Construction of quadrilaterals on the sphere

We previously saw four constructions of a square in the euclidean plane, given a line segment AB.

1. Construct one right angle and four congruent sides.

2. Construct two right angles and three congruent sides (called a *Saccheri quadrilateral*).

3. Construct three right angles and two congruent sides (called a *Lambert quadrilateral*).

4. Construct the perpendicular bisector of AB to find the center point of the square. From the center, create four congruent diagonals that are separated by 90 degrees.

Recreate each of these constructions on the Lénárt sphere or in Spherical Easel. In each case start with an arc of length pi/4 (or so) on the equator.

Do each of the constructions make the same shape? Is it a square?

Can you construct a rectangle on the sphere? Why or why not?

Can you construct a rhombus? How about a rhombus with two right angles?