2.1 Drawings-General

The developer’s engineer shall prepare CVWD service infrastructure drawings that are clear, concise, and meet CVWD drawing format and requirements. Drawings that are difficult to interpret and/or do not meet CVWD drawing standards are unacceptable and will be subject to rejection without review.

All drawings are submitted and returned through the Development Services Division within the Engineering Department. The Engineering Department will review all CVWD service infrastructure drawings except landscape irrigation drawings which are reviewed by the Water Management Division.

Construction must begin within one year of approved CVWD service infrastructure drawings. If more than one year has elapsed since approved drawings, the Development Project Review and Approval Process restarts and drawings must be re-submitted for plan check.

Detailed plan checklists for domestic water, wastewater (sanitation), non-potable water, irrigation/drainage, stormwater, and groundwater management services are located in Appendix E along with drawing examples. The following serves to describe the general drawing format and requirements.

2.2 Sheet Format

2.2.1 General

CVWD service infrastructure drawings shall be of professional quality. Separate drawings must be submitted for each CVWD service function, i.e. domestic water, wastewater (sanitation), irrigation/drainage, stormwater, and landscape irrigation. Drawings shall be of standard engineering practice, well arranged, neat, legible and present the proposed construction in bold font to eliminate confusion. Drawings shall show both plan and profile (except domestic water mains less than 12’’ in diameter).

2.2.2 Sheet Layout

All drawings shall be 24” x 36” size. The horizontal scale shall be 1’’ = 40’ (preferred) or 1’’ = 20’ and the vertical scale shall be 1’’ = 4’ (preferred) or 1’’ = 2’. Scale bars shall be provided.
Match lines and continuations from sheet to sheet shall be used and identified with applicable station points and cross reference. Stationing shall be provided along the centerline of pipe. New stationing shall start at 10+00.

As a minimum, the general sheet layout shall show the following:

- North Arrow shall point up or to the right
- Indicate the sheet number and total number of sheets on the drawing in large bold font at the bottom right corner of all sheets
- All sheets to include a geographic title block
- Engineers signature block
- Basis of bearing
- Benchmark
- Underground service alert (USA) statement
- City/County signature is added after CVWD has approved final drawings

Provide detail sections for special assemblies and complex connections (preferably on the same sheet). The detail shall be drawn to an appropriate scale showing pipe size and shall fully identify all the parts in the detail.

The engineer shall note on the drawings all connections to existing CVWD facilities and the party responsible for making the connections.

CVWD service infrastructure drawings shall not be used as construction drawings for streets, curbs, grading, electrical, gas, television, storm drains or any other non-CVWD improvements.

2.3 Cover Sheet

As a minimum, the Cover Sheet shall show the following:

- Project title, centered at top of sheet in large bold font
- Index Map with scale and north arrow
- Vicinity Map, upper left corner with north arrow
- Geographic title block (Township, Range, Section and Quadrant), and sheet numbering lower right corner
- Owner/developer
- APN
- USA information
- Basis of bearings and benchmark
- List of abbreviations and symbol legend
- Typical street section(s) called out as either public or private
- Utility contacts, static water pressure
- Manhole/cleanout legend (sewer)
• Easement and reference drawing information
• Engineers information block with current seal
• An 8-1/2” wide strip kept clear along entire right-hand side for CVWD notes and signature block to be supplied and affixed by CVWD
• Sheet Index

2.4 Plan and Profile Format

2.4.1 Plan View

The plan view sheets, shall be drawn at a horizontal scale of 1” = 40’ (preferred) or 1” = 20’. Drawings shall be arranged in a clear legible manner with all facilities clearly identified. Proposed facilities shall be called out in large bold font with type and size of facility. Leaders shall be utilized to offset facilities descriptions to improve drawing legibility. All existing CVWD and United States Bureau of Reclamation (USBR) facilities shall be called out with drawing numbers. All lines representing other utility infrastructure shall utilize a unique identifier.

Separation between all facilities and roadway centerline shall be shown. Stationing shall be readable, and shall follow pipeline centerline. All connection points, crossings, and appurtenances shall call out stationing (i.e. bends, manholes, laterals, services). Pipeline data shall be placed in a table format on each corresponding sheet.

No topographical or contour lines shall be added to drawings unless requested by CVWD. Contour lines will be required for stormwater, retention/detention basins and gravity sewer.

