**BFG Bridge 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**

1. Trapping between two objects,
2. Fall of material, hammer, tools, slinged items, bolts, etc.
3. Fall of person from provisional platform,
4. Entanglement
5. Impact of moving / slinged items.
6. Fall of material from height such as angles, channels, beams, plates ,bolts ,nuts etc. due to poor housekeeping.
7. Failure of sling, D shackle, chain pulley block
8. Failure of full body harness due to improper clamping, damaged rope, hooking on weak structure
9. Skidding of person due to poor housekeeping, oil spillage, uneven surfaces, broken bricks etc
10. Back pain while handling heavy load and improper posture
11. Cut injuries from sharp edges of items
12. Getting trapped / skid material stacked
13. Hitting of moving vehicles, and machinery in the plant
14. Slipping/Rolling of trolley while loading/unloading
15. Falling of cylinders due to improper fixing of protective M.S.chain
16. Fall of cylinder trolley due to failure of wheels
17. Explosion due to impact on the knob
18. Failure of the clutch / brake of hydra / material handling vehicles
19. Sliding/rolling of the material from vehicle.
20. Impact of moving / slung items, overturning / slipping of steel items.
21. Failure of rope
22. Bursting of tyre while moving / during erection
23. Jamming of the hand while locking the tempo/truck gates.
24. Getting trapped below Hydra because of failure of brakes or sudden jerks
25. Getting trapped between the swing portion & the body of Hydra
26. Getting hurt because of poor visibility
27. Impact of other vehicles
28. Non usage of PPE like shoes, helmet & safety harness, goggles
29. Alcoholism
30. Skidding of wheel stoppers
31. Human error
32. Overturning of vehicles due to uneven surfaces
33. Overturning due to loosing the centre of gravity.
34. Hitting of person while reversing
35. Incidents due to poor illumination
36. Failure of the workmen basket structure, temporary platform
37. Fall of person from height due to unbalance from workmen basket, temporary platform
38. Trapping of the person between basket and structure
39. Fall of workmen basket, temporary platforms due to failure of the clamping
40. Lifting of the truck due to unstable loading
41. Hitting on surrounding structures, while negotiating a turn
42. Fall of the Pal finger crane from the truck due to failure of mounting bolt
43. Failure of hydraulic system
44. Failure of hook of the crane
45. Fall of “falka” of truck during movement.
46. Fall of the extended boom from top.
47. Damage of overhead structure during marching of crane / hydra
48. Hitting / trapping of crane due to improper / non sequential operation
49. Bending of chassis due to non-levelling of stabilizers
50. Failure of stabilizers
51. Failure of crane / chassis due to non-levelling of crane platform with water level
52. Hitting of the boom due to fast operation.
53. Improper operation due to improper signalling.
54. Scaffold collapse caused by instability or over loading
55. Incident due to usage of mobile while driving / operation of crane / hydra / Palfinger/ Hiab basket
56. Trapping due to Improper jacking during crane maintenance
57. Fire due to fall of sparks welding / gas cutting
58. Back fire during gas cutting
59. Failure of welding hook due to improper / inadequate welding
60. Failure of welding hook due to welding on hard faced plates / unknown plates
61. Human behavior aspect of operators : Operator nature, alcoholism, casual approach & non usage of PPEs.

**Electrical hazard**

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

Electric shock from battery terminal

Electrical short circuit while dismantling cable

**REPLACEMENT OF BFG PIPE SUPPORTED BRIDGE.**

1. This job requires close supervision and permit to work at height
2. Obtain conformation of full gas cutting and GEL water completion from PIP – production.
3. Start the purging by opening near Gas holder vent valve.
4. Provision of dummy after GEL water seal.
5. Empty out balance BF gas in pipe by boiler ID fan kept system in purging for 3 to 4hrs.
6. All electrical HT cables kept in sag position and other water pipe line lay on bridge to be remove & kept away from gas cutting sparks / cover with aluminum cladding.
7. Once purging get completed and obtain work permit clearance from operation department, ensure CO gas level thro’ vent pipe is less than 50ppm. Start gas cutting of BFG pipe line which is laid on top of the bridge and put 10MT belt sling in Centre of pipe line.
8. After gas cutting both end pipe lift the same and lift the pipe by 100mt crane and shift to designated place as instructed by concerned engineer.
9. Carry out the cutting operation using gas-cutting set as per instruction give in SP 44.
10. Fix the 10ton belt slings on center of the bridge and proper support to be provided on bridge inside pipe.
11. Start gas cutting of bridge main four columns and inside pipe make dummy on other end of pipe.
12. Lift by using 100mt crane and shift to designated place as instructed by concerned engineer.
13. Start surface preparation on four end corner for installing newly fabricated column fix it with proper water tubing and weld properly in all corners.
14. Fix 10mt belt sling on newly fabricated, cable tray laid, inside pipe mounted bridge and lift and rest on four corner main column, align properly and start the welding.
15. Once welding work get completed than only release the crane load and remove the slings.
16. After erection of bridge again re fix the remove 1100nb BFG pipe line and located on top of the bridge and align, weld it.
17. Parallel activity on other end by pass line installation near blower area and MOV replacement will be carried out parallel with this bridge replacement work.
18. After completion of entire work and confirming the double isolation in boiler 2 BFG line system.
19. All temporary welded angles, channels, beams etc. has to be removed from site before giving clearance of job.
20. Clear the work permit and give clearance to the operation team/
21. Give clearance to break the water seal, clos the vent valve and charge the BFG in Boiler 1.

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

Provide good illumination in work area

Provide proper scaffolding to work at height

Physically barricade roads and provide diversion boards

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 .