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# Chapter 3 - RESOURCE AND SUPPORT FILES

## CADD Production Criteria Handbook

### 3.1 GENERAL

FDOT has developed CADD Standards for the production of Florida transportation systems plans to be delivered with the aid of the FDOT CADD Software suite. Utilization of the FDOT CADD Software suite is strongly encouraged. FDOT CADD Standards are conveyed through customization within the FDOT approved design software and automated tools contained in the FDOT CADD Software suite. The FDOT Menu (running inside of MicroStation) is a doorway into this customization. This chapter documents and defines the FDOT Resource and Support Files that are included in the FDOT CADD Software suite.

### 3.2 DATABASE

The Engineering CADD Systems Office (ECSO) has created a GEOPAK Design and Computation Manager (D&C Manager) database file (DDB) in the FDOT2010 folder located at \geopak\databases\FDOT2010.ddb. This database has been set up specifically to create drawing elements with the correct level symbology, and in many cases attach pay item data according to FDOT CADD Standards.

This database may need to be modified for project specific items or to comply with District standards. If the database is customized, the user would save the customized database into the project directory in the \symb project sub-folder. Saving the database to the project directory is important to ensure the modified database will be delivered with the project.

It also provides a central location for all modified sections that will be merged back into a single database prior to delivery of the project.

When modifying a project specific database, use the following naming convention:

project #

dr	(drainage)
its	(intelligent transportation system)
lnd	(landscape)
lt	(lighting)
rdwy	(roadway)
sg	(signalization)
sp	(signing and pavement markings)
util	(utilities)

Example: A modified standard DDB, 19728125201sg.DDB would be stored in .\19728125201\symb\ subfolder of the aforementioned project.

### 3.3 CONTROL FILES

FDOT delivers the Create/Edit program to create the standard files in the expected locations within the project directory structure. The standard FDOT Design file is derived from a “seed” file as part of the FDOT software suite. An example would be an existing topography file produced by the Survey discipline – TOPORD01.DGN created in the .\survey sub-folder of the project. Control Files are implemented to control the parameters needed by the Create/Edit program for the creation of these standard design files in adherence with the naming conventions set forth in Chapter 5 of this document. When creating new standard design files, the correct control file must be selected.

Standard FDOT Control Files:

- GEOTECH.CTL Standard FDOT Geotechnical File Names
- ROADWAY.CTL Standard FDOT Roadway File Names
- RW.CTL Standard FDOT Right of Way File Names
- STRUCTURES.CTL Standard FDOT Structures File Names
- MECHELEC.CTL Standard FDOT Mechanical and Electrical File Names
- ARCHITECTURE.CTL Standard FDOT Architectural File Names

### 3.4 MICROSTATION SEED FILES

MicroStation uses “seed” files to create all graphics design files. Seed files are empty drawing files that serve as a template for design files to be created.

The FDOT seed files define the working units for the graphics file, global origin of the file’s coordinate system, view attributes, default color table, text settings, coordinate readout and several other important parameters. FDOT supplies English seed files for both 2D and 3D CADD work.

Working units and global origin are two of the most important settings in the seed file. Working units are expressed as master units and sub-units. FDOT has defined all seed files for MicroStation based on master unit of “Survey Feet” with a sub unit of “Survey Inches.” The global origin is located at the center of the design plane for all seed files.

The resolution is defined per the master unit and determines the size (working area) of the design plane, which will encompass an area large enough for any State Plane coordinate in Florida.

- English 2D Seed File (FDOTSEED2D.DGN)

The following settings apply to all 2D seed files. Working Units:

- Master Units = Survey Feet
- Sub-Units = Survey Inches
- Resolution = 304800 UOR per Survey Foot
- Global Origin: Center of Design plane

- English 3D Seed File (FDOTSEED3D.DGN)

The following settings also apply to 3D seed files. Working Units:

- Master Units = Survey Feet
- Sub-Units = Survey Inches
- Resolution = 304800 UOR per Survey Foot
- Global Origin: Center of Design plane

### 3.5 LEVELS AND SYMBOLOGY

FDOT defines CADD level / symbology standards and deploys the standard using Design Libraries (DGNLIB files), Color Tables, Line Style Resource files, Line Weights and Toolboxes. FDOT has created standard FDOT Design Libraries to propagate FDOT Standards for: cells, levels, level filters, line styles, multi-line styles, text styles, dimension styles, element templates, menu customizations, customized tools, tool boxes, and tasks. Each FDOT Design Library contains data that is shared throughout files and among users.

Each FDOT Standard defined in a Design Library is identified by a unique name. When used, it is copied into the active design file and is given the same name. This allows for comparison of the local resource to the FDOT Design Library resource for compliancy to FDOT CADD Standards.

