The feasibility of using crushed post-consumer glass as a partial replacement of sand in concrete has been studied. To suppress the deleterious reaction between the alkali in cement and the silica in crushed post-consumer glass (ASR), a Class F fly ash was used in the experiment with the cement replacements of about 15, 30, and 45 percent by mass using a ratio of fly ash inclusion to cement replaced of about 1.25. Therefore, actual fly ash to total cementitious materials ratio was 18, 35, and 51 percent by mass. For each combination of cement and fly ash, 15%, 30%, and 45% volume of SSD sand were replaced with crushed glass. The compressive strength and splitting tensile strength of concrete were determined at specified ages for each mixture. Alkali silica reaction was evaluated according to ASTM C 1260 (Mortar Bar Method). Test results indicate that both compressive strength and splitting tensile strength of concrete decrease slightly with an increase in the replacement rate of sand with crushed glass. At lower replacement rates (less than 45%), the Class F fly ash could only delay the onset of expansion, while with high amount of fly ash concrete was immune to ASR.