CHAPTER 18 - STRUCTURES STANDARDS 18-2

18.1 GENERAL.....18-2
18.2 STANDARD FILE NAMES.....18-2
18.3 RESOURCE FILES 18-13
18.4 ENGINEERING DATA.....18-13
18.5 PROFESSIONALS' ELECTRONIC DATA DELIVERY SYSTEM (PEDDS) 18-14
18.6 SYMBOLOGY STANDARDS 18-15
18.6.1 Borders, Scales, Text Sizes and Weights..... 18-22
18.6.2 Colors 18-23
18.6.3 Special Symbols 18-24
18.6.4 Dimension Settings 18-24
18.7 PROJECT PACKAGE – ELECTRONIC SUBMITTAL 18-24
18.8 QUALITY CONTROL 18-24
18.9 USE OF NON-STRUCTURES REFERENCE FILES 18-25

Chapter 18 - STRUCTURES STANDARDS

CADD Production Criteria Handbook

18.1 GENERAL

The use and generation of Computer Aided Design and Drafting (CADD) files by Structures shall be in accordance with the general standards for all disciplines, unless superseded by instructions contained within this chapter.

The following table defines the resource files and features used for FDOT2002_v7, FDOT2002_v8, and FDOT2008 Workspaces.

	FDOT2008	**FDOT2002_v8**	**FDOT2002_v7**
File Format	V8	V8	V7
QC Rules	SPST04.rul	SPST02.rul	SPST02.rul
Named Levels	Yes	No	No
Text/Dimensions Styles	Yes	No	No
Annotation Scale	Yes	No	No
Font Numbers	168/169	68/69	68/69
Level Library	Yes	No	No
Models Allowed	Yes	No	No
Seed File	StructuresSeed.dgn	Steng2d.dgn	Steng2dv7.dgn
Main Cell Library	V8Structures.cel	Steng.cel	Steng.cel
Color Table	Color.tbl	Color.tbl	Color.tbl

18.2 STANDARD FILE NAMES

Florida Department of Transportation (FDOT) utilizes standard naming conventions for all of its files. Some of the automation implemented in various tools provided by FDOT depends on naming conventions being met. More importantly, the naming convention confers information to the downstream customer of the data.

Standard file names for Bridges should follow this format: ***B#AAAA…##.ext***

- B# = Bridge Plans Sequence Number,
- AAAA = abbreviated file description,
- ## =Sequence number.

Example: First EndBent sheet of Bridge 1 in a plan set would be named ***B1EndBent01.dgn***

Note: Please see Chapter 4 of the Structures Detailing Manual for more information.

Files created by the Structures Office for other disciplines shall remain in the **struct** discipline folder, the sheet numbers will be prefixed with the target disciplines sheet prefixes. See Chapter 4 of the Structures Detailing Manual (Volume 2 of the Structures Manual) for complete details on Electronic Delivery Compliant sheet numbering instructions.

Standard drawings file names shall remain as delivered by the Structures Design Office. Use the Structures Menu option Create File application to ensure files are named to FDOT Standards. The table on the following pages lists file names for reference purposes.

Files containing Data Table cells (previously semi-standards) should be named B#DataTable##.dgn and should be placed in the plans with the corresponding component detail sheet. Files marked as (Geotech) are listed to show the order of placement within the Structures plans component only. All Geotech files should be located in the Geotech discipline folder and should follow Geotech standards listed in Chapter 20.

Existing Bridge plan sheets will be in Portable Document Format (PDF) and manually inserted into the Electronic Index using sheet numbers as provided in the table below. Existing Bridge Plans should not be handled in DGN format.

The following table defines the Structures File Name Standards in regards to FDOT Projects with the understanding that each file name will include sequence numbering. The Sheet Order is the default order, but may be modified to suit project specific requirements.

