Daniel S. Farley* (`farley@math.psu.edu`). *Finiteness and $CAT(0)$ properties of diagram groups.* Given a semigroup presentation P and a positive word w in the generators of P, one can associate a group, called the diagram group over P based at w. Guba and Sapir have shown, for example, that Thompson's group F is the diagram group over $\langle x : x = x^2 \rangle$ based at x. In this talk an explicit construction of a contractible cubical free G-complex is given for any diagram group G. When P is a finite presentation, this complex is a proper $CAT(0)$ space and the action of G is by isometries. If P is a finite presentation of a finite semigroup, then all diagram groups over P are of type F-infinity. (Received October 01, 2000)