North Snake Groundwater District
Sandy Pipeline Project
Operation & Maintenance Requirements

The North Snake Groundwater District completed the Sandy Pipeline project in May of 2003. The pipeline is intended to deliver up to 32 cfs of rented surface water and recovered tail water from the pond complex located in S1/2 of Section 5, T8S R14E to a pumping plant (underground vault) in NE1/4 SE1/4 of Section 31, T7S R14E via a 36" HDPE 50 psi pipeline and to deliver up 32 cfs from this location to the head of the Curren ditch in the SW1/4 NE1/4 of Section 31, T7S R14E via a 24" HDPE pipeline. Additionally, the project is intended to deliver up to 2 cfs from the pond complex to a second pump station located in SE1/4 SE1/4 of Section 6, T8S R14E via an abandoned NSCC lateral. The project is intended to operate from approximately April 15th to October 15th annually. The pond complex consists of 3 cascading ponds each successively smaller than the previous pond.

Upper Pond

The upper pond has a capacity of approximately 150 acre*feet. The inlet to the pond is from the NSCC W-26 lateral. Releases from the upper pond to the middle pond are controlled with one 15" headgate and one 24" headgate. The pond also has an emergency spillway, which diverts water to a large overflow area with a number of small ponds and a sizeable sinkhole, which is capable of taking 15 cfs on a continuous basis, which will prevent the main dike from being overtopped. Ordinary operation will be to maintain the upper pond at depth of 8' to 10' from the bottom of the 24" headgate. This provides a supply of stored water to maintain steady flows into the middle pond while adjustments are made for varying inflows from NSCC. It also allows for increased flows due to storm or power outage runoff to be captured and stored as opposed to diversion into the sinkhole. The discharge through the two headgates is sensitive to pond depth and so adjustments to the headgates can be made to maintain steady flows as pond depth varies. When the pond is at target depth, a 15 1/2" valve stem length on the 15" headgate and 11" on the 24" headgate seems to achieve the desired flow rate of approximately 32 cfs. Annual inspections of the headgates ate possible in early spring when water levels drop below the elevation of the headgates. Ongoing maintenance consists of daily measurement of pond inflow, depth and headgate settings as well as weed control around the headgate structures.

Middle Pond

The middle pond has a capacity of approximately 75 acre*feet. Inflow is controlled by the above-mentioned headgates. The middle pond is quite shallow over most of its footprint with the exception of the area immediately behind the dike and around the discharge structure for the pipeline. Discharge capacity through the pipeline is very sensitive to pond depth as the total fall through the pipeline is less than 20' in 6600'. For this reason, to achieve target flows, it is necessary to maintain the depth in the middle pond at least 8' to 10' from the bottom of the 36" headgate which controls the pipeline. The middle pond also has an emergency spillway, which diverts water to the lower pond to avoid overtopping of the dike. Additionally, there is a 12" headgate, which diverts water form the middle to the lower pond (which provides the 2 cfs diversion mentioned above). Because of the low head across the 36" pipeline, small valve openings (stem length of 6-9") are sufficient to provide to target flow as long as adequate head is maintained in the pond. As pond levels drop, flow rates through the pipeline drop quickly. Annual inspections of the headgates ate possible in early spring when water levels drop below the elevation of the headgates. Ongoing maintenance consists of daily measurement of pond depth and headgate settings as well as weed control around the headgate structures.

Lower Pond

The lower pond is located on adjoining property owned by Paul Mesinger. Control of pond levels and flow through the lower pond to the above mentioned second pump station is coordinated by Mr. Mesinger and the irrigation manager for Butch Morris.

