

2-2.13 Utility Facilities

Utility Policy

All projects must conform to Caltrans' Encroachments and Utilities Policy in Chapter 17 of the Project Development Procedures Manual (PDPM). Encroachments and Utilities Policy exceptions must be approved through the exception process. The Chief, Headquarters Division of Design has approval authority for exceptions and has delegated this authority to the Chief, Office of Project Support. In some instances, exception approval has been delegated to the district (see Design Delegation Agreements). A copy of the exception approval must be included with the PS&E submittal to Office Engineer.

All projects on the state highway system (regardless of funding) must have a completed “Utility Policy Certification” whether high priority subsurface facilities exist within the project limits or not. This certification is to be completed even if there are no utilities within the project limits. See PDPM Chapter 17, Section 2, Article 6 “Certify Policy Compliance” for a sample copy of the “Utility Policy Certification.”

Responsibility of Utility Information

The project engineer or the utility engineering workgroup (UEW) is to provide the Caltrans district utility coordinator with a utility matrix for facilities within the project limits. Decisions to relocate or protect utilities must be made by the project engineer or UEW after consultation with the project development team (PDT) and the utility owner.

The utility matrix is used to organize utility information for individual projects. For projects on the state highway system (SHS), whether state or locally funded, a utility matrix is required. Once completed, a copy of the utility matrix must be given to the district UEW (as applicable) and the Caltrans district utility coordinator. Projects that did not require a utility investigation (exempt or work of a flexible nature) do not need to complete a utility matrix.

It is the responsibility of the project engineer or UEW to provide the Caltrans district utility coordinator with preliminary utility plans, when utility verification by owners are necessary for facilities that fall within the project limits. The utility verification process is used to determine the most up-to-date location, and for identifying potential utility conflicts. The district utility coordinator will provide the project engineer and UEW with any corrections or additions to the preliminary utility plans after it has been reviewed by the utility companies. This updated information shall be included in the final advertised contract plans.

All existing utility facilities (subsurface, aboveground or aerial) and new/planned utility installations/relocations must be shown on the project plans to notify the contractor to possible utility conflicts with project work. Utility sheets are recommended to be developed for each project. Depending of the size and type of project, utilities may be included on the layout sheets. For those projects that consist of landscape or electrical systems work only, separate utility sheets are recommended to be part of the contract plans. If the decision is made to show the utilities on the landscape or electrical systems plan sheets only (no utility sheets or roadway layouts), then a civil engineer must sign the landscape or electrical

systems plan sheets showing the utilities. Responsibility for investigating and showing the utility information is under the purview of a civil engineer and the signature on the plan sheet establishes that responsibility.

If any existing or new/planned subsurface facility is in potential conflict with any structures work (e.g. bridge footing, retaining wall, etc.) the subsurface facility should be shown on the structures plans in addition to the roadway utility plans. This will help notify the contractor/subcontractor of a potential conflict.

Subsurface facilities

Subsurface facilities (public, private, state-owned or cooperatively owned underground utilities) that are within the project limits must be shown. The lack of accuracy of the underground utility location is not to hinder disclosure of the presence of underground facilities in the area. The location of these facilities are to be shown in the advertised contract plans to the best quality of information available.

High priority subsurface installations (formerly referred to as “High Risk subsurface facilities”) are defined in PDPM Chapter 17 “Encroachment and Utilities.” Inclusion of positive location information in the project plans is mandated for high priority subsurface facilities. Inclusion of approximate location information is mandated for all other utilities.

The preferred method of positive location to specifically identify and accurately determine the horizontal and vertical location of a utility is by excavating a test hole (pothole) to expose the utility. For definitions of quality level information see ASCE Standard CI/ASCE 38-02. A table identifying the values determined by positive location is required to be shown on the utility plans (see “Utility Plan Examples” in this section).

Reference points presented for positive location of horizontal and vertical locations, on the utility plan view sheets, must correlate with state survey control for the project.

Only if a project is granted an exception to the Caltrans utility policy can a note be placed on the utility plans stating that some or all of the utilities are not shown within the project limits of the advertised contract plans.

For various examples of stating the utility note, see the PPM example “Project Utility Sheets.”

