1036-51-33 **Roger S. Tobie*** (rtobie@comcast.net), 54 Carter Rd., Princeton, NJ. *Some Geometric Invariants of a Class of Tensile-Integrity Structures.* Preliminary report.

A large class of tensegrity structures which are based on twisted regular prisms, exhibit invariant plan views when parallel projected from the "top" down or "bottom" up along their main axis of rotational symmetry. This leads to something that has been called the constant twist angle theorem. This theorem has been demonstrated using calculus, see the Appendix to Chapter 1 of Kenner, *Geodesic Math and How to Use It*. However, there is a much simpler and more intuitively obvious way of demonstrating this theorem using the descriptive geometry of intersecting planes. And there is a particularly elegant and simple way of drawing a series of plan views of these structures that depends solely on the number of sticks within a structure. This drawing algorithm uses only the tools of Euclidean geometry, unmarked ruler and compass. The first drawing in this series of plan views bears a striking resemblance to the first figure in the first book of Euclid's *Elements*. We show that this drawing algorithm is a direct consequence of these intersecting "planes of force" which can be found in all tensegrities where any stick stands as the intersection of two such planes. (Received November 28, 2007)