

### 2-2.22 Landscape, Irrigation, and Planting Plans, Details, and Quantities

#### Drafting Standards

Use acronyms, symbols and abbreviations shown on the Standard Plans to prepare project plans. Non-standard acronyms, symbols, and abbreviations must be shown on the first sheet of the applicable plan series (e.g. LL-1, IP-1, PP-1, etc.). Refer to Section 2-1.2 “Drafting Standards” for further information.

#### Utility Policy

Caltrans Utility Policy requires that all utilities be shown on the advertised contract plans sheets for every project (unless a utility exception is granted) whether Caltrans owned or utilities owned by others. Every project must have a Utility Policy Certification signed by a licensed civil engineer. Usually the same engineer will produce and be responsible for the utility 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. It is recommended that separate utility sheets be included for each project. Depending on the size and type of project, utilities may be shown on the roadway layout sheets in lieu of the utility sheets. For those projects that consist of landscape 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 plan sheets only (no utility sheets or roadway

layouts), then a civil engineer must sign landscape 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.

As a convenience and reminder to the contractor and or subcontractor, utility facilities may be shown on landscape layout, irrigation or planting plans when there may be a potential conflict with project work. When utility facilities are shown a second (2<sup>nd</sup>) time or more (in addition to them being shown on utility plan sheets), the line weight may be reduced to de-emphasize the utility line in comparison to project work.

Refer to Section 2-2.13 “Utility Facilities” for further information.

#### Right of Way

For landscape only projects, the defined right of way must be shown on a landscape plan view type sheet that encompasses the construction limits of the project. The defined right of way may also be shown a second (2<sup>nd</sup>) time or more on other plan view sheets when it is determined that project work is located near the right of way. Showing the defined right of way conveys to the bidder, contractor, and or subcontractor that project work is within Caltrans’ right of way or the limits of an easement. Refer to Section 2-1.1–“Right of Way” for further information.

### Master Files

The background for landscape type plan view sheets utilizes 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 plan view sheets.

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 on plan view sheets. The right of way and alignment may be new or existing, but they are shown solid on plan view sheets.

Master files may contain a lot of information, but only the necessary information needed for any specific contract plan sheet, should be merged into that contract plan sheet (active file). The roadbed is always shown. Refer to Section 3.8 “Master Files” of the CADD Users Manual for further information.

### Composition of Project Plans

Do not callout roadway bid items on landscape layout, irrigation or planting plans. Do not include plan sheets that have no work. Use break lines in place of match lines between plan sheets that are not contiguous. The number of landscape type plan view sheets may not correspond numerically to the roadway layout sheets. Depending of the size and type of project, the number of irrigation plan sheets may

not correspond numerically to the number of landscape layout plan or planting plan sheets. A key map may be necessary to eliminate confusion on the number of each type of plan view sheet. Refer to Section 2-1.1 “Composition of Project Plans and General Preparation Procedures” for further information.

The irrigation conduit (formerly irrigation crossover) bid item is usually shown on the roadway layout sheets, as they typically will be placed before the pavement structure is constructed. In addition to being shown on the roadway layout sheets, the irrigation conduit is shown on the irrigation plans if there is other irrigation work. This informs the contractor where to connect the new irrigation pipe and conduit for control and neutral conductors at either end of the irrigation conduit. The line weight of the irrigation conduit shown on the irrigation plans may be reduced so there is less chance of irrigation conduit being counted twice as a bid item. A callout on the irrigation plans stating “FOR IRRIGATION CONDUIT SEE ROADWAY LAYOUT PLANS” provides further clarity that it is constructed from the roadway layout sheets. Water meters or stub-outs for water meters may be handled the same as irrigation conduit.

If there is not sufficient room to clearly show irrigation conduits or water meters on the roadway layout sheets, they may be shown on the irrigation plan sheets. A note on the first roadway layout sheet stating “SEE IRRIGATION PLANS FOR IRRIGATION CONDUIT” informs the bidder and contractor that the irrigation conduit(s) are shown only on the irrigation plans.

