Photo 50. Fabricated bridge sections were trucked to the site by the NJ Forest Fire Service. *Photo courtesy of Mr. Tibor Latincsics.*

The walkway cross section detail on Plan Sheet 2 provides the dimensions of the walkway. The clear inside dimension of 41 inches was chosen to allow one to install a handrail and still meet the 36-inch clearance required by ADA, and 41 inches is too narrow for snowmobiles and some all-terrain vehicles. The Appalachian Trail and this bridge is for foot traffic only. The guardrail system is 42 inches tall as required by BOCA®. The 7-foot, 3-inch headroom clearance is sufficient for most hikers, even those with tall extended toploaded backpacks. If one is designing a bridge for a multipurpose trail, be it mountain bikes, equestrian, or snowmobile use, these dimensions would have to be modified.

As indicated in photos 41-50, the entire bridge walkway, including the joint connections between each section, was prefabricated and assembled in the Wawayanda State Park maintenance yard. The structural integrity of the bridge sections was tested when they were dragged across the parking lot by backhoes. As shown in photo 46, the bridge walkway was set to the 3.5 percent camber it would assume in the air using car jacks in order to layout the joints for the center section. The bridge walkway sections were then loaded on trucks and delivered to the bridge site as indicated in photo 50. By this time it was October, and the hurricane season had commenced; site access had begun to deteriorate significantly.

The Project "Comes Together"

Many of the project volunteers found prefabrication of the walkway to be the most rewarding part of the project. At 8:00 a.m. on September 24,1995, 27 Trail Conference volunteers met at Wawayanda State Park. The #1 SYP CCA.40 KDAT 19% MC lumber was still in shipping bundles. Not a single volunteer knew the extent of the task before them. The project engineer explained the "big picture" and "micro-details." His explanations were met with glazed eyes and looks of disbelief. Specific tasks were given and work commenced. All of the volunteers were busy 110 percent of the time. Mr. Gene Bove, Mr. Tom Haas, and Mr. Rudy Haas are three professional carpenters from Vernon Township, New Jersey, who volunteered their time to help. Their professional knowledge helped streamline the carpentry tasks. By the end of the day, all 648 pieces of the bridge walkway were measured, cut, and drilled, and the first 20-foot section, as indicated in photo 43, was assembled. The volunteer work crew started to understand the big picture. The total of 400 person hours were required to prefabricate the truss walkway of the bridge. All components, with the exception of the metal Simpson connectors, were either bolted or screwed. This takes significantly more time than power nailing, but resulted in a superior and more durable end product.

Bridge Walkway Camber

As previously discussed and indicated on the plans and photographs, the bridge walkway has a 3.5 percent camber. While the camber does much for the visual aesthetics of the bridge, its first purpose is for practical reasons. The minimum recommended camber is 0.67 percent of the span. This is not noticeable by eye; the bridge will appear level. This will account for stretch in the catenary cable or elongation in the cable under high temperatures. Either condition could result in a “sag” in the walkway, if it was built level. The original design specified a 5 percent camber. This was revised when handicap accessibility became a design goal. ADA limits walkways to a maximum slope of 8 percent. If the slope is between 5 and 8 percent, intermediate level 5-foot long rest platforms are required every 30 feet. Constructing these on the bridge would have been difficult. Designing the camber at 3.5 percent eliminated the need for the intermediate level platforms. Using 3.5 percent also allowed for a margin of error in construction as well as assurance that the walkway slope would not exceed 5 percent even on the coldest days when the cables contract. The camber also plays a role in the interface between the bridge walkway and the tower platforms at either end. The camber results in a vertical load component that forces the walkway end to “sit down” on the platforms. This makes for a smooth ramp transition.

Cable Saddles

The catenary cables pass over the tops of the towers via the cable saddles, which are detailed on Plan Sheet 6, photo 51, and Figure 8. The saddles support the cable, change its direction, and in a perfect theoretical world would be a frictionless connection. This concept is important in the tower design. A frictionless saddle will transmit only axial loads to the tower, as opposed to a horizontal load that would result in bending moments. A column or pole is much stronger in axial compression than bending. Large bridges

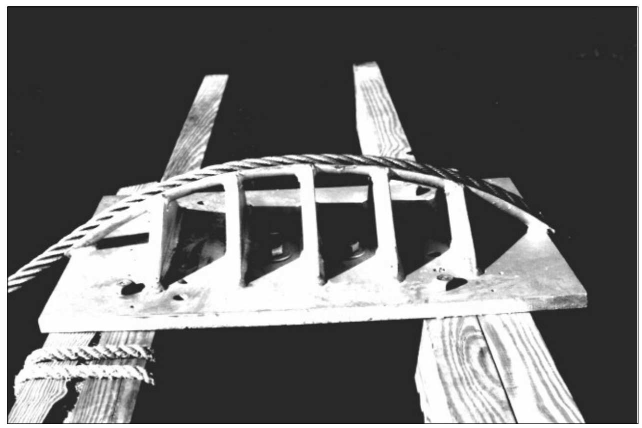

Photo 51. West tower - north pole cable saddle. *Photo courtesy of Mr. Tibor Latincsics.*

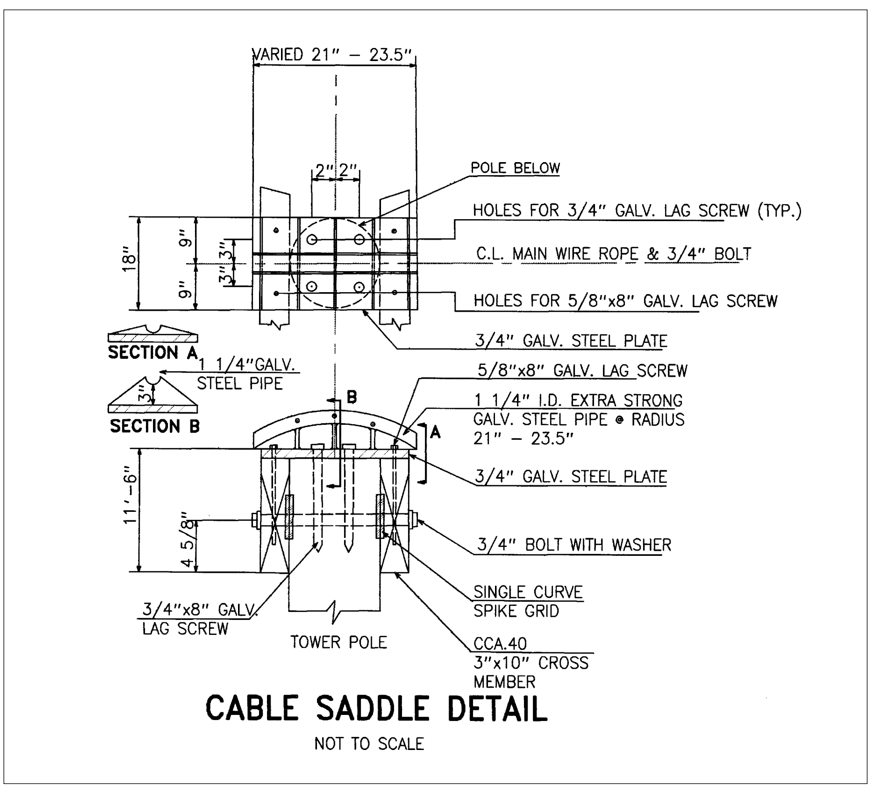

Figure 8. Cable saddle detail.