The following note is to be placed on the utility plans for projects that are exempt from the Caltrans utility policy “EXEMPT PROJECT WITH LIMITED EXCAVATION, UTILITIES ARE NOT SHOWN.” For a list of exempt type projects, see PDPM Chapter 17 “Encroachments and Utilities.”

For those projects that have locations where some of the work is flexible in nature (e.g. placement of sign posts, guardrail posts, irrigation lines, etc.), showing existing utilities can assist the contractor and R.E. in knowing which utility owners are within the construction limits. After the utility mark out during construction, the contractor and the R.E. will determine if an item of work needs to be placed away from existing utility facilities. For projects that have one or more items of work that is flexible in nature, see the PPM example “Project Utility Sheets” for the wording of the utility note.

For construction activities, the phrase “Protect in Place” is not to be placed on the utility plan sheets. Protecting existing utilities is covered in Section 5-1.36 of the Standard Specifications and as such, does not need to be restated on the utility plans.

Composition of Plans

There is a distinct line style to depict each utility type (electrical, water, gas, etc.) and status (new, existing and abandoned). These line styles are in the Caltrans line style resource file “ctlstyle-ss3.rsc.” These utility line styles are shown in Appendix A4 of the CADD Users Manual. Utilities shown on the utility plan sheets are NOT to be dropped out.

When a conflict occurs between an existing utility facility and the planned project work, utility owners will usually relocate their facilities prior to the beginning of construction activities. If it is certain that the facility will be relocated prior to the award of the contract, then show just the final location of the relocated facility on the utility plans.

If there is a possibility that the utility facility won’t be relocated until after the beginning of construction activities, then show both the existing location and the new/planned location. Use “to and from” leader lines and arrows as shown on Standard Plan A10C.

Utility Plans

The background for utility plans is the base map. The base map consists of two (2) separate files:

- Master Topographic file
- Master Design file

The Master Topographic file (“**bb**” file) is developed and maintained by the Surveys and Photogrammetry units in the district. The “**bb**” file includes existing features that are always dropped out on the utility plans.

The Master Design file (“**aa**” file) is developed and maintained by the roadway design unit in the district. The “**aa**” file contains the new permanent design features that are shown solid. The right of way and alignment may be new or existing, but they are shown solid on the utility plans.

Master files may contain a lot of information, but only the necessary information needed for the utility plans, should be merged into any specific contract plan sheet (active file). Utility plan view sheets must maintain the state plane coordinates from the master files. The roadbed is always shown. Refer to Section 3.8 “Master Files” of the CADD Users Manual for further information.

Existing, new/planned or relocated utilities must to be clearly and accurately depicted (including owner, type, size, pressure or voltage, etc.) on the advertised utility plans. The utility line styles with the Caltrans symbology are not to be dropped out.

The first sheet of the utility plans is to contain the legend consisting of notes, symbols and non-standard abbreviations. Do not include standard plan abbreviations, acronyms or symbology as part of the legend. The owners of the utilities must be identified by labeling

each utility line. The full name of owner and the associated acronym identifying each owner is to be shown in the legend. This owner acronym can then be used to label on the remaining utility plan sheets.

As a convenience and reminder to the contractor/subcontractor, utility facilities may also be shown on other plan sheets (e.g. drainage, landscape and electrical systems, etc.) when they may be in potential conflict with project work. When utility facilities are shown a second (2nd) time within the project plans (in addition to them being shown on the utility plan sheets) they may, depending on how cluttered the plan sheet is, reduce the line weight to de-emphasize the utility line in comparison to project work.

When a high priority subsurface facility is shown on a specific plan sheet, a “Positive Location Information” table must be shown on the associated utility plan sheet. The values in the table reflect the exact location of each positive location. The information includes the positive location number, stationing and offset, depth of cover, horizontal position and elevation and method of positive location. The method of positive location is listed as “TEST HOLE” or “ELECTRONIC DETECTION.” Listing the method notifies the contractor of the ASCE Standard CI/ASCE 38-02 utility quality levels. When showing the horizontal position and elevation, the appropriate datum of the California Coordinate System and applicable Zone Number must be identified.

The exact location of a test hole (formally called pothole) is marked on the plans by the Caltrans symbol for potholing (circle with an X). The label (symbol) identifying the positive location number (pentagon) is to be placed with the appropriate number. Do not duplicate positive location numbers. The test

hole symbol and the symbol for labeling the positive location number is shown in the standard plans and is in the Caltrans cell library (ctcellib.cel).

