

## **METHODOLOGY FOR REPAIRS / REPLACEMENTS OF TANK BOTTOM PLATES INCLUDING FOUNDATION (INCLUDING FOR FLOATING ROOF TANKS)**

1. The tank under maintenance is first gas freed, piping connections dismantled, checked and certified by the Engineer-in-charge.
2. If required, Fire screen, Safety Barrier is also erected around the tank.
3. For Floating roof tanks, the seal is dismantled and removed.
4. The rolling ladder to the roof is dismantled.
5. Considering safe load bearing capacity of the soil around the tank periphery, structural members of heavy plates are placed around the tank periphery for erecting the vertical trestles. This is required for transferring the vertical load uniformly to the ground.
6. For supporting the stay pipes of the Trestles, Scaffolding arrangement is made from the ground level to the tank foundation level around the tank foundation.
7. The roof drain is disconnected.
8. After erecting and aligning the vertical trestles and stay pipes the jacks are mounted on the trestles.
9. Hydraulic circuit is completed.
10. The lifting lugs and fend-off lugs are welded to the tank shell.
11. The load of the tank is transferred to the jacking units by initial operation of the hydraulic pump.
12. The tank shell is separated from the bottom plates by gauging / cutting the shell to bottom plate weld.
13. On completion of the cutting operation the entire load of the tank is transferred to the jacking units.
14. After checking, the hydraulic pump is operated and the tank shell and roof is gradually lifted to the required height (maximum 2500 mm from the bottom plates).
15. The annular plates are cut and removed.

16. Before cutting the bottom plates, the pipe supports for the roof are removed after providing temporary supports at various locations.
  17. To avoid continuous loading on the jacking units, the entire tank can be lowered to temporary structurals / supports placed uniformly along the tank periphery.
  18. The bottom plates are cut and removed in sequence.
  19. After inspection, tank foundation is made ready in all respects (including installation of cathodic protection system if required)
  20. Newly fabricated annular plates are laid and welded and testing completed as per requirement.
  21. The centerline of the tank periphery is marked.
  22. The tank is lowered to the newly laid annular plates and aligned.
  23. The bottom plates are laid and the welding and testing completed as per code.
  24. Shell to bottom welding is completed and testing as per codal requirement is completed.
  25. The jacking units are dismantled.
  26. The pipe supports for floating roof is placed at the required positions.
  27. The rolling ladder, foam seal assembly, roof drain assembly is completed.
  28. Fire screen / safety barrier is removed.
  29. Piping connections completed.
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