



Pickett, Kelm & Associates, Inc.  
Consulting Structural Engineers

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## NIXON HIGH SCHOOL GYNASIUM REPAIR

**PROJECT LOCATION:** NIXON, Tx

**OWNER:** NIXON-SMILEY CONSOILDATED ISD

**GENERAL CONTRACTOR:** RIZZO CONSTRUCTION

**COMPLETED:** 2009

**CONSTRUCTION COST:** \$206,000

**PROJECT DESCRIPTION:**



Pickett, Kelm & Associates provided structural engineering design services for repairs to the original gymnasium structure at Nixon-Smiley High School.

The gymnasium building, originally constructed in 1958, is approximately 98'-8" long x 85'-0" wide, with additions at each end to house restrooms, locker rooms and coaches offices. The roof structure consists of a wood plank deck supported by glulam purlins. The purlins are supported by 6 3/4 x 24 3/4 glulam arches at 20'-0" on centers and load bearing walls at each end. The arches span approximately 110'-0" with a rise of about 23 feet at the centerline of the building. The arches, purlins and underside of the deck are exposed at the building interior. Exterior walls consist of wood stud framing.

The outer 12'-6" of each arch is exposed to the environment. The exposed ends were originally painted, but later encased in plaster. When the plaster was recently removed, severe decay of the ends of the wooden arches was discovered which threatened the safety of the building.

Since no construction documents were available, PKA obtained field measurements for analysis and design purposes. PKA then developed concepts for repair of the decayed arches, and evaluated the various options based on constructability, cost, sequencing of construction, schedule and aesthetics.



*Prior to repair*

To repair the building, arches were shored, the rotted exterior ends of the wooden arches were removed and pairs of 4-inch by 16-inch hollow steel tubes, rolled to match the arch curvature, were through-bolted to sound wood inside the building.

*Connection detail*



*After repair*