Structures Plans Naming Convention and Numbering Convention					
Sheet Order	**File Name**	**Suggested Sheet Title**	**Sheet Prefix**	**Drawing Prefix ***	**As-Built Plans System - Structure Type**
* - Optional ** - Lead or Component Key Sheet					
1	B#KeySheet.dgn	Bridge Key Sheet **	B-##	*	Key Sheet
2	B#Index.dgn	Index of Sheets	B-##	*	Gen. Notes, Index of Bridge Sheets, Pay Item Notes
3	B#TRNSPORTStructures.dgn (For Structures only projects)	Summary of Pay Items Sheet	B-##, …	*	Gen. Notes, Index of Bridge Sheets, Pay Item Notes
4	B#GeneralNotes.dgn	General Notes	B#-##	*	Gen. Notes, Index of Bridge Sheets, Pay Item Notes
5	B#PlanElev.dgn	Plan and Elevation	B1-##,B2-##, …	*	Plan and Elevation
6	B#VertCurveSuperEL.dgn	Profile Grade & Superelevation Transition	B1-##,B2-##, …	*	Plan and Elevation
7	B#BridgeHydro.dgn	Bridge Hydraulic Recommendations	B1-##,B2-##, …	*	Bridge Hydraulic Recommendation Sheet
8	B#ConstNotes.dgn	Construction Notes	B1-##,B2-##, …	*	Miscellaneous Details
9	B#ConstDet.dgn	Construction Details	B1-##,B2-##, …	*	Miscellaneous Details
10	B#ConstSeq.dgn	Construction Sequence	B1-##,B2-##, …	*	Miscellaneous Details
11	B#RemoveExist.dgn	Removal of Existing Structures	B1-##,B2-##, …	*	Miscellaneous Details
12	B#BridgeSection.dgn	Section Through Bridge	B1-##,B2-##, …	*	Miscellaneous Details
13	B#CPTGeo.dgn (Geotech)	CPT Soundings	B1-##,B2-##, …	*	Miscellaneous Details
14	B#Boring.dgn (Geotech)	Foundation Investigation (Borings)	B1-##,B2-##, …	*	Report of Core Borings
15	B#FoundLay.dgn	Foundation Layout	B1-##,B2-##, …	*	Foundation Layout
16	B#PileData.dgn	Pile Data Table	B1-##,B2-##, …	*	Foundation Layout
17	B#PileDet.dgn	Pile Details	B1-##,B2-##, …	*	Foundation Layout
18	B#DrillShaft.dgn	Drilled Shaft Data Table	B1-##,B2-##, …	*	Foundation Layout
19	B#DrillShaftDeT.dgn	Drilled Shaft Details	B1-##,B2-##, …	*	Intermediate Bents or Piers
20	B#Footing.dgn	Footing	B1-##,B2-##, …	*	Intermediate Bents or Piers
21	B#FootingDet.dgn	Footing Details	B1-##,B2-##, …	*	Intermediate Bents or Piers
22	B#EndBent.dgn	End Bent	B1-##,B2-##, …	*	End Bents Details
23	B#EndBentDet.dgn	End Bent Details	B1-##,B2-##, …	*	End Bents Details
24	B#IntBent.dgn	Intermediate Bent	B1-##,B2-##, …	*	Intermediate Bents or Piers

