon Di-oxide Type (Portable & trolley mounted)
4.	IS10204 : 2001	Specifications of Portable fire extinguisher, mechanical foam type
5.	IS10658 : 1999	Specifications for Higher capacity Dry powder Fire extinguisher (Trolley mounted)
6.	IS13385 : 1992	Specifications for Fire extinguisher, 50 capacity wheel mounted water type (Gas Cartridge)
7.	IS13386 : 1992	Specifications for Fire extinguisher, 50 l capacity, mechanical foam type
8.	FPM / June 1995	Fire Protection Manual (Part-I) By Tariff Advisory Committee

19. NOISE STANDARDS

NOISE : (Ambient standard)

Area Code	Category of Area	Limit in dB (A) Leq	
		Day time (6 AM to 9 PM)	Night time (9 PM to 6 AM)
A	Industrial area	75	70
B	Commercial area	65	55
C	Residential area	55	45
D	Silence Zone	50	40

Silence Zone is defined as area upto 100 metres around such premises as hospitals, educational institutions and courts.

Source: EPA Notification [G.S.R. 1063(E), DT. 26th Dec.1989]

Domestic appliances & Construction equipment acceptable noise level:

Sl.No.	Type of Appliances	Standard dB(A)
1.	Window Air-conditioner to 1 Ton to 1.5 Tons	68
2.	Air Coolers	60
3.	Refrigerators	46
4.	Diesel Generators for Domestic Purpose	85-90
5.	Compactors (Rollers) Front Loaders, Mixers, Crane movable, Vibrators and Saws	75

Source: EPA Notification [G.S.R. 742(E), DT. 30th Aug.1990]



HSE Management System Manual

IS/HSE/CSSP/O1

CONSOLIDATED SITE SAFETY PLAN

20. List of Applicable Statutory / Regulatory Requirements:

Sl.No.	Standard	Applicable or Not
1.	Indian Electricity Rules, 1956	Yes/ No
2.	The Motor Vehicle Act, 1988	Yes/ No
3.	The Central Motor Vehicle Rules, 1989	Yes/ No
4.	The Gas Cylinder Rules, 1981	Yes/ No
5.	The Environment (Protection) Act, 1986	Yes/ No
6.	The Noise Pollution (Regulation & Control) Rules, 2000	Yes/ No
7.	Battery (Management and Handling) Rules, 2000	Yes/ No
8.	Ozone Depleting Substances (Regulation and Control) Rules, 2000	Yes/ No
9.	The National Environment Tribunal Act, 1995	Yes/ No
10.	Pollution Control Act, Rules and Notifications, September 2001	Yes/ No
11.	Pollution Control Law – Environmental Standard for Ambient Air, Automobiles, Fuels, Industries and Noise – July 2000	Yes/ No
12.	CBIP Guidelines	Yes/ No
13.	Indian Standards as applicable	
14.	<i>List of Relevant Legislations Applicable to Various Sites ISG document issued on 30.06.06</i>	Yes / No
15.	International Standards as applicable	
16.	Project Specific Standards as applicable	

Note: Refer to register of regulations in the HSE system document IS/HSE/ROR/E1.1 to E1.6, IS/HSE/WZS/W1, W2, W3 & IS/HSE/SCH/S1



HSE Management System Manual

IS/HSE/CSSP/O1

CONSOLIDATED SITE SAFETY PLAN

SAFETY DECLARATION BY SUB-CONTRACTOR

1. Name of Sub-contractor
 2. Work Order No.
 3. Nature of work
 4. Project
 5. Number of workers deployed
- | | | |
|-----------|---|------|
| Category: | | |
| 1. | - | Nos. |
| 2. | - | Nos. |
| 3. | - | Nos. |
| 4. | - | Nos. |
6. Number of workers attended safety induction training.
 7. Safety appliances issued to workmen
- | | |
|-------------------------|--|
| Name of the appliances: | |
| 2. Safety Helmet | |
| 3. Safety Boots | |
| 4. Hand gloves | |
| 5. Safety belts | |
| 6. Safety goggles | |
| 7. Dust masks | |
8. First Aid box provided at site
 9. Safety clearance taken from concerned authority for starting the job.
 10. Sand and water provided at the welding station
 11. Fire extinguishers provided at site

Signature of sub-contractor with seal

Date:



HSE Management System Manual

IS/HSE/CSSP/O1

CONSOLIDATED SITE SAFETY PLAN

CHECK LIST FOR WORKING AT HEIGHT

Name of Sub-contractor

Work Order No.

Nature of work

Name of the Project site

Job. No.

Date

Sl. No.	Check Points	Observation	Measures
1.	Safety Plan is available from Sub-contractor	Yes / No	Document No. Dtd.
2.	All the workers have been explained safe work procedure	Yes / No	Verify with few
3.	Effective communication system have been established and explained to the workers.	Yes / No	Type of communication
4.	Adequate illumination is ensured	Yes / No	Good / fair / poor
5.	Work area inspected prior to starting of the job. Joint protocol signed for site clearance.	Yes / No	Verify document
6.	Area below the work place is cordoned.	Yes / No	Verify compliance
7.	Arrangement made for fastening hand tools.	Yes / No	Check
8.	Workmen provided with bag / box to carry nut, bolts and hand tools.	Yes / No	Check
9.	All work plate forms are of adequate strength and ergonomically suitable	Yes / No	Verify
10.	Work at more than one elevation at the same segment is restricted.	Yes / No	Check
11.	Availability of supervision staff at work place.	Yes / No	Check
12.	Availability of controlled copy of drawing and document at work place.	Yes / No	Verify

ACCESS / EGRESS

1.	Walkways provided with handrails, mid rail & toe guard.	Yes / No	
2.	All chequered plates, gratings properly welded and bolted.	Yes / No	Verify
3.	Are ladders inspected and maintained in good condition.	Yes / No	Verify
4.	Are ladders spliced	Yes / No	Verify
5.	Are ladders properly secured to prevent slipping, sliding or falling	Yes / No	Verify
6.	Do side rails extended 36" above top of landing	Yes / No	Verify
7.	Are buildup ladders constructed of sound materials.	Yes / No	Verify
8.	Rungs and cleats not over 12" on center.	Yes / No	Verify



HSE Management System Manual

IS/HSE/CSSP/O1

CONSOLIDATED SITE SAFETY PLAN

Sl. No.	Check Points	Observation	Measures
9.	Metal ladders not used around electrical hazards.	Yes / No	Check
10.	Proper maintenance, storage.	Yes / No	Check
11.	Ladder placed at right slope	Yes / No	Check
12.	Ladders, stair cases are welded / bolted properly	Yes / No	Check
13.	Any obstruction in the stairs	Yes / No	Check
14.	Are landings provided with handrails, knee rails, toe boards etc.	Yes / No	Check
15.	Whether ramp is provided with proper slope	Yes / No	Check
16.	Proper hand rails / guards provided in ramps.	Yes / No	Check
HOUSEKEEPING			
1.	Walkways, aisles & all overhead work places cleared of loose materials.	Yes / No	Check
2.	Flammable material, if any, is cleared.	Yes / No	Check
3.	All shuttering materials are removed after de-shuttering is done.	Yes / No	Check
4.	Platforms and walkways free of oil / grease or other slippery spillage.	Yes / No	Check
5.	Collected scraps are brought down or lowered and not dropped from height.	Yes / No	Ensure
Personnel Protection Equipment & Safety Devices			
1.	Use of Safety Belts and Safety Helmets are ensured for all workers as per IS / applicable standard.	Yes / No	Verify
2.	Anchoring point provided at all places of work	Yes / No	Verify
3.	Common life-line provided wherever linear movement at height is required.	Yes / No	Verify
4.	Safety nets are in use wherever required.	Yes / No	Verify
5.	Proper fall arrest system is deployed at critical work place.	Yes / No	Verify
6.	Crawler boards / safety system for work on fragile roof are used.	Yes / No	Verify

Signature of Sub-contractor Supervisor.

Signature of BHEL Supervisor

Format IS-HSE-CL01

Page 2 of 2

Rev.0

Date of Issue: 14.02.2003



HSE Management System Manual

IS/HSE/CSSP/O1

CONSOLIDATED SITE SAFETY PLAN

CHECK LIST FOR HOUSE KEEPING

Name of Sub-contractor

Work Order No.

Nature of work

Name of the Project site

Job. No.

Date

Sl. No.	Check Points	Observation	Measures
1.	Walkways, passages kept clear of material	Yes / No	Verify
2.	Area and roads kept clear for maneuvering of cranes and material handling equipment.	Yes / No	Verify
3.	Scrap, cut-pieces, welding electrodes stubs, hand tools kept tidy in workarea and disposed suitably.	Yes / No	Verify
4.	Scrap bin available at site.	Yes / No	Verify
5.	Welding cables, power cables routed properly to avoid run over by vehicle or tripping hazards and obstruction to personnel movement.	Yes / No	Verify
6.	Compressed gas hoses routed properly in the site.	Yes / No	Verify
7.	Compressed gas cylinders and hoses kept away from hot work and grinding work.	Yes / No	Verify
8.	Floor is kept clear of water, oil spillage / accumulation	Yes / No	Verify

CIVIL WORK AREA

1.	All approach, aisle, ingress / egress to / from site, excavated pits, ramps, walkways kept clear of material debris tools etc.	Yes / No	Verify
2.	Scaffolding material (H-beam, H-D tower frames, bracings, clamps), shuttering boards, across pans etc. are stacked properly at site.	Yes / No	Verify
3.	Stacking of bricks, hollow blocks are done in safe manner.	Yes / No	Verify
4.	Nails removed from wooden planks / timbers and not protruding out.	Yes / No	Verify
5.	Saw dust, wood chips and scraps wood cleared from carpentry shop and disposed suitably.	Yes / No	Verify
6.	Debris from demolition and excavated earth cleared from site and accesses.	Yes / No	Verify

ELECTRICAL INSTALLATION & BOOTHS

1.	Approach to DB, panels, Switches kept clear	Yes / No	Verify
2.	Fire extinguishers installed at an easy accessible location.	Yes / No	Verify
3.	Shock treatment chart is placed nearby place.	Yes / No	Verify



HSE Management System Manual

IS/HSE/CSSP/O1

CONSOLIDATED SITE SAFETY PLAN

Sl. No.	Check Points	Observation	Measures
4.	Welding cable and power cables are routed separately to avoid obstruction and tripping hazards.	Yes / No	Verify
5.	Welding cable and power cables are not damaged one.	Yes / No	Verify
6.	Floor of electrical booths kept dry.	Yes / No	Verify
7.	Proper grade Rubber mats are placed in front of Electrical panels	Yes / No	Verify
STORES			
1.	Walkways, entry and exits are kept clear	Yes / No	Verify
2.	Materials placed on racks are safely accessible.	Yes / No	Verify
3.	Compressed gas cylinders are segregated as full or empty and types of gas.	Yes / No	Verify
4.	Vertically stored cylinders are secured chained to avoid toppling and horizontal once guarded against rolling down.	Yes / No	Verify
5.	Flammable storage areas are isolated from store, office and work areas.	Yes / No	Verify
6.	Cement bags are stacked in proper gradient safely.	Yes / No	Verify
7.	Corrosive material (eg. Acids, alkalies) are stored away from other material and kept on collection trays to safe guard against accidental leakage.	Yes / No	Verify
8.	Storing area for lifting tools & tackles, ropes, wire ropes & Personnel Protection Equipment is dry, clean & free of corrosive material.	Yes / No	Verify
9.	Easy accessibility to installed fire extinguishers ensured in store.	Yes / No	Verify
GENERAL			
1.	Separate scrap yard is allocated for the site.	Yes / No	Verify
2.	Approaches to workstations, offices, stores are well laid and demarcated.	Yes / No	Verify
3.	Site roads are kept clear of stacked material for free & safe vehicular movement.	Yes / No	Verify
4.	Heavy materials stacking are taken care of to prevent slips, collapse and rolling.	Yes / No	Verify
5.	For house keeping at elevated work places refer to Checklist for Working at height - IS:HSE:CL01	Yes / No	Verify

Signature of Sub-contractor Supervisor.