The following is a listing of all standard FDOT Design Libraries:

<b>Design Library Name (DGNLIB)</b>	<b>DESCRIPTION</b>
fdot_common_levels.dgnlib	FDOT Standard Common Levels
fdot_v8_levels.dgnlib	FDOT Standard Roadway Levels
FDOT_PrintStyles.dgnlib	FDOT Standard Print Styles
FDOT_Styles.dgnlib	FDOT Standard Styles
FDOTtoolboxes.dgnlib	FDOT Standard Toolboxes
GeoTech.dgnlib	FDOT Standard Geotechnical Levels
photogrammetry.dgnlib	FDOT Standard Photogrammetric Levels
rwlevels.dgnlib	FDOT Standard Right of Way Levels
strlevels.dgnlib	FDOT Standard Structure Levels
survey_levels.dgnlib	FDOT Standard Survey Levels
v7_levels.dgnlib	FDOT Standard V7 Levels
countymappinglevels.dgnlib	FDOT Standard County Mapping Levels

### 3.5.1 LEVELS

The standard FDOT Design Libraries define the MicroStation Levels for each Discipline. Designers are to use these standard FDOT Levels in the production of FDOT CADD design files.

The following are FDOT's basic level naming conventions to assist CADD users in utilization:

- Level Names have 18 maximum characters.
- The format of the Level Name is: **object\_sv**

Where: **object** = element type

**s** = state  
**v** = view

#### State Designations

**p** (proposed)  
**d** (drafting element)  
**e** (existing)

#### View Designations

**p** (plan)  
**r** (profile)  
**x** (cross section)

**Note** Level Names with no "\_sv" portion in the name are assumed to be: \_pp (proposed plan). Example: With this information one can determine the following about the Level names below:

gas	- Proposed Plan view elements for "gas" related items
gas_ep	- Existing Plan view elements for "gas" related items
gas_px	- Proposed cross section view elements for "gas" related items

### 3.5.2 COLOR TABLES

The standard FDOT Color Table (FDOTColor.tbl) was created to allow users to visually identify elements with ease in shared files and for consistency in color plotting. The FDOT Color Table is a modified version of the default MicroStation color table (color.tbl) which defines 256 colors. The most important aspect for the standardization of colors is the color number that is applied to elements.

FDOT Color Table customizes various MicroStation colors 0 through 166 as defined in the table below. The remaining colors match the default MicroStation color table. The FDOT Color Table is named "FDOTColor.tbl" as preset by the FDOT workspace variable MS\_DEFCTBL and attached in the FDOT seed files. Some disciplines use the MicroStation default color table or their own customized color table in place of the standard FDOT Color Table. These are defined in the discipline specific chapters.

FDOT Color Table (FDOTColor.tbl):

MicroStation Color	RGB Value	MicroStation Color	RGB Value	MicroStation Color	RGB Value
0	255,255,255	12	255,192,203	27	240,0,0
1	0,0,255	13	0,100,0	28	240,240,0
2	0,255,0	14	176,176,176	30	240,122,0
3	255,0,0	15	0,240,240	55	0,210,210
4	255,255,0	16	240,240,240	68	195,195,0
5	255,0,255	17	0,0,240	81	0,0,180
6	255,165,0	18	0,240,0	130	0,135,0
7	0,255,255	19	240,0,0	150	120,82,0
8	148,0,211	20	225,225,225	152	120,120,120
9	140,88,44	21	240,0,240	154	0,120,0
10	200,176,125	22	240,122,0	157	120,0,120
11	192,192,192	25	0,0,240	166	105,77,0

### 3.5.3 LINE WEIGHT

Line weight for MicroStation is defined by a numerical index within the range of 0 to 30 that designates the stroke width (or thickness) of the line used to draw and plot a graphic element. Each element has its own line weight. The standard line thickness (width) of a plotted graphic element is in dots per inch. Some printers may require the adjustment of these weights.

*Note For Right of Way Mapping Line Weight requirements see Chapter 9.*

Printed Outputs from the design files and postscript image files of plots must be of a quality legible on 2<sup>nd</sup> generation copies. Line Weights in the table below are default settings (also set in the FDOT delivered plot drivers), but may need to be adjusted depending on your hardware to produce the required quality of printed documents.

FDOT Line Weights:

Line Weight	Thickness (Inches)	Line Weight	Thickness (Inches)	Line Weight	Thickness (Inches)
0	0.003	11	0.036	21	0.066
1	0.006	12	0.039	22	0.069
2	0.009	13	0.042	23	0.072
3	0.012	14	0.045	24	0.075
4	0.015	15	0.048	25	0.078
5	0.018	16	0.051	26	0.081
6	0.021	17	0.054	27	0.084
7	0.024	18	0.057	28	0.087
8	0.027	19	0.060	29	0.090
9	0.030	20	0.063	30	0.093
10	0.033				

### 3.5.4 LINE STYLES

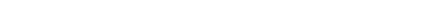
FDOT Line style is part of the symbology of graphic elements in MicroStation. It defines a line's appearance as being solid, continuous dashes, dots and dashes, and so on. Each element has its own line style. An element can be set to a standard MicroStation line style (numbered 0 - 7) or to a custom line style as defined in a custom line style resource file, or custom line style definition embedded in the design file.

Custom line styles are more complex and contain patterns of line segments and/or symbols. Some examples of custom line styles are a tree line, fence line, guardrail, etc. When an element is drawn in MicroStation with a custom line style, the definition of the line style may or may not be contained within the design file.

