

Palmer Lake Board of Trustees Resolution 28-2023 approved the building of a new trail running from Kent St. to the existing Creekside Trail and then east from Spring Street to the pavilion on the Elephant Rock Property. As part of this resolution, the Board of Trustees also approved the building of 1 bridge.

This new trail system adds approximately 1.3 miles of trail and connects the town center and existing trails to the Creekside Trail, and to the Elephant Rock Property. To complete the new trail, 3 creek crossings are required. 1 over North Monument Creek and 2 over Monument Creek.

There were a significant number of unknowns when Resolution 28-2023 was adopted. Since that time, a lot has been learned. The Palmer Lake Parks and Trails Commission now sees the new trail system as a 3 step process.

Step 1: Resolution 28-2023 was the first step to complete the new trail system. With help from the Mile High Youth Corp and many volunteers, the trail from Kent Street to Prairie Street down and across the temporary log bridge to the Creekside Trail, and from Spring Street bridge to Epworth St to the Chicken Coop has been flagged, worked on, partially completed, and being used by citizens. The rest of the trail, Spring Street bridge to Greeley Bridge, has been flagged and roughed in since May. Work on the trail will continue through out the winter.

A dedicated group of local volunteers have designed and built a wonderful temporary log bridge crossing North Monument Creek connecting the Kent / Prairie trail section to the Creekside Trail. This was at a cost of approximately \$1,100 using Parks funds.

PLP&T feels we are well on our way to completing the provisions of Resolution 28-2023.

Step 2: It was known, at the time Res 28-2023 was passed, that a bridge would be required over Monument Creek at the Chicken Coop and that the PLP&T had partnered with local volunteers and the United States Air Force Academy (USAFA) Civil and Environmental Engineering cadets to design and build a permanent bridge crossing Monument Creek at the Chicken Coop into the E-rock property.

The design review and recommendation was presented by the USAFA Cadets December 4th to PLP&T commissioners, a PL Historical Society member, and trail volunteers.

Power Point presentation

The Parks Commission reviewed and discussed the designs at a workshop 12/5 and voted 12/12 on the design they feel is best suited for that location - the laminated beam 4 section, wood partially sourced from logs at the Upper Reservoir.

The USAFA is donating the design and the labor, Parks will pay for the bridge materials - estimated to cost \$14,000, including contingencies - using parking kiosk revenues.

The USAFA expects to start construction in the early spring 2024 and complete the bridge by May 2024.

A wet spring exposed the need for a simple log bridge to cross over Monument Creek at Greeley / Epworth. This bridge can be built by the same volunteer group that built the Kent/Prairie to Creekside bridge at a similar cost (approximately \$1100). PLP&T can fund this bridge.

Option 1 **Step 3:** PLP&T is asking, as the next step, for a Board of Trustees resolution approving the next 2 bridges to be designed and built by the USAFA, for direction to renovate the open air pavilion in E-Rock, and for direction to develop the perimeter trail around the inside of E-Rock as outlined in numerous E-Rock proposals.

The first bridge, 2024-25, would be over Monument Creek at the sight of the historic crossing on Epworth Hwy. The second bridge, 2025-26, would be over North Monument Creek a few hundred feet west of the current Kent/Prairie log bridge. The latter site was suggested by the USAFA to possibly replace the just completed log bridge.

This would allow the USAFA Cadets who are “lining up to register” for the opportunity to take the class, and for PLP&T’s to plan for the next 2 1/2 years.

PLP&T applied for a CPW Non-Motorized Grant and for a MHYC/GOCO Grant that would help fund both the construction of the bridges and the development of the trail respectively. If grant funding is not secured PLP&T would fund the cost of the 2 bridges, although another grant application would be submitted in late 2024. This past Monday, 12/11, Cindy Powell who wrote the grant, Dawn, and myself were notified by GOCO that we were awarded the grant worth about \$35000.00 for 4 weeks to MHYC trail work over this next summer all focused on completing the E-Rock perimeter trail and the section from Spring Street bridge to Greeley bridge.

Why approving a resolution directing PLP&T as requested:

1. Allows PLP&T to plan with the USAFA out at least 2 more years
2. Allows PLP&T and Town Staff to more accurately plan budgets and priorities. We currently have over 100 projects outlined for next year.
3. Allows PLP&T to seek other fund sources outside to budget to accomplish some of those 100 projects.
4. Allows PLP&T to reallocate funds from the parking kiosk to accomplish some of those 100 projects.

Palmer Lake Bridge Project

GLUE-LAMINATED BEAM

Description: GLULAMs are large timber members made from layers of wood which are glued together. This is the primary member of this design. The handrail and decking will be wood.

Pros:

- Cost estimate:
 - \$10,507 for the 2-member bridge
 - \$13,162 for the 4-member bridge
- Natural wood aesthetic
- 4-member bridge has easy construction
- Low maintenance

Cons:

- Lower constructability for the 2-member bridge
- Shorter lifespan than steel, but still likely in the 60-year range

STEEL WIDE FLANGE

Description: Steel Wide Flange shapes resemble an I-beam and could be used as the primary structural element for the bridge. The handrails and decking will be wood.

Pros:

- Cost estimate:
 - \$11,165 for the 2-member bridge
 - \$12,377 for the 4-member bridge
- Greater expected lifespan than Glue laminated option ~ 100 years
- Low maintenance
- Maintain the wood aesthetic

Cons:

- Decreased material workability
- Increased construction complexity

OPEN WEB STEEL JOIST

Description: The main members look like a triangular truss system made of metal (similar to what you would see in a school gymnasium ceiling) with wood handrails and decking.

Pros:

- Cost estimate: \$5,329
- Lightweight (best for span length)
- Easy installation

LIFE SPAN

Cons:

- Increased maintenance
- Little natural wood aesthetic
- Increased amount of soil evacuation



OUR RECOMMENDATION:

4 glue laminated beams with posts harvested from the Palmer Lake area.

OTHER INFORMATION:

- All handrail and decking for each option are pressure treated lumber and are the same design and cost.
- Pressure treated 4x6 inch posts could be used in lieu of locally harvested materials for the handrail posts.

Glue Laminated Beams



Pros

- Estimated Total Cost:
 - \$10,507 for a 2-member bridge
 - \$13,162 for 4-member bridge
- Natural wood aesthetic
- Easier constructability for 4-member bridge
- Low maintenance

Cons

- Higher maintenance for 2-member bridge
- Construction effort/time higher for 2-member bridge
- Shorter lifespan than steel
 - ~60 years