### Plans

The most commonly used plan view sheets are the following:

- Landscape Layout Plans
- Irrigation Plans
- Planting Plans

### Landscape Layout Plan

Landscape layout plans generally show hardscape items that are not irrigation or planting work.

Landscape layout plans typically show but are not limited to, the following:

- Site furnishings
- Gravel mulch, decomposed granite, and rock blanket
- Paving beyond the gore area and paving of narrow areas
- Maintenance vehicle pullouts and access roads
- Fences and gates
- Slope paving

Depending on the size and type of project, these bid items may instead be shown on the roadway layout or planting plan sheets if there is room to clearly show all the information.

### Irrigation Plan

Irrigation plans provide a diagrammatic representation in plan view of new irrigation work in relation to highway facilities.

Irrigation plans typically show but are not limited to, the following new and or existing items:

- Water meter
- Irrigation controllers
- Backflow preventer assembly
- Remote control valves
- Irrigation conduits (formerly crossovers)
- Supply line (main and lateral)
- Irrigation sprinkler type
- Shutoff valves (ball and gate)

New irrigation work is shown with solid lines, symbols and leader lines. Existing irrigation is shown dropped out. Supply lines typically include only pipe size labels. Existing irrigation facilities must be shown when using check and test existing irrigation specification or when connecting new irrigation system to existing irrigation. Showing new planting on irrigation plans is optional but if shown, it is dropped out. Plant symbols may be simplified to circles or massed areas for clarity and must be identified in a legend. Most irrigation symbols are located in the Caltrans Cell Library and available irrigation line styles are located in the Caltrans Line Styles resource file. Refer to the CADD Users Manual, Appendix A1 and A4 for further information.

### Planting Plan

Planting plans provide a visual representation in plan view of planting work in relation to highway facilities.

Planting plans typically show but are not limited to, the following:

- Roadside clearing limits
- Prune existing plants
- Planting
- Transplanting

- Cultivation
- Wood mulch
- Maintain existing planted areas limits
- Plant establishment work limits
- Plant removal work limits

For each new individual, mass or contiguous planting area on a sheet, a callout must identify one representative symbol for each plant shown based on the direction of travel or quadrant area. The callout will include the plant name abbreviation (the underlined letters in the plant legend) and the plant quantity for the area.

Existing plant materials, shown as a single plant symbol or as massed areas, shall be dropped out. Work performed on existing plant material, such as pruning, shall be shown by symbol, callouts, or a note.

The grading, capacity and hydraulics design of permanent storm water treatment or low-impact development features (e.g. vegetated or non-vegetated biofiltration strips and or swales) are under the purview of a civil engineer and must be shown on a plan sheet signed by a licensed civil engineer.

New planting work for permanent storm water treatment or low-impact development should be shown on planting plans.

Planting plans may show new hardscape type bid items if there is room and all information can be clearly shown.

### Alternative Plan Sheets

Alternative or additional plan sheet names are identified as:

- Roadside clearing plan
- Plant removal plan
- Maintain existing planted area plan
- Irrigation removal plan
- Irrigation and planting plan

Use only plan sheet names listed in Section 2.1 of the CADD Users Manual. When combining different types of work (bid items) on one plan sheet, the majority of the work on that plan sheet will determine the selected sheet name.

### Roadside Clearing Plan

Roadside clearing plans show the limits of roadside clearing on landscape projects. These sheets show existing plants to be removed, weed removal, and mowing areas. If there is room and all the information can be clearly shown, roadside clearing work may be consolidated with the planting plan sheets.

On roadway construction projects with hardscape, irrigation, and or planting work, plants removed in earthwork areas should not be called out because they are removed under the clearing and grubbing specifications. Only plants removed outside the limits of earthwork area are shown and called out for payment under the roadside clearing bid item.

### Plant Removal Plan

Plant removal plans show the removal of trees, shrubs, groundcover or unwanted vegetation. If there is room and all the information can be clearly shown, this work may also be consolidated with the roadside clearing or planting plans on projects that consist of landscape work only.