If non-standard custom line styles are required, the resource file defining them must be delivered in the project directory structure, or the custom line style definitions must be embedded in the design file. The user must not create conflicting custom line styles with the same name as an FDOT Standard Line Style.

User created resource files must be different in name from the FDOT resource files and copied to the \SYMB sub-directory of the FDOT project directory structure.

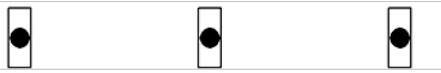
### 3.5.4.1 Standard English Line Style Measurements for Printing

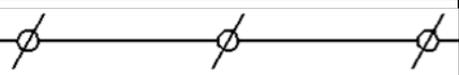
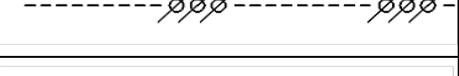
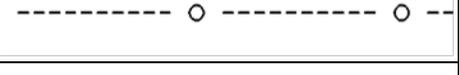
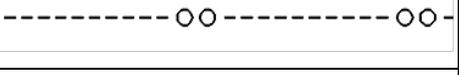
style(0) = continuous	0	
style(1) = (0.02, 0.04)	1	
style(2) = (0.08, 0.04)	2	
style(3) = (0.15, 0.05)	3	
style(4) = (0.200, 0.053, 0.03, 0.053)	4	
style(5) = (0.056, 0.056)	5	
style(6) = (0.32, 0.056, 0.048, 0.056, 0.048, 0.056)	6	
style(7) = (0.59, 0.053, 0.03, 0.053)	7	

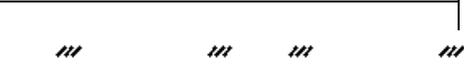
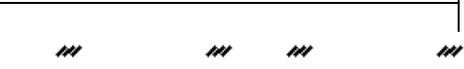
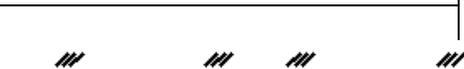
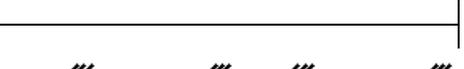
### 3.5.4.2 FDOT Custom Line Style Resource Files

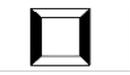
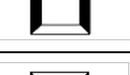
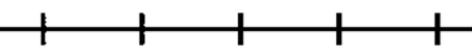
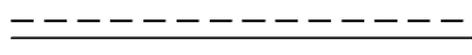
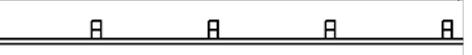
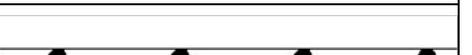
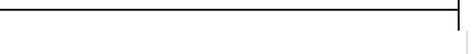
FDOT provides custom line styles for linear repeating patterns. All standard FDOT custom line styles will be carried forward on future releases. Users shall not modify the standard FDOT Custom Line Style resource files.

### 3.5.4.3 Custom Line Style Graphics

Discipline	Name	Description	Sample Image
Maintenance of Traffic	attenuator	Attenuation Systems	
Maintenance of Traffic	barricade1	Barricade Symbol Type 1 or 2 at 15' spacing	
Maintenance of Traffic	barricade2	Barricade Symbol Type 1 or 2 at 30' Spacing	
Maintenance of Traffic	barricade3	Barricade Symbol Type 1 or 2 at 50' Spacing	
Maintenance of Traffic	barricade4	Barricade Symbol Type 1 or 2 at 100' Spacing	
Maintenance of Traffic	cone1	Cones at 25' Spacing	
Maintenance of Traffic	cone2	Cones at 50' Spacing	
Maintenance of Traffic	drum1	Drums at 15' Spacing	
Maintenance of Traffic	drum2	Drums at 30' Spacing	
Maintenance of Traffic	drum3	Drums at 50' Spacing	

Discipline	Name	Description	Sample Image
Maintenance of Traffic	drum4	Drums at 100' Spacing	
Maintenance of Traffic	sign1	Traffic Control Sign Symbol at 500' Spacing	
Maintenance of Traffic	sign2	Traffic Control Sign Symbol 400' Spacing	
Maintenance of Traffic	sign3	Traffic Control Sign Symbol 200' Spacing	
Roadway	barrier1	Turbidity Barrier 1 (floating)	
Roadway	barrier2	Staked Turbidity Barrier	
Roadway	Cable_Barrier	Cable Barrier	
Roadway	conduit1	Conduit for Utilities and Encasements	
Roadway	conduit2	Conduit & Encasements	
Roadway	directbore	Directional Bore	
Roadway	easement	Easement Lines	
Roadway	exlite_cond1	Conduit Underground (Existing)	
Roadway	exlite_cond2	Conduit Under pavement (Existing)	
Roadway	exlite_cond3	Conduit Jacked (Existing)	
Roadway	exlite_cond4	Conduit Surface Mounted (Existing)	
Roadway	exlite_cond5	Conduit In Box Girder (Existing)	
Roadway	grdbl	Guardrail Double Face	

