

PLAN DEVELOPMENT STANDARDS

REQUIRED USE OF STANDARD

Use of this standard is required for use on:

- All projects, including mapping, that are City funded
- All projects which will be turned over to the City for adoption or maintenance
- All Final (Tract) and Parcel Maps (this standard supplements provisions of the Subdivision Map Act)

DATUM

Drawings and maps shall be set into real world coordinates and elevations using the City's horizontal and vertical control networks. The Datum used shall be referenced on the cover sheet.

Plans based on information furnished by the City, from old plans or survey data, shall include references to the City Plan number, file number, field book number, etc.

Any new bench marks and monuments should be shown on the plans with the associated coordinates and / or elevation.

Horizontal Control

The City has established a horizontal control network relative to the California Coordinate System Zone Five, which is defined in Section 8801 through 8819 of the California Public Resources Code. For all projects and maps, two different exterior points or corners shall be tied to at least two different points of the City's horizontal control network for direct import into the Geographic Information System (GIS) database and AutoCAD.

The Horizontal Control Network is available from the Public Works Department.

Vertical Control

The City has established a vertical control network. All projects shall be tied to the nearest bench mark elevation.

The Bench Mark System is available from the Public Works Department.

Grading Plans

Finish and existing grades shall be shown by use of contours on grading plans. Where grades are too flat for contours to be meaningful, grades shall be called out showing existing and final elevations for a number of points reasonable to represent critical grades and drainage. All contours and elevations shall reflect current City Datum.

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UNITS OF MEASUREMENT

All project plans and maps shall be prepared in English units unless written permission has been obtained from the Director of Public Works

DRAWINGS

Software

Drawings are to be produced using AutoCAD or Land Development Desktop compatible with the current version in use by the City. Other programs which produce an AutoCAD drawing may be acceptable; however, if there are incompatibility problems, the project will be rejected until compatible files are produced.

Drawing Sheets

Drawing sheet borders shall be fully contained on a 22" x 34" sheet. The border should reduce 50% to fit completely on an 11" x 17" sheet. Drawings shall be plotted on sheets no larger than 24" x 36". The City recommends use of the electronic files available from the City. These files have already been sized for ease of reduction, contain blocks, typical layers, line types and color assignments.

In lieu of the profile sheet, grids generated by design software may be substituted.

Improvement Plans submitted to the City shall have the standard title block shown in the plan and cover sheets available electronically from the City for privately funded projects.

Map Sheets

Map sheet shall be 18" x 26" with a border 1 inch inside the edge of the sheet in accordance with the Map Act.

Naming Conventions

The following naming convention shall be used to identify the drawings:

For projects developed in ACAD 2000 or higher version:

Complete the drawing in model space and use the layout tabs for sheet layout in paper space:

City Specification No. (Tract No.,MS No., Parcel Map No.)_01.dwg Cover Sheet Drawing

City Specification No. (Tract No.,MS No., Parcel Map No.)_00.dwg Model and Layout Drawing

Ex: Tract 452_01.dwg

If desired, the cover sheet may be incorporated in the main drawing using the _00 extension for the entire project.

For projects developed in earlier versions (without layout tabs):

City Specification No. (Tract No., MS No., Parcel Map No.)_00.dwg for model space drawing

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City Specification No. (Tract No., MS No., Parcel Map No.)_01.dwg for Cover Sheet
 City Specification No. (Tract No., MS No., Parcel Map No.)_02.dwg for Sheet 2
 (XXXX_00.dwg is to be bound to the sheet drawing.)
 Continue numbering (xxxx_xx.dwg) for required number of sheets

If drawing sheets are modified **during construction** and new sheets are printed, they shall use the sheet number and a letter following to designate the change. Ex. Tract 400_05A.dwg

The preferred practice is for page numbers to be sequential for the entire plan set. Where the project contains multiple disciplines, landscaping, electrical, etc., the City will accept multiple drawings named as shown above.

Ex: Tract 452_E00 for the electrical drawing
 Tract 452_M00 for the mechanical drawing
 Tract 452_L00 for the landscape plan, etc.

Model Space and Paper Space

Drawings are to be generated in model space and then plotted with borders in paper space. Refer to the software manual for additional information.

Drawings shall be done in full scale (one drawing unit = 1 foot,) actual dimensions in model space. All borders and titles shall be done in paper space. Scaling of model space drawing to fit paper size shall be done using viewports and model view scaling.

