IOWA DEPARTMENT OF NATURAL RESOURCES **ADDENDUM No. 1**
LAND & WATERS BUREAU
WALLACE STATE OFFICE BUILDING

GEODE STATE PARK
VALVE REPLACEMENT PLAN
HENRY COUNTY, IOWA
PROJECT NUMBER: 18-06-44-02

October 9, 2018

This Addendum is issued to modify, explain or correct the original Drawings and Specifications, and is hereby made a part of the Contract Documents. Please attach this Addendum to the Project Manual in your possession. Insert the number and issue date of this Addendum in the blank space provided on the Proposal Form.

Valve Tower Evaluation Summary:

A. For informational purposes only, attached is the valve tower evaluation summary dated 6/30/2018.

Questions and Answers:

1. Will we be allowed to clear trees? Access to the outlet flap gate is surrounded by trees. Could we remove some to get equipment access in different areas?
   - Yes, contractor may clear some trees, as approved by the engineer. A clearing plan is required for review and approval.
2. What are your plan for traffic control on this project? As no Traffic Control Specs or drawings were included, can we close down the dam road or do we need to maintain public access? Can we have certain times, when the road would be closed to get material or equipment into the access shaft? I would like to close the road and use it as a staging area/parking area.
   - Traffic shall be maintained during construction, however the lake-side lane may be closed during construction. The contractor shall be responsible for all traffic control. Staging and traffic control plans shall be submitted for review and approval.
3. If the road is unable to be shut down, can we take down the side barrier between the access hatch and the road so that equipment and material can be staged?
   - Yes, the contractor may remove the barrier for access. The contractor shall reinstall the barrier after work is complete. The contractor shall submit staging and traffic control plans for review and approval.
4. I observed quite a bit of flow going through the dam while on site on Friday. Is your expectation of the winning contractor to bypass pump to the spillway during the 3.5 months of construction? If so, do you have any calculated flows that we may use to size the bypass pumps for?
   - The contractor needs to bypass flow or provide adequate storage for the duration necessary to complete critical work items. We do not have calculated flow.
5. There was a earthwork contractor onsite. Could you let me know who that is, so I could contact them to discuss access to the lake bed for dewatering?

- The current earthwork contractor on site is Road Builders, Inc. of Lincoln Nebraska. The contact for that project is Leon, 402-853-4289.

6. Is the Clow model F-6102 approved as a substitute?
   - Yes
7. Do you want the existing 8″ pipe to be filled with grout where it goes into the existing concrete after we demolish the exposed pipe? We seal the inlet side of the pipe with the 18″x18″ stainless steel plate, but the shaft side would be open.
   - Grouting of the existing 8" pipe is not required.
8. In the specs under Quality Control, I see we are to pay for Concrete and Aggregate Testing. Is this only for the concrete collar plug, or do we have to also perform the testing on the concrete repair mortar? The concrete mortar will most likely be mixed from bags depending on the depth of the concrete patches. We can make test cylinders from the bag mixes, but it may be difficult to perform the other testing required.
   - Concrete and Aggregate Testing is for the concrete collar plug. Mortar testing is not required.
9. Additionally, will any steel or weld testing be required as part of this project?
   - No weld testing is required on this project.

July 18, 2018

Mr. Heath Delzell, P.E.
Design Engineering Supervisor
Iowa Department of Natural Resources
502 E. 9th Street
Des Moines, IA 50319

RE: LAKE GEODE VALVE REPLACEMENT

Dear Mr. Delzell:

As requested, Snyder & Associates has completed an observation inspection of the Lake Geode dam valve tower. The purpose of our site visit was to observe the condition of the interior of the valve tower, existing valve hardware and the valve thimble. No material testing was performed. This letter summarizes our findings and recommendations.

On June 27, 2018 Snyder & Associates staff made a site visit to observe the existing conditions. This included Jeff Godwin, Kevin Binder, Joe Stanisz and myself. Iowa DNR staff that were present included Heath Delzell, Mike Dufoe, Kyle Basten, and Drew Kuckler. The interior of the valve tower was observed using confined space entry techniques. Joe Stanisz and I visually observed the interior. The tower walls were sounded with a hammer to locate potential delaminated areas. Existing documentation indicates the dam was designed in 1949 and built in 1950. Existing plans of the structure are available.