Signature of BHEL Supervisor

Format IS-HSE-CL02

Page 2 of 2

Rev.0

Date of Issue: 14.02.2003



HSE Management System Manual

IS/HSE/CSSP/O1

CONSOLIDATED SITE SAFETY PLAN

CHECK LIST FOR SCAFFOLDING

Name of Sub-contractor

Work Order No.

Nature of work

Name of the Project site

Job. No.

Date

Sl. No.	Check Points	Observation	Measures
1.	Is site having a practice of providing suitable and sufficient scaffolds so that the work could safely be done at a height. Refer Scaffolding Standard IS-3696.	Yes / No	Check
2.	Is site engaging suitable / properly trained / experienced workmen for constructing / dismantling / shifting scaffolding works.	Yes / No	
3.	Are scaffold platforms designed / constructed with a safety factor of minimum FOUR.	Yes / No	
4.	Is there a safe means of access to the working platform?	Yes / No	
5.	Are scaffolding structure having a solid base avoiding pavements & manhole covers.	Yes / No	
6.	Is the scaffolding structure free from excavation pit / proper distance is maintained.	Yes / No	
7.	Is verticality of the structure properly maintained?	Yes / No	
8.	Are ties for scaffolding structure properly maintained (vertical as well as horizontal position)	Yes / No	
9.	Is there a provision of toe board / guardrails and are they secured.	Yes / No	
10.	Plank used for working platforms are wooden or metallic.	Yes / No	
11.	If wooden plank, whether thickness is maintained as per standard or not, viz.; <ul style="list-style-type: none">• For 1.5 M span - 1.5" thick.• For 2.6 M span - 2" thick.	Yes / No	
12.	Is there a system of inspecting the scaffolds by a competent person atleast once a week and also after every prolonged interruption in the work / bad weather / heavy wind condition?	Yes / No	
13.	Is there a system of inspecting materials of scaffolds on each occasion before erection.	Yes / No	
14.	Is overhanging of the working platform restricted to less than 50mm / four times the thickness of the	Yes / No	



HSE Management System Manual

IS/HSE/CSSP/O1

CONSOLIDATED SITE SAFETY PLAN

Sl. No.	Check Points	Observation	Measures
	board.		
15.	Is awareness of workmen on the importance of load distribution on a given working platform palpable?	Yes / No	
16.	Is there a check for the condition and correct usage of fittings for scaffolds?	Yes / No	
17.	Is the width of a working platform properly maintained according to usage, viz. <ul style="list-style-type: none">• Minimum 600mm for footing only and not for deposit of material.• Minimum 800mm for footing and deposit of material.• Minimum 1050mm when used for heavier loads or to support higher platforms.	Yes / No	
18.	Are all the materials stored on the platforms properly secured or not.	Yes / No	
19.	Are openings in working platform kept safely covered / fenced	Yes / No	
20.	Whether planks are tied using proper binding wires.	Yes / No	
21.	Are mobile scaffolds used on a firm and level surface?	Yes / No	
22.	Does the height of mobile scaffold exceed four times the smaller base dimension?	Yes / No	
23.	Are all materials stacked on the platform properly secured while in motion?	Yes / No	
24.	Is the safety rule “ not to ride on a scaffold while in motion violated”	Yes / No	
25.	Is there a system of checking for obstructions before the tower is moved?	Yes / No	
26.	Are suitable / correct lifting tackle (wire ropes, chains, shackles) selected for suspension & use.	Yes / No	
27.	Is there a system for using manila rope / coir rope for suspension at any place where such rope would be liable to damage by heat / flames/ sharp edges etc.	Yes / No	
28.	Are all precautionary measures taken to prevent contact between arc welding apparatus and suspension ropes.	Yes / No	
29.	Is hanging platform secured?	Yes / No	
30.	Is there a provision of anchoring safety belts- lanyards to be tied to guy ropes?	Yes / No	

Signature of Sub-contractor Supervisor.

Signature of BHEL Supervisor

Format IS-HSE-CL03

Page 2 of 2

Rev.0

Date of Issue: 14.02.2003



HSE Management System Manual

IS/HSE/CSSP/O1

CONSOLIDATED SITE SAFETY PLAN

CHECK LIST FOR GENERAL SAFETY INSPECTION

Name of Sub-contractor

Work Order No.

Nature of work

Name of the Project site

Job. No.

Date

Sl. No.	Check Points	Observation	Measures
PILING WORK			
1.	Condition of tripod and its stability	OK / Not OK	
2.	Condition of wire ropes, D shackles, bulldog grips etc.	OK / Not OK	
3.	Removal of loose earth, slush etc.	OK / Not OK	
4.	Entry in register, details of periodical checking & maintenance.	OK / Not OK	
5.	Guards for rotating parts of machines.	OK / Not OK	
EXCAVATION			
1.	Verification of underground electrical cable	Yes / No	
2.	Condition of storing material	OK / Not OK	
3.	Cutting earth from top & ensuring no undercutting.	OK / Not OK	
4.	Storing of material from the edge of excavated pit 5' or half of the depth whichever is more.	OK / Not OK	
5.	Barricade / fencing / Displaying of danger sign, warning sign by way of red flag / tape/ light etc.	OK / Not OK	
6.	Provision of dewatering facilities.	OK / Not OK	
7.	Provision of ladders for deep trench	OK / Not OK	
8.	Stability of nearby structure	OK / Not OK	
9.	Avoid traffic movement, piling work in the vicinity.	OK / Not OK	
DEMOLITION			
1.	Cordoning of surrounding area	OK / Not OK	
2.	Displaying of warning sign Red Flag / Tape / Light	OK /	



HSE Management System Manual

IS/HSE/CSSP/O1

CONSOLIDATED SITE SAFETY PLAN

Sl. No.	Check Points	Observation	Measures
	etc.	Not OK	
3.	Demolition from top in a planned manner	OK / Not OK	
4.	Disconnection of electrical cable connection / water / steam / gas line etc.	OK / Not OK	
5.	Removal of debris immediately at a safe place	OK / Not OK	
6.	Emergency Transport	OK / Not OK	
7.	Fire extinguishers kept nearby for emergency.	OK / Not OK	
BLASTING			
1.	Blasting record incorporating number of holes made / type of explosive used / firing pattern & sequence with date and time of blast.	OK / Not OK	
2.	Handling of explosives by licensed blaster.	OK / Not OK	
3.	Intensity of the charge calculated before use.	OK / Not OK	
4.	Before drilling presence of unfired explosives checked.	Yes / No	
5.	Blasting is carried out only during lean period (lunch / night hours)	Yes / No	
6.	Standard warning signal / all clear signal is ensured before and after firing.	Yes / No	
7.	Competent persons equipped with red flags are posted at possible approaches to stop traffic and by passers.	Yes / No	
GROUND SURFACES			
1.	Ground level, no soft spot	OK / Not OK	
2.	Footing timber level adequately supported	Yes / No	
3.	No unauthorized entry.	Yes / No	
SCAFFOLDS			
1.	Base plate level	OK / Not OK	
2.	Spindle jack vertical	OK / Not OK	
3.	Standard plumb (vertical tubes), no damage.	OK / Not OK	
4.	Ledgers level (horizontal tubes) no damage	OK / Not OK	



HSE Management System Manual

IS/HSE/CSSP/O1

CONSOLIDATED SITE SAFETY PLAN

Sl. No.	Check Points	Observation	Measures
5.	Diagonal bracing, check secure and non-missing.	OK / Not OK	
6.	Lock pin in place and secure.	OK / Not OK	
7.	Support from permanent structure.	OK / Not OK	
LADDERS			
1.	Check ladder is placed on level ground	OK / Not OK	
2.	Position at an angle of 1:4	OK / Not OK	
3.	Adequately secured	Yes / No	
4.	No damage, check welds	OK / Not OK	
5.	Extent 4 rungs above stepping off point	OK / Not OK	
6.	Uniform and proper spacing of rung and no missing rung.	OK / Not OK	
WORKING PLATFORM			
1.	Should not be less than 600mm wide	OK / Not OK	
2.	Guard rails adequate check <ul style="list-style-type: none"> Top rails at least 910mm height No gap greater than 470mm 	OK / Not OK	
3.	Boards free of defects <ul style="list-style-type: none"> No gaps Adequate support No risk of trips Properly secured / tied. 	OK / Not OK	
PERSONNEL PROTECTIVE EQUIPMENT			
1.	Helmet & Footwear worn	Yes / No	
2.	Safety harnesses as required and secured above shoulder level	Yes / No	
3.	USE of safety belt while working at height.	Yes / No	
4.	Safety goggles during welding / gas cutting / grinding etc.	Yes / No	
5.	Condition / Maintenance of safety appliances	Yes / No	
6.	Use of body guards, gloves etc.		



