

CHECKLIST FOR TANK FOUNDATION GEOTECHNICAL REPORT CONTENT

An experienced, registered geotechnical engineer should prepare the geotechnical report.

The ACI 372R Appendix A and the AWWA D-110-95 Section 3.8 documents should be reviewed prior to the geotechnical investigation being conducted.

A standard membrane tank foundation that is commonly used consists of a four-inch thick, reinforced concrete floor slab with a minimum of a one-foot deep by three-foot wide circumferential footing to support the tank wall and dome. The tank floor behaves as a membrane such that it is flexible enough to transmit all vertical loadings directly into the subbase. Six (6) to twelve (12) inches of well-compacted, granular base material is utilized under the tank floor to provide a uniform bearing surface.

The report should include the following information:

- The scope of the investigation.
- A description of the proposed tank including major dimensions, elevations (including finished floor elevation), and loadings.
- A description of the tank site. This should include existing structures, drainage conditions, type of vegetation on the site, and any other unique features of the site.
- Geological setting of the site.
- Details of the field exploration that was carried out such as number of borings, location of borings, depth of borings, etc.
- A general description of the subsoil conditions as determined from the recovered soil samples, laboratory tests, standard penetration resistance, etc.
- The expected groundwater level at the site during construction and after project completion.

Geotechnical recommendations including:

- Type of foundation system.
- Subgrade preparation, including proofrolling and compaction, if necessary (consider the possibility of "pumping" during compaction of the subgrade).
- Foundation base material type and placement procedure, including compaction requirements.
- Tank backfill material type and placement procedure.
- Allowable bearing capacity.
- Estimated settlements.
- Lateral equivalent soil pressure, including active, at-rest, and passive, where applicable.
- Seismic soil profile type.
- Anticipated groundwater control measures needed at the site during and after construction, including the possibility of buoyancy of the empty tank.

Conclusions and limitations of the investigation.

The report should have the following attachments:

- Site location map.
- A plan indicating the location of the borings with respect to the proposed tank and any existing structures on the site.
- Boring logs.
- Laboratory test results, including Atterberg Limits, unconfined compressive strength, where applicable, etc.