

## A Surveyor's Dilemma Frugal Foresight, Rueful Hindsight

BY ROBERT FOSTER, PE, PLS, Civil Engineering NEWS, Dec. 1989

Data collection surveying is an important activity for the surveyor practising in an area undergoing growth. Where there is growth there is construction. Where there is construction there is a market for data collection surveying as designers look to the surveying profession for site plans showing natural and cultural features.

Data collection surveys may be performed with differing levels of precision and plotted at a variety of scales depending on the purpose of the site plan. The purpose may be evaluation of a site or it may be for preliminary design. The designer may want a site plan on which to base a design for planning and permitting purposes or for construction.

Appropriate scale, precision and completeness of survey affect cost and time, therefore the purchaser of the survey is usually careful to limit an investment in surveying according to their commitment to the project. Does the client own the project or merely considering buying it for a proposed development scheme? Perhaps the client owns the site and is considering several different options for development. Entrepreneurs are reluctant to spend the dollars for a complete, comprehensive survey at design scale before they even own the land; all their actions are speculative at this point.

There is apt to be a problem for the surveyor who has performed a survey for site evaluation purposes when the client decides to go forward with the project. The survey may have been done at a small scale, with minimal density of ground shots, showing only certain features of the site. When the would-be developer has completed an evaluation of the site and decides to go ahead with preliminary planning, the design professional needs somewhat better data than is shown on the surveyor's small-scale plan. But there may still be no need for a full-blown

design scale topographical plan, so the plan is enlarged from 100 feet to the inch to 40 scale. A couple of sewer inverts are measured to be sure the site can be served by gravity, and a few more ground shots are taken in the area of a possible building location, after which preliminary planning is accomplished by the designer.

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Six months later the entrepreneur, liking what he/she sees on the preliminary plan, commits to the final planning/permitting phase of the project. At this point the surveyor is asked to add more data to the plan to bring it up to design plan standards. The designer needs good data but has neither the time nor the budget to send the surveyor back to the beginning to perform a comprehensive survey to the precision and scale required for design and construction purposes. Why, the surveyor is asked, can't he/she just "fix it up" through photo enlargement, by adding still more ground shots, plotting the utilities, rights-of-way, ledge outcrop, all trees over 6 inch calliper, and so on? If the surveyor does this the plan will almost surely fail to meet appropriate accuracy standards for design and construction purposes. On the other hand the surveyor is hard pressed to explain why the earlier work must be scrapped. All the old metaphors about new wine in old wineskins, or the new patch pulling away from the worn sleeve sound to the client like a bid for new fees. Many times in the life of the surveyor there is a desire to turn back the clock to the

beginning of a project: "If only I had known then what I know now, I would have set good ground control for a future topographical survey, and would have gone the extra half-mile to tie into a NGVD benchmark. I would have established permanent base lines. My early work should have been plotted and compiled at a large scale, then reduced photographically for the preliminary plan. If I had done all that I would be in a good position now to provide final topographical plans to serve as a base for final design and construction." But the next time a designer calls the surveyor and says there is only enough money in the budget for a "rough topo plan for evaluation purposes" the process begins anew with predictable results for one out of five projects that goes all the way to final design and construction.

Who is in a position to prevent the dilemma? It is difficult to fault the client for wanting to save costs at the front end of a project that may go nowhere. On the other hand the surveyor has a reputation to protect and a liability exposure to limit when there is a request for services that will not measure up to acceptable standards. The design professional is squarely in the middle. It is usually the designer who decides what data is needed, and when. The designer should be informed from the beginning about the quality of the data exhibited on the surveyor's plans, and should take into account that preliminary survey work now may mean a resurvey of the site for design standard work later. The key is good communication and clear understanding between the designer and the surveyor.

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