IGWA00116

Vault

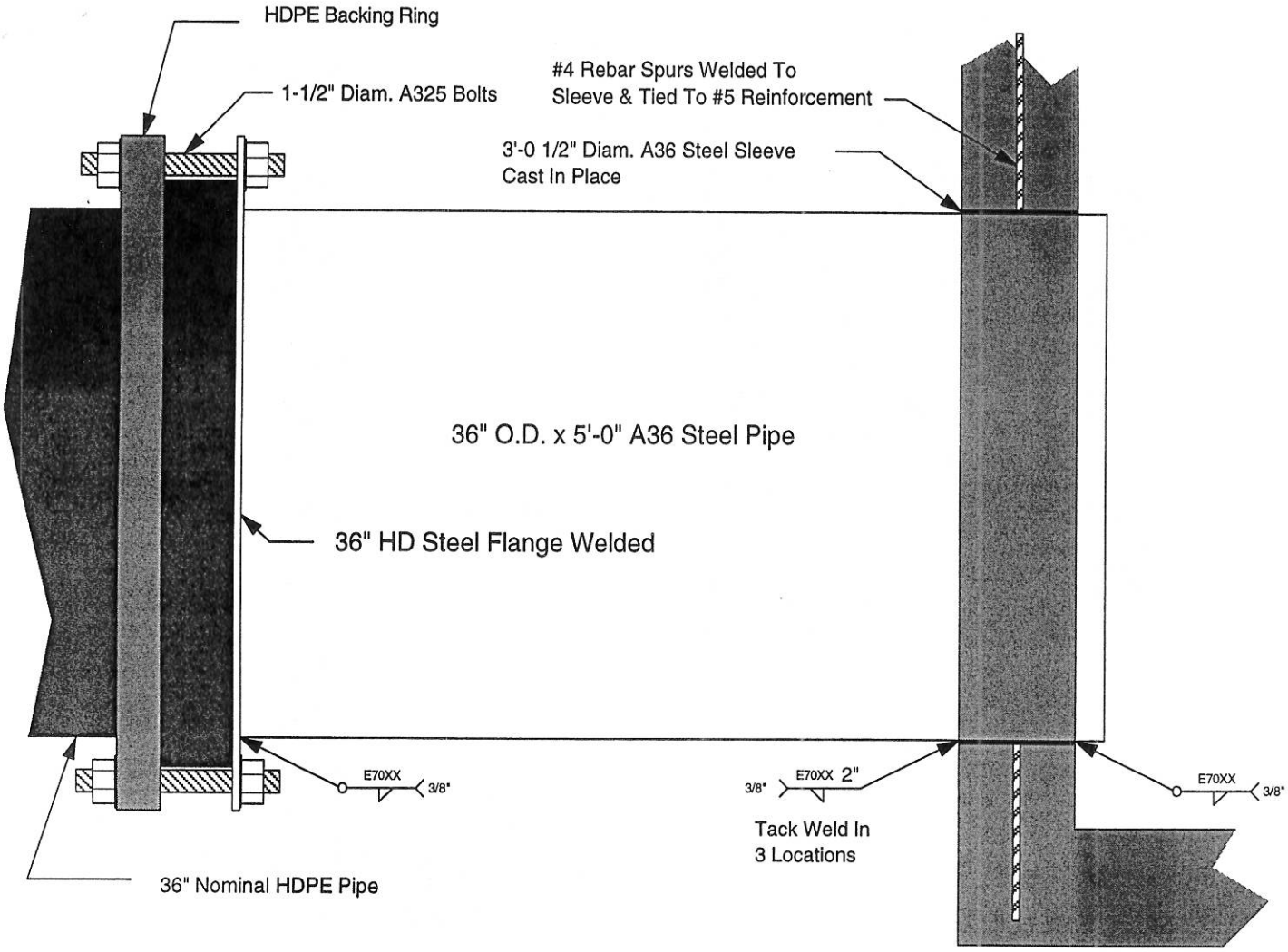
The primary pump station is situated atop an underground vault where the 36" pipeline discharges. The vault is divided into two chambers by a 6.5' wall in the center. Two pumps divert directly from the first chamber and a 12" line gravity flows from this first chamber to a pump about 1/8th of a mile to the West. Maintenance of all three pumps is the responsibility of Mr. Morris. Daily operation of the vault consists primarily of making measurements of flows passing from the first chamber, over the divider, to the second chamber where the 24" pipeline carries water away to the Curren ditch. Winterizing the system will involve temporary caps placed over the ends of the 24" and 36" pipelines to prevent animals or debris from entering the pipelines.

36" Pipeline Drain

There is a 4" valve located southeast of the vault where the 36" pipeline passes Mr. Morris' pivot in the event that it becomes necessary to drain the 36" pipeline for inspection or maintenance. It is not necessary that the pipeline be drained as the pipeline below frost depth along its entirety and the HDPE material has sufficient linear expansion capabilities to resist rupture due to freezing.

