1. You are designing an asphalt pavement to carry 1000 18-kip single axle loads (ESALs) per day over a 20-year design life with a terminal serviceability index of 2.5. The project site is on U.S. 4 in Killington, Vermont. The subgrade soil has a CBR of 6. The road will have 6 inches of plant mix asphalt (assume a_1 = 0.44) underlain by a crushed gravel base course with a CBR of 70. There is no subbase. Determine the required thickness (rounded **up** to the nearest inch) of the crushed stone base. Please include a copy of the nomograph showing your solution for SN.

2. You are designing an asphalt pavement to carry 5 million 18-kip single axle loads (ESALs) over a 15-year design life with a terminal serviceability index of 2.5. The project site is on U.S. 4 in Killington, Vermont. The subgrade soil has a CBR of 6. The locally available asphalt concrete has an elastic modulus of 350,000 psi at 68°F. The only available base material is a crushed gravel with an elastic modulus of 25,000 psi. Local custom is to construct all such highways with 12 inches of base material and no subbase. Determine the required thickness (rounded up to the nearest half inch) of asphalt concrete. Please include a copy of the nomograph showing your solution for SN.