

Estimated Quantities and Costs:

MM 279.3

<u>Item</u>	<u>Quantities</u>	<u>Cost</u>
Excavation, CL 10, Waste	350 CY	\$ 2,000.00
Erosion Stone	625 TONS	\$ 20,000.00
Macadam Stone Slope Protection (Gradation No. 13, no choke stone course)	218 SY	\$ 8,300.00
Class B Revetment	800 TONS	\$ 39,000.00
Engineering Fabric	900 SY	\$ 3,000.00
Clearing & Grubbing	0.5 ACRES	\$ 1,000.00
Contingencies, Mobilization & TC (35%)		\$ 36,800.00
Total Cost		\$ 108,100.00

Muscatine County, US 6, MM 275.6 - Sta. 708+58

Observations/Notes:

The overall condition of the foreslope was difficult to determine due to the amount of vegetation present. It would seem beneficial to return to this site sometime during the winter months when the vegetation is dormant.

For estimating purposes, the following were assumed:

The foreslope in this area has a height of about 25 feet and a 1.5:1 slope.

Foreslope instability has a longitudinal length of about 100 feet, starting at approximate Station 708+58 and extending to Station 709+58.

Based on as-built road plans, there appears to be a pipe with unknown diameter within the assumed limits of foreslope instability at about Station 709+16. This drainage structure was not observed in the field at the time of our visit. Based on observations made by DOT Maintenance, we understand that there are several sections of separated pipe present at the toe of slope within this area. Broken concrete was placed by DOT Maintenance within the general limits of instability to temporarily maintain the integrity of the slope.

Link to pictures: [DSCN1593.JPG](#)

Link to relevant as-built road plan sheets: [as-built road plans, US 6, MP 275.5 and MP 275.6.pdf](#)

Recommendations:

Bench and rebuild the foreslope to the previously constructed slope, starting near Station 699+64 and extending to about Station 700+84. Slope repair activities shall not disturb any existing tree vegetation present on the foreslope adjacent to the instability. The repair shall start at the toe of the existing foreslope and then extend up-slope to the outside edge of the gravel shoulder. It is recommended that the backfill material consist of Erosion Stone underlain with Engineering Fabric.

Backfilling shall occur immediately after cutting the benches and placing the Engineering Fabric. The Erosion Stone shall be capped with a 1-foot thick layer of Macadam Stone Base Material (Gradation No. 13, no choke stone course). Clearing and Grubbing will be necessary. Evaluate the existing culvert structure. Remove/replace or repair the existing concrete pipe culvert.

It appears that temporary or permanent ROW will be needed to complete this repair.

Due to the height and steepness of the existing foreslope, it may be necessary to install guardrail within the limits of the repair. Recommend obtaining field survey for the preparation of plans.

The following quantities are estimated along with associated costs for the foreslope repair. This estimate does not include costs associated with repairs to the existing pipe, necessary ROW, or guard rail.

Estimated Quantities and Costs:

MM 275.6

<u>Item</u>	<u>Quantities</u>	<u>Cost</u>
Excavation, CL 10, Waste	522 CY	\$ 3,000.00
Excavation, CL 13, Waste	100 CY	\$ 1,000.00
Erosion Stone	749 TONS	\$ 24,500.00
Macadam Stone Slope Protection (Gradation No. 13, no choke stone course)	600 SY	\$ 24,600.00
Engineering Fabric	747 SY	\$ 2,200.00
Clearing & Grubbing	0.2 ACRES	\$ 1,000.00
Contingencies, Mobilization & TC (35%)		\$ 28,300.00
Total Cost		\$ 80,600.00

Muscatine County, US 6, MM 275.5 - Sta. 699+74

Observations/Notes:

The overall condition of the foreslope was difficult to determine due to the amount of vegetation present. It would seem beneficial to return to this site sometime during the winter months when the vegetation is dormant.

For estimating purposes, the following quantities were assumed:

The foreslope in this area has a height of about 25 feet and a 1.5:1 slope.

Foreslope instability has a longitudinal length of about 100 feet, starting at approximate Station 699+74 and extending to Station 700+74.

Based on as-built road plans, there appears to be a 12-inch diameter concrete pipe within the assumed limits of foreslope instability at about Station 700+23. There also appears to be an 18 inch intake and pipe located directly west of Station 699+74. These drainage structures were not observed in the field at the time of our visit.

Based on observations made by DOT Maintenance, we understand that there are several sections of separated pipe present at the toe of slope within this area.

Link to relevant as-built road plan sheets: [as-built road plans, US 6, MP 275.5 and MP 275.6.pdf](#)

Recommendations:

Bench and rebuild the foreslope to the previously constructed slope, starting near Station 699+64 and extending to about Station 700+84. Slope repair activities shall not disturb any existing tree vegetation present on the foreslope adjacent to the instability. The repair shall start at the toe of the existing foreslope and then extend up-slope to the outside edge of the gravel shoulder. It is recommended that the backfill material consist of Erosion Stone underlain with Engineering Fabric. Backfilling shall occur immediately after cutting the benches and placing the Engineering Fabric. The Erosion Stone shall be capped with a 1-foot thick layer of Macadam Stone Base Material (Gradation No. 13, no choke stone course). Clearing and Grubbing will be necessary. Evaluate the existing culvert structures. Remove/replace or repair the existing concrete pipe culvert.

It appears that temporary or permanent ROW will be needed to complete this repair.

Due to the assumed height and steepness of the existing foreslope, it may be necessary to install guardrail within the limits of the repair.

Recommend obtaining field survey for the preparation of plans.

The following quantities are estimated along with associated costs for the foreslope repair. This estimate does not include costs associated with repairs to the existing pipes, necessary ROW, or guard rail.