Discipline	Name	Description	Sample Image
Roadway	hay_bales	Sediment Barriers – Synthetic Bales	
Roadway	silt_fence	Sediment Barriers – Silt Fence	
Roadway	intcon1	Cable Interconnect	
Roadway	intcon2	Interconnect Cable (Existing)	
Roadway	lite_cond1	Street Lighting Conductors, Conduit Underground	
Roadway	lite_cond2	Conduit Under pavement	
Roadway	lite_cond3	Conduit Jacked Under pavement	
Roadway	lite_cond4	Conduit Surface Mounted	
Roadway	lite_cond5	Conduit In Box Girder	
Roadway	PS_PAT2'	Shoulder Paved 2ft	
Roadway	PS_PAT4'	Shoulder Paved 4ft	
Roadway	PS_PAT5'	Shoulder Paved 5ft	
Roadway	PS_PAT6'	Shoulder Paved 6ft	
Roadway	PS_PAT8'	Shoulder Paved 8ft	
Roadway	PS_PAT10'	Shoulder Paved 10ft	
Roadway	PS_PAT12'	Shoulder Paved 12ft	
Roadway	PS_PAT15'	Shoulder Paved 15ft	

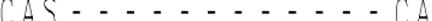
Discipline	Name	Description	Sample Image
Roadway	RockBag	Rock Bag	
Roadway	rpm_skip1	Reflective Pavement Markers Skip Striping Temporary	
Roadway	rpm_solid	Reflective Pavement Markers Solid Striping	
Roadway	rpm10	Reflective Pavement Markers 10' spacing	
Roadway	rpm20	Reflective Pavement Markers 20' spacing	
Roadway	rpm30	Reflective Pavement Markers 30' spacing	
Roadway	rpm40	Reflective Pavement Markers 40' spacing	
Roadway	rr1	Railroad	
Roadway	rr2	Railroad	
Roadway	rumble_cont	Rumble Strip Continuous	
Roadway	rumble_skip	Rumble Strip Skip	
Roadway	signal_cable	Signal Cable	
Roadway; Survey & Mapping	grail1	Guardrail Left	
Roadway; Survey & Mapping	grail2	Guardrail Right	
Roadway; Survey & Mapping	laft	Fence Limited Access Left	
Roadway; Survey & Mapping	laft	Fence Limited Access Right	
Roadway; Survey & Mapping	LaneLine_exist	Lane Lines - Existing	

Discipline	Name	Description	Sample Image
Roadway; Survey & Mapping	wetland	Edge of Mangrove, Wetlands (Marsh or Swamp)	
Roadway; Survey & Mapping	Wetland_ep	Edge of Mangrove, Wetlands (Marsh or Swamp) (Existing)	
Roadway; Survey & Mapping	woodline	Wood Line, Groves & Orchards Boundary, Scattered Trees	
Signing & Pavement Markings	10/10/20 Alt.Skip	Pavement Markings	
Signing & Pavement Markings	crosswalk1	Emphasis Crosswalk 6ft High	
Signing & Pavement Markings	crosswalk2	Emphasis Crosswalk 10ft High	
Signing & Pavement Markings	dbl_line	Pavement Marking Traffic Stripe 6" Double Yellow	
Signing & Pavement Markings	Delineators40	40' Spacing	
Signing & Pavement Markings	Delineators300	300' Spacing	
Signing & Pavement Markings	skip10/30 contrast	Pavement Marking Traffic Stripe Skip 10/30 (Contrast)	
Signing & Pavement Markings	skip/solid	Pavement Markings	
Signing & Pavement Markings	slip10/10/20contrast	Pavement Markings	
Signing & Pavement Markings	skip10_30	Pavement Marking Traffic Stripe Skip 10/30	
Signing & Pavement Markings	skip10_30ext	Pavement Marking Traffic Stripe Skip 10/30 (Existing)	
Signing & Pavement Markings	skip2_4	Pavement Marking Traffic Stripe Skip 2/4	
Signing & Pavement Markings	skip2_4ext	Pavement Markings Skip 2_4 (Existing)	
Signing & Pavement Markings	skip3_12 (6")	Pavement Markings Paint Skip 3_12 6"	

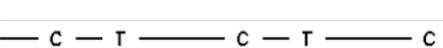
Discipline	Name	Description	Sample Image
Signing & Pavement Markings	skip3_12ext (6")	Pavement Markings Paint Skip 3_12 6" (Existing)	
Signing & Pavement Markings	skip3_9 (6")	Pavement Markings Paint Skip 3_9 6"	
Signing & Pavement Markings	skip3_9ext (6")	Pavement Markings Paint Skip 3_9 6" (Existing)	
Signing & Pavement Markings	skip6_10	Pavement Markings	
Signing & Pavement Markings	skip6_10ext	Pavement Markings Paint Skip 6_10 8" (Existing)	
Signing & Pavement Markings	stripe06	Pavement Marking Traffic Stripe 6in	
Signing & Pavement Markings	stripe06ext	Pavement Marking Traffic Stripe 6in (Existing)	
Signing & Pavement Markings	stripe08	Pavement Marking Traffic Stripe 8in	
Signing & Pavement Markings	stripe08ext	Pavement Marking Traffic Stripe 8in (Existing)	
Signing & Pavement Markings	stripe12	Pavement Marking Traffic Stripe 12in	
Signing & Pavement Markings	stripe12ext	Pavement Marking Traffic Stripe 12in (Existing)	
Signing & Pavement Markings	stripe16	Pavement Marking Traffic Stripe 16in	
Signing & Pavement Markings	stripe16ext	Pavement Marking Traffic Stripe 16in (Existing)	
Signing & Pavement Markings	stripe18	Pavement Marking Traffic Stripe 18in	
Signing & Pavement Markings	stripe18ext	Pavement Marking Traffic Stripe 18in (Existing)	
Signing & Pavement Markings	stripe24	Pavement Marking Traffic Stripe 24in	
Signing & Pavement Markings	stripe24ext	Pavement Marking Traffic Stripe 24in (Existing)	