Listed below are general details and background of the valve tower:

- The valve tower is a reinforced concrete shaft with interior dimensions of 4’ by 4’. The tower walls are 10” thick. The height of the tower is approximately 56’. Tower wall reinforcing consists of two mats of steel.

- The tower is currently accessed through a steel hatch cast into the southwest corner of the tower lid. Steel rungs are cast into the south wall at the west end for vertical access.

- Existing documentation indicates the valve has not been operable since 1988. The valve gate was removed in 2003 and reinstalled in 2017.

- The existing 3’ x 3’ sluice gate is not functional and will be replaced.

Listed below are observations that were noted during the field visit:

- The lid of the tower is separated from the tower walls. It appears a concrete saw was used to cut horizontally through the four walls just below the bottom of the lid. It is assumed this was done in 2003 when the valve gate was removed. The lid currently is supported on two wood members that bear on the east and west tower walls. There is an air gap between the lid and north/south tower walls.

- Interior concrete surfaces on approximately the upper half of the tower were found to be in good condition. No surface deterioration was observed.

- Spalling and scaling were observed on the interior concrete surfaces from the base up to a height of 25'. Aggregate is exposed and appears to be river rock. A buildup of what appears to be iron oxide is present on the surface of the concrete.

- Existing concrete patching was observed 25' above the base on the south and east walls. The patches appear to have been placed roughly, but are intact.

- Efflorescence was observed on the north wall in a range from 27' to 31' above the base. The efflorescence continues around the corners of the north wall onto intersecting walls.

- Existing ladder rungs are severely corroded and major section loss is present. The majority of the rungs are missing from the base of the tower up to a height of 28'.

- Existing valve equipment attached to the walls is severely corroded and major section loss is present.

- Existing sluice gate and thimble are severely corroded, not functional, and will be replaced.

Based on our observations, we offer the following comments/recommendations:

- The iron oxide buildup on the walls is most likely from aggregate in the concrete that contains high levels of iron oxide minerals. The minerals begin to oxidize when exposed to moisture and air. This type of aggregate is commonly found in river rock.

  Concrete repairs are recommended for the lower 25' of the tower shaft. Iron oxide buildup should be removed along with any loose or delaminated concrete. This can be accomplished using light chipping hammers. Concrete repair mortar would then be applied to the walls. Depending on the depth of removals, a self- consolidating repair mortar may be used in conjunction with formwork. The full extents of wall repair will not be known until the iron oxide buildup is removed.

- Efflorescence is caused by water migrating through the concrete walls that brings soluble salts to the surface. Efflorescence buildup should be removed from the walls.

Once the efflorescence is removed, the concrete walls should be observed for open cracks or construction joints. If the cracks or joints are 1/8" or wider, they should be sealed with an epoxy crack injection system.

- The existing ladder rungs should not be used in their current condition. They should be cut off flush with the wall surface. Any remaining steel embedded in the concrete should have loose material removed. The remaining steel can then be coated with a rust converting compound and painted.

If it is desired to maintain vertical access in the tower, a new prefabricated ladder should be installed. The ladder should have an integral fall protection system. Stainless steel should be considered for the new ladder to provide corrosion protection in the highly damp environment.

- The existing sluice gate assembly and all mounting and operating hardware should be removed. It will be replaced with a 24" gate valve and 24" ductile iron pipe with mechanical joints mounted in a concrete plug to fill the 3' by 3' gate opening.

This concludes our summary of the evaluation for the Geode Dam valve tower. If you have any questions regarding this report, please feel free to contact our office.

Sincerely,

SNYDER & ASSOCIATES, INC.

