

DESIGN MEMORANDUM NO. 12-04

TO: Chief District Engineers
Design Engineers
Active Consultants

FROM: Gary W. Sharpe, P.E.
Director
Division of Highway Design

DATE: July 29, 2004

SUBJECT: Underground Utility Location



The relocation of underground utilities is a primary concern during project development. Complete and concise locations of existing utilities shall be obtained early in the design process. Utility company archives may not be sufficient to identify all utilities within the project corridor.

Locating existing utilities to a certain level should occur even during the Planning phase and/or Phase I Design of a project, whenever there are either large concentrations of utilities or the existence of a major utility facility. At any stage of design, the utility companies should be involved in the design process. They should be invited to key meetings, advised, and consulted about impacts of the roadway to their facilities. Utility companies should be invited and encouraged to attend public involvement meetings so as to afford the companies the opportunity to provide input. The choice of alternatives for the proposed roadway should reflect this information in an effort to first AVOID the utility conflict, secondarily MINIMIZE the effect, and thirdly MITIGATE the conflict with the utility company.

The quality level that is utilized in the location of existing utilities should be based on the stage of development for a roadway project. During the corridor study to determine potential alternatives, the use of existing records or verbal information from utility companies typically will suffice. The quality level utilized in locating existing utilities should improve as alternatives are developed and refined. Location of utilities should include the horizontal (and vertical position when appropriate) of the utility, the material of which it is composed, the size, and any other pertinent data concerning the facility. The following is a description of the differing quality levels of utility location:

- Quality Level D (QL D): Information derived solely from existing records or verbal recollections.
- Quality Level C (QL C): Information obtained by surveying and plotting visible aboveground utility features and by exercising professional judgment in correlating this information to Quality Level D information.
- Quality Level B (QL B): Information obtained through the application of appropriate surface geophysical methods to identify the existence and approximate horizontal position of subsurface utilities. "Quality Level B" data should be reproducible by surface geophysics at any point of the utility's depiction. This information is surveyed to applicable tolerances and reduced onto plan documents.

- Quality Level A (QL A): Information obtained by the actual exposure (or verification of previously exposed and surveyed utilities) of subsurface utilities, using (typically) minimally intrusive excavation equipment to determine their precise horizontal and vertical positions, as well as their other utility attributes. This information is surveyed and reduced onto plan documents. Accuracy should be to applicable horizontal survey and mapping accuracy and should be within ± 0.05 ft. vertical.

All of the above Quality Level work shall be completed in accordance with Section 5: Utility Quality Level Attributes as documented in CI/ASCE 38-02, the *Standard Guideline for the Collection and Depiction of Existing Subsurface Utility Data* by the American Society of Civil Engineers.

The project team shall determine the quality level (QL) of utility locations that are appropriate for the various stages of project development. The appropriate level D, C, or B should coincide with surveying activities during initial phases of design (Phase 1). QL A location of utilities will be done as needed, based on potential conflicts. Utilities MUST be identified and located on plan documents. All underground utilities depicted shall be QL B unless the particular utility is labeled "QL C" or "QL D" (See exhibit 300-05.) QL A is applicable only where direct observations of the exposed utility are made. A summary sheet will be included in the plans to document the QL A horizontal and vertical locations. The QL A data shall be documented by station, offset, northing, easting, and elevation. (See exhibit 300-06.)

The following are areas where emphasis and care should be given to complete and accurate location of underground utilities:

- (1) The urban highway construction project with high potential for anticipated utility conflicts;
- (2) Projects with complex utility networks-either aged or of significantly high potential for expensive utility relocations;
- (3) Limited, narrow, and congested existing rights-of-way; and
- (4) High-profile highway projects that have critical schedule.

It may appear to be fiscally advantageous to place the brunt of relocation costs on private companies, while avoiding publicly owned utilities simply to avoid the direct cost of utility relocation by the Cabinet. The ultimate cost in time and money to the public should compel the designer to consider all the impacts of utility relocation whenever decisions are made as to the location of a roadway.

If the project is being designed by consultant, the project team should specify in the Advertisement for Consultant Services that the consultant will be required to locate utilities to the differing levels dictated by the project development stages.

Similar efforts to more adequately and expeditiously define the location of utilities should be exercised on projects being designed by in-house staff.