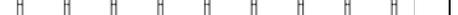
Discipline	Name	Description	Sample Image
Signing & Pavement Markings	Vibratory	Audible and Vibratory Pavement Marking 6in	
Signing & Pavement Markings	yield	Yield Pavement Markings 3' Spacing	
Signing & Pavement Markings	yield1	Yield Pavement Markings 2' Spacing	
Survey & Mapping	Angle	Annotation Angles	
Survey & Mapping	ARROW2	Annotation: RW Width	
Survey & Mapping	ArrowPoint	Annotation: Station Offset	
Survey & Mapping	ArrowTie	Annotation: Station Tie	
Survey & Mapping	CLIMIT	City Limit Line	
Survey & Mapping	Climit2	City Limit	
Survey & Mapping	COLINE	County Line	
Survey & Mapping	EECL	Existing Easement Centerline	
Survey & Mapping	EXLA	Limited Access Right of Way (Existing)	
Survey & Mapping	fence1	Fence	
Survey & Mapping	GRTL	Government: Grant Line	
Survey & Mapping	LA	Limited Access Right of Way	
Survey & Mapping	LEADERLT	Annotation: Begin End Leader Left	
Survey & Mapping	LEADERRT	Annotation: Begin End Leader Right	

Discipline	Name	Description	Sample Image
Survey & Mapping	LICENSE	Easement: License (Agreement)	
Survey & Mapping	LOC	Construction Limits	
Survey & Mapping	NONVH	Non-Vehicular Access	
Survey & Mapping	NSPF	Government: National or State Forest Park Line	
Survey & Mapping	NSPF2	Government: National or State Forest Park Line (Hash Only)	
Survey & Mapping	PESMT	Easement Lines Perpetual	
Survey & Mapping	PL	Property Line	
Survey & Mapping	QSEC	Quarter Section Line	
Survey & Mapping	RR	Railroad	
Survey & Mapping	RW	Right of Way Lines - Existing	
Survey & Mapping	SECLIN	Section Lines	
Survey & Mapping	STL	Government: State Line	
Survey & Mapping	SUBDIV	Annotation: Subdivision Boundary Arrows <---->	
Survey & Mapping	SUBDIV2	Annotation: Subdivision Boundary Arrows Double <<---->>	
Survey & Mapping	SUBDIV2LT	Annotation: Subdivision Boundary Arrows Two Left <<---->	
Survey & Mapping	SUBDIV2LTOOnly	Annotation: Subdivision Boundary Arrows Two Left Only <<----	
Survey & Mapping	SUBDIV2RT	Annotation: Subdivision Boundary Arrows Two Right <---->	

Discipline	Name	Description	Sample Image
Survey & Mapping	SUBDIV2RTOOnly	Annotation: Subdivision Boundary Arrows Two Right Only ---->>	
Survey & Mapping	SUBDIVLT	Annotation: Subdivision Boundary Arrows Single Left <----	
Survey & Mapping	SUBDIVRT	Annotation: Subdivision Boundary Arrows Single Right ---->	
Survey & Mapping	TEMPE	Easements Temporary (Existing)	
Survey & Mapping	TIITF	Safe Upland – Murphy Reservation	
Survey & Mapping	TWPRGE	Township / Range Lines	
Survey & Mapping	WaterMapBoundary	Major Water Mapping Boundary	
Utilities– existing; Survey & Mapping	e-be	Existing Conductors (Transmission), Buried Power	
Utilities - Existing; Survey & Mapping	e-bfo	Existing Fiber Optics Cable (Underground)	
Utilities - Existing; Survey & Mapping	e-bt	Existing Telephone (Buried ), Duct, Toll	
Utilities - Existing; Survey & Mapping	e-btv	Existing Cable TV Line (Buried)	
Utilities - Existing; Survey & Mapping	e-cas	Existing Conduit & Pipe Encasements	
Utilities - Existing; Survey & Mapping	e-dt	Existing Telephone Buried Duct	
Utilities - Existing; Survey & Mapping	e-g	Existing Gas Line	
Utilities - Existing; Survey & Mapping	e-npw	Existing Non-potable Water Line	
Utilities - Existing; Survey & Mapping	e-oe	Existing Power Lines (Aerial), High Voltage Transmission Lines	
Utilities - Existing; Survey & Mapping	e-oyo	Existing Fiber Optics Cable (Overhead)	

