
Regional Utilities CAD Standards

Effective March 1, 2006

Effective March 1, 2006, all as-built plans submitted to Regional Utilities shall be provided on Compact Disc in AutoCAD format. The following standards must be followed for all plans. CONSTRUCTION WILL NOT BE CERTIFIED UNTIL THESE STANDARDS ARE MET.

2.3.1 General Requirements

- 2.3.1.1 Drawings shall be georeferenced to the US State Plan Coordinate System, NAD 83, Florida State Planes, North Zone, US Foot, and must contain **two** referenced, labeled points tied to the State Plan Coordinate System.
- 2.3.1.2 All features depicted in the as-built drawings must be surveyed **after** construction, to verify accuracy. Regional Utilities will randomly spot check to ensure accuracy. Water system features must be surveyed to an accuracy of ≤ 0.3 foot. Sewer system features must be surveyed to an accuracy of ≤ 0.5 foot.
- 2.3.1.3 The following feature types are acceptable: *Line (Polyline), Polygon, Text and Insert*).
- 2.3.1.4 Regional Utilities will provide a template drawing available for downloading on its web site at www.regionalutilities.net.
- 2.3.1.5 The project boundary must be labeled on the BOUND-PROJECT-TXT layer, and the label must be within the extent of the project boundary.

2.3.2 Layering

- 2.3.2.1 Layer names must appear exactly as in Appendix A (attached).
- 2.3.2.2 All required layers listed in Regional Utilities approved CAD layers shall only contain the associated described features. For example, the BOUND-PROJECT layer shall contain only the project boundary line.
- 2.3.2.3 All required layers shall be present in the drawing except for features that do not pertain to a particular project.
- 2.3.2.4 All layers shall be clearly differentiated from one another. For example: two layers having the names WATER-MAIN and WATER-MAINS shall not exist in the same drawing.
- 2.3.2.5 All text shall appear on separate layers from the layers they annotate. For example, text describing a water main should be on the WATER-MAIN-TXT layer and not on the WATER-MAIN layer.

2.3.2.6 Leaders and dimensions shall be placed on the appropriate text layer and not the feature layer. All Dimensions shall be associative. Exploded dimensions will not be accepted.

2.3.3 Drawings

2.3.3.1 All layers shall conform to the proper geometry type (line (polyline), polygon, text, insert) as shown on Appendix A (attached).

2.3.3.2 All polygon type features shall be completely closed. Lines may need to be duplicated on more than one layer to be correctly drawn as a polygon.

2.3.3.3 Gravity Sewer lines and Force Mains shall be drawn as polylines and broken only at changes in pipe type, valves, tees, crosses, bends (elbows), manholes and reducers.

2.3.3.4 All valves shall be labeled with coordinates and referenced to road centerlines, power and/or utility poles, phone boxes, or any other existing permanent above ground structure. All dimensions for valve references shall be on the appropriate Valve-Txt layer.

2.3.3.5 Water lines shall be drawn as polylines and broken only at changes in pipe type, valves, tees, crosses and reducers.

2.3.3.6 Pipe end points shall be snapped together at endpoints.

2.3.3.7 “End-of-line” caps shall be drawn to differentiate end-of-lines from lines that extend beyond the extent of the drawing. “End-of-line” caps shall be drawn for lines that are to be permanently capped when the job is complete, not for lines that are temporarily capped pending inspection.

2.3.4 Symbols

2.3.4.1 Symbols shall be standardized according to examples provided in the Regional Utilities As-built Template file. The following “point” features shall be symbolized using the standard Regional Utilities Symbols and inserted as blocks. See Appendix B for symbol and description.

- End of line Cap
- Fire Hydrant
- Flush Hydrant
- Manhole
- Meter
- Reducer
- Tees
- Valve
- Cleanout
- Lift station

2.3.5 **Annotation**

2.3.5.1 All water and sewer lines shall include detail of the line diameter, material type and slope.

2.3.5.2 All addresses and lot numbers shall not be shown with special characters such as *, #, “, etc.

2.3.5.3 All required text shall be single line text.

2.3.6 **File naming and revisions**

2.3.6.1 File names shall correspond exactly to the subdivision or project name and should be consistent from one version to the next. The file name shall contain the project name and the revision date in YYMMDD format as part of the name. There should be no blank spaces in the name, only underscores.

2.3.7 **Deliverables**

2.3.7.1 All files shall be delivered on a single compact disc in AutoCAD 2004 (or earlier) format.

2.3.7.2 All deliverables shall be labeled with the file name, company name, contact name, and phone number.

2.3.7.3 A Transmittal letter restating this information along with a statement requesting an as-built review will also accompany the disk.

2.3.7.4 Any additional drawing files used as an external reference within the submitted drawing file shall also be included with the submitted project. Any projects which have and external reference attached and not included shall not be accepted.