Structures Plans Naming Convention and Numbering Convention					
Sheet Order	**File Name**	**Suggested Sheet Title**	**Sheet Prefix**	**Drawing Prefix ***	**As-Built Plans System - Structure Type**
25	B#IntBentDet.dgn	Intermediate Bent Details	B1-##,B2-##, …	*	Intermediate Bents or Piers
26	B#Pier.dgn	Pier	B1-##,B2-##, …	*	Intermediate Bents or Piers
27	B#PierDet.dgn	Pier Details	B1-##,B2-##, …	*	Intermediate Bents or Piers
28	B#BeamLay.dgn	Beam Layout	B1-##,B2-##, …	*	Superstructure Sheets
29	B#BeamLayAASHTO.dgn	AASHTO Beam Layout	B1-##,B2-##, …	*	Superstructure Sheets
30	B#BeamLayBulbT.dgn	Bulb-T Beam Layout	B1-##,B2-##, …	*	Superstructure Sheets
31	B#BeamLayFub.dgn	Florida U-Beam Layout	B1-##,B2-##, …	*	Superstructure Sheets
32	B#BeamLayInvT.dgn	Inverted T Beam Layout	B1-##,B2-##, …	*	Superstructure Sheets
33	B#BeamLayT.dgn	T Beam Layout	B1-##,B2-##, …	*	Superstructure Sheets
34	B#PrestSlab.dgn	Prestressed Slab Units	B1-##,B2-##, …	*	Superstructure Sheets
35	B#TypicalSection.dgn	Typical Section Through Bridge Deck	B1-##,B2-##, …	*	Superstructure Sheets
36	B#FinishGrEL.dgn	Finish Grade Elevations	B1-##,B2-##, …	*	Superstructure Sheets
37	B#Camber.dgn	Camber Diagrams	B1-##,B2-##, …	*	Superstructure Sheets
38	B#FramingPlan.dgn	Framing Plan	B1-##,B2-##, …	*	Superstructure Sheets
39	B#Superst.dgn	Superstructure	B1-##,B2-##, …	*	Superstructure Sheets
40	B#SuperstDet.dgn	Superstructure Details	B1-##,B2-##, …	*	Superstructure Sheets
41	B#ClosureJoint.dgn	Closure Joint Details	B1-##,B2-##, …	*	Beam Sheets
42	B#CrossFrameDet.dgn	Cross Frame Details	B1-##,B2-##, …	*	Beam Sheets
43	B#DiaphragmDet.dgn	Diaphragm Details	B1-##,B2-##, …	*	Beam Sheets
44	B#ErectSeq.dgn	Erection Sequence	B1-##,B2-##, …	*	Beam Sheets
45	B#ErectProced.dgn	Erection Procedure for Launching Girder	B1-##,B2-##, …	*	Beam Sheets
46	B#FieldSplice.dgn	Bolted Field Splice	B1-##,B2-##, …	*	Beam Sheets
47	B#FieldSpliceDet.dgn	Bolted Field Splice Details	B1-##,B2-##, …	*	Beam Sheets
48	B#FloorBeam.dgn	Floor Beams	B1-##,B2-##, …	*	Beam Sheets
49	B#SteelGirder.dgn	Steel Girder	B1-##,B2-##, …	*	Beam Sheets
50	B#SteelDet.dgn	Steel Girder Details	B1-##,B2-##, …	*	Beam Sheets
51	B#Stiffener.dgn	Stiffener Details	B1-##,B2-##, …	*	Beam Sheets
52	B#BearingDet.dgn	Bearing Details	B1-##,B2-##, …	*	Superstructure Sheets
53	B#PierPTDet.dgn	Precast Pier Post-Tensioning	B1-##,B2-##, …	*	Superstructure Sheets

Structures Plans Naming Convention and Numbering Convention					
Sheet Order	**File Name**	**Suggested Sheet Title**	**Sheet Prefix**	**Drawing Prefix ***	**As-Built Plans System - Structure Type**
		Details			
54	B#SegDimCap.dgn	Pier Cap Segment Dimensions	B1-##,B2-##, …	*	Superstructure Sheets
55	B#TransPTPier.dgn	Pier Transverse Post-Tensioning	B1-##,B2-##, …	*	Superstructure Sheets
56	B#SegLayout.dgn	Segment Layout	B1-##,B2-##, …	*	Superstructure Sheets
57	B#JointCoord.dgn	Segment Joint Coordinates	B1-##,B2-##, …	*	Superstructure Sheets
58	B#SegDimBox.dgn	Segment Dimensions	B1-##,B2-##, …	*	Superstructure Sheets
59	B#ReinfSeg.dgn	Segment Reinforcing	B1-##,B2-##, …	*	Superstructure Sheets
60	B#SegDimDev.dgn	Deviation Segment Dimensions	B1-##,B2-##, …	*	Superstructure Sheets
61	B#ReinfDevSeg.dgn	Deviation Segment Reinforcing	B1-##,B2-##, …	*	Superstructure Sheets
62	B#SegDimPier.dgn	Pier Segment Dimensions	B1-##,B2-##, …	*	Superstructure Sheets
63	B#ReinfPierSeg.dgn	Pier Segment Reinforcing	B1-##,B2-##, …	*	Superstructure Sheets
64	B#SegDimAbut.dgn	Abutment Segment Dimensions	B1-##,B2-##, …	*	Superstructure Sheets
65	B#ReinfAbutSeg.dgn	Abutment Segment Reinforcing	B1-##,B2-##, …	*	Superstructure Sheets
66	B#ReinfClosureSeg.dgn	Closure Segment Reinforcing	B1-##,B2-##, …	*	Superstructure Sheets
67	B#BulkheadSeg.dgn	Bulkhead Segment Details	B1-##, B2-##, …	*	Superstructure Sheets
68	B#LongPT.dgn	Longitudinal Post-Tensioning Layout	B1-##,B2-##, …	*	Superstructure Sheets
69	B#ContinuityTend.dgn	Continuity Tendon Layout	B1-##,B2-##, …	*	Superstructure Sheets
70	B#FuturePTLay.dgn	Future Post-Tensioning Layout	B1-##,B2-##, …	*	Superstructure Sheets
71	B#PTDet.dgn	Post-Tensioning Details	B1-##,B2-##, …	*	Superstructure Sheets
72	B#PTQuantities.dgn	Post-Tensioning Quantities	B1-##,B2-##, …	*	Superstructure Sheets
73	B#TendonCurveDet.dgn	Tendon Curvature Details	B1-##,B2-##, …	*	Superstructure Sheets
74	B#TransPTAbut.dgn	Abutment Segment Transverse Post-Tensioning	B1-##,B2-##, …	*	Superstructure Sheets
75	B#TransTendonDet.dgn	Transverse Post-Tensioning Details	B1-##,B2-##, …	*	Superstructure Sheets
76	B#SegConstSeq.dgn	Construction Sequence (PT)	B1-##,B2-##, …	*	Superstructure Sheets
77	B#BearingPads.dgn	Neoprene Bearing Pads	B1-##,B2-##, …	*	Superstructure Sheets
78	B#BearingPlates.dgn	Beveled Bearing Plates	B1-##,B2-##, …	*	Superstructure Sheets
79	B#PotBearing.dgn	Pot Bearing Details	B1-##,B2-##, …	*	Superstructure Sheets
80	B#JackingDet.dgn	Jacking Details	B1-##,B2-##, …	*	Superstructure Sheets

