would work. This will be reported elsewhere.

This paper is organized as follows:
In Section 2, we discuss the theoretical framework for this problem, as discussed in [5, 18, 19]. In Section 3, we formulate a graph called the star graph of the polygon, and prove that the minimum clique cover of the star graph corresponds exactly to a minimum star cover of the polygon. Section 4 defines a constriction, and proves several properties related to constrictions that help in the proofs presented in later sections. We state our main results concerning general orthogonal polygons in Section 5, and prove our results in Sections 6 and 7. Section 8 deals with the case where the polygon has dents in only three directions. In this case, we obtain a much more efficient algorithm than in the general case. We present our conclusions in Section 9.

2. Preliminaries

An *orthogonal polygon (OP)*, P, is a polygon with all its sides parallel to one of the two co-ordinate axes. In this paper, we are concerned with covering simple, connected OP's. An OP is said to be an orthogonally convex polygon (OCP) if its intersection with every line parallel to one of the co-ordinate axes is either empty or a single line segment.

2.1. Dents

Consider the traversal of the boundary of P in the clockwise direction, ensuring that the interior is always to the right [19]. At each corner (vertex) of P, we either turn 90^o right (outside corner) or 90^o left (inside corner). A *dent* is an edge of the boundary of P, both of whose endpoints are inside corners. The direction of traversing a dent gives its *orientation*: for instance, a dent traversed from west to east has a **N** orientation. Figure 1 illustrates the **N**, **S**, **E** and **W** dents. A polygon is said to have only three dent orientations if all its dents take on only one of three orientations (see Figure 2).

2.2. Staircase Paths and Visibility

A *staircase path* $p = x_0, x_1, \cdots, x_r = q$ in P is a path joining p and q and completely contained in P such that x_{i-1} and x_i are the endpoints of a segment parallel to one of the co-ordinate axes and with no two consecutive turns to the same side (left or right). We say $p \equiv q$ (read as p *sees* q, or, p is *visible* from q) if there exists a staircase path joining p and q. The following observation from [19] will be useful.

Observation 1. $p \equiv q$ if and only if some OCP includes both p and q.