HSE Management System Manual

IS/HSE/CSSP/O1

CONSOLIDATED SITE SAFETY PLAN

Sl. No.	Check Points	Observation	Measures
STRUCTURAL FABRICATION & ERECTION			
1.	All electrically operated equipment has proper earthing and connected through ELCB.	Yes / No	
2.	Safety guards for drilling & grinding machine are in position.	Yes / No	
3.	Use of Scotch block / wedge on wheels of trailers during unloading of material.	Yes / No	
4.	End stoppers fixed and maintained for rail mounted gantry cranes and limit switches are in operating condition.	Yes / No	
5.	Checking lifting tool & tackles before use.	OK / Not OK	
6.	Precaution during slinging on sharp edges.	Yes / No	
7.	Signaling to crane operators by one person at a time.	Yes / No	
8.	Withdrawal of persons beneath suspended loads.	Yes / No	
9.	Cordoning on all sides displaying Red flags, tapes / light and warning signs.	Yes / No	
10.	Ascertain center of gravity for the load to be lifted.	Yes / No	
11.	Easy access for cranes to move with suspended loads.	OK / Not OK	
12.	Proper tag line is used for guiding lifting loads.	Yes / No	
13.	Proper sequence of erection is followed.	Yes / No	
14.	Guy ropes are used and secured during and after erection if heavy lift.	Yes / No	
15.	Wire ropes are maintained and its safe working load inscribed.	Yes / No	
16.	Adequate illumination provided.	Yes / No	
GAS CUTTING AND WELDING			
1.	Storing of gas cylinders in proper manner	OK / Not OK	
2.	Proper handling of gas cylinder	OK / Not OK	
3.	Condition of regulator, hose, torch etc.	OK / Not OK	
4.	Welding generators / transformers condition and its proper earthing.	OK / Not OK	



HSE Management System Manual

IS/HSE/CSSP/O1

CONSOLIDATED SITE SAFETY PLAN

Sl. No.	Check Points	Observation	Measures
5.	Condition of welding cables and joints	OK / Not OK	
6.	Electrode holder	OK / Not OK	
7.	Area free from combustible material	Yes / No	
8.	Cordoning when welding / gas cutting is in progress at height.	Yes / No	
9.	Provision of fire extinguisher.	Yes / No	
10.	Stacking of cylinders not near live wires, battery charging rooms / oil rooms.	OK / Not OK	
MEANS OF ACCESS			
1.	Platform, toe board and railing	OK / Not OK	
2.	Scaffolding and its condition and maintenance	OK / Not OK	
3.	Stair case and railing	OK / Not OK	
4.	Ladder & fixing	OK / Not OK	
5.	Safe access to and from	OK / Not OK	
ELECTRICAL WORKS			
1.	Earthing of electrically operated equipment.	OK / Not OK	
2.	Provision of Shed / Canopy / Cover of Distribution Board and sub-distribution board.	Yes / No	
3.	Insulation of Cables and Joints	OK / Not OK	
4.	Cable laying above 7 feet from ground level	Yes / No	
5.	Fire extinguishers and Main Distribution Board Room.	OK / Not OK	
6.	Periodical checking of portable tools.	Yes / No	
7.	Use of ELCBs	Yes / No	
8.	“MEN WORKING DON'T SWITCH ON” board and other related Warning boards and Tags.	OK / Not OK	
9.	Insertion of loose wires and sockets	OK / Not OK	
10.	Use of proper plug and sockets.	Yes / No	



HSE Management System Manual

IS/HSE/CSSP/O1

CONSOLIDATED SITE SAFETY PLAN

Sl. No.	Check Points	Observation	Measures
11.	Job safety analysis for shut-down jobs and its proper action.	OK / Not OK	
12.	Permit to work.	Yes / No	
HOUSEKEEPING			
1.	Material stacking and storing	OK / Not OK	
2.	Working / Moving area clean	OK / Not OK	
3.	Access / Main Approach / Passages free from obstacles.	OK / Not OK	
4.	Cordoning / covering of pit, vat, machine foundation etc.	OK / Not OK	
5.	Displaying of Red Flags / Tape / Light.	Yes / No	
6.	Removal of unwanted materials like excavated earth debris etc.	Yes / No	
FIRE PREVENTION / PROTECTION			
1.	Combustible material away from source of heat / fire.	OK / Not OK	
2.	Provision of fire extinguishers and its maintenance.	OK / Not OK	
3.	“No Smoking” Board / “Caution” Board displayed.	OK / Not OK	
4.	Stacking / Storing of different type of combustible materials.	OK / Not OK	
ROAD SAFETY			
1.	Driving by unauthorized person.	Yes / No	
2.	Loading of material on truck, dumper securely.	Yes / No	
3.	Material falling from vehicle while transporting.	Yes / No	
4.	Speed Limit.	Yes / No	
5.	Transportation of persons by dumper.	Yes / No	
6.	Going up and coming down from moving vehicle.	Yes / No	
7.	Indulging in Horse Play on job.	Yes / No	
8.	Reverse Horn.	Yes / No	



HSE Management System Manual

IS/HSE/CSSP/O1

CONSOLIDATED SITE SAFETY PLAN

Sl. No.	Check Points	Observation	Measures
9.	Location of Overhead Lines identified and pre-cautions taken.	Yes / No	
MISCELLANEOUS			
1.	First Aid Box with proper medicine and its maintenance.	OK / Not OK	
2.	Validity Date of medicine.	OK / Not OK	
3.	Illumination.	OK / Not OK	
4.	Safety board and safety promotional materials i) Posters. ii) Stickers.	Yes / No	
5.	Accident Report form.	Yes / No	
6.	Reporting System with Head Quarters.	Yes / No	
7.	Arrangement of drinking water and sanitation.	OK / Not OK	
8.	Provision of emergency vehicle.	Yes / No	
9.	Telephone Nos. of nearby hospitals displayed at prominent place • For Burns • For Fractures • For Head Injuries • General	Yes / No	
10.	Telephone Nos. of nearby Fire Stations / Police Stations / Other establishments nearby for emergency help, displayed at prominent place	Yes / No	

Signature of Sub-contractor Supervisor.

Signature of BHEL Supervisor



HSE Management System Manual

IS/HSE/CSSP/O1

CONSOLIDATED SITE SAFETY PLAN

CHECK LIST FOR HEAVY MATERIAL HANDLING EQUIPMENT INSPECTION

Name of Sub-contractor

Work Order No.

Nature of work

Name of the Project site

Job. No.

Material Handling Equipment Type

Identification Number

Date

Sl. No.	Check Points	Observation	Measures
1.	Marking of Maximum Safe Working Load	OK / Not OK	
2.	Crane Hook and Latch for the Hook	OK / Not OK	
3.	Availability of Trained operator with Licence	Yes / No	
4.	Training of persons involved in proper signaling	Yes / No	
5.	Checking of various safety limit switches	OK / Not OK	
6.	Condition of Boom	OK / Not OK	
7.	Condition of Rope	OK / Not OK	
8.	Condition of Battery and Lamps	OK / Not OK	
9.	Safety Guards for operator and other personnel	OK / Not OK	
10.	Fire Extinguisher availability	Yes / No	
11.	Warning and Danger boards where required	Yes / No	
12.	Use of Pilot vehicle / warning by personnel during transport of heavy / oversized material	Yes / No	
13.	Vehicle condition of tyres, brake, clutch, lamps and horn.	OK / Not OK	

Signature of Sub-contractor Supervisor.

Signature of BHEL Supervisor



HSE Management System Manual

IS/HSE/CSSP/O1

CONSOLIDATED SITE SAFETY PLAN

CHECK LIST FOR ARC WELDING TRANSFORMER

(Reference Standard IS-1851 – 1975 Specification for Single operated type Arc Welding Transformer)

Test to be done before first use at site and repeated periodically once in 6 months

Name of Sub-contractor

Work Order No.

Nature of work

Name of the Project site

Job. No.

Welding Set make, model and

Capacity

Serial Number

Date of Testing

Date of Testing					
Sl. No.	Check Points			Measured Value / Observations	Observation
1.	General Condition of the Set				OK / Not OK
2.	Earthing of Welding Set at Two Places				Yes / No
3.	Open Circuit Voltage in Volts (Measure Output voltage with rated input voltage without loading the set)				OK / Not OK
4.	Physical Inspection, Check Cable, termination, Insulation , cleanliness, Guard against live parts, fuse rating and healthiness				OK / Not OK
5.	Insulation Test (IR value in Megohms) <ul style="list-style-type: none">• Primary Terminal• Secondary Terminal• Continuity of Coil - Primary• Continuity of Coil - Secondary• Use appropriate Meggar				OK / Not OK
6.	Load Test $U= 20 + 0.04 I$ Where U is the Load Voltage in Volts I is the Load Current in Amps. Check the results as per the above formula.				<u>Results</u> Accepted / Rejected
Sl.No.	Welding Current	Voltage	Electrode Size	Remarks	

Signature of Sub-contractor Supervisor.

Signature of BHEL Supervisor

Format IS-HSE-CL06

Page 1 of 1

Rev.0

Date of Issue: 14.02.2003



HSE Management System Manual

IS/HSE/CSSP/O1

CONSOLIDATED SITE SAFETY PLAN

CHECK LIST FOR DC ARC WELDING GENERATOR

(Reference Standard IS-2635 – 1975 Specification for DC Electric Welding Generator)

Test to be done before first use at site and repeated periodically once in 6 months

Name of Sub-contractor

Work Order No.

Nature of work

Name of the Project site

Job. No.

Welding Set make, model and

Capacity

Serial Number

Date of Testing

Date of Testing

Sl. No.	Check Points			Measured Value / Observations	Observation
1.	General Condition of the Set				OK / Not OK
2.	Earthing of Welding Set at Two Places				Yes / No
3.	Open Circuit Voltage in Volts Speed of Machine in RPM (Measure Output voltage with DC Voltmeter without loading the set) Check value measured with Nameplate rating.				OK / Not OK
4.	Physical Inspection, Check Cable, termination, Insulation , cleanliness, Guard against live parts, fuse rating and healthiness				OK / Not OK
5.	Insulation Test (IR value in Megohms) <ul style="list-style-type: none">• Earth to Coil A• Earth to Coil B• Earth to Coil C• Continuity of Coil A• Continuity of Coil B• Continuity of Coil C (Use appropriate Meggar)				OK / Not OK
6.	Load Test (Check the results as per the formula) U= 20 + 0.04 I - Where U is the Load Voltage in Volts I is the Load Current in Amps.				Accepted / Rejected
Sl.No.	Welding Current	Voltage	Electrode Size	Remarks	

Signature of Sub-contractor Supervisor.

Signature of BHEL Supervisor

Format IS-HSE-CL07

Page 1 of 1

Rev.0

Date of Issue: 14.02.2003



HSE Management System Manual

IS/HSE/CSSP/O1

CONSOLIDATED SITE SAFETY PLAN

CHECK LIST FOR STAGING

Name of Sub-contractor

Work Order No.

Nature of work

Name of the Project site

Job. No.