Structures Plans Naming Convention and Numbering Convention					
Sheet Order	**File Name**	**Suggested Sheet Title**	**Sheet Prefix**	**Drawing Prefix ***	**As-Built Plans System - Structure Type**
81	B#ExpJointDet.dgn	Expansion Joint Details	B1-##,B2-##, …	*	Superstructure Sheets
82	B#SlidingPlate.dgn	Traffic / Pedestrian Railing Sliding Plate Assembly	B1-##,B2-##, …	*	Superstructure Sheets
83	B#ApproachSlab.dgn	Approach Slab	B1-##,B2-##, …	*	Miscellaneous Details
84	B#ConduitDet.dgn	Utility Conduit Details	B1-##,B2-##, …	*	Miscellaneous Details
85	B#JunctionBox.dgn	Junction Box	B1-##,B2-##, …	*	Miscellaneous Details
86	B#DrainDet.dgn	Drain Details	B1-##,B2-##, …	*	Miscellaneous Details
87	B#LadderDet.dgn	Ladder Details	B1-##,B2-##, …	*	Miscellaneous Details
88	B#MiscDet.dgn	Miscellaneous Details	B1-##,B2-##, …	*	Miscellaneous Details
89	B#SidewalkDet.dgn	Sidewalk Details	B1-##,B2-##, …	*	Miscellaneous Details
90	B#SurfaceFinish.dgn	Surface Finish Details	B1-##,B2-##, …	*	Miscellaneous Details
91	B#FenderSystem.dgn	Fender System	B1-##,B2-##, …	*	Miscellaneous Details
92	B#FenderDet.dgn	Fender Details	B1-##,B2-##, …	*	Miscellaneous Details
93	B#RiprapRubble.dgn	Rubble Riprap	B1-##,B2-##, …	*	Miscellaneous Details
94	B#SlopeProtectionConcrete.dgn	Concrete Slope Protection	B1-##,B2-##, …	*	Miscellaneous Details
95	B#ScourPlan.dgn	Plan View of Scour Protection	B1-##,B2-##, …	SP-##	Miscellaneous Details
96	B#BotContourMap.dgn	Bottom Contour Map	B1-##,B2-##, …	SP-##	Miscellaneous Details
97	B#ScourProf.dgn	Profile of Scour Protection	B1-##,B2-##, …	SP-##	Miscellaneous Details
98	B#ScourDetail.dgn	Scour Protection Details	B1-##,B2-##, …	SP-##	Miscellaneous Details
99	B#RiprapSand.dgn	Sand Cement Riprap	B1-##,B2-##, …	SP-##	Miscellaneous Details
100	B#MiscStrTempBridge.dgn	Temporary Bridge Details	B1-##,B2-##, …	*	Miscellaneous Details
101	B#AccessOpen.dgn	Access Opening	B1-##,B2-##, …	*	Miscellaneous Details
102	B#MaintLight.dgn	Maintenance Lighting Plan	B1-##,B2-##, …	*	Miscellaneous Details
103	B#MaintLightDet.dgn	Maintenance Lighting Details	B1-##,B2-##, …	*	Miscellaneous Details
104	B#Handrail.dgn	Handrail	B1-##,B2-##, …	*	Miscellaneous Details
105	B#CompTestSetup.dgn	Compression Test Setup	B1-##,B2-##, …	LT-##	Miscellaneous Details
106	B#DrillShaftLT123.dgn	Drilled Shaft Load Test Sites 1, 2 & 3	B1-##,B2-##, …	LT-##	Miscellaneous Details
107	B#LTSumDrillShaft.dgn	Drilled Shaft Load Test Program Summary	B1-##,B2-##, …	LT-##	Miscellaneous Details
108	B#InstruDet.dgn	Instrumentation Details	B1-##,B2-##, …	LT-##	Miscellaneous Details

