



Hurstville Lime Kiln Improvements

Jackson County Historical Society

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Project Location

The Hurstville Lime Kilns are a part of the Hurstville Historic District located in Maquoketa, Iowa. The site they occupy is maintained by the Jackson County Historical Society.



Figure 1. Project Location

Existing vs Proposed Site Plan

The purpose of this project is to make improvements to the site in order to better preserve and showcase its history. Our team has been tasked with flood control, parking lot redesign, and the addition of a trail system. Together these three tasks have been designed to improve the safety, accessibility, and connectivity of the site.

To mitigate the flooding of the site, the rising ground water will have a drainage outlet that fits within the modified topography of the site. The parking lot redesign pulls the parking spaces away from the kilns while staying within the property lines and being ADA compliant. Lighting was also added to each section of parking. Current conditions include a staircase located north of the kilns. As these have been accessed for ADA compliance, the trail will provide two alternative routes to view the tops of the kilns.



Figure 2. Existing conditions (left), Proposed Design (right)

Drainage Design

A dry retention basin and culvert were designed to catch and retain overland flow and allow the abundant rising ground water to drain. A flap gate was added to prevent back flow during peak stream discharge. Effluent waters are drained into the neighboring tributary of the North Fork of the Maquoketa River.

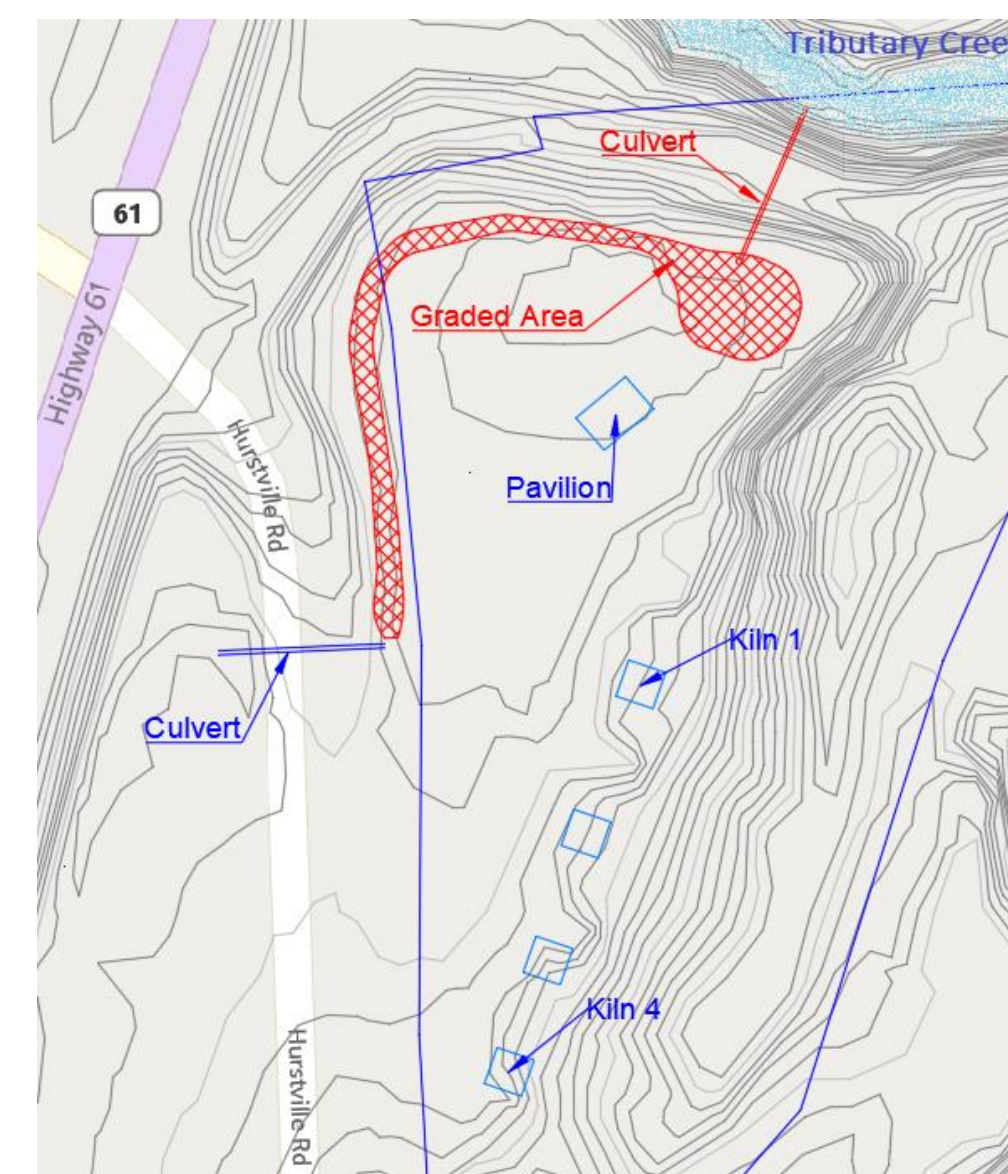


Figure 3. Drainage detail

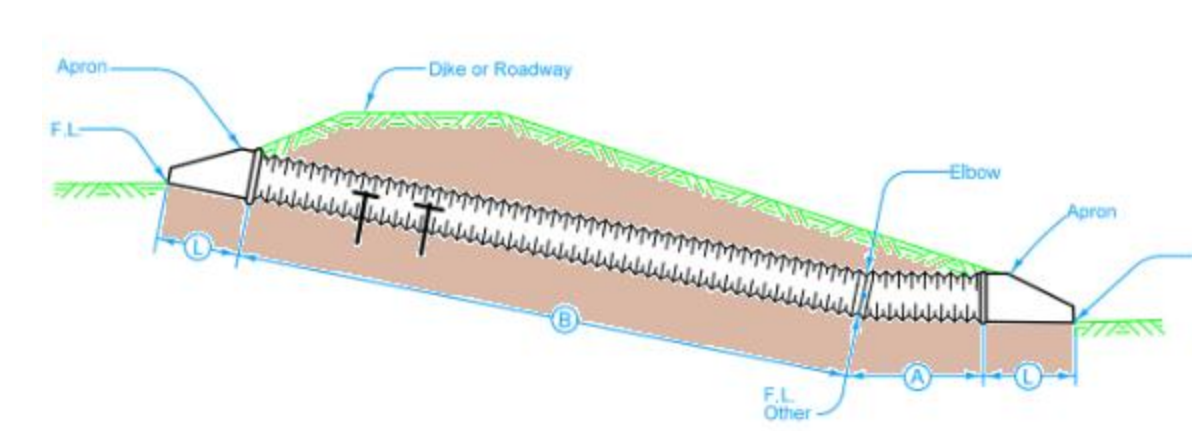


Figure 4. Culvert detail

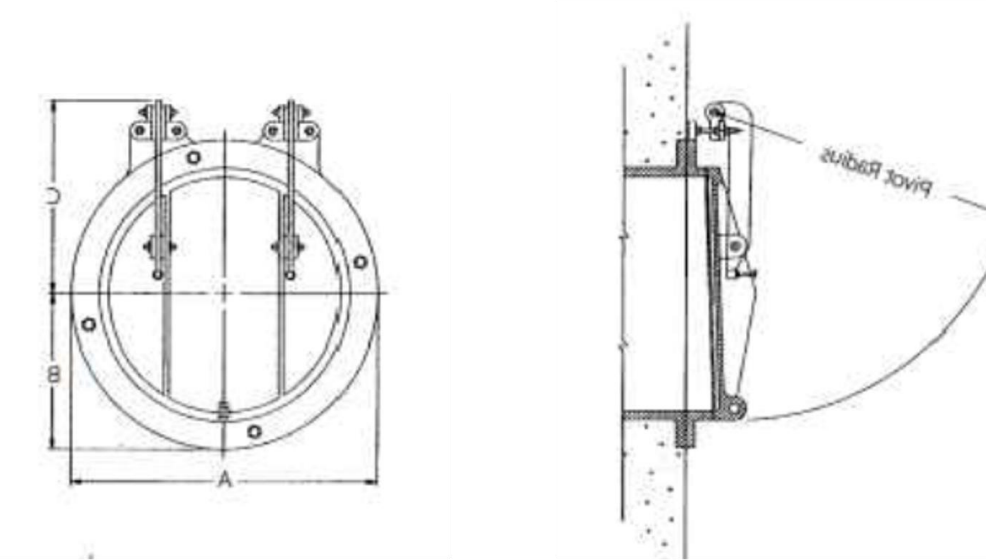


Figure 5. Flap gate detail

Parking Lot Design

The driveway lane runs along the west side of the property line with two separate sets of parking spaces. This allows for two points of access to the trail with the north section also giving direct access to pavilion outlined in yellow. The lighting will provide safety to visitors and to the structures against vandalism.