Date

Sl. No.	Check Point	Details action	Observation OK / Not OK
1	Staging material	All load bearing vertical pipe/tubes shall be minimum medium thickness as per BIS 1161(Light gauge thickness pipe shall not be used without approval of engineer in charge).	
		No warped, cracked, bend and damaged material shall be used. Staging pipe shall be checked for adequacy of thickness due to rusting.	
2	Vertical supports	Size and intervals shall be as shown in staging drg.	
		Shall be erected to true vertical and shall not be placed in slope.	
		Verticals shall not be placed over the earth / ground directly.	
		Either wooden planks of good quality or steel plate shall be placed between vertical supports and earth base.	
3	Ties & Bracings	Size and intervals shall be as shown in staging drg.	
		Shall be erected to true line and shall not be placed in slope.	
4	Clamps	Clamps shall be properly cleaned in suitable oil before put into use so that to ensure the tightness of bolt and nut to the required level.	
		Damaged clamps shall not be used. All clamps & wedges shall be periodically checked for tightness till clearance issued by engineer in charge for de-centering.	
5	Base	Base shall be strong enough to receive the load. In case of earth base it shall be well compacted to desired level and no loose pockets shall be found.	
6	Wedges	Wedges if any to be provided between staging and form work shall be of good quality of wood and shall be fixed with the form work properly by nailing etc.	
7	Joints	All joints between vertical supports and Ties / bracings shall be properly clamped to the required tightness.	
		Care shall be taken to ensure that no joints are left unclamped.	



HSE Management System Manual

IS/HSE/CSSP/O1

CONSOLIDATED SITE SAFETY PLAN

8	Rigidity	Rigidity of staging as whole shall be verified thoroughly before allowing for concrete by a team of engineers concerned and a joint protocol shall be made.	
9	Removal of form work / staging	No form work or staging shall be removed before completion of allowed curing and setting time for concrete and without prior permission from the Engineer in writing.	
10	Construction Loads	Construction loads over temporary staging shall be well with in DEAD LOAD + LIVE LOAD as per approved staging design assumptions.	
11	Impact Loads	Impact load over staging shall not be allowed due to movement of construction vehicles, concrete conveying equipment etc. Ready made concrete delivered from batching plant through chocked pipes shall not be tied to staging without approval of engineer in charge. Engineer in charge to verify of condition free flow of pumped concrete through the pipe without excessive pumping pressure to avoid any accidental loads over staging pipes etc.	
12	Illumination	Sufficient illumination below the centering shall ensured for verification of above check points during night hours & wherever clear visibility is absent for checking.	
13	Curing	Excessive ponding of water beyond 25 mm over cast RCC slab during rains or curing shall not be allowed to avoid overloading of staging pipes.	
14	Workforce/skilled labours	Separate required skilled work force with fitters & carpenters etc. shall be kept to attend to above points during concreting.	
15	Approach to workplace	Proper safety ladder or approach stool shall be provided for access to inspection of staging.	
16	Fire hazards	Ensure prevention of fire hazards due to welding & electrical short circuit etc. in the total staging area.	
17	Flooding of water at base of staging	Ensure required dry conditions are maintained at the base level of the staging to avoid slippages of wedges with required pumps & other facilities.	
18	Camber	Ensure that for beams above 6 m span required camber as per approved drawings are maintained by adjustment of the staging props.	

Signature of Sub-contractor Supervisor	Signature of BHEL Supervisor
--	------------------------------



HSE Management System Manual

IS/HSE/CSSP/O1

CONSOLIDATED SITE SAFETY PLAN

Hazards Risk & Preventive Measures at Construction Sites.

(SITE SAFETY PLAN – 2)

INDEX

Sl. NO.	TITLE OF ACTIVITY	Page no.
1.	SURVEY / RECEIPT OF MATERIAL AT STORES & STORAGE	2 / 26
2.	MARCHING & PILING	3,4,5 / 26
3.	EXCAVATION	6,7 / 26
4.	BACK FILLING & SAND COMPACTION	7 / 26
5.	CONCRETING / SHUTTERING.	8,9,10 / 26
6.	HANDLING OF REINFORCEMENT	11 / 26
7.	PRECASTING	12 / 26
8.	FABRICATION	13 / 26
9.	ERECTION	14,15,16 / 26
10.	ROAD MAKING	17 / 26
11.	ROOFWORK	18 / 26
12.	WORKING WITH PORTABLE TOOLS	19 / 26
13.	HANDLING OF DIESEL	20, 21 / 26
14.	SITE TRANSPORTATION	22 / 26
15.	WORKING AT HEIGHT	23 / 26
16.	WELDING & GAS CUTTING	24, 25 / 26
17.	GRINDING	25 / 26
18.	FIRE PREVENTION	26 / 26



HSE Management System Manual

IS/HSE/CSSP/O1

CONSOLIDATED SITE SAFETY PLAN

1. SURVEY / RECEIPT OF MATERIAL AT STORES & STORAGE

ACTION BY : Concerned Site Engineer / Supervisor

Sl.No.	HAZARDS / RISK	PREVENTIVE MEASURE
1	Snakes / Insects bite, inclement weather, water borne diseases etc.	<ul style="list-style-type: none"> Provide gumboots, water bag, train personnel in first Aid treatment, provide First Aid Box
2	Injuries due to fall of material on workmen during striping of packing & unloading	<ul style="list-style-type: none"> Proper instruction to workmen about work at work and Carry out work under effective supervision by skilled personnel. Manufacturers instructions if any, to be followed during these activities. Use of proper ramps and stoppers while unloading the material and also to ensure that the ramp used will have sufficient load bearing capacity. Ensure that the equipment is stored on leveled firm floor / ground to prevent tilting / toppling.
3	Injuries due to fall of material on workmen due to improper stacking and tying	<ul style="list-style-type: none"> Proper tying, stacking of material and necessary support to the equipment in storage area. Regular check up of storage area / work shop for removal of material / unwanted scrap. Display of necessary safety precaution boards and Do's & Don't's charts at workplaces and storage areas. Oxygen and Acetylene cylinders are to be stacked separately and label mentioning full or empty to be displayed for easy identification. Chains, slings, cables etc. are to be stacked under the tarpaulin or asbestos / GI shed with tarpaulin covered over shed to avoid seepage of water during raining season. Proper sequence / labeling of material stacking be followed for quick retrieval.
4	Fire	<ul style="list-style-type: none"> Ensuring that the materials stacked are classified as combustible, inflammable, explosive and stored separately. Ensure right type & quantity of extinguishers are available and personnel trained for using the extinguishers.
5	Handling chemicals, paints etc	<ul style="list-style-type: none"> Ensure availability of Material Safety Data Sheets (MSDS). Ensure strict adherence to the requirement of MSDS.



HSE Management System Manual

IS/HSE/CSSP/O1

CONSOLIDATED SITE SAFETY PLAN

2. MARCHING & PILING

ACTION BY : Concerned Site Engineer / Supervisor

Sl.No.	HAZARDS / RISK	PREVENTIVE MEASURE
1	Fall of material / slings cut off / fall of person from same level	<ul style="list-style-type: none"> • Use of proper slings and checking adequacy before use. • Selection of proper hitch while shifting sleepers. • Path should be free from interruption. • Carrying out work by Skilled operator / Signal man under supervision of knowledgeable supervisor. • Use of PPE's like Safety shoe, helmet, hand gloves.
2	Hand injury, head injury, fall from same level, struck by, struck against etc.	<ul style="list-style-type: none"> • Distance must be maintained while inserting the wooden plank. • No one shall be entertained under the rig to insert plank, pouring water, grease etc. while marching. • Marching must be done in the presence of skilled supervisor. • While shifting the sleepers by the winch following needs to be ensured: <ul style="list-style-type: none"> ➤ The correct hitch must be selected ➤ Path should be cleared from barriers ➤ No one should have direct touch with sleepers ➤ Guy rope should be tied to control the swings of sleepers ➤ Safety helmet, shoe, gloves and belt will be tied by the lifeline on workers shoulder level ➤ Operator should not use loose shirt
3	Toppling of rig	<ul style="list-style-type: none"> • Sleepers should be provided equally on both the sides and under the eye • Exact counter weight should be placed at rear end • Dumps would be compensated by placing the wooden pieces over the sleepers / filling with sand to make the surface level • Care must be taken while rolling the wire rope on Ballard for marching straight and returning to a required angle.
4	Fall of person from height	<ul style="list-style-type: none"> • Safety belt must be used and lifeline be tied at shoulder level while putting the channel under the helmet for resting the hammer.



HSE Management System Manual

IS/HSE/CSSP/O1

CONSOLIDATED SITE SAFETY PLAN

2 MARCHING & PILING --Contd

ACTION BY : Concerned Site Engineer / Supervisor

Sl.No.	HAZARDS / RISK	PREVENTIVE MEASURE
5	Greasing and maintenance of rigs	<ul style="list-style-type: none">• Greasing should be done while the machine is in rest• Gloves should not be used for doing any repair in case of running machine• Greasing gun must be used• Structural frame should be cleaned from grease to avoid slippery surface.• All nuts & bolts should be tightened before it get broken off by shear.• Wire rope should be checked visually and be changed if needs.
6	Injuries while operating / piling	<ul style="list-style-type: none">• Wearing gloves is necessary before handling the wire ropes / handling bitumen• Wearing shoes• Operation must takes place under the supervision of piling in charge / front line supervisor• All workers are clearly told about their responsibility & they must understand clearly.• Do not allow any body to sit near by the rig while in operation.• Wearing of helmet with chin strap• Fly wheel and gear pulleys are properly guarded• While pouring the concrete, worker will ensure that the belts are used properly.
7	Fire	<ul style="list-style-type: none">• Fire extinguisher of Halon type be placed with each rig.• All workers are to be trained to operate the extinguishers• Water buckets be placed near by piling area to control the class A fires.
8	Slipping of tripod legs for piling / Injury	<ul style="list-style-type: none">• Tripod legs should be properly spiked in the ground. This will prevent the accident due to slip of the tripod legs when rested on a paved ground or sleepers. The shear legs and bases become fatigued with usage. Those should be replaced frequently.
9	Failure of pulley	<ul style="list-style-type: none">• The failure of a pulley due to shearing of pin is quite common. Therefore frequent check up of pulley is essential.