Structures Plans Naming Convention and Numbering Convention					
Sheet Order	**File Name**	**Suggested Sheet Title**	**Sheet Prefix**	**Drawing Prefix ***	**As-Built Plans System - Structure Type**
109	B#LateralLT.dgn	Lateral Load Test Details	B1-##,B2-##, …	LT-##	Miscellaneous Details
110	B#LTFrame.dgn	Load Test Frame Configuration	B1-##,B2-##, …	LT-##	Miscellaneous Details
111	B#LTBraceDet.dgn	Load Test Reaction Girder Bracing Details	B1-##,B2-##, …	LT-##	Miscellaneous Details
112	B#LTGirderDet.dgn	Load Test Reaction Girder Details	B1-##,B2-##, …	LT-##	Miscellaneous Details
113	B#OsterbergCell.dgn	Osterberg Cell 3000 ton Load Testing Device	B1-##,B2-##, …	LT-##	Miscellaneous Details
114	B#LTSumPile.dgn	Pile Load Test Program Summary	B1-##,B2-##, …	LT-##	Miscellaneous Details
115	B#PlatformDet.dgn	Service Platform Deck and Frame Details	B1-##,B2-##, …	LT-##	Miscellaneous Details
116	B#StatnamicLT.dgn	Statnamic Load Test Details	B1-##,B2-##, …	LT-##	Miscellaneous Details
117	B#RebarList.dgn	Reinforcing Bar List	B1-##,B2-##, …		Reinforcing Bar List
118	B#BP-Notes.dgn	Bascule Pier Notes	B1-##,B2-##, …	BP-##	Movable Bridge - Structural
119	B#BP-Plan.dgn	Bascule Pier Plan	B1-##,B2-##, …	BP-##	Movable Bridge - Structural
120	B#BP-Elevations.dgn	Bascule Pier Elevations	B1-##,B2-##, …	BP-##	Movable Bridge - Structural
121	B#BP-Sections.dgn	Bascule Pier Sections	B1-##,B2-##, …	BP-##	Movable Bridge - Structural
122	B#BP-StlFraming.dgn	Bascule Pier Steel Framing	B1-##,B2-##, …	BP-##	Movable Bridge - Structural
123	B#BP-Details.dgn	Bascule Pier Details	B1-##,B2-##, …	BP-##	Movable Bridge - Structural
124	B#BP-Misc.dgn	Bascule Pier Miscellaneous	B1-##,B2-##, …	BP-##	Movable Bridge - Structural
125	B#BP-Quantities.dgn	Bascule Pier Quantities	B1-##,B2-##, …	BP-##	Movable Bridge - Structural
126	B#BP-Reinforcing.dgn	Bascule Pier Reinforcing	B1-##,B2-##, …	BP-##	Movable Bridge - Structural
127	B#BP-Barlist.dgn	Bascule Pier Bar Lists	B1-##,B2-##, …	BP-##	Movable Bridge - Structural
128	B#RP-Notes.dgn	Rest Pier Notes	B1-##,B2-##, …	RP-##	Movable Bridge - Structural
129	B#RP-Plan.dgn	Rest Pier Plan	B1-##,B2-##, …	RP-##	Movable Bridge - Structural
130	B#RP-Elevations.dgn	Rest Pier Elevations	B1-##,B2-##, …	RP-##	Movable Bridge - Structural
131	B#RP-Sections.dgn	Rest Pier Sections	B1-##,B2-##, …	RP-##	Movable Bridge - Structural
132	B#RP-StlFraming.dgn	Rest Pier Steel Framing	B1-##,B2-##, …	RP-##	Movable Bridge - Structural
133	B#RP-Details.dgn	Rest Pier Details	B1-##,B2-##, …	RP-##	Movable Bridge - Structural
134	B#RP-Misc.dgn	Rest Pier Miscellaneous	B1-##,B2-##, …	RP-##	Movable Bridge - Structural