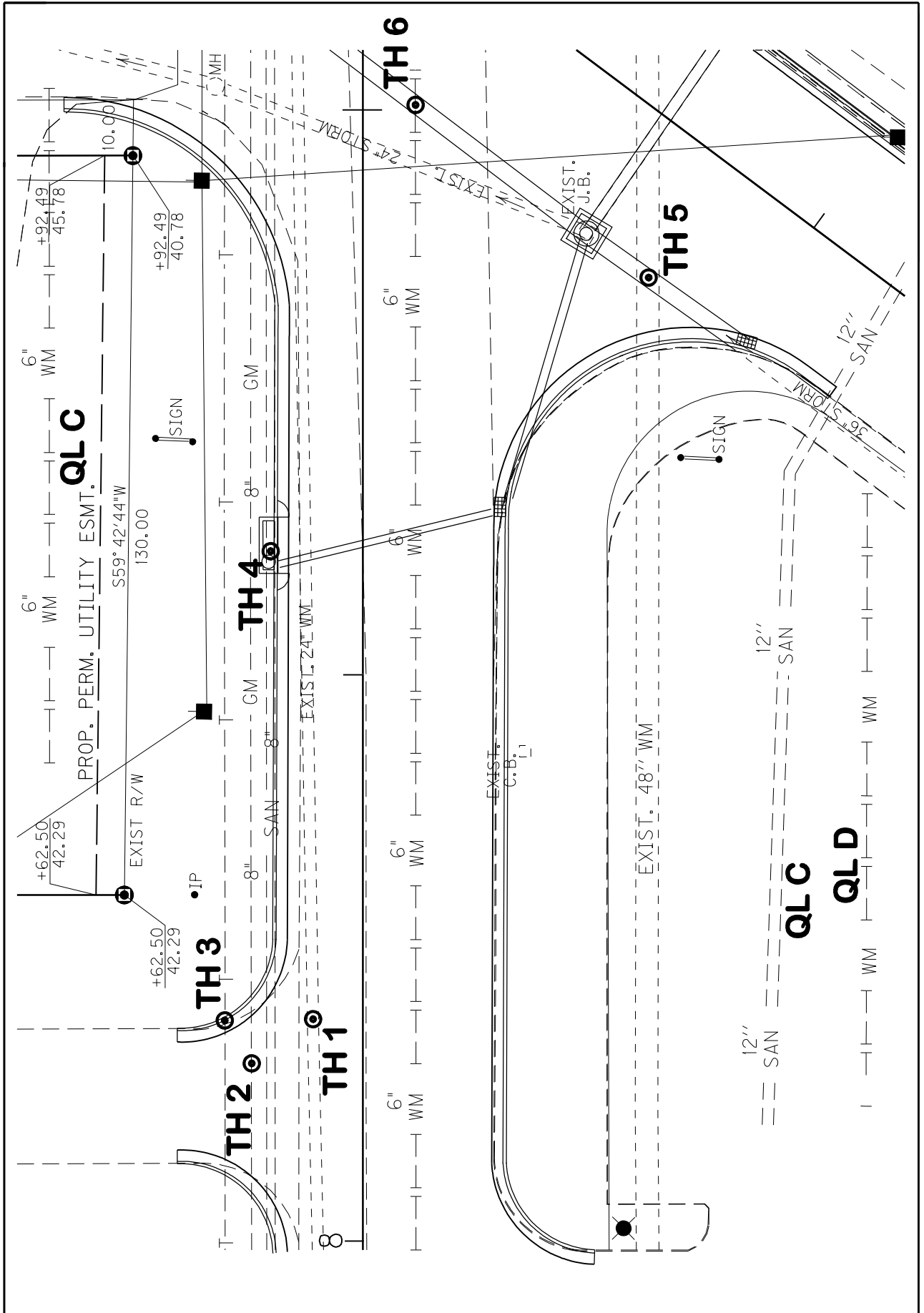
Design Memo No. 12-04
Page 3
July 29, 2004

Projects let to contract after July 1, 2005, must comply with this memorandum unless otherwise approved by the Director of Highway Design. Projects that will be let to contract prior to July 1, 2005, may implement the policy written in this Design Memorandum if determined necessary or appropriate by the Project Manager/Project Team.

Any questions regarding the implementation of this memorandum should be directed to this office.

GWS:JDJ:JAD

EXAMPLE QUALITY LEVEL PLAN SHEET



TEXT REPRESENTING TEST HOLES AND QUALITY LEVELS ARE BOLDED FOR EXHIBIT PURPOSES.

