

C1.06 - Canyon Lake Dam Rehabilitation

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Problem Statement

Dams across North America are aging and not receiving the maintenance or long-term services needed to stay up to date.

Alternatives

Sensors

Flat Jack: Monitors stress and strain in concrete, rock, and masonry structures. This will be a total of \$6,797.

Dynamax Soil Probe: This sensor monitors moisture and saturation in soil. This will cost a total of \$11,620.

Liquid Limit: Monitors and regulates free levels of flowing water. This will cost a total of \$1,423.

Soil Lime Admixture

Adding a lime injection into the soil makes it stronger by increasing the consolidation and impermeability factors. The total cost of this material, along with the labor, is \$5,985,805.

Sustainability

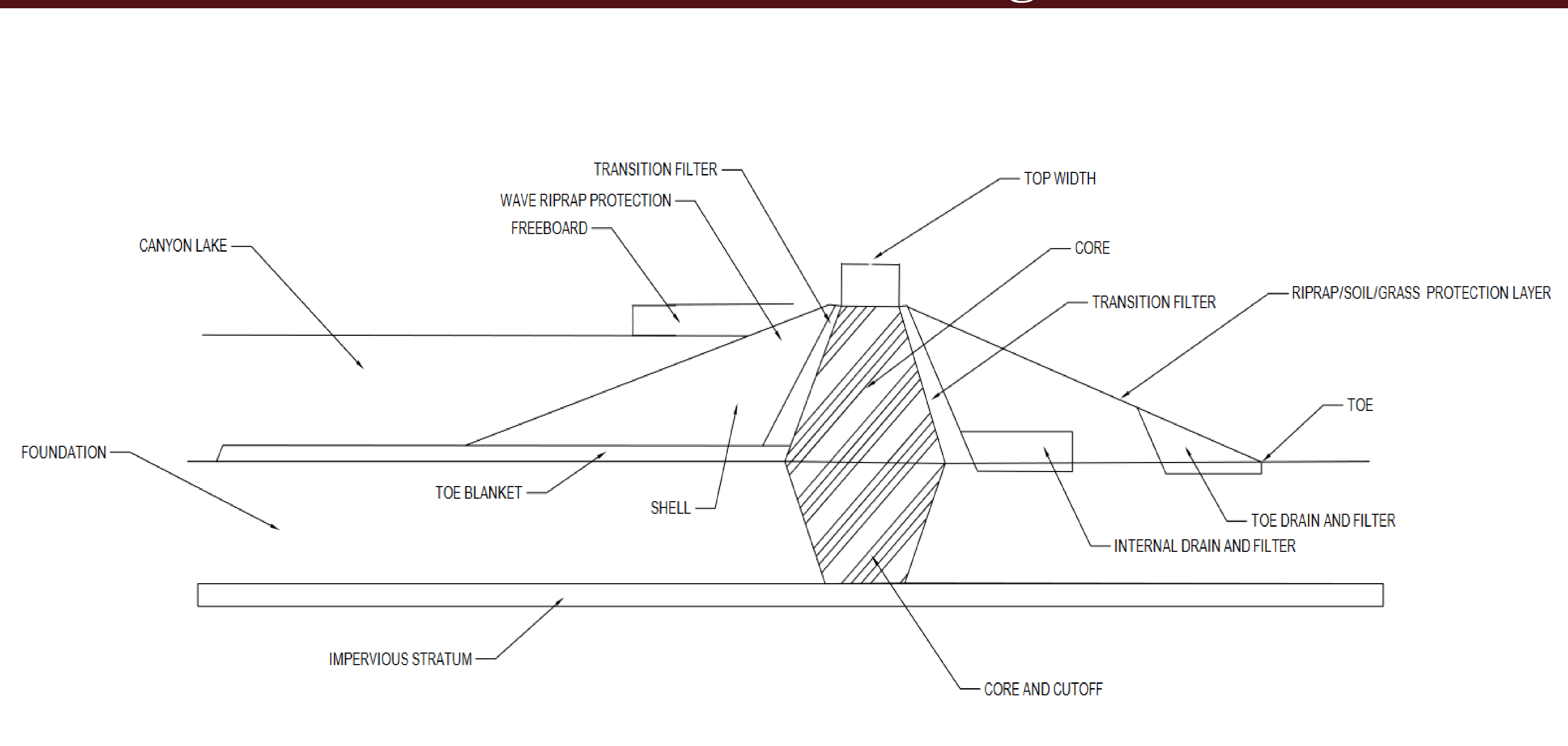
Sensors are a sustainable alternative because they will reduce the use of materials and construction by alerting of any complication before it gets detrimental.