Curren Ditch Discharge Structure

The 24" HDPE pipeline terminates as it exits from the earth in the embankment above the Curren ditch. The exposed elbow is painted steel and discharges into a concrete stilling structure. Operation of the pipeline requires no activity at the discharge. Annual maintenance consists of inspection for erosion or settlement problems, concrete integrity, and repainting requirements and weed control.



Section D-D

1" = 1'-0"

(2' Diameter Connection at Other End of Vault Similar)

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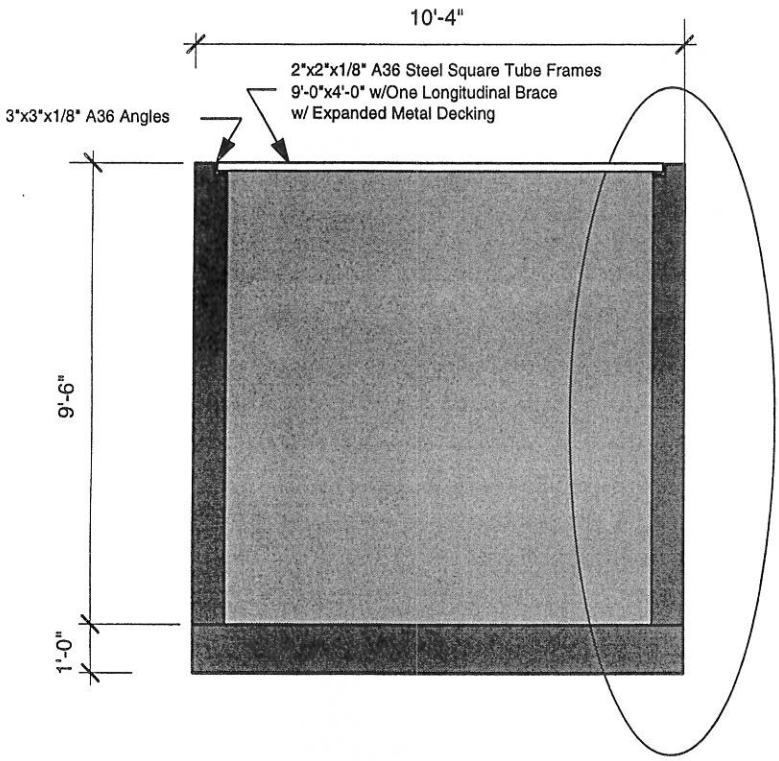
4/1/03

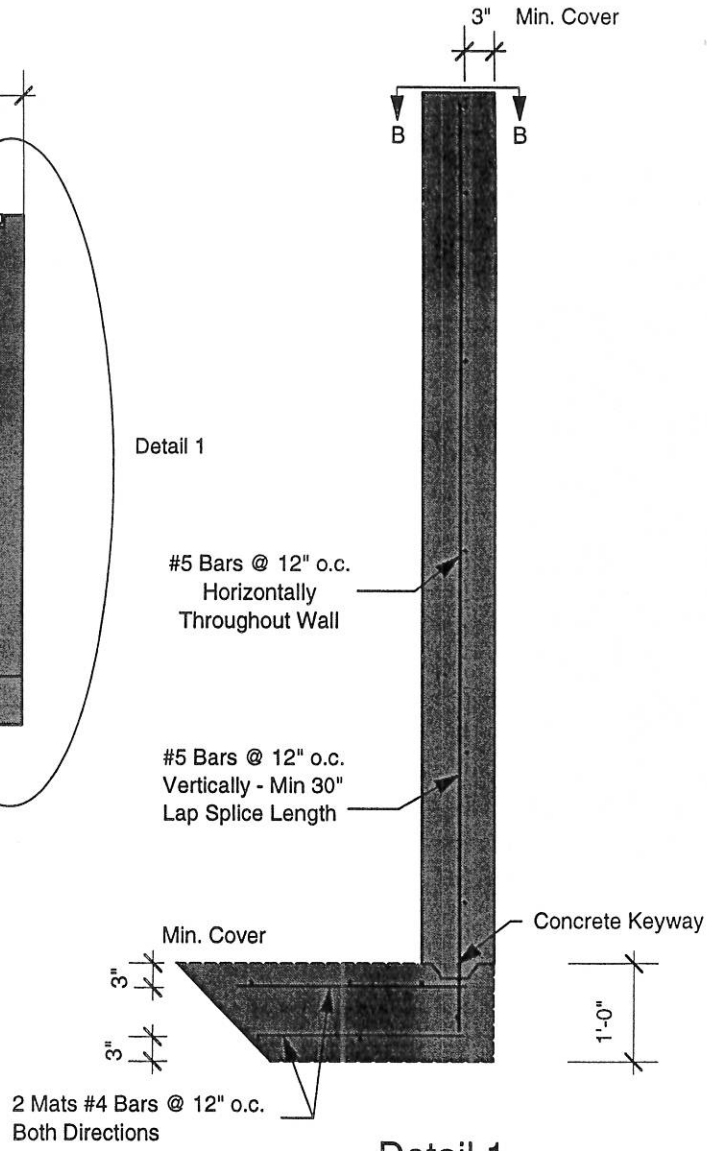
Professional Engineer
REGISTERED
7919
10-23-03
STATE OF IDAHO
Jeffrey L. Martin