General Drawing Content

Drawings shall contain the following minimum elements:

Title Block	North Arrow	Creek & Street Names
Vicinity Map	Bar Scale	Centerline Monuments
Dimensions	Date	Lot lines & numbers
Stationing	Legends	Tract Name & number
Bench Marks	Easements	Bearings, radii, etc.
Topography	Elevations	Existing Utilites
Datum Reference	Trees & Driplines	
Engineering Standard with numbers referenced		

Tree diameter shall be accurately represented. Drip lines shall be shown for any tree not permitted for removal.

Grading, utility and landscape plans shall not be combined on the same sheet. Curves shall show radius, delta, curve length and control for BC and EC to allow construction.

External References (xrefs)

Xrefs shall be bound to or inserted in the drawing in which they are needed for printing. Xrefs used during design, but not displayed for printing shall be detached.

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User Coordinate System (UCS)

When rotation is necessary for plotting, a UCS shall be used in lieu of rotating the drawing out of the original orientation.

Stationing

Stationing shall be north to south or west to east running left to right on the paper. Beginning stationing shall be tied to an existing centerline intersection. Coordinates for the beginning station and ending station shall be shown on the plans. Alignments and stationing should be on a street centerline when work will occur within a street. Profiles can be generated either on the centerline or offset, as long as their location is clearly defined on the profile.

On City funded projects (Capital Improvement Program) stationing for different streets in the same project shall not have duplicate stationing numbers.

Ex: A Street Waterline – Sta 1+00 to Sta 3+58, B Street Paving – Sta 4+00 to Sta 6+97

North Arrows and Bar Scales

North arrows and bar scales shall be inserted in model space such that a north arrow and bar scale appear in each plan view when plotted. Blocks shall not be so ornate as to obscure their content.

Scales

Plotting scale shall be appropriate to the type of project allowing adequate detail clarity. Bar scales shall be inserted in model space such that a bar scale appears in each plan view when plotted. Scale should appear in the lower right hand corner whenever possible. For sheets containing both plan and profile information, a ratio of the Horizontal to the Vertical scale shall be shown in the title block.

Example of typical scales:

Utility, Grading and Street Improvements Plan 1" = 20'
Paving and Traffic Control Plan 1" = 100'
Signal Plan 1" = 10' or 1" = 20'

Blocks

Blocks shall be created on layer 0 at scale 1:1 with line type and color by layer.

Layering

Drawings shall provide separate layers for the various items shown in the drawings using appropriate layer prefixes to group related layers. See Appendix B for additional information. Where allowed by the program, layer "state" or settings for printing shall be saved and named *print_sheet#*.

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Land Development Desktop defaults may be used for layer naming. Alignment names should be selected to mimic the layering conventions set forth in the appendix to the degree possible, and layer names shall be generated using the alignment prefix option such that all layers related to the alignment begin with the alignment name.

Color and Line Types

All colors and line types shall be **By Layer**. Layer colors and line pen designations shall be those shown in the City prototype drawings. See Appendix C for additional information.

Pen weights shall be those designated in the plot file for those colors associated with standard layers. Polylines shall not have an assigned width, but rather be given weight through pen designation.

Generally, abandoned and existing facilities are shown with a fine line weight or at half tone, with abandoned facilities using hidden or dashed line types, in lieu of the standard continuous line type. New facilities are shown in bolder line types. Line scale shall be set so that line types, other than continuous, repeat frequently enough to be clearly differentiated.

Dimensions

Dimensions shall have characteristics by layer. The dimensions shall appear on the text layer or a new layer specifically for dimensions. Dimensioning text shall be per this standard.

Text

Accepted fonts are limited to those furnished with AutoCAD or Land Development Desktop. Where new text styles are created, they should have the same name as the font used for that style. The use of AutoCAD’s predefined “Standard” text style, which defaults to the txt font type, is not encouraged.

Text shall always be on a separate layer. Line labels shall be above the line and not cut into the line.

Plotting

Whenever possible, use the plot file furnished by the City. If this is not possible, save a plot file for the project and submit it with the drawing files. Plot file shall be named using the same naming convention as for drawings, with the default file name extension.

RECORD DRAWINGS

When construction is complete, a record drawing of the project shall be completed as set forth below. Record drawing layers may be added as need to provide proper printing for each sheet. Save the file using the naming convention as for drawings followed by R.

Ex: Tract 452_E00R Record drawing for electrical sheets

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- Create a new layer and name it *Record_Drawing*
- Set color to 200 and line type to continuous. Colors 201 & 202 may also be used as needed to address different line weights.
- Record all record drawing information on the Record Drawing layer
- Each sheet is to be “stamped” to note record drawings have been completed for that sheet. If no changes were made, a note to that effect is to be included adjacent to the stamp.
- Each sheet is to be numbered with an “R” after the sheet number. Ex. 2R of 13
- Set all pen colors but pen 200, 201, and 202 to color 253 or use the City standard plot file for record drawings.
- Complete plotting of record drawing set

SUBMITTALS

Drawing files must be completely compatible with the current City AutoCAD standard program. Bond used for submittals shall be a minimum of 20lb.