Figure 6. Parking Lot Layout

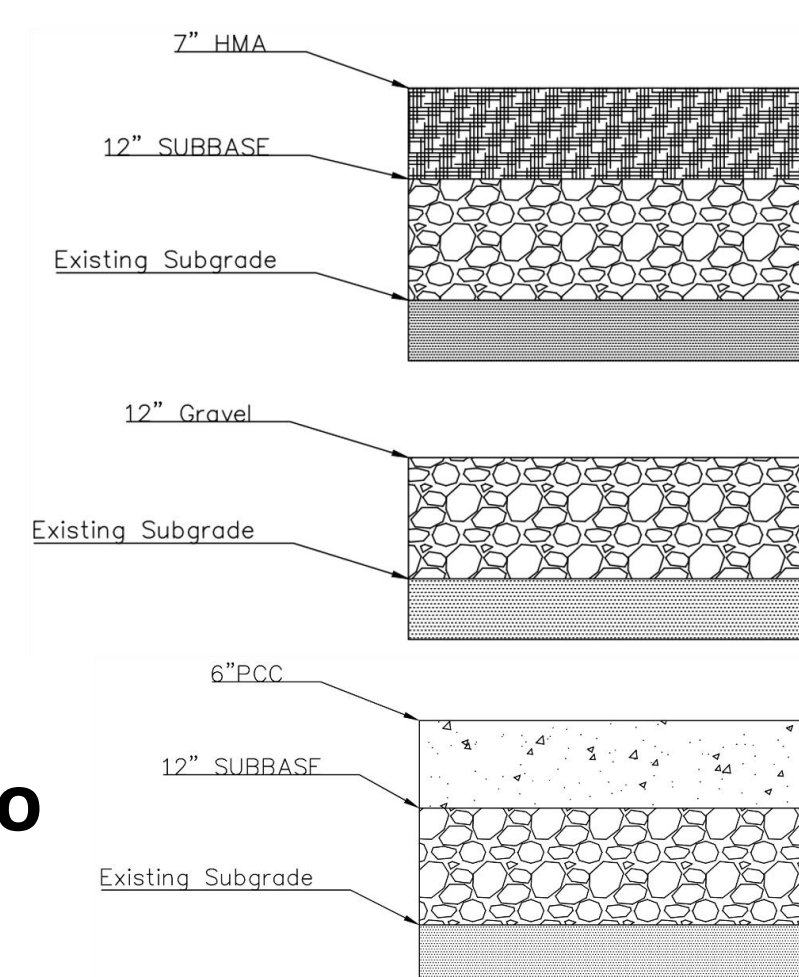


Figure 7. Material option cross-sections

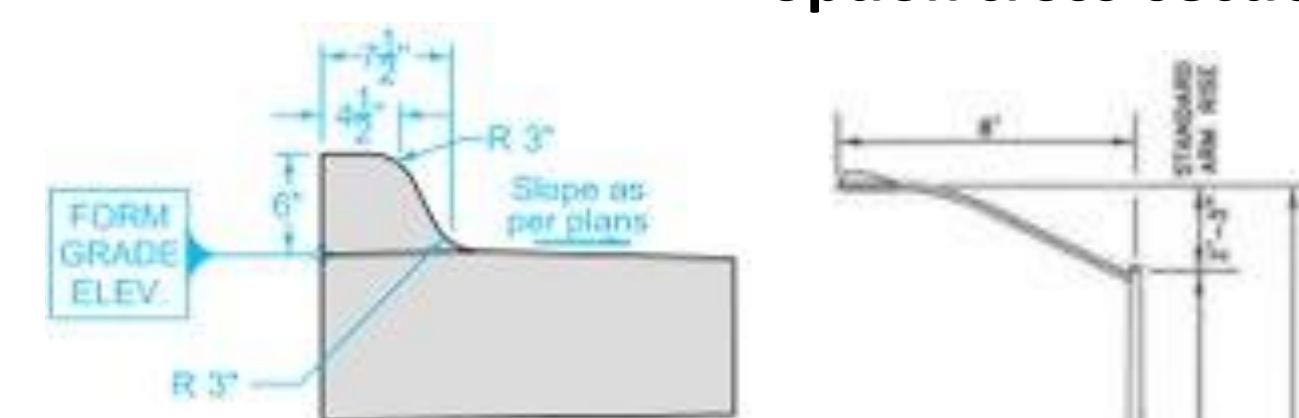


Figure 8. Curb Detail



Figure 9. Lighting Details

Trail Design

To improve accessibility and connectivity, the trail system forms a continuous loop around the site. Due to the lack of ADA compliance of the existing staircase, our team recommends it be closed. With this closure, the trail system provides two alternative routes to view the tops of the kilns along either the north or south ends of the site.