### Maintain Existing Planted Area

Maintain existing planted area plans show locations and the type of existing planting to be maintained. These sheets may also be used to show locations of vegetated permanent stormwater treatment features to be maintained such as biofiltration strips and swales. If there is room and all the information can be clearly shown, this work may also be consolidated with the planting plan sheets.

### Irrigation Removal Plan

Irrigation removal plans identify irrigation facilities to be removed. Equipment to be removed is normally shown with hatching or callouts of the existing equipment. If there is room and all the information can be clearly shown, this work may also be consolidated with the irrigation plan sheets.

### Irrigation and Planting Plan

Irrigation and planting plans may be consolidated if there is room and all the information can be clearly shown.

### Irrigation Sprinkler Schedule

Irrigation sprinkler schedule is used to show sprinkler types that are used on any given project. The information in the sprinkler schedule includes the sprinkler symbol, item description, and detailed information related to the operating ranges and material components. Additional information or instructions may be included in the “remarks” section of the schedule.

### Plant Legend (formerly Plant List)

The plant legend identifies individual plant species by symbol, container size, botanical name, common name, and quantity. Botanical names contain underlined letters that denote the abbreviations used on the planting plans to identify the plant symbols. The legend also contains planting instructions, including hole size, basin type, soil amendments, fertilizer, and plant spacing.

### Details

Detail sheets are defined as one of the following:

- Landscape Details
- Irrigation Details
- Planting Details

Detail sheets show project specific details not included in the Standard Plans, or details modified from the Standard Plans. A modified standard plan detail or a combination of standard plan details must be shown and labeled as a modified detail. Provide sufficient dimensioning and callouts for the modified detail so that quantities involved are calculable. See Section 2-1.4 “Use of Standard Plans.”

Standard drawings from other agencies, when applicable to the project, shall be included as part of the project plan 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.

Landscape detail sheets include project specific details for work shown on the landscape layout sheets. If the number of

details does not warrant an entire sheet then they may be shown on the landscape layout plan sheets if there is room.

Irrigation detail sheets include project specific details for work shown on the irrigation plans. If the number of details does not warrant an entire sheet then they may be shown on the irrigation sprinkler schedule, or irrigation plan if there is room.

Planting details sheets include project specific details for work shown on the planting plans. If the number of details does not warrant an entire sheet then they may be shown on the plant legend or planting plan if there is room.

### Quantities

Quantities sheets are defined as one of the following:

- Landscape Quantities
- Irrigation Quantities
- Planting Quantities

Quantity summaries (totals or subtotals) for hardscape, irrigation, and planting work shall be included in the project plans for bid items shown on the plans. Quantities summarized in tabular format must show the bidder, contractor and resident engineer the bid items and their total quantities, their locations within the project limits, and the plan sheets on which they are shown.

When the same bid item is shown both on roadway layouts and landscape layout plans (such as hardscape work, inert material, or site furnishing) it shall be grand totaled on the appropriate table on the summary of quantities and subtotaled

on the appropriate table on a landscape quantity sheet.

Bid items for work shown on the irrigation plans shall be summarized on the irrigation quantities table. Irrigation quantities are tallied in two parts: the lateral supply side of the remote-control valves and the main supply side of the valves. When a bid item is used on both sides of the valve, the subtotal shown on the lateral side table is carried forward to the main side table where the two subtotals are added, resulting in the final total. Do not create a separate Total Quantities table.

Planting types and quantities are summarized on the plant legend but the totals for the bid items shall be shown on the plant quantities table.

If the quantity tables do not warrant an entire sheet then landscape quantities may be shown on the final landscape layout sheet, irrigation quantities on the Irrigation Sprinkler Schedule (ISS), and plant quantities on the Plant Legend (PL) sheet. Sheet names should not be modified when combining quantity tables with sheets mentioned above.

