

- P. Supports shall be designed to prevent transfer of excessive loads from support to support or to equipment as the line expands or contracts.
- Q. Support components shall be attached in places only where they will not damage other construction either during or after installation. Wall brackets may be used where equipment / piping are adjacent to the wall or other vertical surfaces suitable for support use.
- R. All large pipes and all long pipes shall have at least two supports each arranged so that any length of pipe or valve or other device can be removed without any additional temporary support.
- S. Support components connected to building structural steel shall be done only by means of clamps or bolts', welding is not permitted. Bolt holes shall be drilled and not burned. Supports components connected to concrete shall be by means of approved concrete stainless steel anchors only.
- T. Where the equipment / piping is subject to shock loads, such as thrust imposed by the actuation of safety valves, isolation valves, etc. the support design shall include provisions for shock absorbing devices of approved design.
- U. Selection of vibration control devices shall be part of the Contractor's work. If vibration is encountered after the system is in operation, appropriate vibration control equipment shall be installed by the Contractor on his own costs.
- V. Hangers shall be designed to prevent being disengaged by movement of supported pipe.
- W. Prior to manufacture the Contractor shall submit to the Engineer, for the Engineer's review and approval, the detailed design of the anchor system proposed for the various component of the Plant. The design shall consider:
- a. Loads applied (tensile, shear, bending moments etc.)
 - b. Composition and strength of material where anchors are to be embedded
 - c. Available anchor depth
- X. For fixing of steel structures, brackets, ladders, railing and the like only the following type and material is accepted:
- a. Expansion anchors in dry non-corrosive environment: Material
A2, ISO 3506 or approved equivalent