Discipline	Name	Description	Sample Image
Utilities - Existing; Survey & Mapping	e-ot	Existing Telephone Line (aerial)	OT - - - - - OT
Utilities - Existing; Survey & Mapping	e-otv	Existing Cable TV Line (Aerial)	OTV - - - - - OTV
Utilities - Existing; Survey & Mapping	e-pet	Existing Oil Line	PET - - - - - PET
Utilities - Existing; Survey & Mapping	e-rd	Existing Roof Drain	RD - - - - - RD
Utilities - Existing; Survey & Mapping	e-s	Existing Force Main, Sanitary Sewer	S - - - - - S
Utilities - Existing; Survey & Mapping	e-stm	Existing Steam Pipe	STM - - - - - STM
Utilities - Existing; Survey & Mapping	e-w	Existing Water Line	W - - - - - W
Utilities -Proposed	be	Proposed Electrical Transmission Conductors Power (Buried)	BE BE BE BE BE
Utilities -Proposed	bfo	Proposed Fiber Optics Cable (Buried)	BFO BFO BFO BFO
Utilities -Proposed	bt	Proposed Telephone (Buried)	BT BT BT BT BT
Utilities -Proposed	btv	Proposed Cable TV Line (Buried)	BTV BTV BTV BTV
Utilities -Proposed	cas	Proposed Casing	CAS CAS CAS CAS
Utilities -Proposed	dt	Telephone Buried Duct	DT DT DT DT DT
Utilities -Proposed	g	Proposed Gas	G G G G G G G G G G
Utilities -Proposed	npw	Proposed Water Line Non Potable, Sanitary Sewer Effluent NPW	NPW NPW NPW NPW
Utilities -Proposed	oe	Proposed Transmission Conductors High voltage Line (Overhead)	OE OE OE OE OE
Utilities -Proposed	ofa	Fiber Optics Cable (Aerial)	OFA OFA OFA OFA

Discipline	Name	Description	Sample Image
Utilities -Proposed	ot	Cable TV Line (Aerial)	
Utilities -Proposed	otv	Proposed Overhead Television	
Utilities -Proposed	pet	Proposed Oil Pipeline, Petroleum	
Utilities -Proposed	rd	Proposed Roof Drain	
Utilities -Proposed	s	Proposed Sanitary Sewer, Force Main	
Utilities -Proposed	stm	Proposed Steam Pipes	
Utilities -Proposed	w	Proposed Water	
	(Border)	Default MicroStation	
	(Center)	Default MicroStation	
	(Dashdot)	Default MicroStation	
	(Dashed)	Default MicroStation	
	(Divide)	Default MicroStation	
	(Dot)	Default MicroStation	
	(Hidden)	Default MicroStation	
	(Phantom)	Default MicroStation	
	{-E-}	Default MicroStation - Electric Line	
	{Arrow}	Default MicroStation	
	{Batten}	Default MicroStation – Batt Insulation	
	{Cable/Tele}	Default MicroStation – Cable/Telephone	
	{Chain Double-Dash}	Default MicroStation	

Discipline	Name	Description	Sample Image
	{Curtain}	Glare Screen & Blinds Curtain Wall	
	{Dashed Triple-Dot}	Default MicroStation	
	{Diamond}	Default MicroStation	
	{Gas Line}	Default MicroStation	
	{Ground Line}	Ground Lines (Existing)	
	{Half Dash}	Default MicroStation	
	{Leader Line}	Default MicroStation	
	{Offset Lines}	Default MicroStation	
	{Origin Line}	Default MicroStation	
	{Rail Road}	Default MicroStation	
	{Tapered Dash}	Default MicroStation	
	{Tree Line}	Default MicroStation	
	{Wide Dash}	Default MicroStation	

### 3.6 PRINTER DRIVER CONFIGURATION FILES

The FDOT CADD Software supplies MicroStation print configuration files to generate prints to scale using the sheet cells (also provided with the FDOT CADD Software) on specific printers. All print configuration files have raster printing enabled. These print configuration files are examples due to various site-specific configurations and the types of printers encountered.

The table below lists the print configuration file names and the type of printer on which it was developed and tested. Each printer has its own footprint, or area on the paper on which it can print. For this reason, if a printer is not listed below and is used to generate prints, the print configuration file may require modification by the user to print to scale.