Structures Plans Naming Convention and Numbering Convention					
Sheet Order	**File Name**	**Suggested Sheet Title**	**Sheet Prefix**	**Drawing Prefix ***	**As-Built Plans System - Structure Type**
135	B#RP-Quantities.dgn	Rest Pier Quantities	B1-##,B2-##, …	RP-##	Movable Bridge - Structural
136	B#RP-Reinforcing.dgn	Rest Pier Reinforcing	B1-##,B2-##, …	RP-##	Movable Bridge - Structural
137	B#RP-Barlist.dgn	Rest Pier Bar Lists	B1-##,B2-##, …	RP-##	Movable Bridge - Structural
138	B#BL-Notes.dgn	Bascule Leaf Notes	B1-##,B2-##, …	BL-##	Movable Bridge - Structural
139	B#BL-SpanLockDet.dgn	Bascule Leaf Span Lock Details	B1-##,B2-##, …	BL-##	Movable Bridge - Structural
140	B#BL-SpanLockPlan.dgn	Bascule Leaf Span Lock Plan	B1-##,B2-##, …	BL-##	Movable Bridge - Structural
141	B#BL-Sections.dgn	Bascule Leaf Sections	B1-##,B2-##, …	BL-##	Movable Bridge - Structural
142	B#BL-ClearDiagram.dgn	Bascule Leaf Clearance Diagram	B1-##,B2-##, …	BL-##	Movable Bridge - Structural
143	B#BL-ForceDiagram.dgn	Bascule Leaf Force Diagram	B1-##,B2-##, …	BL-##	Movable Bridge - Structural
144	B#BL-FramePlan.dgn	Bascule Leaf Framing Plan	B1-##,B2-##, …	BL-##	Movable Bridge - Structural
145	B#BL-Girders.dgn	Bascule Leaf Main Girders	B1-##,B2-##, …	BL-##	Movable Bridge - Structural
146	B#BL-FloorBeams.dgn	Bascule Leaf Floor Beams	B1-##,B2-##, …	BL-##	Movable Bridge - Structural
147	B#BL-Strings.dgn	Bascule Leaf Stringers	B1-##,B2-##, …	BL-##	Movable Bridge - Structural
148	B#BL-Bracing.dgn	Bascule Leaf Bracing	B1-##,B2-##, …	BL-##	Movable Bridge - Structural
149	B#BL-CantBracket.dgn	Bascule Leaf Cantilever Bracket	B1-##,B2-##, …	BL-##	Movable Bridge - Structural
150	B#BL-TrunGirder.dgn	Bascule Leaf Trunnion Girder	B1-##,B2-##, …	BL-##	Movable Bridge - Structural
151	B#BL-CounterWeight.dgn	Bascule Leaf Counter Weight	B1-##,B2-##, …	BL-##	Movable Bridge - Structural
152	B#BL-CntrWghtGirder.dgn	Bascule Leaf Counter Weight Girder	B1-##,B2-##, …	BL-##	Movable Bridge - Structural
153	B#BL-Deck.dgn	Bascule Leaf Deck	B1-##,B2-##, …	BL-##	Movable Bridge - Structural
154	B#BL-Details.dgn	Bascule Leaf Misc. Details	B1-##,B2-##, …	BL-##	Movable Bridge - Structural
155	B#BL-JointAssembly.dgn	Bascule Leaf Joint Assemblies	B1-##,B2-##, …	BL-##	Movable Bridge - Structural
156	B#BL-SideWalk.dgn	Bascule Leaf Sidewalk	B1-##,B2-##, …	BL-##	Movable Bridge - Structural
157	B#BL-TraffRail.dgn	Bascule Leaf Traffic Railing	B1-##,B2-##, …	BL-##	Movable Bridge - Structural
158	B#BL-PedRail.dgn	Bascule Leaf Pedestrian Railing	B1-##,B2-##, …	BL-##	Movable Bridge - Structural
159	B#BL-AccPlatforms.dgn	Bascule Leaf Access Platforms	B1-##,B2-##, …	BL-##	Movable Bridge - Structural
160	B#MechNotes.dgn	Mechanical Notes	B1-##,B2-##, …	BM-##	Movable Bridge - Mechanical

