**Work instructions for fabrication dismantling & erection**

Objective Safe work procedure for fabrication dismantling & erection

Scope power plant Accessories

Responsibility Engineer In Charge & workmen at job

PPE –s to be used Helmet, Safety shoes, Dust masks, Hand gloves safety belt and goggles

Work No 1 Fabrication of Structures

Work no 2 Erection

Work No 3 Dismantling of the structures

Aspect – Impact

Fumes/dust generation Air pollution

Gas leakage Air pollution

Noise Noise pollution

Scrap generation Resource Depletion

Hazards identified

**Mechanical hazard**

Trapping between two objects,

Fall of material, hammer, tools, slinged items, bolts, etc.

Fall of person from platform,

Entanglement

Impact of moving / slinged items.

Fall of material from height such as angles, channels, beams, plates ,bolts ,nuts etc. due to poor housekeeping.

Failure of sling, D shackle, chain pulley block

Failure of full body harness due to improper clamping, damaged rope, hooking on weak structure

Skidding of person due to poor housekeeping, oil spillage, uneven surfaces, broken bricks etc

Back pain while handling heavy load and improper posture

Cut injuries from sharp edges of items

Getting trapped / skid material stacked

Hitting of moving vehicles, and machinery in the plant

Slipping/Rolling of trolley while loading/unloading

Falling of cylinders due to improper fixing of protective M.S.chain

Fall of cylinder trolley due to failure of wheels

Explosion due to impact on the knob

Failure of the clutch / brake of hydra / material handling vehicles

Sliding/rolling of the material from vehicle.

Impact of moving / slung items, overturning / slipping of steel items.

Failure of rope

Bursting of tyre while moving / during erection

Jamming of the hand while locking the tempo/truck gates.

Getting trapped below Hydra because of failure of brakes or sudden jerks

Getting trapped between the swing portion & the body of Hydra

Getting hurt because of poor visibility

Impact of other vehicles

Non usage of PPE like shoes, helmet & safety harness, goggles

Alcoholism

Skidding of wheel stoppers

Human error

Overturning of vehicles due to uneven surfaces

Overturning due to loosing the centre of gravity.

Hitting of person while reversing

Incidents due to poor illumination

Failure of the workmen basket structure, temporary platform

Fall of person from height due to unbalance from workmen basket, temporary platform

Trapping of the person between basket and structure

Fall of workmen basket, temporary platforms due to failure of the clamping

Lifting of the truck due to unstable loading

Hitting on surrounding structures, while negotiating a turn

Fall of the Pal finger crane from the truck due to failure of mounting bolt

Failure of hydraulic system

Failure of hook of the crane

Fall of “falka” of truck during movement.

Fall of the extended boom from top.

Damage of overhead structure during marching of crane / hydra

Hitting / trapping of crane due to improper / non sequential operation

Bending of chassis due to non levelling of stabilizers

Failure of stabilizers

Failure of crane / chassis due to non levelling of crane platform with water level

Hitting of the boom due to fast operation.

Improper operation due to improper signalling.

Scaffold collapse caused by instability or over loading

Incident due to usage of mobile while driving / operation of crane / hydra / Palfinger/ Hiab basket

Trapping due to Improper jacking during crane maintenance

Fire due to fall of sparks welding / gas cutting

Back fire during gas cutting

Failure of welding hook due to improper / inadequate welding

Failure of welding hook due to welding on hard faced plates / unknown plates

Human behavior aspect of operators : Operator nature, alcoholism, casual approach & non usage of PPEs.

**Physical hazard**

Vehicle emission Pressure due to failure of air /hydraulic system Burns

**Electrical hazard**

Electric shock from overhead lines or welding, Short circuit due to failure of electrical system

Electric shock from battery terminal

Chemical hazard –

Fire & Explosion

1.     Take clearance from the concerned department if the job is related to the other department.

2.     Cordon the area where job is to be carried out.

WORK NO 1 : FABRICATION OF STRUCTURES PROCEDURE

Shift the structural material from the store following instructions given in the work procedure

Plan cutting of material for maximum use of material in structure developed and least waste generation as scrap.

Carry out the cutting operation using gas-cutting set as per instruction give in SP 44.

Stack all the structure at proper place in safe condition so that it will not affect others.

Grind the sharp edges of the structure.

Carry out the welding operation as per design supplies in the form of drawing or as per instruction of engineer in charge.

Only trained operators should carryout grinding cutting and welding operation.

All temporary welded angles , channels , beams etc has to be removed from site before giving clearance of job.

Ensure proper housekeeping after completion of the job as per instruction

WORK NO 2 : ERECTION

1. Clean the surface where the structure/equipment is to be erected.
2. Lift the material following procedure indicated
3. Lock the structure, equipment at the required position.
4. Before lifting of any structural material, fabricated, cylinder, tank, concrete slab/ block, etc., ensure usage of sling belt, D Shackle has to be certified.
5. Slings has to be fit by keeping object has to be in center.
6. While lifting of object no one has to be present on object and before lifting nylon rope has to be fix to avoid heavy movement in object.
7. Carry out other remaining welding job for permanent locking. For erection of equipment at height ensure no person stands below the lifted object.
8. Use safety belt while working at height for climbing on object if it difficult to approach.
9. Suitable crane has to be in better position, before usage of crane has to be certify.
10. All temporary welded angles, channels , beams etc has to be removed from site before giving clearance of job.
11. Ensure proper housekeeping after completion of the job as per instruction

WORK NO3: DISMANTLING OF THE STRUCTURES

A.    Lock the object with the rope or chain block if they handled material is large

B.    Do the cutting or dismantling job.

C.    Ensure no person stands in the area of swing of the material while cutting.

D.    Follow the procedure specified as per work instruction

6.     Do take proper care to avoid falling of material from height when job is carried out at height.

7.     All temporary welded angles , channels , beams etc has to be removed from site before giving clearance of job.

8.     Ensure proper housekeeping after completion of the job as per instruction

DO:

    Lock the material or tie with rope while handling any material.

    Use standard welding electrodes

    Ensure good welding quality.

     Study any usage of cut material for re usage so as the wastage will be minimum.

     Use D shackles While frequent opening/closing operation is involved for lifting

DO NOT:

    Stand below the hanging structures.

    Weld the lifting hooks on casted material. (It must be available in design itself)

    Keep Material on slope while carrying out fabrication, erection, cutting job.

    Keep any steel items like angles, channels, beams, plates , etc on platforms at height after completion of job .