

6. (12 points) A telephone installation crew must run a line underground between two junction boxes. Unfortunately, there is a 36 feet wide paved road between the two boxes, and one box is 100 feet down that lane from the other (see figure). It costs \$30 per foot to cut and repair the paved road, but only \$24 per foot to dig and refill along the side of the road. The crew will cut and repair the road to a point  $x$  feet from the point directly across from the first junction box, and then dig along the road the rest of the way. Determine the number of feet,  $x$ , from the point directly across from the first junction box which will minimize the cost of the installation.