HSE Management System Manual

IS/HSE/CSSP/O1

CONSOLIDATED SITE SAFETY PLAN

2 MARCHING & PILING --Contd

ACTION BY : Concerned Site Engineer / Supervisor

Sl.No.	HAZARDS / RISK	PREVENTIVE MEASURE
10	Failure of wire rope	<ul style="list-style-type: none">The wire rope linked between main piling tools should be checked frequently.
11	General	<ul style="list-style-type: none">All workers must wear tight fitting clothes. Use helmets, hand gloves, protective foot-gears, earmuff and eye goggles.Electrical connections must be handled with a great deal of care. Direct tapping of power should be prohibited. Each unit should have its own switchboard. All cables should be properly insulated. Earthing is to be ensured.All movable part of the winch should be suitably guarded.Engine must be stopped before replacing belts.
12	Damage of near by structure	<ul style="list-style-type: none">Piling work causes vibration, that may damage near by structure, particularly old ones. It is thus essential to keep watch on the old structure while piling is in process. Condition of the structure around the piling area should be examined before starting of work.
13	Pile breaking	<ul style="list-style-type: none">For pile breaking operation piles projected more than 2 m may be considered for groove chipping and gas cutting at a level of 5 m height above the cutoff level avoiding tilting or collapsing of the upper part.



HSE Management System Manual

IS/HSE/CSSP/O1

CONSOLIDATED SITE SAFETY PLAN

3. EXCAVATION

ACTION BY : Concerned Site Engineer / Supervisor

Sl.No.	HAZARDS / RISK	PREVENTIVE MEASURE
1	Under ground cables / HT lines / Electrocutation	<ul style="list-style-type: none"> Site clearance and information on location of specific area be obtained from concerned customer's department.
2	Improper shoring / collapse of trench	<ul style="list-style-type: none"> Excavate as per the angle of repose of the particular soil. Provide shoring wherever required The excavated soil shall be kept at a distance of more than 5 feet or half of the depth of the trench, whichever is more from edge. Proper slope must be given. Vehicle movement should not be allowed near by the edge of the trench. Necessary protection should be taken care. Cutting should be done from top to bottom. Under cutting should not be allowed. While providing steps for access / egress, slippery surface must be avoided. Proper ramp must be provided. Work must be done under the control of skilled supervisor.
3	Ground water seepage & accumulation	<ul style="list-style-type: none"> Dewatering to be done before allowing workmen in or around the pit Suitable pump must be used if heavy seepage exists.
4	Personnel falling into excavated pit	<ul style="list-style-type: none"> Provide proper sign / warning board Use proper means of access. Ladders to be provided which should be projected (extended) more than 3 feet from the ground level. 3 feet height Barricade be provided near the excavated area. Proper illumination be provided. In deep excavation (more than 4 feet), persons working at slope or bench of the pit should wear safety belt. One ladder should be placed at the pit site all the times. One ladder for each 100 m length.
5.	Material falling into excavated pit	<ul style="list-style-type: none"> Store material away from the edge of the pit (away from the barricade) Edge preparation be ensured Vehicle movement permitted away from the pit barricade.



HSE Management System Manual

IS/HSE/CSSP/O1

CONSOLIDATED SITE SAFETY PLAN

3. EXCAVATION Contd.

ACTION BY : Concerned Site Engineer / Supervisor

Sl.No.	HAZARDS / RISK	PREVENTIVE MEASURE
6	Occupation health hazards	<ul style="list-style-type: none">Water spraying be ensured over the fly ash or fines for suppression of dustNose / dust mask must be usedSafety shoe with ankle must be usedEnsure eye protection using goggles.

4. BACK FILLING & SAND COMPACTION

ACTION BY : Concerned Site Engineer / Supervisor

Sl.No.	HAZARDS / RISK	PREVENTIVE MEASURE
1	Reversing of vehicle / personnel injury / toppling of vehicle	<ul style="list-style-type: none">Reversing horn (back gear horn) of each vehicle should be workingDriving near to the edge of the excavation be avoided.Back view mirror must be fitted and intact in proper position on each vehicleProper approach to be made to pit, which required to be backfilled as well as to the source of backfilling material.Proper signaling be ensured while reversing the vehicle.Activities are to be performed under the control of skilled supervisor.
2	Compactors	<ul style="list-style-type: none">All the drivers should possess a valid license.For mini hand operated compactors, all rotating parts should be guarded.Near by persons should be alerted while reversing the compactorsHand gloves should be used in case of mini hand operated compactorsCare must be taken while starting the hand operated compactors.
3	Excavation area / toppling of rollers & compactors	<ul style="list-style-type: none">Area under excavation should be barricaded.Warning sign should be displayed.Drivers / operators should be advised suitablyConstant supervision must be provided.Repair and maintenance of compactors or rollers should be done out of compactor areaProper illumination be provided.JCBs need not go nearer to edge of excavated area.JCB operators must use helmet.



HSE Management System Manual

IS/HSE/CSSP/O1

CONSOLIDATED SITE SAFETY PLAN

5. CONCRETING / SHUTTERING.

ACTION BY : Concerned Site Engineer / Supervisor

Sl.No.	HAZARDS / RISK	PREVENTIVE MEASURE
1	Person working at height / fall from height	<ul style="list-style-type: none"> • Make proper platform with handrail • Use safety belt at height • Use safety net if necessary • Use personal protective gears as required
2	Placing of loose material at top / fall of material	<ul style="list-style-type: none"> • Provide toe boards throughout periphery of the platform • Avoid gap between platform planks • Do not place loose materials over or near by the edge of the platform • Keep the hand tools in a particular box and the box should be tied / fixed with the platform. • Use hand tools by tying with rope to a fixed structure, so that it does not fall off due to inadvertent slippage etc. • Use safety net having smaller mesh size. • Avoid standing just below the working area.
3	Improper approach way / fall of person from height	<ul style="list-style-type: none"> • Use proper ladder with handrail placed on firm ground and lashed / fixed both ends of the ladder • Make proper landing place
4	Lifting of materials like shutters, concrete etc.	<ul style="list-style-type: none"> • Check wire ropes & brakes of the machines daily • Check lifting tools and tackles daily • Proper slinging • Check the locking system of concrete bucket regularly
5	Noise pollution while operating vibrator, compressors, improper handling of material, electrocution, electrical fire etc.	<ul style="list-style-type: none"> • Use of ear plug or ear muff • Use of hand gloves • Electrical connection to be taken through ELCB • Checking of electrical grounding system periodically • Overhead work to be coordinated properly to avoid injury to people working underneath. • Proper instruction to be given to the workmen by supervisor while working • Constant supervision must be provided • Greasing need not be done on running mixer machine • Carbon dioxide type extinguisher should be placed nearby DB / SDB



HSE Management System Manual

IS/HSE/CSSP/O1

CONSOLIDATED SITE SAFETY PLAN

5. CONCRETING / SHUTTERING. Contd.

ACTION BY : Concerned Site Engineer / Supervisor

Sl.No.	HAZARDS / RISK	PREVENTIVE MEASURE
6	Protruding of nails / injuries, scratch	<ul style="list-style-type: none"> Protruding nails from the shuttering planks should be removed before put into the use. Nails should not be thrown or spread at site. Nails must be kept in proper box.
7	Pouring of concrete using transit mixer	<ul style="list-style-type: none"> Reversing horn (back gear horn) of each vehicle should be working Helper should be provided to operate the lever to unload the concrete and guide the vehicle while reversing. Concrete should not be collected by bond carrying on hand for making cubes Before making move, the helper should check that nothing is lying / nobody is sleeping under the tyres On daily basis maintenance work shall be carried out. Maintenance work shall be taken place after shutdown of engine fully and informing driver. No one should be permitted to sit over the tyre shield. Speed limit permitted at work site must be followed. Hand break and wedge should be placed under the tyre while parking at site for unloading the concrete. Each and every rotating part of transit mixer should be guarded properly Tyre pressure needs to be checked at regular interval. Mixer fitness test validity to be ensured Break efficiency, head lights, reverse horn coordination should be checked periodically. Concreting activity must be done under the control of skilled supervisor.
8	Defects in wire rope and its clamping in mixer chain	<ul style="list-style-type: none"> Proper examination by a competent person before taking in use. Lubricant should be applied as per norms.
9	Inhaling of exhaust gases / health injury	<ul style="list-style-type: none"> Inhaling of exhaust gases coming out of Diesel mixer may cause diseases so it should be directed away from the operator.
		<ul style="list-style-type: none">



HSE Management System Manual

IS/HSE/CSSP/O1

CONSOLIDATED SITE SAFETY PLAN

5. CONCRETING / SHUTTERING. Contd.

ACTION BY : Concerned Site Engineer / Supervisor

Sl.No.	HAZARDS / RISK	PREVENTIVE MEASURE
10	Cleaning of mixer drum / health injury	<ul style="list-style-type: none">• Accident normally occurs during cleaning mixer drum , so care should be taken to display the notice “ UNDER REPAIR” while cleaning the Drum.
11	Contact of body parts with power transmission belt / health injury	<ul style="list-style-type: none">• Each and every rotating part of transit mixer should be guarded properly using protective guard.
12	Electric Shock	<ul style="list-style-type: none">• All part of electrical installations should be so equipped so as to prevent danger of electrical shock.• Personal protective equipment such as rubber boots should be considered as providing adequate protection against risk of electric shock.



HSE Management System Manual

IS/HSE/CSSP/O1

CONSOLIDATED SITE SAFETY PLAN

6. HANDLING OF REINFORCEMENT

ACTION BY : Concerned Site Engineer / Supervisor

Sl.No.	HAZARDS / RISK	PREVENTIVE MEASURE
1	Sharp edge / scratch / injury	<ul style="list-style-type: none">Persons handling reinforcement rod should wear hand gloves and safety shoes.While shifting the lengthy rods, the group of persons involved in shifting should be of nominal heights.While shifting the rods, the passage clearance must be ensured.
2	Rod cutting machine / cutting injury / caught in rotating parts	<ul style="list-style-type: none">While bending the rod the nearby persons should be alerted.The rotating part of the machine should be guardedAvoid using loose shirts.Ensure proper earthing of machine and connection taken through ELCB.
3	Persons falling from height / Injury.	<ul style="list-style-type: none">Safety belts must be used while handling the reinforcement at a height of more than 2 meters.Safety net to be tied.People working underneath area should be alerted.
4	Tying of reinforcement bars / hand puncturing	<ul style="list-style-type: none">Hand gloves should be used.Only one person should do this job in one place.
5	Fall of reinforcement rod	<ul style="list-style-type: none">Proper stacking of rods to be done if required to store at some elevated levelRequired quantity of rod should be shifted to elevated work spot.
6	Projected edge / Eye injury	<ul style="list-style-type: none">The projected edge of the stacked rods should be covered.
7	Bending / breaking of rod	<ul style="list-style-type: none">Carbon content in reinforcement to be checked.