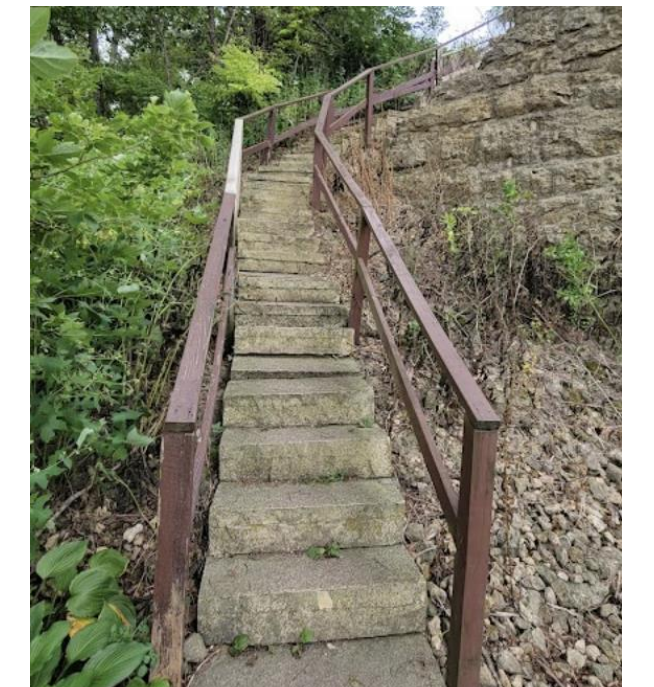


Figure 12. Existing staircase

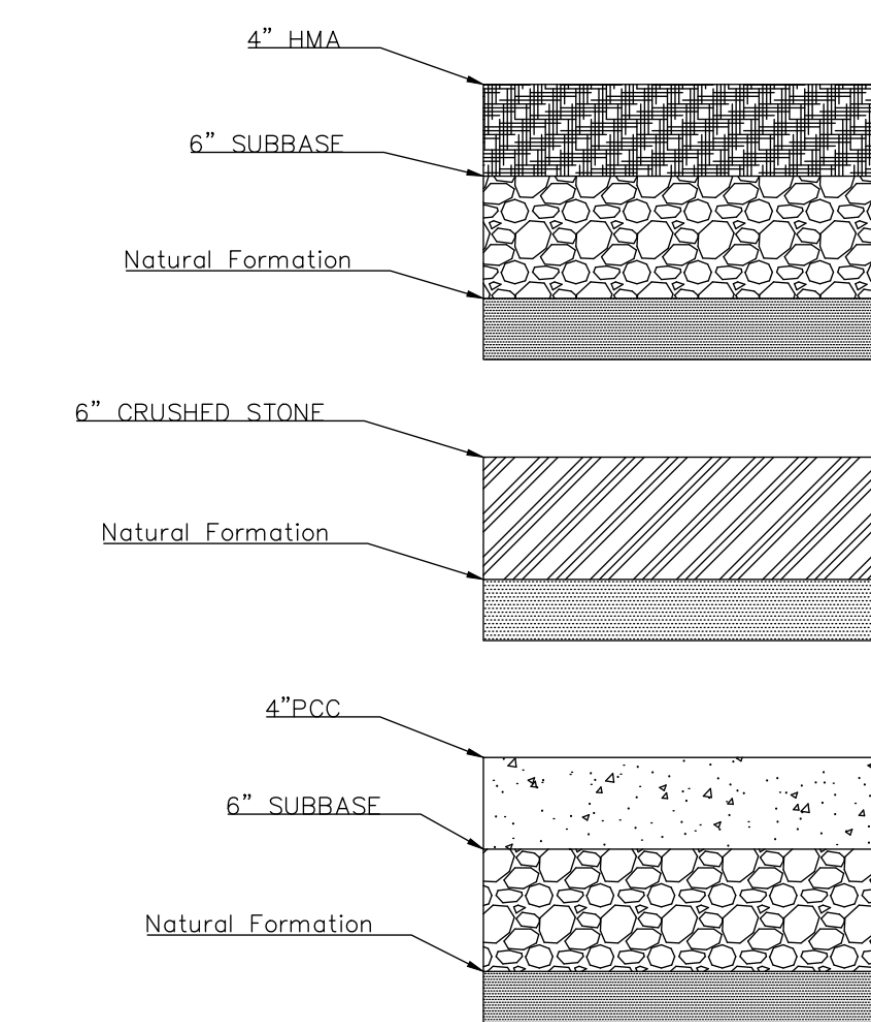


Figure 11. Trail material option cross-sections

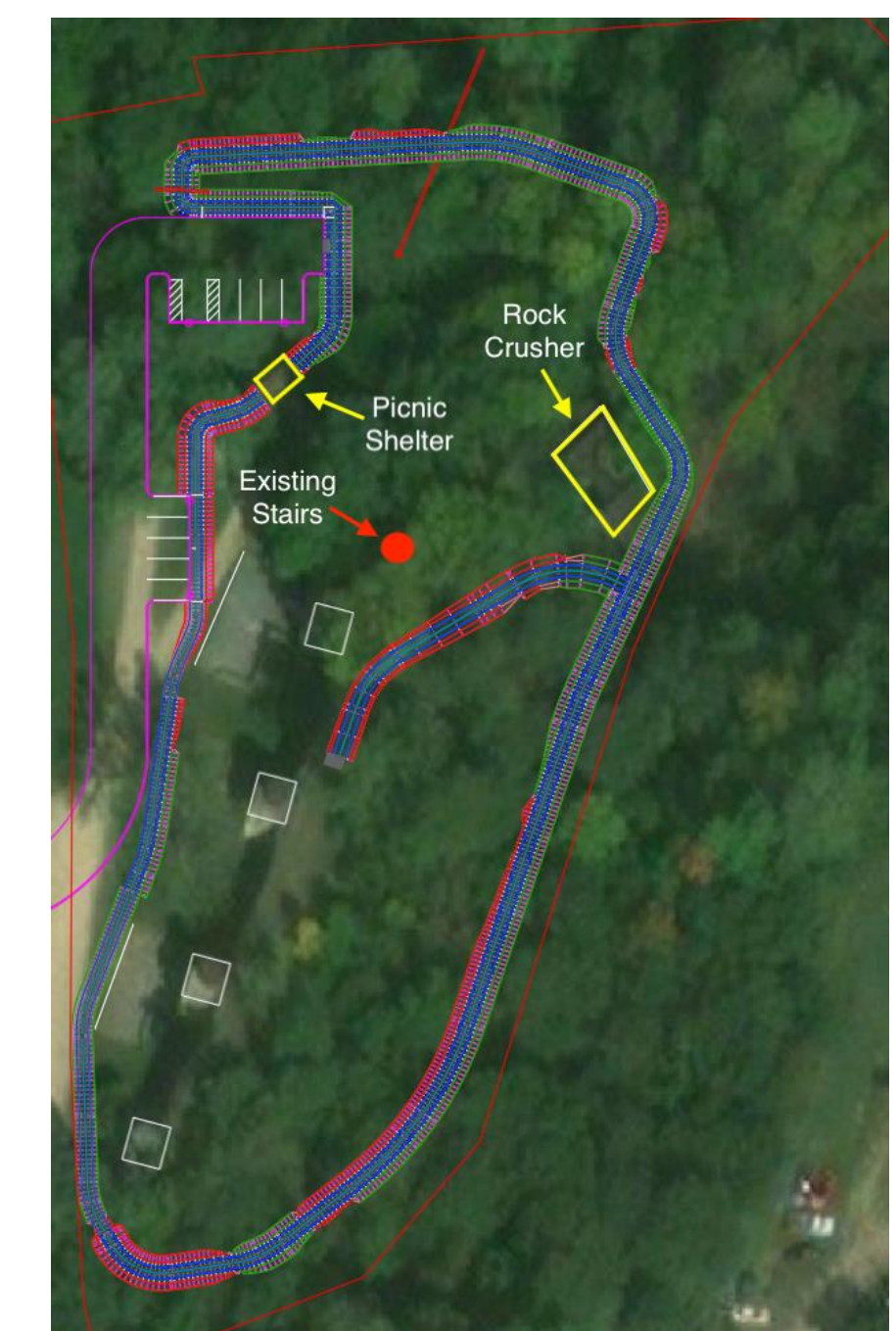


Figure 13. Trail Alignment

Project Cost Estimation

The cost estimate has been broken down into subtotals for each component of the design. Unit prices were taken from the Iowa DOT Bid Tabs of April and include the cost of material, labor, and equipment, resulting in a construction subtotal for each component.

Total Project Cost				
Component	Material	Construction Subtotal	Contingencies	TOTAL COST ¹
Drainage	-	\$ 78,800.00	\$ 7,875.00	\$ 87,000.00
	PCC	\$ 155,500.00	\$ 15,600.00	\$ 171,500.00
Parking Lot	Asphalt	\$ 115,000.00	\$ 11,500.00	\$ 127,000.00
	Gravel	\$ 88,000.00	\$ 8,800.00	\$ 97,500.00
Trail	PCC	\$ 67,000.00	\$ 6,700.00	\$ 74,000.00
	Asphalt	\$ 31,100.00	\$ 3,100.00	\$ 34,700.00
	Gravel	\$ 21,600.00	\$ 2,150.00	\$ 24,300.00

¹ Total project cost is the sum of the construction subtotal, 10% contingencies, and \$500 in engineering administration for each component.

References

- Iowa Department of Transportation
- Iowa Statewide Urban Design and Specifications
- Iowa Stormwater Management Manual
- 2010 ADA Standards for Accessible Design