CONSTRUCTION PLANS FOR
SAND HILL LAKE DAM MODIFICATIONS
2019
SAND HILL RIVER WATERSHED DISTRICT
POLK COUNTY
MINNESOTA

GOVERNING SPECIFICATIONS
STANDARD SPECIFICATIONS FOR
CONSTRUCTION ADOPTED BY THE MINNESOTA
DEPARTMENT OF TRANSPORTATION, 2019
EDITION. STANDARD DRAWINGS CORRECTLY IN
EFFECT AT THE TIME CONTRACT PROVISIONS
SUBMITTED HERETO.

VERTICAL DATUM
BASED ON NAVD88

SHEET NO.
1 COVER SHEET
2 ACCESS ROUTE
3 ROCK ARCH PLAN AND PROFILE
4 ROCK WEIR LAYOUT
5 ROCK WEIR DETAILS

I hereby certify that this plan, specification, or
report was prepared by me or under my direct
supervision, and that I am a duly Licensed
Professional Engineer under the laws of the
State of Minnesota.

Signed:
Derek B. Jones
License No. 41161
Date: 9/11/2019

VICINITY MAP

PREPARED BY: HOUSTON ENGINEERING INC. FARGO, NORTH DAKOTA
NOTES:

1. The contractor shall use the access route as indicated. Prior to accessing the site, the contractor shall coordinate with the engineer and land owner.

2. All damages including but not limited to rutting and damage to grassy areas shall be restored by the contractor to the condition of or exceeding preconstruction conditions as determined by the engineer. All costs to restore the site shall be the responsibility of the contractor but included in the price of other items.

3. 210 TON of aggregate Class V has been included in the plan to be used as surfacing material for the access route to be used as needed to improve access conditions. Placement should be approved by the engineer before use. The aggregate material shall remain at the site of construction unless otherwise directed by the field representative.

4. 2 weeks prior to the commencement of construction activities, the contractor shall submit to the engineer for approval, an access route modification plan detailing location of proposed removals, aggregate placement, and construction staging areas.

5. No work shall be completed within Sand Hill Lake, the Sand Hill River, or Polk County Ditch No. 83 between March 15 and June 15 to allow for fish spawning and migration.
1. Number of boulders for each rock-arch is dependent on size and spacing of boulders.

2. Rock weirs shall consist of 36" boulders, top of boulders shall be set above midline cl 3 riprap as shown on the profile to result in weirs spaced at approximately 12' intervals between low flow rocks.

3. Boulder weirs are to be filled with smaller stone (midsize cl 2 rock riprap) to reduce leakage and create pools.

4. Additional boulders will be added randomly to add to aesthetics as directed by the engineer or representative in the field (estimated at 30 additional boulders). The linear footage of the additional boulders shall be measured as the average of the centerline length of all 3 axes planes and paid for under the mid item "additional boulders by dimension".

5. The weirs function to provide added stability to the riffles, resting area for the migration of fish, directing flow towards mid-channel (reducing stress on banks) and increasing safety by creating low velocities near banks.

6. Weirs are to be integrated into the constructed banks, the gaps between boulders shall typically range from 6 to 12 inches.

7. All fill material, under riprap ramp to be either granular fill or excavated channel material.

8. Void in the placed riprap shall be filled with a well graded mix of aggregate varying from the No. 3 sieve up to 3/4 inch stones. The mix of aggregate should be such that it is not blown out of the riprap by the river current but instead forces flow over the riprap. Excess channel excavation can be used for filling voids with engineer approval.

9. Contractor shall strip and salvage topsoil from embankment area, area, salvaged topsoil shall be spread evenly over vegetation areas - incidental to other items.

10. Contractor shall install class 3 riprap within Polk County ditch No. 30 as shown on the plans.