

## Team C2.01 # - Senior Design . Bridge Scour

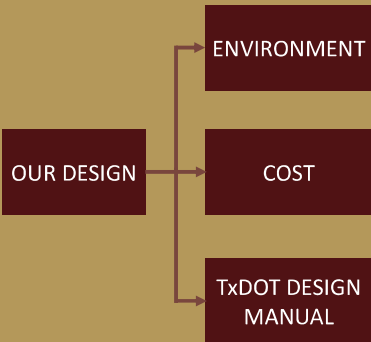
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CREATE



### Project Overview

In response to ongoing scour beneath the West Salitrillo Creek Bridge, this project aims to place cellular grout to combat existing voids beneath the foundation, construct a concrete ramp to divert stormwater away from the structure, utilize existing riprap for energy dissipation, and install willow brush mattresses for riverbank stabilization.

### Design Considerations



### Constraints

- ❖ Sustainable Procurement Practices
- ❖ Minimizing Environmental Footprints
- ❖ Compliance with TxDOT SWPPP Climate Change and Flood Resilience
- ❖ Downstream Impact Considerations
- ❖ Carbon Footprint and Emission Control Limitations

### Site Plan



### Element Design

#### Cellular Grout



#### Concrete Ramp



### Envision Framework

Criteria	Score
Quality of Life	12/90
Resource Allocation	46/134
Natural World	16/84
Climate and Resilience	94/190
Total Score	168/498

**ENVISION  
SILVER**

### Life Cycle Cost Analysis

Year	Cost Component	Cost	Discounted Rate Cost	Discounted Cost
0	Initial Installation	\$450,000	1	\$450,000
5-50	Willow Brush Mattress Maintenance	\$15,000	5 % (every 5 years)	\$5,000
5-50	Rip Rap Maintenance	\$500	2 % (every 5 years)	\$1,000
1-50	Salvage Value	\$450,000	After 50 years	\$10,500

### Capital Cost Analysis

Capital Costs	Costs
1. MK1 Construction Fees	\$300,000.00
2. MK1 Concrete Ramp	\$6,500.00
3. Eco Services	\$7,000.00
4. Engineering Fees	\$8,000.00
5. Summary	\$6,000.00
6. Brush Mattresses	\$32,000.00
7. Riprap	\$12,000.00
8. 20 % Contingency	\$75,000.00
Total Costs	\$450,000.00

### Meet the Team

