Since around 1900, there has been a school in the area of the community of Florence Hill. According to some sources, the area was named for Fred Florence. A white clapboard school was built on land given by Issac Bodine for a church and school circa 1900, located approximately 200 yards south of Polo Road, on the west side of Robinson Road. Approximately 35 students were attending the school in 1901. Some of the names of these students were: Crouch, Grimmett, Hintze, Mosley, Pool, Sanders, and Williams. Sadie Miller was the teacher in 1901.

A brick structure was built approximately one mile north of the original site, reportedly on land donated by David Walker Florence and his wife Julia Beaty Florence in 1915. Fires plagued the various Florence Hill School buildings, but most of Grand Prairie residents were familiar with the 1939 structure which was torn down to make way for the current Florence Hill Elementary School, built in 1990. The 1939 building consisted of a one-story, five-bay brick building with a symmetrical primary elevation on the west. The central entry bay had a round, arched, recessed entrance flanked by paired pilasters and topped by an elaborate two tiered cornice/parapet with an inscription. The school was a 1939 WPA project (one of several county schools included in the projects). It was designed by architect Hoke Smith. Additions were added in the 1950s and/or 1960s. The 1939 library, which was a separate building, still stands in front of the new Florence Hill Elementary School.

In the 1920s, some of the students included Haskell Alspaugh, Laudell Mouser, Earl and Marvin Bodine, and Raymond Pool. Teachers included Miss Annie Vernoy and Mr. F.B. Agnew.