

SECTION 331613.14 – POTABLE WATER STORAGE TANKS

Scope:

Every steel water storage tank, standpipe, or reservoir should be carefully inspected prior to repair and/or repainting and at any time when leakage or some other apparent deterioration is observed. In any event, all water tanks should be thoroughly inspected at intervals of not more than five years. The standard for painting steel water storage tanks, AWWA D102, includes as an option a first anniversary inspection to be performed by the tank painting contractor. Also, the Foreword suggests that defective areas be repaired annually. It is the intent of this document to define the requisite qualifications of the inspecting agency, the type of inspection to be made and the data considered essential.

Qualifications:

1. An engineering organization whose principals are registered professional engineers, specializing in inspection service and having at least five years' experience in the inspection of steel structures.
2. Independent engineers, licensed in the state in which the structure is located, whose practice has included substantial or major attention to steel construction.
3. Inspection or safety agencies of the state in which the structure is located, if such agencies are empowered to render inspection service and, further, if such inspection services involve the employment of personnel experienced in steel construction and maintenance.

In all of the above classes of qualified inspection agencies, the inspector or inspectors assigned to the work in the field shall have been properly trained by the organization so qualified and shall have no interest, other than that of a competent inspector, in the performance of any work under consideration at the time the inspection is made.

Responsibility:

The inspector shall assume the entire responsibility for accident to himself while inspecting the structure. He shall make such observations of ladders, railings, roof rods, and other parts of the structure as may be necessary to determine their safety for use by him in inspecting the structure. The inspecting company or inspector shall carry adequate workmen's compensation, property-damage, and public liability insurance and shall fully protect the owner against claims of any nature arising out of the inspection work.

Draining of Tank:

The owner, following proper notification, shall have the tank emptied for the inspector in order that the inside of the roof, sides, and bottom of the tank will be properly exposed for inspection. The inside surfaces shall be thoroughly washed down by the owner to remove slime from the wall surfaces and loose deposits and dirt from the tank bottom before the inspector arrives.

Work Included:

The work included under this inspection shall consist of: (1) a field examination; (2) a specific report upon the structure, and (3) a video of the inside of the tank. The inspection work does not include repairs, except that, if cotter pins or nut pins are found to be missing, they shall be replaced at once, or else a special report shall be made promptly to the owner so that he may have the pins replaced.

Examination and Report:

Condition of paint:

Give a description of the condition of paint as found, stating:

1. Rough approximation of percent of rust area.
2. Special locations of such areas, if segregated.
3. Character of such rust areas -that is, whether general or blotchy corrosion, loose paint or none.

Pitting:

Determine and report upon the extent and depth of pitting in the area selected, scaled, and cleaned by the inspector. The dimensions and locations of each area scaled and cleaned are to be reported. The extent of pitting found should be described both as to location and character. The record of pitting should be as specific as practicable as to location, area affected, whether blotchy, deep, pinpoint, or general corrosion. Depth gages should be used to obtain specific data. If plates are badly pitted, report whether drilling holes to determine the plate thickness is recommended.

Type of repairs:

Where pitting has penetrated to a depth indicating the necessity for repairs, the report shall so state specifically, describing the location of such spots and their size. If they can be repaired by patches, the inspector shall specify to the extent practicable the size, location, and number of patches. If other types of repairs are indicated, the inspector shall specify clearly the type and extent recommended numbers. The inspector in his report shall inform the owner of all repair work which he considers necessary. The report need not be limited to the items specifically outlined herein, but should include all items of any nature which the inspector considers material.

Items to be reported:

Anchor bolts:

1. Are the anchor bolts rusted as to reduce their strength materially? If so, caliper and record the smallest section. Advise replacement if considered necessary.
2. Are the anchor bolts tight?

Column Shoes:

1. Are the column shoes clean and painted?
2. Has dirt accumulated?
3. Are the column shoes seriously rusted? If so, where and to what depth?

Tower:

1. Are the tower posts in line?
2. Is there any indication settlement in the foundations?
3. Are the tower rods in good adjustment and well turned up?
4. Are the tower rods in good condition? If badly rusted, measure the smallest part and report, indicating rods on which reduced section occurs.

Cotter Pins:

1. Examine each pin for the presence of cotter pins. Report the location of any pins not so fitted.
2. Where rod pins with nuts are used, advise if the nuts are on with full thread and the end of the thread is well battered.

Riser Pipe:

1. Is the riser pipe straight?
2. Are the riser pipe stay rods in good condition?
3. Is the frost casing in good condition and properly supported?

Indications of Leakage:

1. Are there any indications of leakage in the riser pipe?
2. In the expansion joint?
3. In the tank proper? If so, give the location and state the type of repair indicated.

Ladder:

1. Is the ladder safe?

Balcony:

1. Is the balcony safe?
2. Is the balcony floor in good condition?
3. State the amount of rust accumulated on the balcony floor.

Bolts:

1. Are any bolts or rivets omitted or missing in the spliced connections of the tower, struts, or balcony?

Paint:

Report on each of the following items .

1. The condition of the paint and metal of the tower.
2. The condition of the paint and metal on the outside of the tank bottom, particularly underneath the balcony and post connections.
3. The condition of the paint and metal outside of the tank shell.
4. The condition of the paint and metal outside of the roof and under the eaves of the roof.
5. The condition of the paint and metal inside of the tank shell, based on the areas carefully examined and other information gained by the inspector.
6. The condition of the paint and metal on the inside of the roof.
7. The condition of the spider and spider rods.
8. The finial connection.
9. The condition of the paint and metal on the inside of the bottom of the tank.
10. The condition of the paint and metal inside of the riser pipe, particularly at the bottom of the riser pipe.

Rivets:

Report, by selecting, scaling and examining suitable areas, the condition of the rivets at lap joints and post connections.

Metal:

Report, by selecting areas to be examined, the condition of the metal between the rivets at the laps and at the post connections.

Tank Bottom:

Has the bottom of the tank deteriorated because of its having covered with mud or scale? If so, what conditions are observed? Will scaling and repainting be satisfactory? Are repairs indicated?

Prior to Painting:

1. When has the tank reported to have been last painted?
2. What material was used?

Disposition of Report

1. Two copies of the inspection report shall be delivered to the owner.
2. It is understood between the owner and the inspection company that copies of the inspection report may be made available by the owner to painting or tank repair contractors, to define the condition of the tank, if bids for repair or painting are desired.

Payment:

1. Payment for the above specified services, including all expenses of the inspector, shall be at the lump sum price agreed upon between the owner and inspector. Payment shall be made within thirty days after the receipt of the inspection report.

Cleanliness:

1. The inspector shall conduct all his work in a clean and sanitary manner.
2. No one shall work in a tank if he has been under a physician's care, or has needed a physician's care, within a seven-day period prior to entering or working in the tank.
3. The tank owner, after work of any nature is done in a tank, is charged with satisfying himself that the tank interior is clean and sanitary before the tank is returned to service.

331613.14-4

Potable Water Storage Tanks