Restrained joints shall be called out in bold with stationing in accordance with the checklist requirements. The area of pipeline being restrained shall be shaded or hatched to distinguish the restraint joint areas. For projects in which the entire pipeline is restrained, only call out “ALL RESTRAINED JOINTS” in the plan view.

Easements shall be identified on all sheets including the Instrument Number. All CVWD and USBR easements shall be lightly shaded.

Street names or line references shall be called out in large bold font and identified as public or private. No cross-hatching shall be used to represent asphalt removal. Cross-hatching may be used for pipeline encasement.

An area 3” x 6” along the bottom right-hand side of the drawing shall be left clear for CVWD to affix the signature block.

Construction notes are to be included on each sheet numerically listing each described item with item number inscribed in a circle. The numerical callouts with leader lines shall point to the location of the described construction note.
2.4.2 Profile

Profile sheets shall be drawn at a vertical scale of 1” = 4’ (preferred) or 1” = 2’. Profile shall show all existing and proposed surfaces and utility crossings over or under proposed facility. Stationing shall be shown along bottom of profile at 100 foot intervals. Profile stationing shall line up with plan view stationing. Elevations shall be clearly shown on both ends of profile sheet.

Sewer and drainage drawings shall show distances between manholes, top of manhole elevation, manhole number, stationing, depth and inverts in/out. All profile types shall show slope of pipeline, pipe invert elevation, restrained joints, grade breaks, crossings, and stationing of appurtenances and connection points with reference drawings called out.

For all profile sheets the vertical datum bench mark information shall be included in the title block along the bottom of each sheet.

2.5 Easements

CVWD requires easements to ensure the ability to properly operate and maintain its facilities. The detailed process for securing and dedicating easements to CVWD is described in Section 3-Right-Of-Way (ROW). The general physical requirements for CVWD easements are depicted in Table 2.1.

Table 2.1 CVWD Minimum Easement Width

<table>
<thead>
<tr>
<th>Depth of Pipe Less Than 10’</th>
<th>Easement Width</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single Pipe</td>
<td>20 feet</td>
</tr>
<tr>
<td>Two Pipes(^1)</td>
<td>32 feet (10’ curbs/walls to pipe CL + 12’ between pipe CL )</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Depth of Pipe Greater Than 10’</th>
<th>Easement Width</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single Pipe(^2)</td>
<td>Minimum-Depth x 2.0</td>
</tr>
<tr>
<td>Two Pipes(^1,2)</td>
<td>Minimum-Depth of Deepest Pipe x 2.0 + 10’ curbs/walls to pipe CL + 12’ between pipe CL</td>
</tr>
</tbody>
</table>

\(^1\)The 12” pipe center line (CL) offset applies when the sum of the inside diameter of the two pipes is 24” or less. If the sum of the diameters is greater than 24”, then the separating distance between the outside edge (including bells) of the pipes shall be 10’.

\(^2\)CVWD may require additional easement width depending on field conditions.
There shall be no unreasonable interference with the CVWD infrastructure within the easement area. Please see Section 3-Right-of-Way for more information on interference and encroachments.

2.6 Digital Drawings

Prior to the release of mylars (see Section 1.6.3 and Appendix C), a digital copy of the drawings (on CD or DVD) shall be provided in dwg format, including streets, units, cross reference drawings, section and midsection lines, and state plane coordinates. California state plane coordinates, zone 6 (NAD 83) are required to be shown at all street intersections, tract boundary points and two known section or ¼ section points. Development Services can supply known points for the area. Should any changes in the development project take place after this time, a revised digital drawing shall be provided immediately.

2.7 Revisions to Drawings

Drawings that are revised after approval by the CVWD shall be resubmitted for approval of the revision. Revisions to approved drawings need to be submitted by the original engineer or with the original engineer’s written consent. The revisions will be labeled with a triangle (numbered with the appropriate sequential number) and a brief description of the revision in the CVWD signature block will be initialed by CVWD. The area to be revised should be identified by a cloud or other descriptive method.

Revisions can be made in two forms:

- By hand on the original mylar
- Resubmit replacement mylar showing the revisions and marking the drawing “REPLACEMENT MYLAR” in bold above the CVWD title block.

If any modifications to the CVWD service infrastructure are made after the drawings have been revised to "As-Built" by CVWD, the modifications shall be made by the Engineer on CVWD’s copy (if not too extensive-to be determined by CVWD) and not on the Engineer's original or digital copy. If the revisions are extensive the drawings may be submitted as a regular revision as described above.