HSE Management System Manual

IS/HSE/CSSP/O1

CONSOLIDATED SITE SAFETY PLAN

7. PRECASTING

ACTION BY : Concerned Site Engineer / Supervisor

Sl.No.	HAZARDS / RISK	PREVENTIVE MEASURE
1	Reinforcement bar / personnel injury, scratches	<ul style="list-style-type: none"> Gloves should be used Reinforcement bars should be stacked properly Care should be taken while tying bars with steel wire Good house keeping should be maintained.
2	Mixer machine	<ul style="list-style-type: none"> Rotating parts should be guarded Greasing of gears / other maintenance should be done in switch off mode. Ear plug should be provided if necessary Person should carry only 50 Kg Connection should be given through ELCB.
3	Pouring of concrete / fall of person / injury	<ul style="list-style-type: none"> Neat and strong walk way should be provided over the network of reinforcement bar Safety shoe should be used Load carrying helmet should be used Hand gloves should be used.
4	Vibrator / noise, electrocution,	<ul style="list-style-type: none"> Gloves should be used Use of ear plugs Proper earthing of equipment and supply provision through ELCB Keeping the vibrator unit at one side to avoid hindrance to movement



HSE Management System Manual

IS/HSE/CSSP/O1

CONSOLIDATED SITE SAFETY PLAN

8. FABRICATION

ACTION BY : Concerned Site Engineer / Supervisor

Sl.No.	HAZARDS / RISK	PREVENTIVE MEASURE
1	General	<ul style="list-style-type: none">• Space should be earmarked for fabrication yard at least 40 – 50 feet away from a rail track, road and overhead transmission lines.• All equipment electrically operated must have proper earthing and guards in position.• Electrical supply should be taken through ELCB.• The use of rubber gloves or leather gloves in dry condition is an absolute must, while operating hand held electric tools.• Drilling machine , grinding machine should have safety guard in position.• While unloading structural steel from trailers or wagons by cranes adequate protection should be taken to make the trailers or wagons stationary by putting scotch blocks or wedge on the wheels.• No persons should stand under hanging or swinging load area.• While fabricating heavy structures, adequate props to be given to avoid toppling of the component under fabrication.• Material should not be dumped haphazardly. It should be stacked properly in order.• All the confined space such as tanks, control equipments etc should be ventilated properly.



HSE Management System Manual

IS/HSE/CSSP/O1

CONSOLIDATED SITE SAFETY PLAN

9. ERECTION

ACTION BY : Concerned Site Engineer / Supervisor

Sl.No.	HAZARDS / RISK	PREVENTIVE MEASURE
1	Location of cranes / unlevelled surface of earth / toppling of crane / Overloading of cranes / Setting of cranes / Collapse of boom Physical injury of men and damage of equipment material etc.	<ul style="list-style-type: none"> Ground surface should be leveled. Stability of earth should be checked. Mobile crane should be parked on hard soil. Crane should not be placed near the edges of pit or excavations. 1" thick metallic plate or wooden sleeper to be placed on the ground to increase the stability of the crane to be positioned and distribute the load equally. Suitable approach shall be made for crane marching. Wooden sleepers shall be used wherever necessary. Proper boom angle and radius shall be ascertained before going to lift a load. Boom over hoisting limit/ cut off switch should be checked before use. Check tires condition / pressure. Overloading shall never be allowed at site. Tag line should be used while hoisting heavy and bulky materials. Limit switches of cranes should be tested frequently for ensuring its proper functioning. Operator should be able to see the hook and load throughout the hoisting period.
2	Poor signaling / operation	<ul style="list-style-type: none"> Employ experienced signalman only Crane operator should be familiar with those signal Operator should possessed with valid license Hindrance to operators cabin should be avoided.
3	Overconfidence / negligence / inexperience on the part of workmen	<ul style="list-style-type: none"> Check for people movement underneath the lifted load. Continuous PEP talk to create awareness Provide constant supervision
4	Reversing the crane	<ul style="list-style-type: none"> Healthy ness of reverse horn to be ensured. Use of reverse horn before movement Instruct the helper to guide crane operator while reversing Stop people movement behind the crane area
5	Failure of lifting tackle, sling, chain pulley / fall of material	<ul style="list-style-type: none"> Before lifting any load its actual weight should be ascertained. Center of gravity should be identified and mode of load transfer at sling point to be considered.



HSE Management System Manual

IS/HSE/CSSP/O1

CONSOLIDATED SITE SAFETY PLAN

9. ERECTION Contd.

ACTION BY : Concerned Site Engineer / Supervisor

Sl.No.	HAZARDS / RISK	PREVENTIVE MEASURE
		<ul style="list-style-type: none"> Exact determination of sling capacity, sling angle, factor of safety Factor of Safety should be at least 2.5 Radius of swing should be identified A visual check must be done regarding fitness of all lifting tackles, ropes, slings etc. before every use. The common tendency of checking gear meshing, lubrication, coupling, hole matching etc. by feeling with a finger must be strictly curbed. Selection of bars, rollers, skid etc. should be made depending the type of equipment to be handled. No slings should be overloaded. Proper quality of pulley block should be used. In no case pulley block suitable for fiber rope should be used for steel wire ropes. No person shall walk, stand or work beneath suspended load. During erection only one signaler shall give signals. However STOP signal should be obeyed whoever gives.
6	Lifting of structure / improper hitch / fall of material	<ul style="list-style-type: none"> Correct hitch to be selected respective to the structure to be lifted Sudden jerk should be avoided. The structural members should be kept in orderly manner on the ground so that those items do not roll down while being handled. Clear passages should be left for easy handling and transportation of structures. All persons shall stand clear when a crane is sorting or shifting steel girders or other structural materials. While using spanners, reverting hammer etc. at height should be tied with rope fixed to nearby structure so that it will not drop in case of slip. Care should be taken while lifting loads. Proper tag line must be used for guiding while lifting loads. While positioning a beam of fabricated structure etc. it shall be so held that the workers hand does not get jammed against other objects.



HSE Management System Manual

IS/HSE/CSSP/O1

CONSOLIDATED SITE SAFETY PLAN

9. ERECTION - Contd

ACTION BY : Concerned Site Engineer / Supervisor

Sl.No.	HAZARDS / RISK	PREVENTIVE MEASURE
		<ul style="list-style-type: none"> Loose bolt, nuts, and tools must be kept in a box and not on structures. Box must have proper anchorage. Care should be taken to fasten the erected members properly and secure by guys etc. wherever necessary. Providing packing over sharp edges should protect ropes and slings. Slinging should be carefully done so as to prevent the load from slipping. Proper sequence of erection should be followed. All electrically operated equipments like grinding machine, drilling machine, welding machines etc. must be properly earthed. The structural member should be able to taken out as per sequence of erection without disturbing the stack. At the same time light structure should not be stacked below heavy structural member to avoid damage. Safety appliances like safety Helmets, gloves, belts must be used suitably at erection sites.
7	Barricade of working area / Fatal hit	<ul style="list-style-type: none"> Area should be barricaded Appoint experienced signalman.



HSE Management System Manual

IS/HSE/CSSP/O1

CONSOLIDATED SITE SAFETY PLAN

10. ROAD MAKING

ACTION BY : Concerned Site Engineer / Supervisor

Sl.No.	HAZARDS / RISK	PREVENTIVE MEASURE
1	Hot mix plant / Burns	<ul style="list-style-type: none"> • Ascertain the direction of wind and then locate. • Provide fire fighting equipment • Avoid open fire near fuel tank • Helmets, Gumboots, Goggles and Hand gloves should be provided for operators, mechanics and helpers • Avoid using loose clothes • Ensure that the guards on moving parts are firmly fixed and properly • The platform for operation should be strong and spacious and provided with side railing. Ladder should be provided for access. • Avoid direct contact with dryer drum / its aggregate. • Avoid leaning over the chamber mixer. • Avoid back fire
2	Heating Bitumen / Handling	<ul style="list-style-type: none"> • Container should be leak proof & kept closed. • Temperature should be maintained • Avoid back fire • Ensure the buckets for carrying bitumen are intact • Hand gloves shall be used
3	Stones, crushed stones / Injuries	<ul style="list-style-type: none"> • Stones should be kept at side. • Reverse horn of the truck must be healthy
4	Road rollers / injury	<ul style="list-style-type: none"> • Operator should have valid license • Repair / Maintenance work should not be done while in motion / engine "ON" condition. • Roller operating area should be indicated by planting red flag on both sides.



HSE Management System Manual

IS/HSE/CSSP/O1

CONSOLIDATED SITE SAFETY PLAN

11. ROOF WORK

ACTION BY : Concerned Site Engineer / Supervisor

Sl.No.	HAZARDS / RISK	PREVENTIVE MEASURE
1	Standing on and moving above roof under construction / Falling and injury	<ul style="list-style-type: none"> • Fabricate temporary structure / surface of adequate strength and supported at a number of points to distribute load. • If site is dusty, then dust control measure must be provided to avoid dust deposition on the roof. • Suitable platform should be furnished with width of more than 600 mm for moving along horizontally. • Cat boards, flat ladder, crawling boards should be used for moving along vertically. • A safety net or catch platform should be installed under the roof if it is necessary. • Evacuate all workers under the roof where work is in progress. • Suitable precaution board should be displayed on working spot. • Guard rails be installed around the roof edge and roof openings along with toe guard and middle rail. • Proper egress and access to be provided to reach the work spot. • All roof materials should be stored at ground level and shifted as per requirements and do not be stored at elevated work spot. At most care must be taken while transporting the fragile material from store to work spot. • Proper PPEs like suitable clothing, footwear, with non-slip soles safety belts, fall arresting system (made preferably from rope).
2	Electrocution / Injury	<ul style="list-style-type: none"> • The electricity supply to adjacent overhead wires should be interrupted or the wire should be rendered harmless by some other means. • Proper illumination arrangement must be made.
3	Health	<ul style="list-style-type: none"> • Medical examination would be done to detect any defects of equilibrium before being engaged at work. • Emergency vehicle should be parked at site for round the clock. • First aid hospital shall be identified and phone number would be displayed at all visible locality.