IGWA00118



Section A-A

1/4"=1'-0"



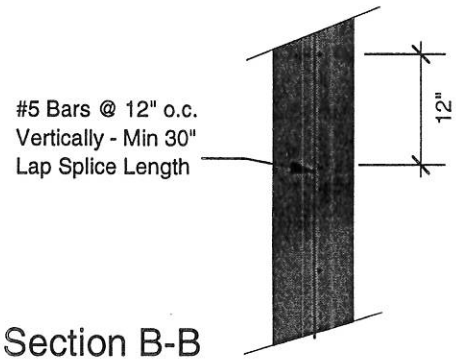
Detail 1

1/2"=1'-0"

Notes & Specifications

- Contractor shall verify and coordinate dimensions among all drawings prior to proceeding with work or fabrication.
- Contractor to submit request for any substitution of specified materials to engineer.
- Footing elevations and details are subject to change depending on conditions encountered.
- Contractor to notify engineer if soil conditions are encountered which may require a lower allowable bearing pressure.
- All reinforcing bars to be placed a minimum of 2" from nearest face of concrete unless otherwise noted on drawings.

Design Bearing Pressure	2000 PSF
Lateral Earth Pressure	55 PCF
Minimum Concrete Strength @ 28 Days	3500 PSI
Air Content	5.5% +/- 0.5%
Reinforcement	Grade 60 (Fy = 60 KSI)



Section B-B

1/2"=1'-0"

