## Building Background

The structure is approximately 100 feet tall with a masonry base and steel tank (Photo 1). It was constructed in1889 and has been a functioning water tank since that time. It was decommissioned in late 2022 and the waterwas removed from the tank as of December 14, 2022. The structure is comprised of a 70 foot tall masonry structure with a 30 foot tall, 185,000 gallon, cylindrical steel tank at the top.

The steel tank is cylindrical with a cone-shaped roof. It appears to be comprised of steel plates attached to an interior frame. This assessment did not include accessing the interior of the tank, so this construction was not verified. Please note that while the term "steel" is used throughout this report, given the age of the construction, it may be iron. Depending on the repairs that are designed, this may be an important distinction. The composition of the material should be verified prior to doing repairs. The steel tank is placed on a series of I beams spanning over the water tower and bearing on the masonry walls (Photo 2). There are two large plate girders that support the small beams (Photo 3). There is also a floor system below the plate girders that is comprised of steel beams and wood planks (Photos 4 and 5).

**Photo 2: Steel beams below tank**

**Photo 3: Steel plate girder supports**

**Photo 4: Floor below tank at top of masonry tower**

**Photo 5: Floor and tank supports as viewed from below**

### *Condition #7: Corroded Steel*

**Description:** The steel beams and plate girders holding the tank have light corrosion, particularly near the masonry walls (Photos 31 to 33). The beams that form the floor below the tank also have corrosion at the exterior walls (Photos 34 and 35).

The tank has some signs of corrosion on the exterior at the joints (Photo 36).

The ladder on the interior of the structure has corrosion at the base and at some of the wall connections (Photos 37 and 38)

**Repair:** Perform some exploratory openings at locations where beams are bearing on walls. Exposing the steel members will determine whether repairs are needed. If repairs are needed it will likely involve welding new steel plates/angles/etc to the existing steel to replace the lost steel capacity.

At a minimum, exposed steel members should be primed and painted to extend the life of the structure.

Once water is removed from the tank, the interior should be inspected by a tank inspector to determine whether the tank itself, or its connections to the base, require repairs.

The interior ladder's base and connections to the wall should be reinforced with new steel elements. The exterior platform and ladder should be inspected in greater detail when access is available, or when repairs begin.

For all steel repairs, the weldability of the material should be determined by testing prior to implementing any repairs. Some steel of this age is not weldable. There is also a chance that some of the material is iron rather than steel.

**Priority Level:** High – beams and girders that are bearing on masonry. These are a higher priority because their condition will impact the longevity of any masonry repairs.

High – Ladders or other access points

Medium – All other locations

**Photo 31: General light corrosion on support structure**

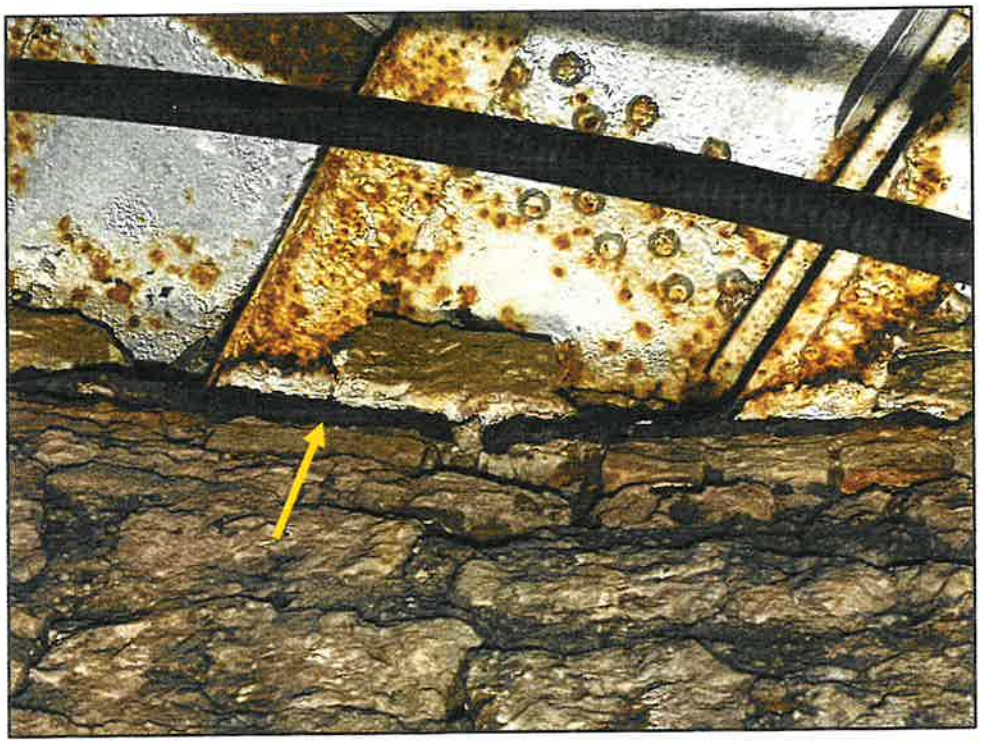

**Photo 32: Close up of tank supports at wall**
**There is a steel plate on top of the masonry that is corroding as well as the base of the tank**

**Photo 33: General surface corrosion of tank support beams with an increase near walls**

**Photo 34: Signs of floor beam corrosion at walls**

**Photo 35: Corroding floor beam at exit to exterior platform**

**Photo 36: Rust staining on exterior of tank**