HSE Management System Manual

IS/HSE/CSSP/O1

CONSOLIDATED SITE SAFETY PLAN

12. WORKING WITH PORTABLE TOOLS

ACTION BY : Concerned Site Engineer / Supervisor

Sl.No.	HAZARDS / RISK	PREVENTIVE MEASURE
1	Electric shock, Burns, Electrocutation / Injury	<ul style="list-style-type: none">• Earthing of all electrical equipment must be ensured.• Supply through ELCB should be provided.• Regular checking of ELCB operation is to be done. Register should be maintained .• Double earthing should be followed.• Electrical cable should be neatly traced along the platform and handrail. Avoid placing them on the platform or routing in haphazard way.• 3 pin plug should be used for power tapping.• Proper shed should be provided to DBs to protect the same from extreme weather condition.• Avoid number of intermediate cable joints. One joint per 25 meter is allowed with necessary insulated taping.• Appropriate PPE should be used.• “DANGER BOARD”, “ MEN ON THE JOB” “DO NOT SWITCH ON” boards shall be put up as required.• Insertion of loose wires in the socket shall not be allowed.• Dry chemical type fire extinguisher shall be kept in the DB / FDB location. Use of these must be known to workers & supervisors.
2	Caught in rotating parts, slip from hand / injury	<ul style="list-style-type: none">• Ensure that the guards are firmly and correctly fixed.• Avoid doing repair / maintenance work during in motion.• Avoid stagnation of water in and around.• Avoid wearing loose shirts• Retain hold of hand tools until moving parts have stopped.• Avoid leaving the equipment as it is without “ switch off”.• Use hand gloves free from oil & grease.• Never carry the machine by its power cord.
3	Occupational health hazards / Noise	<ul style="list-style-type: none">• Use ear plug if necessary.• Change portable tools if noise level is not controllable.



HSE Management System Manual

IS/HSE/CSSP/O1

CONSOLIDATED SITE SAFETY PLAN

13. HANDLING OF DIESEL

ACTION BY : Concerned Site Engineer / Supervisor

Sl.No.	HAZARDS / RISK	PREVENTIVE MEASURE
1	Flammable and toxic vapors on exposure to atmosphere. Being heavier than air become difficult for it to disperse.	<ul style="list-style-type: none"> Care should be taken to prevent accidental ignition and explosion of the vapors. Electrical cables should be properly insulated to prevent spark and fire. Incandescent lamps (if used) , shall have glass cover and protective cage. To take out flammable liquids from 200 L drum to small containers, manually operated hand pump with funnel shall be used. Lid of containers shall be immediately replaced. Match box or gas ignited lighters use must be avoided. NO SMOKING / NO NAKED LIGHTS board must be displayed. Container should be stored in upright position in an open air compound and securely fenced and surrounded by a bund sufficient to hold the content of the largest drum stored plus 10%. In case drums are stored horizontally wedges must be used. “ Highly Inflammable Liquid” caution board should be displayed at the entrance of the storage area. Care must be taken to avoid spillage & leaks by maintaining screw caps and the use of funnels, spouts or a symphonic device. Spillage can be soaked with dry sand, which could then be placed at least 4 M away from any possible vapour source or combustible stock of materials.
2	Cleanliness and disposal of rubbish / Fire	<ul style="list-style-type: none"> It is vital that all waste of highly flammable liquids or materials contaminated by them is disposed off immediately and workplace kept clean all times to remove hazards. Within workplace, metal bins with lids are required to receive rags and waste. All bins should be removed to store overnight. Rubbish is to be incinerated in small quantities in the open at least 8 m from any building. <p>Cleaning should be done with nonflammable solvent in well-ventilated places. Detergent, degreaser, cleanser are often satisfactory.</p>



HSE Management System Manual

IS/HSE/CSSP/O1

CONSOLIDATED SITE SAFETY PLAN

13. HANDLING OF DIESEL - Contd.

ACTION BY : Concerned Site Engineer / Supervisor

Sl.No.	HAZARDS / RISK	PREVENTIVE MEASURE
		<ul style="list-style-type: none">• Wooden, plastic or non-sparking alloy implements should be used to clean residues from floor or other surfaces.• Heat should never be applied to normally empty vessels as they still contain explosive mixture.• Empty containers with cap removed should be crushed and disposed off as rubbish, but not incinerated.• The cleaning or repairing of drums on site is not recommended. They should be returned to the supplier if they are not to be removed.



HSE Management System Manual

IS/HSE/CSSP/O1

CONSOLIDATED SITE SAFETY PLAN

14. SITE TRANSPORTATION

ACTION BY : Concerned Site Engineer / Supervisor

Sl.No.	HAZARDS / RISK	PREVENTIVE MEASURE
1	Site access or routing at site / accidents	<ul style="list-style-type: none"> Site entrance should be located in such a way so as to cause minimum inconveniences to the public or other road users. Suitable warning notice should be displayed at the convenient locations (adjacent to overhead lines or near storage areas or excavated pits etc.) Provision of one way system and the avoidance of vehicle reversal recommended upto a satisfactory level. Protective embankment should be provided at the all excavated sites particularly at the areas where lorries or dumpers trip into excavations.
2	Vehicles & drivers / Accidents	<ul style="list-style-type: none"> Fitness of vehicle needs to be checked. Driver must possess valid license. Tiers condition / Battery condition be checked.
3	Violation of driving rules / accidents	<ul style="list-style-type: none"> Drivers must follow the traffic rules and signals. Speed limit and sharp bends must be avoided. Stop and proceed carefully at unmanned junction points.
4	Over loading / Accidents	<ul style="list-style-type: none"> Over loading causes more wear & tear of tires, road surfaces and decreasing efficiency of the moving components of the vehicle. It also causes less control on steering, inadequacy of break power, overturning while negotiating sharp bends.
5	Stacked material / Accidents	<ul style="list-style-type: none"> Transport vehicle usually should go to the stacked material site for loading either manually or by machine. In case of loading by a ladder strong canopy or cap should be provided for the safety of the driver. The engine of the vehicle should not be kept running during the period of stacking. In case of loading or transporting of material such as built up columns or MS rods which are projected beyond the vehicle should be provided with precautionary signs suitable (Flag or Signal man), to avoid injuries to the people. Human being should not be transported in Truck / Dumpers / Cranes etc. Filled Oxygen and Acetylene cylinders should not be thrown from vehicle. It must be shifted through bottom rim.



HSE Management System Manual

IS/HSE/CSSP/O1

CONSOLIDATED SITE SAFETY PLAN

15. WORKING AT HEIGHT

ACTION BY : Concerned Site Engineer / Supervisor / Site Safety Engineer

Sl.No.	HAZARDS / RISK	PREVENTIVE MEASURE
1	Fall of a person / injury	<ul style="list-style-type: none">• Fabricate temporary structure / surface of adequate strength and supported at a number of points to distribute load.• Suitable stable platform should be furnished with width of more than 600 mm for moving along horizontally.• Proper access / egress should be provided.• Good house keeping should be maintained at elevated work place.• PPE like safety belts, fall arresting system should be incorporated / anchored of lifeline with permanent structure at a height of person shoulder level.• Guy ropes shall be used for anchoring lifeline of safety belt to facilitate safe horizontal movement at height.• In special circumstances fall arrestor should be used where usage of safety belt is non-practical.
2	Fall of material / Injury	<ul style="list-style-type: none">• Platform should be spacious to allow placement of material and space for working person.• Barrication / handrails, toe boards should be provided if necessary.• Guard / Safety net is provided suitably for preventing falling of material from height..• Overloading on temporary platform is avoided.• Protect structures against external impact.• Build and dismantle the structures in accordance with design.
3	Improper scaffolding	<ul style="list-style-type: none">• Erected on firm and level ground• Proper approach should be provided by ladders, Ramps etc.• Gangway jalties, which are used to form platform at top, should be tied firmly.• Slippery / wet condition over the working platform should be avoided.• Safety belt & safety helmet are must for the people who are working on scaffolding platform.



HSE Management System Manual

IS/HSE/CSSP/O1

CONSOLIDATED SITE SAFETY PLAN

16. WELDING & GAS CUTTING

ACTION BY : Concerned Site Engineer / Supervisor

Sl.No.	HAZARDS / RISK	PREVENTIVE MEASURE
1	Fire, explosion, backfire / Injury	<ul style="list-style-type: none">• DA and Oxygen cylinders should be kept in upward position and tied firmly.• Cylinders should be shifted by wheel trolley.• DA cylinders should be covered by wet cloths or gunny bags.• Flash back arrester should be fitted in all DA cylinders.• Nozzle of cutting torch should be properly tightened and kept clean from dirt, dust, metal depositions etc.• No joints and extension of hoses are allowed for DA.• If any crack is found on the hose pipe it shall be thoroughly checked and replaced.• Provide right type of fire extinguishers near by the work spot.• Gas cylinder should be stored properly in a shed. Empty and full cylinders should be kept separately and labeled.• Oil or Paint drums (empty or with content) shall not be allowed to be kept near the vicinity of weld area.
2	Bare wire or improper insulation / Electrocutation	<ul style="list-style-type: none">• Earthing of all electrical equipment must be ensured.• Supply through ELCB should be provided.• Double earthing should be followed.• Electrical cable should be neatly traced along the platform and handrail. Avoid placing them on the platform or routing in haphazard way.• 3 pin plug should be used for power tapping.• DBs must be protected from rains.• Avoid number of intermediate cable joints. One joint per 25 meter is allowed with necessary insulated taping.• Appropriate PPE should be used.• Electrode holder shall be of good quality with proper insulation. The welder should never be allowed to weld when he is wet.• Install power generators of suitable capacity.• Provide emergency light / torches in the job site.• Provide emergency ladder for elevated work spot.



HSE Management System Manual

IS/HSE/CSSP/O1

CONSOLIDATED SITE SAFETY PLAN

16. WELDING & GAS CUTTING - Contd.

ACTION BY : Concerned Site Engineer / Supervisor

Sl.No.	HAZARDS / RISK	PREVENTIVE MEASURE
		<ul style="list-style-type: none"> Incase of confined area, forced ventilation shall be provided.
3	Exposure to spark hot metal and fumes	<ul style="list-style-type: none"> The welder shall use apron and Helmet with weld screen. Provide adequate ventilation in the working area.
4	Continuous working / Heat Stress	<ul style="list-style-type: none"> Provide adequate ventilation. Continuous working should be avoided. Adequate interval should be provided. Incase of confined area, forced ventilation shall be provided.
5		<ul style="list-style-type: none">

17. Grinding

ACTION BY : Concerned Site Engineer / Supervisor

Sl.No.	HAZARDS / RISK	PREVENTIVE MEASURE
1	Contact with grinding wheel / electric shock	<ul style="list-style-type: none"> Wheel guard should be placed in proper position. Machine should be earthed properly. Frequent checking of power cord and use of plugs & sockets. Proper use of PPEs such as grinders goggles, face shields, safety shoes, hand gloves etc. Wheel should be mounted properly on the suitable grinding machine. Grinding machine RPM and wheel RPM should match. Use of safety belt during grinding at height more than 2 m.
2	Damage of wheel	<ul style="list-style-type: none"> Check the expiry date.
3	Cable / cord	<ul style="list-style-type: none"> Double insulated power cable should be used in grinding machine. Joints in cable should be avoided or protected properly.



