In what follows, a *cell* is a simply connected compact subset of the plane. The following theorem, due to Moln'ar [16], will be useful.

Theorem 1. **(Moln'ar)** Let C be a set of cells in the plane. If $C \cap C'$ is a cell for every $C, C' \in$ C and $C \cap C' \cap C'' \neq \emptyset$ for $C, C', C'' \in$ C, then $\bigcap \{C \in$ C$\} \neq \emptyset$.

Consider any clique H' in H. The visibility polygon of any source in H' is a cell. The intersection of any two such visibility polygons is non-empty, and a cell by Lemma 5. By Lemma 6, the intersection of any three such visibility polygons is non-empty. Molnar's Theorem now assures us that the intersection of all these visibility polygons is non-empty, implying that there is a point that sees all the sources of H'. By Lemma 4, there is a sink in P that sees all these sources. This results in Theorem 2.

Theorem 2. Let $H' = (V', E')$ be a clique in H. Then, there is a maximal star polygon that covers all the sources in V'.

If v_1 and v_2 are not adjacent in H, they cannot both be covered by the same star polygon. Thus, every maximal star polygon corresponds to a clique in H. We obtain the following corollary.

Corollary 1. A minimum clique cover of H (that is, a minimum cardinality set of cliques of H with every vertex of H belonging to some clique) corresponds exactly to a minimum cover of P by star polygons.

4. Constrictions

The main purpose of this section is to provide a theoretical handle on the covering problem. Consider two points, $p, q \in P$, such that they do not have any 1-bend staircase path between them, i.e., $p \nstar q$. Given such a pair of points, we will identify a connected subset of P, $Cons(p, q)$, with the following properties: (a) there is no staircase path from either p or q to any point in $Cons(p, q)$, and (b) any path in P from p to q must pass through this region. We call this region the constriction between p and q. In a sense, the existence of the constriction is the reason why there is no 1-bend path from p to q. We first give a formal definition of a constriction and then obtain certain useful properties.

Let p and q be points of P, and let $p \nstar q$. Clearly $\mathrm{v}(p) \cap \mathrm{v}(q) = \emptyset$. Let $Q_1, \cdots, Q_k$ denote the connected components of $Q = P - [\mathrm{v}(p) \cup \mathrm{v}(q)]$. We first claim that there is a unique connected component of Q which shares a boundary with both $\mathrm{v}(p)$ and $\mathrm{v}(q)$.