Work with its associated quantity that is shown in a quantity table but is not a separate bid item shall be noted with an (N). The (N) signifies that the quantity for the work is important enough to show in the quantity table but it is paid for under one or more contract bid items. Use the cell NOTE3: “(N) NOT A SEPARATE BID ITEM” placed just below the quantity table.

For further information on presenting bid items and quantities in a quantity table,

refer to Section 2-2.19 “Summary of Quantities.”



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### CHECKLIST FOR PLAN SHEETS

- District, county and route
- Post Miles
- Unit and Project Number and Phase
- Signature, date of signature, license number, printed name, and license renewal date. (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 sheet approval statement centered at bottom of sheet (example: *"APPROVED FOR PLANTING WORK ONLY"*)
- On landscape only projects at least one type of plan view sheet must show right of way. 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 conform to those listed in the Standard Plans
- The first sheet of each landscape layout, irrigation and or planting plan shall contain project specific notes, legends, and symbols, and nonstandard abbreviations that are not included in the Standard Plans
- Identify routes within the project limits. Line designations and routes must be identified and are typically placed above the alignment line. Do not use route shields
- Show existing fences and gates dropped out
- Show new gates with size and type
- City and county limit lines shown
- Utility plans signed by a registered civil engineer
- Waterways (stream, creek, river, etc.) and direction of flow
- Do not show extraneous topography (See Section 2-1.1)
- Environmentally sensitive area (ESA) limits shown. Use hatched area as shown on Standard Plan A10B
- Alignment line and stationing shown solid
- Limit of roadbed shown

**CHECKLIST FOR IRRIGATION PLAN**

- Symbols and abbreviations are consistent on all plan sheets and with those shown in the irrigation legend
- Pipe appropriately labeled (size) or provided for in Pipe Sizing Chart on detail sheet
- Connect to existing system symbol shown at all points of connection between existing and new irrigation facilities
- Existing irrigation component symbols per Standard Plan symbols
- Verify that locations of irrigation controllers are at the same locations as shown on the electrical systems plans
- New planting dropped out if shown
- Water meter labeled with size and as recycled or potable

**CHECKLIST FOR PLANTING PLAN**

- Symbols and abbreviations are consistent on all plan sheets including botanical names
- Each plant group has appropriate symbol or pattern and quantity as per the plant legend
- Symbols used for plant types match throughout plans and on the plant legend

- Each planting area is provided with one quantity call out for each plant symbol or massed area
- Specify wood mulch areas in cubic yards
- Specify cultivation areas in square yards
- Show existing planting dropped out

**CHECKLIST FOR IRRIGATION SPRINKLER SCHEDULE**

- Numbered notes shown in appropriate columns are applicable when circled in notes list
- Sprinkler symbols correspond with irrigation plan

**CHECKLIST FOR PLANT LEGEND**

- Symbols and abbreviations are consistent on all plan sheets including botanical names
- Underlined portions of Botanical Names correspond with abbreviations on the planting plans
- Numbered notes shown in appropriate columns are applicable when circled in notes list
- Plant Sizes shown conform to standard American Nursery and Landscape Association (ANLA) container size descriptions
- Appropriate basin type(s)

- Hole size is shown and large enough to accommodate plant container size, root protectors and or amendments
- Planting limits filled out completely
- Number of plants shown are to total to the amount shown on planting quantity table
- Provide staking, foliage protectors, root protectors, and or root barriers if needed

### **CHECKLIST FOR QUANTITY SHEET**

- Quantity tables for hardscape items such as rock blanket, gravel mulch, minor concrete, decomposed granite, and edging shall be shown on landscape quantities table as subtotals if the grand total is shown on another quantity table used elsewhere in the project
- Irrigation quantity summaries shall be shown on irrigation quantities sheets. For projects using large number of valves and controllers, split quantities into two tables; quantities downstream of control valves, and quantities on the supply side of control valves
- Planting quantities table may be shown on planting plan or plant legend
- Ensure that all project work shown on the plans is either identified as a bid item or is paid for under another bid item



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