Estimated Quantities and Costs:

MM 275.5

<u>Item</u>	<u>Quantities</u>	<u>Cost</u>
Excavation, CL 10, Waste	415 CY	\$ 2,300.00
Erosion Stone	490 TONS	\$ 16,100.00
Macadam Stone Slope Protection (Gradation No. 13, no choke stone course)	400 SY	\$ 16,400.00
Engineering Fabric	463 SY	\$ 1,400.00
Clearing & Grubbing	0.2 ACRES	\$ 1,000.00
Contingencies, Mobilization & TC (35%)		\$ 18,700.00
Total Cost		\$ 53,600.00

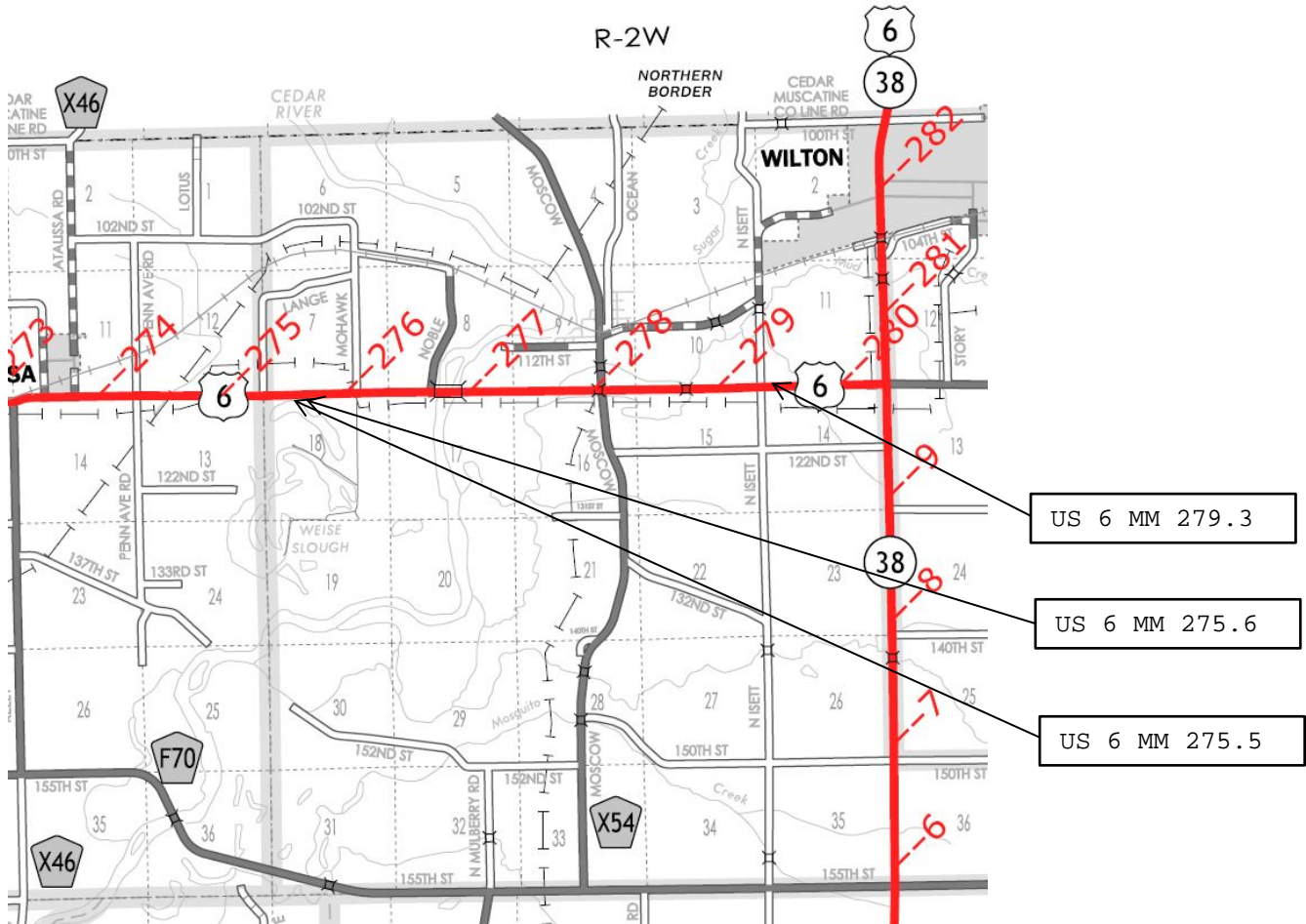
ESTIMATED COSTS:

Location at MM 279.3 - \$110,000
 Location at MM 275.6 - \$ 80,000
 Location at MM 275.5 - \$ 55,000
Total - \$ 245,000

FUNDS PROGRAMMED:

It has been identified by the District 5 office for construction in FY 2021. A schedule of events for plan development will be determined following approval of the Project Concept.

LOCATION MAP:



cc:

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|------------------|------------------|-----------------|
| C. Purcell | M. J. Kennerly | K. D. Nicholson |
| D. L. Maifield | C. B. Brakke | S. J. Megivern |
| F. W. Todey | A. A. Welch | N. M. Miller |
| C. C. Poole | S. Anderson | G. A. Novey |
| M. A. Swenson | M. J. Sankey | R. A. Younie |
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| D. L. Newell | B. E. Azeltine | D.R. Claman |
| T. D. Hanson | S. J. Gent | W.A. Sorenson |
| T. D. Crouch | J.W. Laaser-Webb | M. Van Dyke |
| D. E. Sprengeler | E. C. Wright | H. Torres-Cacho |
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