City funded projects

All electronic files shall be submitted to the City. For projects developed using design software, the entire project folder shall be submitted, including all the sub folders with drawings and supporting data. The electronic folder shall be submitted in the configuration generated by the software. Drawing file shall be purged of all unused layers, text, etc.

Written specifications shall also be submitted in electronic format.

Submit one original, stamped and signed, ink on bond, set of plans and one original stamped and signed set of specifications along with the electronic files prior to the start of construction. Submittal shall also include a complete *Acrobat Adobe* file bid package (Specifications and Plans.)

Record drawings are to be submitted within 4 weeks of completion of construction and shall include a signed scan (.tif) or adobe file in addition to the drawing files.

Files shall be submitted to the designated Project Manager for Capital Improvement projects.

Privately funded projects

Submit the electronic drawing files (.dwg) and any associated plot files along with one original, stamped and signed, ink on bond, set of plans prior to the start of construction or Map recording.

Record drawings are to be submitted within 4 weeks of completion of construction and prior to City acceptance of the public improvements. Record drawing submittal shall include a hard copy original, stamped and signed, ink on bond; an electronic image copy (.tif or .pdf)

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of the original approved plans and record drawings interlaced, i.t. page 1, 1R, 2, 2R etc.; and the drawing file (.dwg).

Submit this data either via email (for small projects) or on a CD containing the required data. Files shall be submitted to the Development Review Division Engineer.

CITY DOCUMENTS ON LINE

The following files are available from the City web site slocity.org:

- Standard Cover Sheet for City funded projects
- Standard Cover Sheet for private funded projects
- Standard Plan Sheet for City funded projects
- Standard Plan Sheet for private funded projects
- Standard Profile Sheet for private funded projects
- Standard plot file for draft construction plans –17” x 11”
- Standard plot file for original construction plans –34” x 22”
- Standard plot file for Record Drawings
- Horizontal Control Network
- Bench Mark System

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LAYER COLOR AND LINE TYPE CONVENTIONS

Layer Prefixes:

- F** Layers showing future facilities.
- X** Layers showing existing information and facilities.
- XABD** Layers showing abandoned facilities such as water lines, sewer lines, etc.
- N** Layers showing new or proposed information and facilities.
- 0 (zero)** Layers that are in Paper Space, such as borders and border titles.

- ADRS** Layers showing site addresses
- BLDG** Layers showing buildings and other structures
- CCOM** Layers showing City owned communication facilities
- CL** Layers showing centerline information
- CTL** Layers showing monuments, bench marks or other control points
- CLM** Layers showing City Limit lines
- EASE** Layers showing easements or other rights of entry
- ELEC** Layers showing electric facilities and joint electric and phone/cable poles
- EP** Layers showing edge of pavement
- GAS** Layers showing gas facilities
- HATCH** Layers showing hatching
- LTG** Layers showing lighting
- OIL** Layers showing oil facilities
- PL** Layers showing property lines / parcel lines
- PNT** Layers showing survey points and associated data
- ROW** Layers showing right of way lines
- S** Layers showing sanitary sewer facilities
- SD** Layers showing storm drain systems including large culverts and bridges.
- SW** Layers showing sidewalks, curbs and gutter
- TEL** Layers showing telephone & telecommunication facilities
- TC** Layers showing traffic control, including signs and striping
- TS** Layers showing traffic signal facilities
- TV** Layers showing television / cable facilities
- TXT** Layers showing text
- VEG** Layers showing vegetation
- W** Layers showing potable water facilities
- 3W** Layers showing non-potable water facilities including tertiary treated water

Layer prefixes should be combined as appropriate and additional description added as needed.