Matthew Castor, P.E.
Project Manager

Photo 1 – Typical iron oxide buildup on tower walls near base

Photo 2 – Typical concrete surface deterioration on lower portion of tower

Photo 3 – Concrete surface deterioration and missing ladder rungs on lower portion of tower

Photo 4 - Typical ladder rung corrosion and section loss

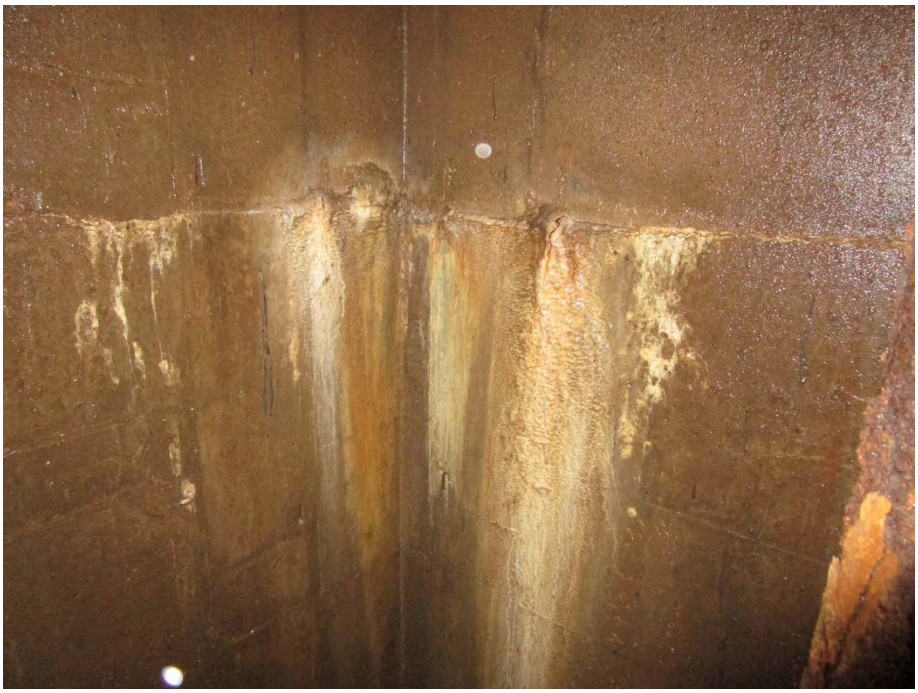

Photo 5 – Efflorescence on north tower wall (31’ above base)

Photo 6 – Efflorescence on north tower wall (31’ above base)