2.3.8 Appendix A



























Layer Name	Color	Linetype	Lineweight	Description	Type
ADDRESS-TXT	7	CONTINUOUS	0.25	STREET POSTAL ADDRESS NUMBER	TEXT
BLDG-IDEN	7	CONTINUOUS	0.25	BUILDING IDENTIFICATION	TEXT
BLDG-OTLN	7	CONTINUOUS	0.18	BUILDING OUTLINE	POLYGON
BLOCK-IDEN-TXT	3	CONTINUOUS	0.25	SUBDIVISION BLOCK IDENTIFICATION	TEXT
BORE	7	CONTINUOUS	0.15	BORE LOCATION	POLYGON
BORE-TXT	7	CONTINUOUS	0.25	TEXT ASSOCIATED WITH BORE	TEXT
BOUND-EASE	11	PHANTOM2	0.18	BOUNDARY LINE OF EASEMENTS	POLYGON
BOUND-EASE-TXT	7	CONTINUOUS	0.25	TEXT ASSOCIATED WITH EASEMENTS	TEXT
BOUND-FENCE-WALL	20	CONTINUOUS	0.13	FENCES, RETAINING WALLS, GUARDRAILS, ETC.	POLYLINE
BOUND-FENCE-TXT	20	CONTINUOUS	0.25	TEXT ASSOCIATED WITH FENCES, RETAINING WALLS, GUARDRAILS, ETC.	TEXT
BOUND-LOT-LINE	84	PHANTOM2	0.18	LOT LINES WITHIN AND ASSOCIATED TO PROJECT	TEXT
BOUND-LOT-LINE-TXT	3	CONTINUOUS	0.25	LOT IDENTIFICATION	TEXT
BOUND-PROJECT	1	PHANTOM2	0.20	OVERALL BOUNDARY OF PROJECT	POLYGON
BOUND-PROJECT-TXT	1	PHANTOM2	0.25	TEXT ASSOCIATED WITH BOUNDARY OF PROJECT	TEXT
C-ANNO-PATT	9	CONTINUOUS	0.13	HATCH PATTERNS	INSERT
C-ANNO-TXT	3	CONTINUOUS	0.25	MISCELLANEOUS TEXT	TEXT
DEFPOINTS	7	CONTINUOUS	0.00	DEFPOINTS	
G-ANNO-LOGO	7	CONTINUOUS	0.20	COMPANY LOGO	INSERT
G-ANNO-NOTE	2	CONTINUOUS	0.25	TEXT FOR TITLE BLOCK FOR PROJECT	TEXT
G-ANNO-TTLB	6	CONTINUOUS	0.80	TITLE BOCKS	INSERT
G-ANNO-TEXT	2	CONTINUOUS	0.18	TEXT ASSOCIATED WITH TITLE BLOCKS	TEXT
G-LAYOUT	2	CONTINUOUS	0.00	VIEWPORT IN PAPER SPACE	
HYDRANT	152	CONTINUOUS	0.25	HYDRANTS (FLUSH, FIRE, ETC.)	INSERT
HYDRANT-TXT	152	CONTINUOUS	0.25	TEXT ASSOCIATED WITH HYDRANTS	TEXT
HYDRO-SHORELINE	5	DIVIDE2	0.18	SHORELINES OF LAKES, STREAMS, PONDS, ETC.	POLYGON
HYDRO-TXT	7	CONTINUOUS	0.25	TEXT ASSOCIATED WITH WATER BODIES	TEXT
PLSS-SECTION	4	DASHED	0.25	SECTION LINES AND INDENTIFICATION	POLYLINE AND TEXT
PLSS-TOWNSHIP-RANGE	143	PHANTOM	0.20	TOWNSHIP AND RANGE LINES INCLUDING TEXT	POLYLINE AND TEXT
RECLAIM-WATER-FITINGS	211	CONTINUOUS	0.30	RECLAIM WATER END CAPS, BENDS, REDUCERS, ETC.	INSERT
RECLAIM-WATER-FITTINGS-TXT	211	CONTINUOUS	0.25	TEXT ASSOCIATED WITH RECLAIM WATER LINE FITTINGS	TEXT