PRINT CONFIGURATION FILE	PRINTER	DESCRIPTION
36x24.pro	N/A	Controls postscript image/print output
Color.plt		Color 11x17 (Raster Capable) Uses FDOT.TBL pen table and PSCRIPT.PRO prolog file.
Color_FDOTPDF.pltcfg	N/A	Creates a color PDF file. (Raster Capable) Uses FDOT.TBL pen table.
Color_Keysheet.pltcfg	ANY	To be used when printing key sheets containing maps with filled shapes.
FDOT.tbl	N/A	Pen table that also enters username, date time, and sheet border path.
FDOT_GrayExisting.tbl	N/A	Pen table that enters username, date time, sheet border path, and applies gray scale to files named like: TOPO*, UTEX*, and DREX*
FDOTbatchplt.spc	N/A	Batch print specification file customized for FDOT print configuration files. (Only used with old Batch Print dialog). This print configuration file is being replaced with Print Styles in MicroStation V8i)
FDOTPDF.plt	N/A	Creates a .PDF file. (Raster Capable) Uses FDOT.TBL pen table.
FDOTprinter.plt	Windows Printer	Copy of Bentley's PRINTER.PLT with weights and styles set to FDOT standards. Uses FDOT.TBL pen table.
HP1055.plt	HP 1055 CM	Monochrome 36x24 (Raster Capable) Uses 36x24.PRO prolog file.
HP1055C.plt	HP 1055 CM	Color 36x24 (Raster Capable) Uses 36x24.PRO prolog file.
HP5000.plt	HP 5000 GN	Monochrome 11x17 (Raster Capable) Uses FDOT.TBL pen table and HPTTABL1.PRO prolog file.
HP5000Legal.plt	HP 5000 GN	Monochrome 8.5x14 (Raster Capable) Uses FDOT.TBL pen table and HPTLEGAL.PRO prolog file.
HP5000Letter.plt	HP 5000 GN	Monochrome 8.5x11 (Raster Capable) Uses FDOT.TBL pen table and HPTLETTER.PRO prolog file.
hpglrtl.pltcfg	Large Format	Intended for use when printing large format monochrome sheets. (Raster Capable)
hpglrtl_c.pltcfg	Large Format	Intended for use when printing large format color sheets. (Raster Capable)
PostScript.plt	N/A	Creates postscript image file. (Raster Capable) Uses FDOT.TBL pen table and HPTTABL1.PRO prolog file.
Postscript36x24.plt	N/A	Creates postscript image file. (Raster Capable) Uses FDOT.TBL pen table and 36x24.PRO prolog file.
pscript.pro	N/A	Controls postscript image/print output
XeroxN40.plt	XEROX Docuprint N4025	Monochrome 11x17 (Raster Capable) Uses FDOT.TBL pen table and HPTTABL1.PRO prolog file.

### 3.7 CELL LIBRARIES

Cells are frequently used or repeated components of drawings, complex symbols, notations, details, or parts that can be inserted into one or many drawings. Cells are defined and stored in design files called a Cell Libraries. Cell Libraries are exactly like DGN files, but with a .cel extension. These cells have been grouped by disciplinary usage into the standard FDOT Cell Libraries delivered with the FDOT CADD software.

The Standard FDOT Cell Libraries are listed in the following table:

CELL LIBRARY	DESCRIPTION
3D.cel	Various three Dimensional objects
alphabet.cel	Alphabet & Numbers
arrows.cel	Distance & GuidSIGN Arrows
drplan.cel	Drainage Proposed
drplan_ex.cel	Drainage Existing
DrainXS.cel	Drainage Structure Cross Sections
ftpsigns.cel	Florida Traffic Plans Signs
geotech.cel	Geotechnical
its.cel	Intelligent Transportation Systems Signs
Landscape.cel	Landscape
Lighting.cel	Lighting
Mutcd.cel	Manual on Uniform Traffic Control Devices
PavementMarkings.cel	Pavement Markings
Photogrammetry.cel	Photogrammetry
Roadway.cel	Roadway
row.cel	Right of Way
Signalization.cel	Signalization
SignalPoles.cel	Signal Poles
survey.cel	Survey Symbols for Right of Way
syeng.cel	Survey Symbols for Roadway
TollPlaza.cel	Toll Plaza Signs
tplabels.cel	Traffic Plans Labels
TrafficControl.cel	Traffic Control
tff_v8semi-standards.cel	Structures Semi-standards
tff_v8structures.cel	Structures
TypicalSection.cel	Typical Sections
utilities.cel	Utilities
v8structurespatterns.cel	Patterns for Structures
XMSuperSection.cel	Structures for Super sections
xsections.cel	Cross Sections

## 3.8 TEXT

### 3.8.1 FONTS

FDOT delivers a set of True Type Font (.TTF) files to ensure text uniformity between applications supporting TTF fonts and legibility of FDOT CADD drawings. The FDOT CADD Software delivers a set of proportional and uniformed spaced True Type Font files using vertical and slanted characters, the detail of which is reflected in the table below. Specifying specific fonts with specific levels is not a requirement. Fonts should be determined using the guidelines provided in the table below, however, the level and style used are optional and left entirely up to the designer. The MicroStation based zdotfont.rsc and structuresfont.rsc resource files are also delivered with the FDOT CADD software delivery to maintain legibility of legacy files.

MicroStation can utilize fonts contained within MicroStation RSC, AutoCAD SHX, and True Type Font files. MicroStation will read multiple font resource files according to the paths set by the MS\_FONTPATH configuration variable in the selected workspace, and True Types Fonts registered with the Windows operating system. Within a MicroStation design file, font resources are compiled into a list of fonts from all the resource files that are found. The MstnFontConfig.xml file located by the MS\_FONTCONFIGFILE variable determines if duplicate font names are displayed in font selection lists and how to resolve duplicate font names.