Structures Plans Naming Convention and Numbering Convention					
Sheet Order	**File Name**	**Suggested Sheet Title**	**Sheet Prefix**	**Drawing Prefix ***	**As-Built Plans System - Structure Type**
161	B#MechPlan.dgn	Mechanical Plan	B1-##,B2-##, …	BM-##	Movable Bridge - Mechanical
162	B#MechElev.dgn	Mechanical Elevation	B1-##,B2-##, …	BM-##	Movable Bridge - Mechanical
163	B#MechDet.dgn	Mechanical Details	B1-##,B2-##, …	BM-##	Movable Bridge - Mechanical
164	B#MechSect.dgn	Mechanical Sections	B1-##,B2-##, …	BM-##	Movable Bridge - Mechanical
165	B#MiscMechDet.dgn	Miscellaneous Mechanical Details	B1-##,B2-##, …	BM-##	Movable Bridge - Mechanical
166	B#PinionDet.dgn	Pinion Details	B1-##,B2-##, …	BM-##	Movable Bridge - Mechanical
167	B#TrunAssem.dgn	Trunnion Assembly	B1-##,B2-##, …	BM-##	Movable Bridge - Mechanical
168	B#TrunDet.dgn	Trunnion Details	B1-##,B2-##, …	BM-##	Movable Bridge - Mechanical
169	B#DriveAssem.dgn	Drive Assembly	B1-##,B2-##, …	BM-##	Movable Bridge - Mechanical
170	B#GateAssem.dgn	Gate Assembly	B1-##,B2-##, …	BM-##	Movable Bridge - Mechanical
171	B#HydraNote.dgn	Hydraulic Notes	B1-##,B2-##, …	BM-##	Movable Bridge - Mechanical
172	B#HydraCylDet.dgn	Hydraulic Cylinder Details	B1-##,B2-##, …	BM-##	Movable Bridge - Mechanical
173	B#HydraSchem.dgn	Hydraulic Schematic	B1-##,B2-##, …	BM-##	Movable Bridge - Mechanical
174	B#ElecNotes.dgn	Electric Notes	B1-##,B2-##, …	BE-##	Movable Bridge - Electrical
175	B#CCTVDet.dgn	CCTV Details	B1-##,B2-##, …	BE-##	Movable Bridge - Electrical
176	B#CommLayout.dgn	Communications Layout	B1-##,B2-##, …	BE-##	Movable Bridge - Electrical
177	B#ConduitRiser.dgn	Conduit Riser	B1-##,B2-##, …	BE-##	Movable Bridge - Electrical
178	B#ControlDesk.dgn	Control Desk	B1-##,B2-##, …	BE-##	Movable Bridge - Electrical
179	B#DriveDiag.dgn	Drive Diagram	B1-##,B2-##, …	BE-##	Movable Bridge - Electrical
180	B#ElecFloorplan.dgn	Electrical Floor Plan	B1-##,B2-##, …	BE-##	Movable Bridge - Electrical
181	B#GeneratorDet.dgn	Generator Details	B1-##,B2-##, …	BE-##	Movable Bridge - Electrical
182	B#Grounding.dgn	Grounding and Lighting Protection	B1-##,B2-##, …	BE-##	Movable Bridge - Electrical
183	B#IOpoints.dgn	Input Output Points, PLC	B1-##,B2-##, …	BE-##	Movable Bridge - Electrical
184	B#LadderLogic.dgn	Ladder Logic, PLC	B1-##,B2-##, …	BE-##	Movable Bridge - Electrical
185	B#OpSeq.dgn	Operating Sequence Flowchart	B1-##,B2-##, …	BE-##	Movable Bridge - Electrical
186	B#PanelBoardSch.dgn	Panel Board Schedule	B1-##,B2-##, …	BE-##	Movable Bridge - Electrical

