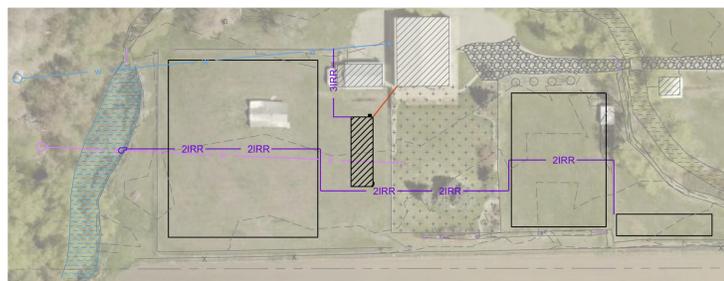


Project Introduction

The purpose of this project is to design an irrigation system and a greenhouse for a private landowner in Nibley, Utah. The client has approximately three acres that they want to convert into a cut flower farm.

The client has water rights to springs along the hill adjacent to the property that will provide irrigation to the farm. Water from the springs flows into the pond and feeds two storage tanks on the property.



Alternatives



USU Extension 2025

Furrow irrigation uses small trenches between plant rows to transport water to the roots.

Bubbler sprinklers water plants evenly at ground level, which protects leaves and flowers while ensuring deep root hydration.



Menards 2025



Robert's Ranch 2025

High Tunnels are plastic-covered, arched-framed structures with 12-15 ft high walls.

Low tunnels are short, flexible hoop-supported structures covered with plastic.



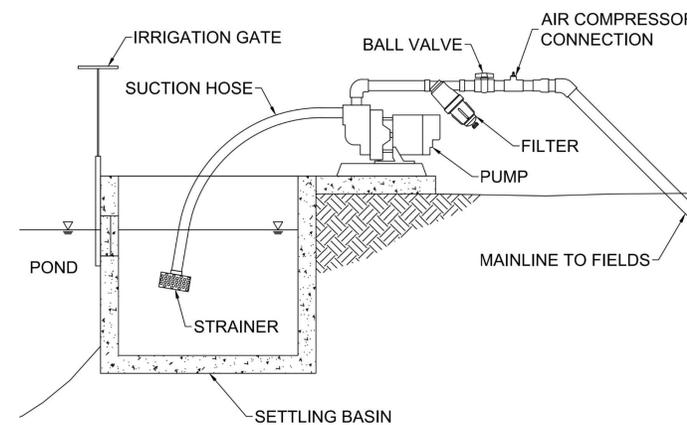
OER Commons 2025

Water Supply

The pond supplies water to irrigate the fields. A storage tank on the hill supplies water to the house through a culinary waterline. The greenhouse waterline branches off the culinary line.

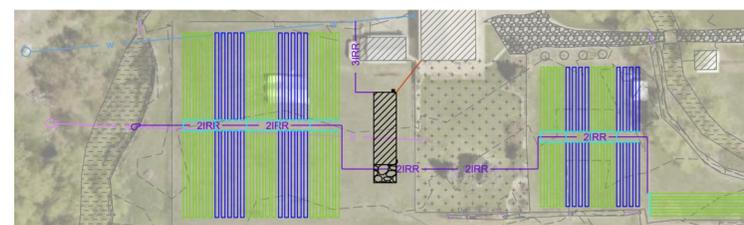


The irrigation pump draws water from a stilling basin on the side of the pond. The stilling basin has a grate to keep out large debris. A strainer on the end of the suction hose keeps smaller debris out of the pump. After the water runs through the pump, it goes through a filter which keeps sediment from clogging the driptape.



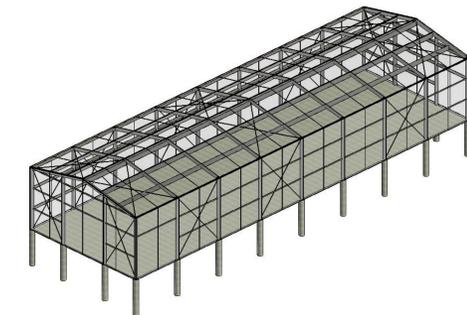
Irrigation System

The property is split into three growing fields. Each field is divided into zones. In total there are 19 zones. After the water leaves the pump, it travels through a 2-in. PVC mainline. Risers and manifolds bring water from the mainline to the irrigation zones. Driptape branches off each manifold to each zone.

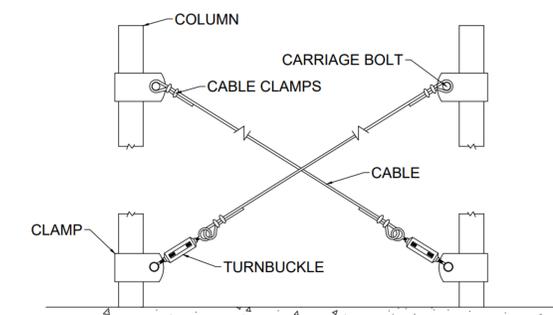


Greenhouse

The A-Frame style greenhouse consists of HSS steel tubing with cold-formed Z-Girts and purlins to support 6mm polycarbonate glazing. The greenhouse is supported by small, concrete drilled shafts.



Loads were calculated using procedures outlined in ASCE 7-22. The loads were applied and analyzed using Risa 3-D. The greenhouse's lateral force resisting system consists of concentrically braced moment resisting frames with tensioned steel cables as the bracing mechanism.



Team & Acknowledgements



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