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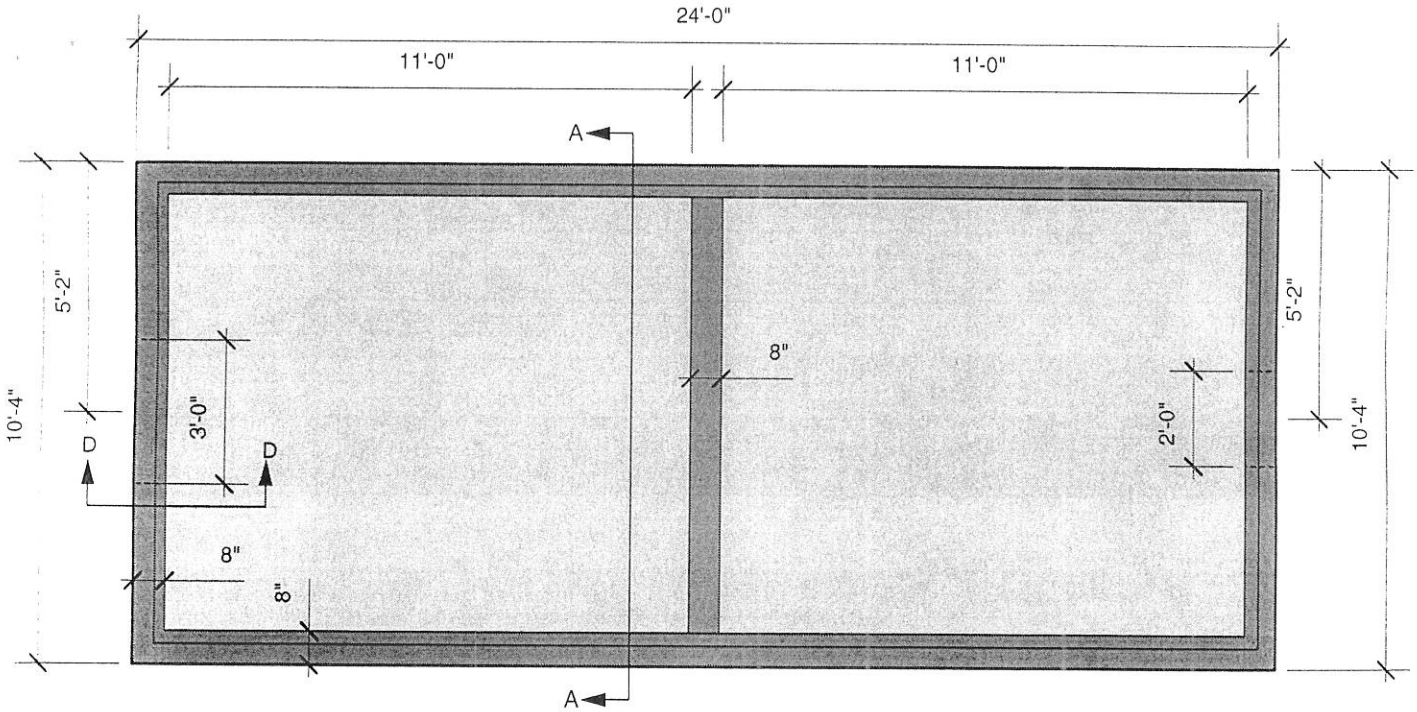
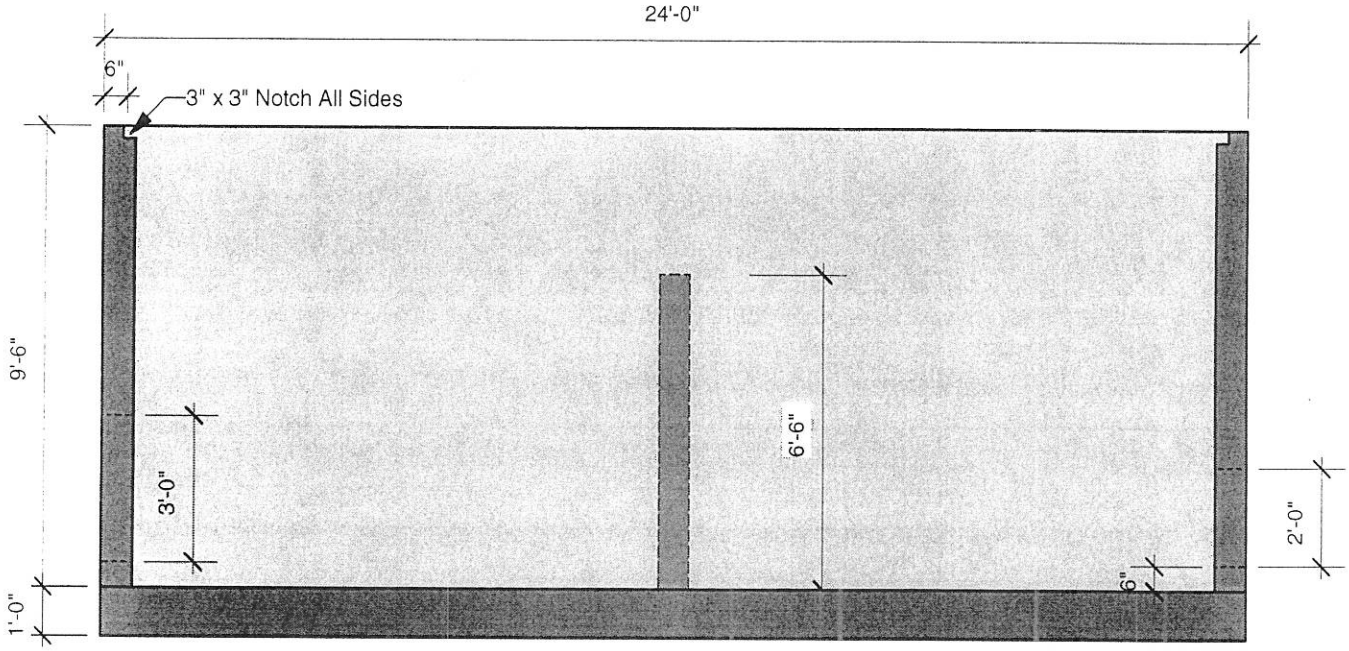


Vault Plan View

1/4"=1'-0"



Vault East Elevation

1/4"=1'-0"

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