One of the main advantages of pervious concrete is its ability to drain water easily. Moreover, earlier studies on pervious concrete have shown that it can be designed to perform well in freeze-thaw regions. Bridge superstructures placed in regions where the temperature during winter time varies around freezing point are exposed to a harsh freeze-thaw impact, since bridges are not only cooled from the topside, as a normal road bed, but also from underneath. Hence, the demands to the moisture properties of the superstructure are strict in order to ensure the necessary durability. Pearl-Chain Bridges are a new patented bridge technology consisting of a number of Super-Light Deck elements, which are post-tensioned to create an arch bridge used for example for highways. The present study investigates how pervious concrete can be applied as a stabilizing filling material between the arch substructure and the wearing course. One pervious concrete mixture containing air entrainment is designed and tested. The tests include investigations of compaction methods, compressive strength, stiffness, frost resistance and permeability.