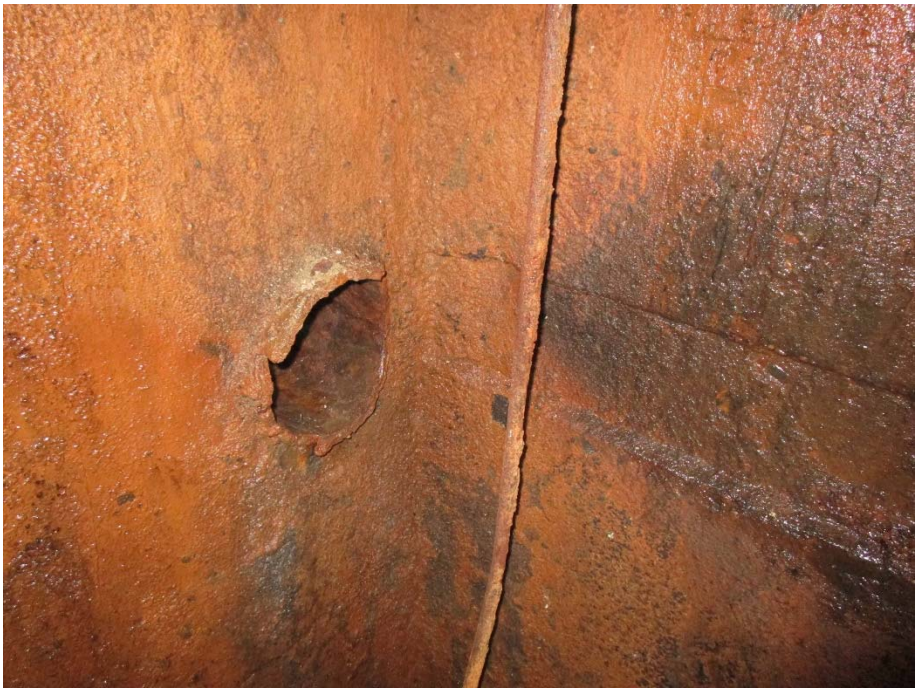

Photo 7 – Existing 8” pipe removed within interior of tower

Photo 8 – Typical corrosion and section loss on existing valve equipment

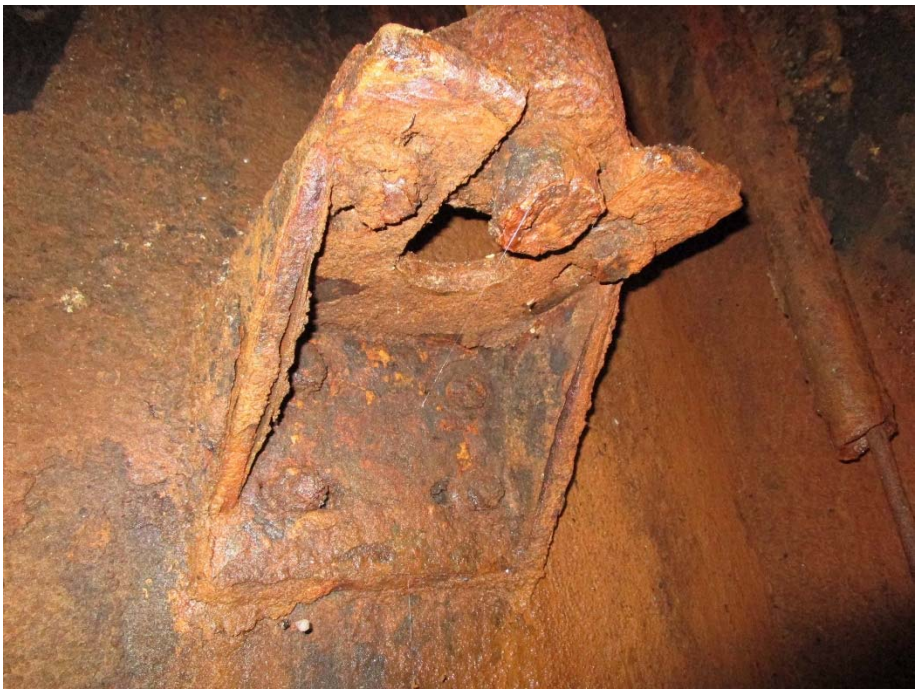

Photo 9 – Typical corrosion and section loss on existing valve equipment

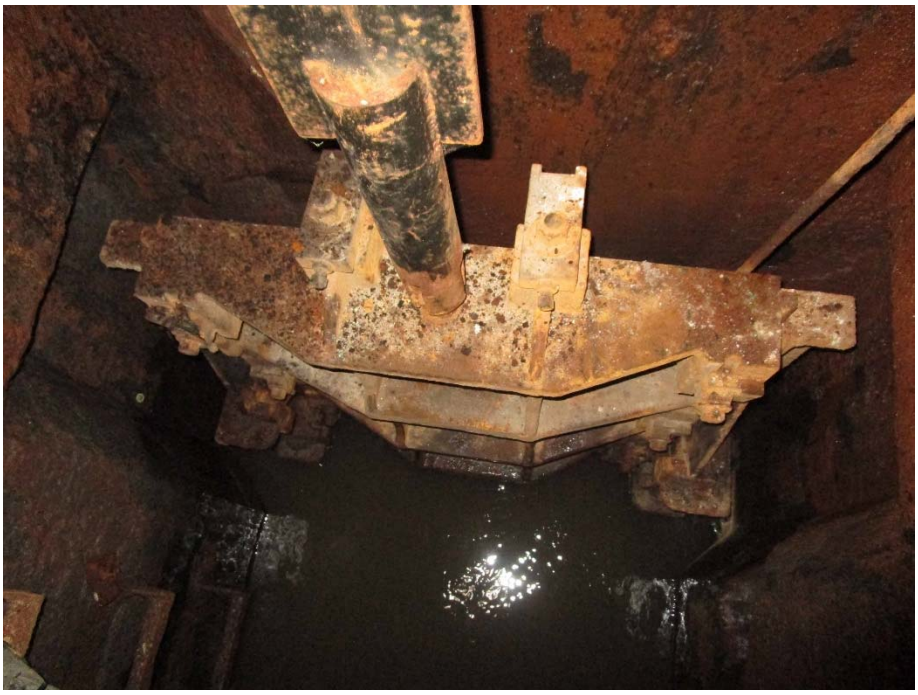

Photo 10 – Existing valve gate