Historic Information in Dam Rehabilitation

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Historic information including original design drawings, as-built or record drawings, original construction photos, historic investigations, and other resources are valuable when planning, designing, and constructing dam rehabilitation or replacement projects. However information from historic documents may vary in its accuracy and level of detail, and field verification is often required for critical elements. Unexpected or varying conditions should also be anticipated during construction, even when historic information is available. This paper will discuss examples of accurate or inaccurate historic information used in rehabilitation design, field verifications performed, and unexpected conditions encountered during construction and the solutions developed. Lessons learned with use of historic information will also be discussed. Project examples include:

- Design drawings for a dam rehabilitation project with a concrete spillway indicated the spillway slab had a concrete cutoff and foundation. This foundation was planned to be incorporated into the rehabilitation of the structure but the foundation had not been constructed as originally designed. The differing conditions required rehabilitation design modifications to accommodate the varying conditions after the existing slabs were demolished.

- Historic construction photos were used to verify and adjust as-built drawings for a spillway and embankment rehabilitation project. Construction photos helped verify the shape and dimensions of underground portions of the concrete non-overflow section of the dam because surveyed conditions did not match the original drawings. Construction photos were also used to verify locations of subsurface drains and rock foundations before they were backfilled or covered.

- Existing toe drains and filters were encountered at three dam rehabilitation projects. At two of the projects the existing toe drains were shown on as-built drawings. The first of these projects involved verifying and tying into a section of an existing toe drain and removal of the remainder of the toe drain. The second project involved complete replacement of the toe drain due to the composition of the existing drain, which was verified through test pits during the design phase of the project. The third project had a toe drain that was not shown on historic drawings or encountered in test pits but was encountered during construction and incorporated into a new toe drain system being installed.