- Ex: XABD-W-TXT A layer showing abandoned water facilities text
- X-SD-County A layer showing existing storm drain facilities under County jurisdiction
- N-S A layer showing new sewer facilities

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LAYER COLOR AND LINE TYPE CONVENTIONS

<i>Facility Type</i>	<i>Color</i>	<i>Line Type</i>
Model Space		
Abandoned & Future		
All facilities	210	Hidden2
Text	210	Continuous
Existing		
Addressing	12	Continuous
Buildings / Structures	100	Continuous
Cable TV	30	Continuous
City Limits	21	Continuous
Centerlines	1	Center2
City Communication Conduits	20	Dashdot2
Contours – Major	38	Dashed
Contours – Minor	33	Dashed
Curb, gutter & sidewalks	8	Continuous
Easement	44	Continuous
Edge of Pavement	8	Continuous
Electric	11	Phantom
Gas	50	Continuous
Hatch	253	Continuous
Lighting	52	Continuous
Miscellaneous	4	Continuous
Oil	51	Continuous
Parcel lines	30	Continuous
Points for Control – monuments & benchmarks	1	Continuous
Points – other	Any	Continuous
Right of Way	2	Continuous
Railroad	41	Continuous
Sanitary Sewer	3	Continuous
Storm drains	74	Continuous
Telephone & Other Communication Lines	23	Phantom2
Television	30	Continuous
Text	5	Continuous
Traffic Control	10	Continuous
Traffic signals	10	Divide2
Vegetation	72	Continuous
Water	5	Continuous
Water – Reclaimed	212	Continuous

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Facility Type	Color	Line Type
Model Space		
New		
All facilities – main plan - heavier line weight	7	Continuous
All facilities – details- lesser line weight	14	Continuous
Text	6	Continuous
Dimensions	105	Continuous
Grid lines – Major	38	Continuous
Grid lines – Minor	33	Continuous
Contours – Major	16	Dashed
Contours – Minor	13	Dashed
Hatch	15	Continuous
North arrow & scale	170	Continuous
Record Drawings		
Record Drawing – heavy line weight	200	Continuous
Record Drawing – medium line weight	203	Continuous
Record Drawing – light line weight	201	Continuous
Paper Space		
Border	174	Continuous
Border Titles & Engineering Stamp	170	Continuous
Viewports	255	Continuous

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SORT BY COLOR NUMBER

Facility	Color	Line Type
Centerlines, Points for Control	1	Center2, Continuous
Right of Way, Railroad	2	Continuous
Sanitary Sewer	3	Continuous
Miscellaneous	4	Continuous
Text, Water	5	Continuous
(N) Text	6	Continuous
(N) All facilities – main plan - heavier line weight	7	Continuous
Curb, gutter & sidewalks, Edge of Pavement	8	Continuous
Traffic Control, Traffic signals	10	Continuous, Divide2
Electric	11	Phantom
Addressing	12	Continuous
(N) Contours - minor	13	Dashed
(N) All facilities – details- lesser line weight	14	Continuous
(N) Hatch	15	Continuous
(N) Contours major	16	Dashed
City Communication Conduits	20	Dashdot2
City Limits	21	Continuous
Telephone & Other Communication Lines	23	Phantom2
Cable TV, Parcel lines,	30	Continuous
(N) Grid lines – Minor, (E) Contours – Minor	35	Continuous
(N) Grid lines – Major, (E) Contours – Major	38	Continuous
Easement	44	Continuous
Gas	50	Continuous
Oil	51	Continuous
Lighting	52	Continuous
Vegetation	72	Continuous
Storm drains	74	Continuous
Buildings / Structures	100	Continuous
(N) Dimensions	105	Continuous
Variable Layers & Line Weights *	110-169	
Border Titles & Engineering Stamp	170	Continuous
North arrow & scale, Border	174	Continuous
Variable Layers & Line Weights *	180-199	
Record Drawing – heavy line weight	200	Continuous
Record Drawing – light line weight	201	Continuous
Record Drawing – medium line weight	203	Continuous
Future, (XA) All facilities, (XA) text	210	Hidden2, Continuous
Water – Reclaimed	212	Continuous
Variable Layers & Line Weights *	220-249	
Hatch	253	Continuous
Viewports	255	Continuous

* see next page for line weights

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Line Weight (mm)	Unassigned Colors				
0.00	110	111	164	165	
0.05	112	113	166	167	
0.09	114	115	168	169	
0.10	116	117	180	181	250 - 255
0.13	118	119	182	183	
0.15	120	121	184	185	
0.18	122	123	186	187	
0.20	124	125	188	189	
0.25	126	127	190	191	
0.30	128	129	192	193	
0.35	130	131	194	195	
0.40	132	133	196	197	
0.45	134	135	198	199	
0.50	136	137	220	221	
0.53	138	139	222	223	
0.60	140	141	224	225	248 (color250)
0.65	142	143	226	227	
0.70	144	145	228	229	
0.80	146	147	230	231	
0.90	148	149	232	233	
1.00	150	151	234	235	
1.06	152	153	236	237	
1.20	154	155	238	239	249 (color 250)
1.40	156	157	240	241	
1.58	158	159	242	243	
2.00	160	161	244	245	
2.11	162	163	246	247	

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