Introduction

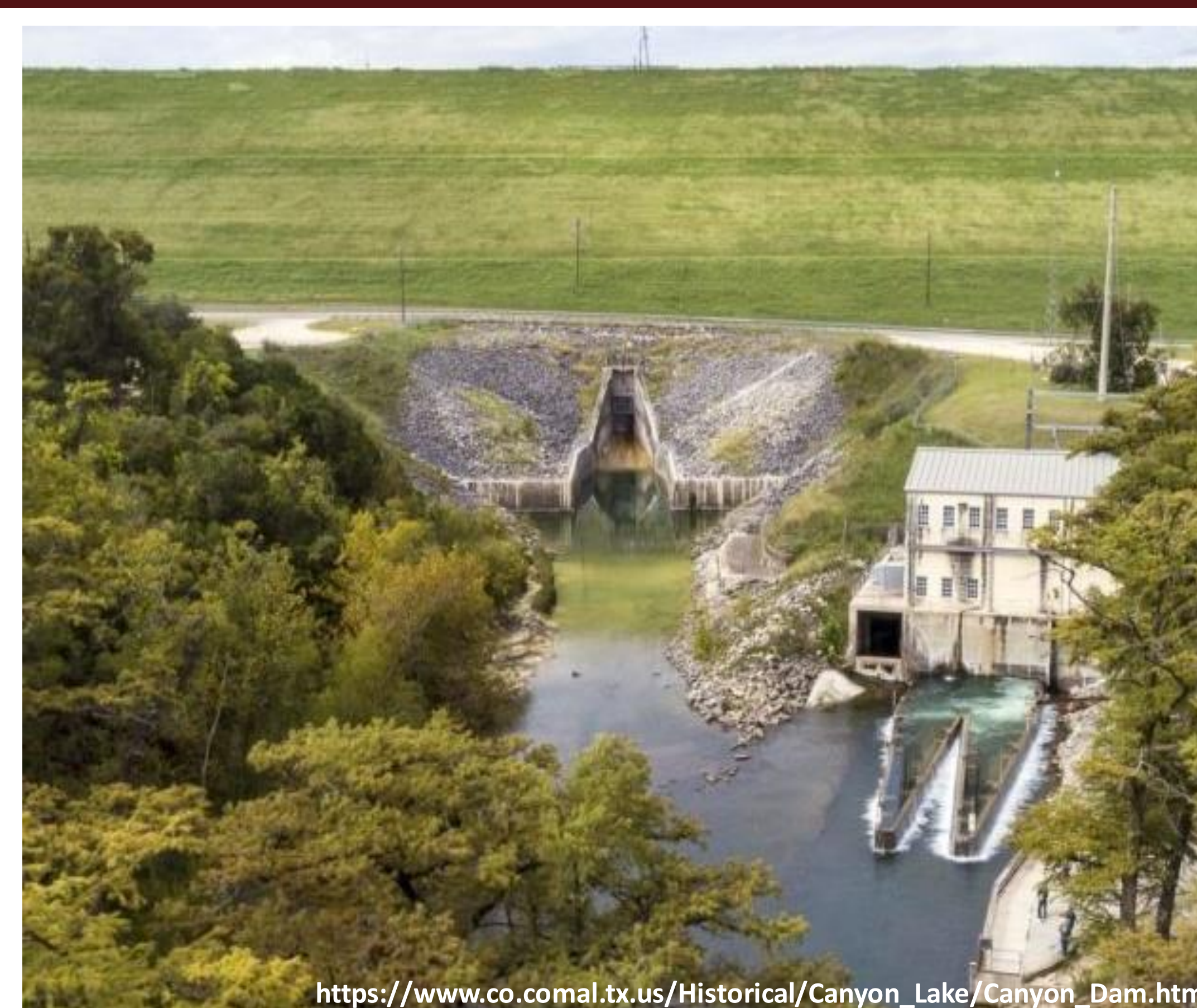


Our site is the Canyon Lake Dam, located in Canyon Lake, Texas. We chose this dam because of its proximity which gave us an opportunity to visit. This is a high-risk Earthen dam, made up mainly of rock and soil.

AutoCAD Drawing



Images



Life-Cycle Cost



Conclusion

We chose two alternatives because it takes many measures to maintain an earthen dam to live indefinitely. Protocol says they only last 50-60 years.

Design II

- Emergency Spillway
- Replacing Flood Gates
- Grouting
- Concrete Armor Top

Mix ID: CSA2+20%FA+15%LP

Day	Average
56	80.55 (MPa)