HSE Management System Manual

IS/HSE/CSSP/O1

CONSOLIDATED SITE SAFETY PLAN

18. FIRE PREVENTION

ACTION BY : Concerned Site Engineer / Supervisor

Sl.No.	Causes of fire	PREVENTIVE MEASURE
1	Malicious ignition, careless gas cutting, welding, smoking, throwing of lighting match sticks, uncontrolled rubbish burning Incorrect storage and careless use of flammable liquids and compressed gases.	<ul style="list-style-type: none"> • Portable extinguishers containing Foam, DCP or BCF should be used on fire involving flammable liquids. Such fire extinguishers shall be conspicuously located. • Nobody shall be allowed to misuse or horseplay with this emergency equipment. • Demonstration on the usage of fire extinguishers shall be arranged. • Employees shall be instructed to report all fires immediately and notify their supervisor about the discharge of the fire extinguisher and its need of servicing. • The extinguisher should be readily available for use and not more than 15 m away from the area of use. • Employees, especially those involved in actually using these liquid must be adequately trained in the proper use of fire extinguishers. These employees in case of emergency and for other measures can use extinguisher in the event of fire. • Fencing of loading area like flammable liquid stores, paint oil storage and material stores (especially timber stacks) should have prominent displaying of “ NO SMOKING”.

	<h1 style="text-align: center;">HSE Management System Manual</h1>
IS/HSE/CSSP/O1	CONSOLIDATED SITE SAFETY PLAN

GUIDELINES FOR RESIDENT MANAGERS ON CONTRACT LABOUR, SAFETY & ACCIDENT REPORTING SYSTEM

CONTRACT LABOUR

- 1) Form V under Contract Labour (Regulation and Abolition Act) may be arranged from the customer, who is the principal employer, in the name of sub-contractor directly and ensure that the sub-contractor shall obtain licence under Contract Labour (Regulation and Abolition Act) 1970.
- 2) Ensure PF coverage in respect of all the contract labour deployed by our sub-contractors.
- 3) Ensure ESI coverage, wherever applicable, in respect of all the contract labour deployed by our sub-contractors.
- 4) Ensure gate pass issued by the customer to all the contract labour deployed by our sub-contractors.
- 5) Ensure Insurance coverage in lieu of Workmen's Compensation in respect of all the contract labour deployed by our sub-contractors.
- 6) Ensure payment of minimum wages, bonus, gratuity and other statutory payments to the contract labour
- 7) Please keep the labour law books containing the labour legislations applicable to each site. For example Factories Act Rules of the state where in the site situated, etc.

SAFETY

- 8) Ensure compliance of all safety measures/aspects by sub-contractors.
- 9) Ensure usage of PPEs as per the safety norms for each work / site by BHEL employees and persons engaged by the sub-contractors.
- 10) Ensure compliance of safety aspects envisaged in HSE Management System Manual.

ACCIDENT REPORTING SYSTEM

- 11) In case of major accidents resulting in serious bodily injury or death, report the same to Business Manager, Head(HR), etc. at HQ immediately.

	<h1 style="text-align: center;">HSE Management System Manual</h1>
IS/HSE/CSSP/O1	CONSOLIDATED SITE SAFETY PLAN

- 12) If the accident happened to any contract labour, please obtain a letter from the contractor regarding the accident and forward the same to the customer after obtaining concurrence from HQ.
- 13) In case of Fatal Accident to contract labour, local Police shall be informed by the contractor under intimation to you. A copy of the FIR may be forwarded to HQ.
- 14) In case of Fatal Accident to BHEL employee, local Police shall be informed by the Resident Manager under intimation to HQ.
- 15) Obtain the concurrence and approval of Business Manager & Head(HR) before signing any Accident Notice Forms under the Factories Act or Form EE under Workmen's Compensation Act, etc. or any other documents related to the accident.
- 16) In case of Fatal Accident to contract labour, ensure contractor shall arrange for postmortem and other formalities and hand over the body to the relatives.
- 17) In case of major accidents resulting in serious bodily injury or death to contract labour, Resident Manager shall forward the prescribed Form (Notice of Accidents or Dangerous Occurrences Resulting in Death or Bodily Injury under the Factories Act Rules of the state in which site is situated) filled and submitted by the sub-contractor to the Customer for onward transmission to the Assistant Labour Commissioner and other concerned Authorities within the prescribed time limit. For example Form 22 under Chatisgarh Factories Act Rules is applicable to Korba East site and Form 18 under Punjab Factories Act Rules is applicable to Lehramohabat site.
- 18) In case of major accidents resulting in serious bodily injury or death to BHEL employee, Resident Manager shall fill and submit the prescribed Form (Notice of Accidents or Dangerous Occurrences Resulting in Death or Bodily Injury under the Factories Act Rules of the state in which site is situated) to the Customer for onward transmission to the Assistant Labour Commissioner and other concerned Authorities within the prescribed time limit. For example Form 22 under Chatisgarh Factories Act Rules is applicable to Korba East site and Form 18 under Punjab Factories Act Rules is applicable to Lehramohabat site.
- 19) Contact Resident Manager / HR executive of Power Sector Site at the same location, if available, and take their assistance, in case if they had already handled a similar accident case at the same location.
- 20) Ensure providing of details like age (date of birth), wages of the person met with an accident and injured or expired to the concerned authorities.

	<h1 style="text-align: center;">HSE Management System Manual</h1>
IS/HSE/CSSP/O1	CONSOLIDATED SITE SAFETY PLAN

- 21) Ensure depositing of Workmen's Compensation amount decided by the authority under the Workmen's Compensation Act with the Commissioner of Workmen's Compensation by the contractor or their Insurance Company.
- 22) Inform HQ regarding the payment of Workmen's Compensation through the authorities to the dependents of the person expired.
- 23) Ensure payment of other statutory payments also, if any.

HSE ACCIDENT / INCIDENT REPORTING

- 24) Strictly comply with section 17.0 of HSE Management System Manual in respect of Accident / Incident reporting system
- 25) Submit the Accident / Incident Report format to HQ immediately after occurrence of accident.
- 26) Submit the Accident / Incident Investigation Report format to HQ after completion of the investigation



HSE Management System Manual

IS/HSE/CSSP/O1

CONSOLIDATED SITE SAFETY PLAN

LIST OF RELEVANT LEGISLATIONS APPLICABLE TO VARIOUS SITES

1. Contract Labour (Regulation and Abolition) Act, 1970
2. Factories Act, 1948 with relevant state rules
3. The Buildings And Other Construction Workers (Regulation Of Employment And Conditions Of Service) Act, 1996
4. The Inter-state Migrant Workmen (Regulation Of Employment And Conditions of Service) Act, 1979
5. The Child Labour (Prohibition and Regulation) Act, 1986
6. Minimum Wages Act, 1948 with relevant state amendments
7. Payments of Wages Act, 1936
8. Payment of Bonus Act, 1965
9. Payment of Gratuity Act, 1972
10. Employees' State Insurance Act, 1948
11. The Employees' Provident Funds And Miscellaneous Provisions Act, 1952
12. Fatal Accidents Act, 1855
13. The Personal Injuries (Compensation Insurance) Act, 1963
14. Workmen's Compensation Act, 1923
15. The Industrial Disputes Act, 1947
16. The Electricity Act, 2003
17. The Indian Electricity Act, 1910
18. The Indian Electricity Rules 1956
19. Environmental Standards for TPP
20. The Indian Boilers Act, 1923
21. Tariff Advisory Committee - Insurance
22. Hazardous goods TAC
23. The Motor vehicle Act 1988
24. The national Environment Tribunal Act 1995
25. The Environment (Protection) Act, 1986
26. The Gas Cylinder Rules 2004

All the above legislations are made available in ISG web under HSE (<http://isgweb/hse.html>) Business Managers / Project Managers / Resident Managers are requested to go through the above legislations and ensure strict compliance of the relevant legislations and its specific clauses applicable to their respective sites. Resident Managers are also requested to enquire with the customer regarding applicability of any local legislation.



HSE Management System Manual

IS:HSE:AIR:001

ACCIDENT (PERSONAL INJURY / PROPERTY DAMAGE) REPORT

1.	NAME OF SITE:				
2.	SCOPE OF WORK:				
3.	ACTIVITY OF AREA:				
4.	NAME OF CONTRACTOR:				
5.	NAME & DESIGNATION OF BHEL ACTIVITY INCHARGE:				
6.	DATE & TIME OF ACCIDENT:				
7.	DATE RESUMED:				
8.	NO. OF WORKING DAYS LOST BY VICTIM (if duty not resumed give estimated figure):				
9.	NO. OF MAN HOURS LOST BY OTHERS:				
10.	PERSONAL DETAILS OF INJURED AND/OR DETAILS OF MATERIALS / EQUIPMENT / PROPERTY DAMAGED:				
NAME:				NAME OF MATERIAL/ EQUIPMENT/ PROPERTY:	
PERIOD OF EMPLOYMENT:					
AGE:		SEX:	MARRIED / SINGLE:	ESTIMATED COST	ACTUAL COST
OCCUPATION:			PART OF BODY INJURED	NATURE OF DAMAGE	
NATURE OF INJURY					
11.	AGENCY (OBJECT / EQUIP / SUBSTANCE) MOST RESPONSIBLE FOR CAUSING ACCIDENT / INJURY / DAMAGE:				



HSE Management System Manual

IS:HSE:AIR:001

ACCIDENT (PERSONAL INJURY / PROPERTY DAMAGE) REPORT

12.	PERSON (NAME & DESIGNATION) WITH MOST CONTROL OVER AGENCY (OBJECT / EQUIP/ SUBSTANCE) CAUSING ACCIDENT / INJURY / DAMAGE:	
13.	DESCRIBE CLEARLY HOW THE ACCIDENT OCCURRED (IF SPACE INSUFFICIENT USE SEPARATE SHEET & ATTACH):	
ANALYSIS:		
14.	WHAT ACTS AND/OR CONDITIONS CONTRIBUTED MOST DIRECTLY TO THIS ACCIDENT?	
15.	WHAT ARE THE BASIC REASONS FOR THE EXISTENCE OF THESE ACTS AND / OR CONDITIONS?	
16.	WHAT CORRECTIVE ACTIONS HAVE BEEN TAKEN TO PREVENT ACCIDENT RECURRENCE?	
DATE :		SIGNATURE OF CONCERNED ENGINEER:
17.	COMMENTS OF SITE IN-CHARGE OF BHEL:	
DATE :		SIGNATURE OF SITE INCHARGE

Note:

- 1) The Report shall be prepared by the Concerned engineer and to be submitted to Head quarters through Resident Manager.