RECLAIM-WATER	211	CONTINUOUS	0.40	RECLAIM WATER MAIN LINES	POLYLINE
RECLAIM-WATER-TXT	211	CONTINUOUS	0.25	TEXT ASSOCIATED TO RECLAIM WATER MAIN LINES	POLYLINE
RECLAIM-WATER-VALVE	211	CONTINUOUS	0.30	RECLAIM WATER VAVLES	INSERT
RECLAIM-WATER-VAVLE-TXT	211	CONTINUOUS	0.25	TEXT ASSOCIATED WITH RECLAIM WATER VALVES	TEXT
RECREATION	8	CONTINUOUS	0.18	POOLS, TENNIS COURTS, GOLD COURSES, ETC	POYLINE
RECREATION-TXT	8	CONTINUOUS	0.18	TEXT ASSOCIATED WITH RECREATION FACILITIES	TEXT
ROAD-CENTER	12	CENTER2	0.15	ROAD CENTERLINES	POLYLINE
ROAD-CURB	95	CONTINUOUS	0.15	BACK AND FACE OF CURB	POLYLINE
ROAD-DRIVEWAY	8	CONTINUOUS	0.13	DRIVEWAYS AND IDENTIFICATION	POLYGON
ROAD-EOP	2	CONTINUOUS	0.13	EDGE OF ROAD SURFACES	POLYGON
ROAD-EOP-TXT	2	CONTINUOUS	0.25	TEXT ASSOCIATED TO ROAD SURFACE	TEXT
ROAD-ROW	3	PHANTOM2	0.13	ROAD RIGHT OF WAYS	POLYGON
ROAD-ROW-TXT	7	CONTINUOUS	0.25	TEXT ASSOCIATED TO ROAD RIGHT OF WAYS	TEXT
ROAD-SIDEWALK-DECK	7	CONTINUOUS	0.13	SIDEWALKS, DECKS, WALKWAYS, ETC.	POLYLINE
ROAD-TXT	1	CONTINUOUS	0.25	ROAD NAMES	TEXT
SSWR-CLEANOUT	31	CONTINUOUS	0.25	SANITARY SEWER FORCE MAIN CLEAN OUTS	INSERT
SSWR-CLEANOUT-TXT	31	CONTINUOUS	0.25	TEXT ASSOCIATED WITH FORCE MAIN CLEAN OUTS	TEXT
SSWR-EXISTING	31	HIDDEN	0.18	EXISTING SANITARY SEWER LINE, FORCE OR GRAVITY	POLYLINE
SSWR-EXISTING-FITTINGS	3	CONTINUOUS	0.15	EXISTING SANITARY SEWER VALVES, END CAPS, BENDS, ETC.	INSERT
SSWR-EXISTING-FITTINGS-TXT	3	CONTINUOUS	0.25	TEXT ASSOCIATED WITH EXISTING SANITARY SEWER VALVES, END CAPS, ETC.	TEXT
SSWR-EXISTING-MANHOLE	3	CONTINUOUS	0.15	EXISTING MANHOLES	INSERT
SSWR-EXISTING-MANHOLE-TXT	3	CONTINUOUS	0.25	TEXT ASSOCIATED WITH EXISTING MANHOLES	TEXT
SSWR-EXISTING-TXT	7	CONTINUOUS	0.25	TEXT ASSOCIATED WITH EXISTING SANITARY SEWER LINES FORCE AND GRAVITY	TEXT
SSWR-FITTINGS	1	CONTINUOUS	0.25	SANITARY SEWER END CAPS, BENDS, REDUCERS, ETC.	INSERT
SSWR-FITTINGS-TXT	7	CONTINUOUS	0.25	TEXT ASSOCIATED WITH SANITARY SEWER END CAPS, BENDS. REDUCERS ETC	TEXT
SSWR-FM	222	CONTINUOUS	0.40	SANITARY SEWER FORCE MAINS	POLYLINE
SSWR-FM-TXT	222	CONTINUOUS	0.25	TEXT ASSOCIATED WITH SANITARY SEWER FORCE MAINS	TEXT
SSWR-GRAVITY	3	CONTINUOUS	0.40	SANITARY SEWER GRAVITY MAINS	POLYLINE
SSWR-GRAVITY-	7	CONTINUOUS	0.25	TEXT ASSOCIATED WITH	TEXT