#### 3.8.1.1 *FDOT True Type Fonts (TTF)*

A single True Type Font file may contain thousands of characters. The FDOT TTF files contain special characters used by designers that are not normally found in standard publishing fonts (see *the Unicode mapping standard here: <http://www.unicode.org/charts/>*). If the FDOT TTF files are registered with the operating system, the default behavior when installing the FDOT CADD software suite, the fonts may be used in any standard windows program like Word, Excel, or other applications supporting True Type Fonts.

Font	Description
FDOT	Standard slanted proportional spaced font used for most annotations
FDOTBold	Bold version of the FDOT font
FDOTImprint	Chiseled font used mainly within the FDOT sheet border
FDOTImprintBold	Bold version of FDOTImprint font
FDOTMono	Standard mono-spaced font used mainly in tables to keep characters aligned vertically
FDOTMonoBold	Bold version of FDOTMono font
FDOTVert	Non-slanted proportional spaced version of FDOT font used mainly by Right Of Way discipline
FDOTVertBold	Bold version of FDOTVert font used mainly by ROW
FDOTVertMono	Mono-spaced version for FDOTVert font used mainly in tables used mainly by ROW
FDOTVertMonoBold	Bold version of FDOTVertMono font used mainly by ROW

### 3.8.1.2 *MicroStation Fonts*

The fonts within zdotfont.rsc are no longer in use, but must be maintained for backward compatibility purposes. The fonts contained within the zdotfont.rsc file are described later.

FDOT Font resource file - Zdotfont.rsc:

Font	Description
0	(Fast font) Simple font - Upper and Lower Case, Fractions
2	Wide font - Upper Case (used by survey & mapping)
3	Narrow font - Upper and Lower Case (used by survey & mapping)
4	Italics font - Upper and Lower Case (used by survey & mapping)
5	Script font - Upper and Lower Case (used by survey & mapping)
6	Simple Block font - Upper Case (used by survey & mapping)
7	Filled font - Upper Case (used by survey & mapping)
8	Filled font - Lower Case (no numbers - used by survey & mapping)
9	Filled font - Upper and Lower Case (used by survey & mapping)
10	Simple font - Upper and Lower Case, Fractions (used by survey & mapping)
11	Slanted font - Upper and Lower Case (used by survey & mapping)
12	Filled font - Upper Case (no numbers - used by survey & mapping)
13	Outline Block font - Upper Case (used by survey & mapping)
14	Script font - Upper and Lower Case (used by survey & mapping)
15	Old English style font - Upper and Lower Case (used by survey & mapping)
16	Upper Case and Engineering Symbols
17	Arrow and Miscellaneous Symbols
23	Slanted Simple font - Upper and Lower Case, Fractions
25	Standard font - Upper and Lower Case, Fractions (English projects prior to 2000 - No longer used)
26	Greek Symbols
41	Hand lettering font - Upper Case
42	Block outline font - Upper Case for Architecture plans
48	Slanted font (proportional spacing) Upper and Lower Case, fractions (the new English font for Design and Traffic Plans for labels)
49	Slanted font (proportional spacing) Upper and Lower Case, fractions (the new English font for Design and Traffic Plans for notes)
58	Vertical font (proportional spacing) Upper and Lower Case, fractions (used by R/W Engineering and Mapping for labels in English projects)
59	Slanted font (proportional spacing) Upper and Lower Case, fractions (used by R/W Engineering and Mapping for labels in Metric projects)
67	Provided for backward compatibility, no longer used.
68	Slanted font (proportional spacing) Upper and Lower Case, fractions (used by Structures for labels)
69	Slanted font (proportional spacing) Upper and Lower Case, fractions (used by Structures for notes)

Font	Description
70	Standard font - Upper and Lower Case, fractions (used in the Roadway and Traffic Design Standards)
71	Slanted font - Upper and Lower Case, fractions
72	Simple font - Upper and Lower Case, fractions
77	Filled font - Upper and Lower Case used for the titles in Sheet borders
78	Slanted font (proportional spacing) Upper and Lower Case (the Metric font for Design and Traffic Plans for labels)
79	Slanted font (proportional spacing) Upper and Lower Case (the Metric font for Design and Traffic Plans for notes)
80	True Type font Arial
81	True Type font Arial Italics
82	True Type font Courier
83	True Type font Courier Italics
84	True Type font Engravers Gothic
85	True Type font Photina
86	True Type font CG Times
87	True Type font Swis721
88	True Type font Times New Roman
89	True Type font Times New Roman Italics
90	True Type font Times New Roman Bold Italics
91	True Type font Garait
92	True Type font Garamond
93	True Type font Garamond Bold
94	True Type Greek Alphabet and Symbol
95	True Type Wingding
96	True Type WPMathA
97	True Type WPMathB
98	Character symbol text from cross section files
99	Block filled fonts - Upper and Lower Case for signs
100	Symbol arrows
101	Symbol fonts for cross section files
102	Topography symbol fonts (used by Surveying and Mapping)
126	Topography symbol fonts (used by Surveying and Mapping)

