Problem of the Week
Week # 18

There is a house at each of the four corners of a square of side length 1 mile. What is the shortest road system that enables each of the inhabitants to visit any of his or her neighbors?

Example: We could create a road from the diagonals. Although this might the shortest paths between neighbors $A$ and $D$ as well as between $C$ and $B$, it would not be the shortest path for neighbors $B$ and $D$. Find the road that will create the shortest path for all six pairs of neighbors.