

Maintenance programs based on the above principles will ensure that lowest whole life costs will be achieved in delivering the required asset performance. Maintenance programs may be controlled through CMMS that generates work orders on daily, weekly, etc. basis. This system allows the control of corrective maintenance and stock management and produce reports.

3.11.2 Definition of Scheduled Maintenance

Schedule maintenance shall include, periodic, lubrication, inspection and testing, based on the recommendations of the equipment manufacturer, it shall also take account of any specific legal requirements relating to particular work equipment, e.g. inspection and testing of lifting gear, etc.

A Scheduled Maintenance program shall, as a minimum, consist of the following aspects:

- a) Routine Maintenance
- b) Routine Inspections
- c) Monthly Inspections
- d) Annual Inspections

3.11.3 Classification of Routine Maintenance Tasks

Routine maintenance tasks will be divided up on the basis of frequency and will bear the effective operational date during the year. There will be routine daily, weekly, monthly, twice monthly, and quarterly, six-monthly, and annual and two-year operations. Particular attention will be paid in planning procedures to avoid an excessive concentration of programd works on the same day. The following are some typical examples of routine maintenance:

- a) Extensive manual program
- b) Chamber inspection and renovation programs
- c) Chamber location, raising and lowering
- d) Construction of chambers, outfalls and other structures
- e) Pressure main inspection and repair
- f) Pipeline excavation and repair
- g) Joint sealing programs (patches, sleeves, etc.)
- h) Chemical grouting programs
- i) Man-entry inspection programs
- j) Routine maintenance for valves, probes, gate valves (lubrication, painting, electric wiring inspection, etc.) and flowmeters
- k) Ordinary maintenance of control, indicator and measurement instrumentation
- l) Electrical and Mechanical test procedures
- m) Mandatory/statutory testing of equipment
- n) Maintenance of traffic management equipment
- o) Maintenance of safety equipment; gas monitors, man-lifts, harnesses, etc.
- p) Safe working methods, e.g. working in confined spaces; isolation, tests and restoration on high voltage equipment; isolation, working and re-starting of rotating and electrical equipment; winching; jetting/de-silting of outfalls; major/minor pipe repairs, working in public highways.
- q) Cleaning services are defined as the removal from the networks, tanks, etc. obstructions, deposits and debris. Cleaning services can be low or high velocity jetting, flushing and cutting.