boundary of the field as the gyroplane becomes level (position 11).

If you have a direct headwind or tailwind on the upwind and downwind leg, drift should not be encountered. However, it may be difficult to find a situation where the wind is blowing exactly parallel to the field boundaries. This makes it necessary to use a slight wind correction angle on all the legs. It is important to anticipate the turns to compensate for groundspeed, drift, and turning radius. When the wind is behind the gyroplane, the turn must be faster and steeper; when it is ahead of the gyroplane, the turn must be slower and shallower. These same techniques apply while flying in an airport traffic pattern.

S-TURNS

Another training maneuver you might use is the S-turn, which helps you correct for wind drift in turns. This maneuver requires turns to the left and right. The reference line used, whether a road, railroad, or fence, should be straight for a considerable distance and should extend as nearly perpendicular to the wind as possible.

The object of S-turns is to fly a pattern of two half circles of equal size on opposite sides of the reference line. [Figure 20-11] The maneuver should be performed at a constant altitude of 600 to 1,000 feet above the terrain. S-turns may be started at any point; however, during early training it may be beneficial to start on a downwind heading. Entering downwind permits the immediate selection of the steepest bank

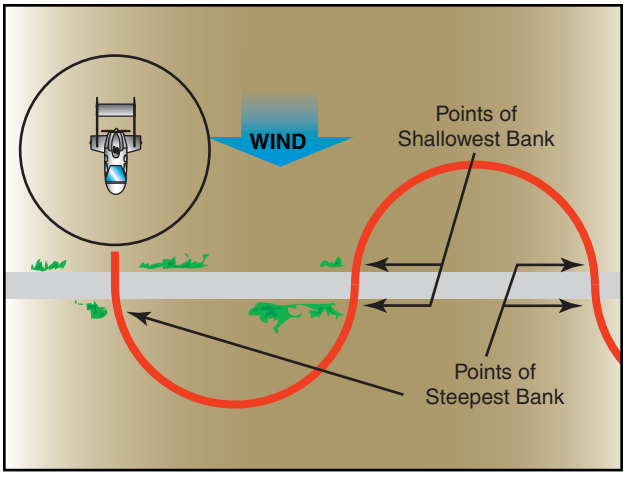

Figure 20-11. S-turns across a road.

that is desired throughout the maneuver. The discussion that follows is based on choosing a reference line that is perpendicular to the wind and starting the maneuver on a downwind heading.

As the gyroplane crosses the reference line, immediately establish a bank. This initial bank is the steepest used throughout the maneuver since the gyroplane is headed directly downwind and the groundspeed is at its highest. Gradually reduce the bank, as necessary, to describe a ground track of a half circle. Time the turn so that as the rollout is completed, the gyroplane is crossing the reference line perpendicular to it and heading directly upwind. Immediately enter a bank in the opposite direction to begin the second half of the "S." Since the gyroplane is now on an upwind heading, this bank (and the one just completed before crossing the reference line) is the shallowest in the maneuver. Gradually increase the bank, as necessary, to describe a ground track that is a half circle identical in size to the one previously completed on the other side of the reference line. The steepest bank in this turn should be attained just prior to rollout when the gyroplane is approaching the reference line nearest the downwind heading. Time the turn so that as the rollout is complete, the gyroplane is perpendicular to the reference line and is again heading directly downwind.

In summary, the angle of bank required at any given point in the maneuver is dependent on the groundspeed. The faster the groundspeed, the steeper the bank; the slower the groundspeed, the shallower the bank. To express it another way, the more nearly the gyroplane is to a downwind heading, the steeper the bank; the more nearly it is to an upwind heading, the shallower the bank. In addition to varying the angle of bank to correct for drift in order to maintain the proper radius of turn, the gyroplane must also be flown with a drift correction angle (crab) in relation to its ground track; except of course, when it is on direct upwind or downwind headings or there is no wind. One would normally think of the fore and aft axis of the gyroplane as being tangent to the ground track pattern at each point. However, this is not the case. During the turn on the upwind side of the reference line (side from which the wind is blowing), crab the nose of the gyroplane toward the outside of the circle. During the turn on the downwind side of the reference line (side of the reference line opposite to the direction from which the wind is blowing), crab the nose of the gyroplane toward the inside of the circle. In either case, it is obvious that the gyroplane is being crabbed into the wind just as it is when trying to maintain a straight ground track. The amount of crab depends upon the wind velocity and how nearly the gyroplane is to a crosswind position. The stronger the wind, the greater the crab angle at any given position for a turn of a given radius. The more nearly the gyroplane is to a crosswind position, the greater the crab angle. The maximum crab angle should be at the point of each half circle farthest from the reference line.

A standard radius for S-turns cannot be specified, since the radius depends on the airspeed of the gyroplane, the