PROJECT: Corrosion and Seismic/Structural/Safety Engineering Evaluation of Two Welded Steel Water Storage Tanks

STRUCTURE: Interior of a 2.5 MG Welded Steel Water Storage Tank (Hawkins North Tank)

OWNER: City of South Gate

LOCATION: South Gate, California

PHOTOGRAPHED BY: Andre Harper, Project Engineer

DATE: February 2022

I-1 View of the roof and structural members, illustrating random minor corrosion along the upper rafter flanges and roof lap joints.
I-2 Same as Photo I-1, except in the inner bay. Note area of minor corrosion on a roof plate.

I-3 View of the center support plate, illustrating minor corrosion at the rafter ends and nuts and bolts securing the rafters to the center support plate.

I-4 View of the rafters just below the edge of the center vent, illustrating random spots of corrosion on the topside of the rafters.
I-5  Same as Photo I-4, except in a different location.

I-6  View of a portion of the inner bay, illustrating minor corrosion randomly along the lower rafter flanges.

I-7  View of a portion of the outer bay, illustrating minor corrosion along the tie-rods and roof lap joints.
I-8  Same as Photo I-7, except a different portion of the outer bay.

I-9  View of roof plates, rafters, and a girder, illustrating minor corrosion along the upper rafter flanges and upper and lower flanges of the girder. Note area of minor corrosion on the girder web.

I-10  View of the outer bay, illustrating random minor corrosion along the roof lap joints and upper rafter flanges. Note generally good condition of the coating on the knuckle plates.
I-11  View of a girder to column connection, illustrating minor corrosion and staining at the nuts and bolts and topside of the lower girder flanges.

I-12  Same as Photo I-11, except from the opposite side of a connection.

I-13  View of a girder, illustrating minor corrosion on the girder flanges and adjacent rafter ends.
I-14  View of rafter to girder connections, illustrating minor corrosion at the connections and adjacent girder flange.

I-15  Close-up view of tie-rod to rafter connections, illustrating minor corrosion on the tie-rod threads and adjacent roof lap joint.

I-16  Same as Photo I-15, except from the opposite side of a connection. Note minor corrosion on the threads.
I-17  View of a cathodic protection (CP) handhole and adjacent insulator mount, illustrating minor corrosion at the circumference of the handhole and moderate to severe corrosion of the insulator mounting bracket.

I-18  View of the liquid level indicator (LLI) roof penetrations, illustrating staining at the penetrations and otherwise good condition of the coating system. Note minor to moderate corrosion at the nuts and bolts securing the adjacent knuckle brace to rafter connection.

I-19  View of the roof to knuckle transition, illustrating minor corrosion at the lap joint and otherwise good condition of the coating system on the roof and knuckle.
I-20  View of the knuckle and adjacent knuckle braces, illustrating minor corrosion at the nuts and bolts securing the connections and otherwise good condition of the coating system.

I-21  Same as Photo I-20, except in a different location.

I-22  Close-up view of a knuckle brace, illustrating moderate corrosion at the nuts and bolts securing the rafter to the knuckle brace and knuckle brace to the shell.
I-23  Same as Photo I-22, except from the opposite side of a knuckle brace.

I-24  Close-up view of a rafter to knuckle brace connection, illustrating minor to moderate corrosion at the nuts and bolts.

I-25  Same as Photo I-24, except from the opposite side of a connection.
I-26 View of a knuckle brace to shell connection, illustrating minor corrosion along the edge of the knuckle brace and the nuts and bolts securing the connection.

I-27 Same as Photo I-26, except from the opposite side of a connection.

I-28 View of the overflow, illustrating staining on the interior funnel and otherwise good condition of the overflow.
I-29  Same as Photo I-28, except a close-up view of the interior.

I-30  View of the LLI float and guide wires, illustrating good condition of both. Note wire hanging across the float.

I-31  View of the roof hatch, illustrating minor to moderate corrosion along the interior of the hatch curb.
I-32  View of the ladder, illustrating minor corrosion at the stand-off brackets.

I-33  Same as Photo I-32, except a close-up view of the corrosion on a stand-off bracket.

I-34  View of the ladder just below the waterline, illustrating light brown staining on the ladder, safety climb rail, stand-off brackets, and adjacent shell.
I-35  Same as Photo I-34, except at the bottom of the ladder. Note minor to moderate corrosion along the topside of the stand-off brackets.

I-36  View of the lower portion of the second shell course, illustrating the transition of the coal tar enamel coating and the solvent cut-back coal tar coating (above). Note generally good condition of both in this location.

I-37  View of a horizontal weld, illustrating light brown staining and otherwise generally good condition of the coating system.
I-38  Same as Photo I-37, except in a different location.

I-39  Close-up view of the lower shell course, illustrating isolated spots of corrosion.

I-40  View of a manhole, illustrating generally good condition of the coating system.
I-41  Same as Photo I-40, except at the other manhole.

I-42  View of the overflow pipe, illustrating large blisters with minor to moderate corrosion present.

I-43  View of an overflow stand-off bracket, illustrating large blisters with minor corrosion present.
I-44  Same as Photo I-43, except in a different location.

I-45  View of the bottom of the overflow, illustrating the generally good condition of the coating system.

I-46  View of the shell to bottom transition, illustrating isolated spots of corrosion and otherwise good condition of the coating system.
I-47 Same as Photo I-46, except in a different location.

I-48 View of a column at the coating transition, illustrating good condition of both coating systems.

I-49 Same as Photo I-48, except at a different column. Note blistering and minor corrosion at this column.
I-50 View of a column base, illustrating an isolated spot of corrosion on the column and otherwise good condition of the coating system on all surfaces.

I-51 Same as Photo I-50, except at a different column base. Note minor corrosion along the edge of the column base.

I-52 View of a corner clip at a column base, illustrating minor corrosion on the corner clip and adjacent bottom plates.
I-53 Close-up view of bottom plates, illustrating random spots of corrosion.

I-54 Same as Photo I-53, except in a different location. Note light layer of sediment in this location.

I-55 Same as Photos I-53 and I-54, except in a different location.
I-56  Close-up view of the bottom, illustrating two isolated spots of corrosion.

I-57  View of the bottom, illustrating a circular depression and random corrosion.

I-58  View of the drain sump, illustrating random corrosion at the drainpipe and randomly in the sump.
I-59 View of the inlet/outlet pipe, illustrating chipped coating and minor corrosion at the upper edge of the pipe.

I-60 View of the LLI guide wires and anchor clips, illustrating generally good condition of both.

I-61 View of a CP anode, illustrating minor deterioration of the anode.