Where utility plans are included in the project plan set, the following statement shall be included at the bottom center of each utility plan view sheet: *“THIS PLAN TO BE USED FOR UTILITY INFORMATION ONLY.”*

Utility Work as Part of the Project Work

For the majority of projects, the utility plans show only the existing utility conditions. But some projects will also need to show new/planned installations or relocated facilities. The owners usually relocate their own facilities prior to the beginning of construction activities.

But utility plans that show work to be done by the project contractor are to be prepared the same way drainage plans are prepared, except for the use of system numbers and item designations. See Section 2-2.10 of this manual.

Sheets showing profiles, details and quantities may be required in addition to the plan sheets. Utility work is typically performed by a subcontractor, therefore the work shown on these profiles, details, and quantity sheets should be the new/planned installation or relocation of utilities only. Clearly define the utility work to be performed by the project contractor.

Indicate what work is to be performed, such as "Remove," "Relocate," or "Abandon." The words "Construct," "Place," etc., should not be used to describe the installation of a new utility facility as they do not convey additional information to the bidder or contractor. The appropriate bid item is to be used to describe the installation of any new/planned work or the relocation of a facility.

Utility Profiles and Cross Sections

Where new/planned or relocated utility facilities are to be installed as an item of work, profiles along such lines may be needed. If needed, profiles may be shown on the bottom grid portion of a combination plan and profile sheet or on a separate profile sheet. Utility profiles, details and/or quantities may be shown on the profile sheet if it can be clearly shown. Utility profiles should be prepared the same way drainage profiles are prepared, except for the use of system numbers and item designations. See Section 2-2.10 of this manual.

Partial cross sections showing the location of an existing utility with respect to a new/planned construction feature (e.g. drainage pipe, bridge footing, etc.) should also be shown on the specific project plan, profile or detail sheet where the potential conflict may occur.

Utility Details

Details shown on the utility detail sheets are not drawn to a specific scale. They are to be drawn at a one to one proportion, but then enlarged to fit within a Caltrans standard border sheet. Each sheet is to be labeled "No Scale." Sufficient dimensioning shall be shown on the details so that the facilities are buildable and the quantities are calculable.

Standard drawings from other agencies, when applicable to the project, shall be included as part of the project plans set. Referring to a standard drawing number from another agency is not acceptable. Refer to Section 2-1.6 "Standard Drawings from Other Agencies" for further information.

Utility details may be shown on the utility plan or profile sheet if there is room.

Utility Quantities

The summary of utility quantities are to be prepared in a tabular format similar to the tables on the project summary of quantities. See Section 2-2.19 of this manual for further information. Utility quantities may be shown on the utility plan, profile or detail sheet if there is room.

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CHECKLIST FOR UTILITY PLAN SHEETS

- District, county and route
- Post Miles
- Unit and Project Number and Phase
- Signature and date of signature. Current license number, printed name, and license renewal date of a civil engineer. Signature is added as the last step before the project goes to PS&E
- Standard roadway north arrow
- Scale centered below sheet name
- Information on plan sheet development name blocks in left margin of border sheet. See Figures 2-10 and 2-11 in Section 2-1.6 of this manual for additional instructions
- Correct statement centered at bottom of sheet (“*THIS PLAN TO BE USED FOR UTILITY INFORMATION ONLY*”)
- The following statement must be shown on each plan sheet where determinate right of way is shown: "FOR ACCURATE RIGHT OF WAY DATA, CONTACT RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE"
- Standard abbreviations are to conform to those listed in the Standard Plans
- The first sheet of utility plans shall contain project specific notes, legends, symbols and nonstandard abbreviations that are not included in the Standard Plans
- Name and abbreviations for all utility owners, including state-owned facilities/utilities in the legend
- Public, private and state-owned utilities/facilities are shown on utility plan sheets. Utilities are not to be dropped out.
- Utility note only appears if the project is exempt as defined by the “utility policy” or the project has been granted an exception to the “utility policy”
- Utility relocation information shown, if any
- Correct utility line styles for utility type and status, see CADD Users Manual
- Utility feature points shown (manholes, pull boxes, cabinets, poles, etc.
- High priority subsurface facility positive location information called out and shown in tabular format, if any exist within limits of each utility sheet

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