TXT				SANITARY SEWER GRAVITY MAINS	
SSWR-LAT	202	CONTINUOUS	0.30	SANITARY SEWER SERVICE LINES AND TAPS	POLYLINE
SSWR-LAT-TXT	7	CONTINUOUS	0.25	TEXT ASSOCIATED TO SANITARY SEWER GRAVITY LINES	TEXT
SSWR-MANHOLE	1	CONTINUOUS	0.30	SANITARY SEWER MANHOLES	INSERT
SSWR-MANHOLE-TXT	7	CONTINUOUS	0.25	TEXT ASSOCIATED WITH MANHOLES	TEXT
SSWR-STATION	200	CONTINUOUS	0.30	LIFT STATIONS, ETC	INSERT
SSWR-STATION-TXT	7	CONTINUOUS	0.25	TEXT ASSOCIATED WITH LIFT STATIONS, ETC.	TEXT
SSWR-VALVE	7	CONTINUOUS	0.30	SANITARY SEWER VALVES	INSERT
SSWR-VALVE-TXT	7	CONTINUOUS	0.25	TEXT ASSOCIATED TO SANITARY SEWER VALVES	TEXT
SURVEY-CONTROL	2	CONTINUOUS	0.13	HORIZONTAL AND VERTICAL CONTROL OF SURVEY	LINES
SURVEY-CONTROL-TXT	2	CONTINUOUS	0.25	TEXT ASSOCIATED TO HORIZONTAL AND VERTICAL	TEXT
SURVEY-POINTS	6	CONTINUOUS	0.13	ALL SURVEY POINTS	POINT
WATER-BFP	152	CONTINUOUS	0.20	BACK FLOW PREVENTER	
WATER-BFP-TXT	7	CONTINUOUS	0.25	TEXT ASSOCIATED TO BACK FLOW PREVENTERS	TEXT
WATER-EXISTING	153	HIDDEN	0.13	EXISTING WATER MAINS AND SERVICES	POLYLINE
WATER-EXISTING-TXT	7	CONTINUOUS	0.25	TEXT ASSOCIATED TO EXISTING WATER MAINS AND SERVICES	TEXT
WATER-FIRELINE	1	CONTINUOUS	0.40	WATER FIRE LINES	POLYLINE
WATER-FIRELINE-TXT	7	CONTINUOUS	0.25	TEXT ASSOCIATED TO FIRE LINES	TEXT
WATER-FITTING	152	CONTINUOUS	0.30	END CAPS, REDUCERS, TEES, ETC.	INSERT
WATER-FITTING-TXT	7	CONTINUOUS	0.25	TEXT ASSOCIATED WITH WATER END CAPS, REDUCERS, TEES, ETC.	TEXT
WATER-LAT	130	CONTINUOUS	0.30	WATER SERVICE LINES	POLYLINE
WATER-LAT-TXT	7	CONTINUOUS	0.25	TEXT ASSOCIATED WITH WATER SERVICE LINES	TEXT
WATER-MAIN	152	CONTINUOUS	0.40	WATER MAINS	POLYLINE
WATER-MAIN-TXT	7	CONTINUOUS	0.25	TEXT ASSOCIATED TO WATER MAINS	TEXT
WATER-METER	152	CONTINUOUS	0.30	WATER METER	INSERT
WATER-STATION	152	CONTINUOUS	0.30	BOOSTER PUMPS, MONITORING WELLS, TANKS, TOWERS, ETC.	INSERT
WATER-STATION-TXT	7	CONTINUOUS	0.25	TEXT ASSOCIATED WITH WATER STATIONS	TEXT
WATER-VALVE	150	CONTINUOUS	0.30	WATER VALVES	INSERT
WATER-VALVE-TXT	7	CONTINUOUS	0.25	TEXT ASSOCIATED WITH WATER VALVES	TEXT
WATER-VAULT	152	CONTINUOUS	0.30	LARGE METER OR CONNECTION VAULT	POLYGON
WATER-VAULT-TXT	7	CONTINUOUS	0.25	TEXT ASSOCIATED WITH LARGE METER OR CONNECTION VAULT	TEXT

U-CABLE	53	CONTINUOUS	0.13	TELEVISION CABLE STRUCTURES	INSERT
U-POWER	53	CONTINUOUS	0.13	ELECTRICAL POWER STRUCTURES	INSERT
U-STORM	53	CONTINUOUS	0.13	STORM WATER DRAINAGE STRUCTURES	INSERT
U-TELE	53	CONTINUOUS	0.13	TELEPHONE STRUCTURES	INSERT

2.3.9 Appendix B

SYMBOL LEGEND		
	BLOCK NAME	DESCRIPTION
	22DBEND	22 1/2 DEGREE BEND
	45DBEND	45 DEGREE BEND
	ARV	AIR RELIEF VALVE
	BFP	BLACK FLOW PREVENTER
	CAP	END OF LINE CAP
	CLOUT	CLEAN OUT
	EBOX	ELECTRICAL BOX
	EX-HYD	EXISTING HYDRANT
	EX-VALVE	EXISTING VALVE
	FH	FIRE HYDRANT
	FHV	FIRE HYDRANT WITH VALVE
	FLH	FLUSH HYDRANT
	LP	LIGHT POLE
	MH	MANHOLE
	LS	LIFT STATION
	PP	POWER POLE
	REDUCER	REDUCER
	TAP-SAD	TAPPING SADDLE
	TBOX	TELEPHONE BOX
	TCBOX	TELEVISION CABLE BOX
	TEE-V	TAPPING TEE WITH VALVE
	TEE	TAPPING TEE
	UP	UTILITY POLE
	VALVE	VALVE
	WELL	WELL
	WM	WATER METER

REVISED 5/18/06