Structures Plans Naming Convention and Numbering Convention					
Sheet Order	**File Name**	**Suggested Sheet Title**	**Sheet Prefix**	**Drawing Prefix ***	**As-Built Plans System - Structure Type**
187	B#SingleLine.dgn	Single Line Diagram	B1-##,B2-##, …	BE-##	Movable Bridge - Electrical
188	B#SubCableDet.dgn	Submarine Cable Details	B1-##,B2-##, …	BE-##	Movable Bridge - Electrical
189	B#SurgeSup.dgn	Surge Suppression Details	B1-##,B2-##, …	BE-##	Movable Bridge - Electrical
190	B#ElecMachLayout.dgn	Electrical Machinery Layout	B1-##,B2-##, …	BE-##	Movable Bridge - Electrical
191	B#MiscElecDet.dgn	Miscellaneous Electrical Details	B1-##,B2-##, …	BE-##	Movable Bridge - Electrical
192	B#Legend.dgn	Symbol Legend	B1-##,B2-##, …	BE-##	Movable Bridge - Electrical
193	B#MCC.dgn	Motor Control Center	B1-##,B2-##, …	BE-##	Movable Bridge - Electrical
194	B#ThreeLineDiag.dgn	Three Line Diagram	B1-##,B2-##, …	BE-##	Movable Bridge - Electrical
195	B#TrafCtrlDet.dgn	Traffic Control Details	B1-##,B2-##, …	BE-##	Movable Bridge - Electrical
196	B#NaviLightDet.dgn	Navigation Lighting System Details	B1-##,B2-##, …	BE-##	Miscellaneous Details
197	B#TowerDet.dgn	Control Tower Details	B1-##,B2-##, …	BT-##	Miscellaneous Details
198	B#TowerLighting.dgn	Control Tower Lighting	B1-##,B2-##, …	BT-##	Miscellaneous Details
199	B#TowerLayout.dgn	Tower, Lighting and Pier Layout	B1-##,B2-##, …	BT-##	Miscellaneous Details
200	B#Plumbing.dgn	Plumbing	B1-##,B2-##, …	BT-##	Miscellaneous Details
201	B#WorkID.dgn	Work Identification Sheet	B1-##,B2-##, …	BT-##	Miscellaneous Details
202	B#SitePlan.dgn	Site Plan for Rest Area	B1-##,B2-##, …	BT-##	Miscellaneous Details
203	B#CatwalkDet.dgn	Catwalk Details	B1-##,B2-##, …	BT-##	Miscellaneous Details
204	B#WallControl.dgn	Wall Control Drawing	BW-##	W1-##,W2-##, …	Retaining Wall Sheets
205	B#Bulkhead.dgn	Bulkhead	BW-##	W1-##,W2-##, …	Retaining Wall Sheets
206	B#BulkheadDet.dgn	Bulkhead Details	BW-##	W1-##,W2-##, …	Retaining Wall Sheets
207	B#CrashWall.dgn	Crash Wall	BW-##	W1-##,W2-##, …	Retaining Wall Sheets
208	B#SheetPileWallAnch.dgn	Anchored Sheet Pile Wall	BW-##	W1-##,W2-##, …	Retaining Wall Sheets
209	B#SheetPileWallCant.dgn	Cantilever Sheet Pile Wall	BW-##	W1-##,W2-##, …	Retaining Wall Sheets
210	B#MSEwall.dgn	MSE Wall	BW-##	W1-##,W2-##, …	Retaining Wall Sheets
211	B#RetainingWall.dgn	Retaining Wall	BW-##	W1-##,W2-##, …	Retaining Wall Sheets
212	B#SheetPileWall.dgn	Sheet Pile Retaining Wall	BW-##	W1-##,W2-##, …	Retaining Wall Sheets
213	B#SheetPileWallST.dgn	Steel Sheet Pile Retaining Wall	BW-##	W1-##,W2-##, …	Retaining Wall Sheets

Structures Plans Naming Convention and Numbering Convention					
Sheet Order	**File Name**	**Suggested Sheet Title**	**Sheet Prefix**	**Drawing Prefix ***	**As-Built Plans System - Structure Type**
214	B#SheetPileWallConc.dgn	Concrete Sheet Pile Retaining Wall	BW-##	W1-##,W2-##, …	Retaining Wall Sheets
215	B#SoundBarrier.dgn	Sound Barriers	BW#-## / none	SB1-##, SB2-##, ...	
216/Rdwy	B#MiscStr.dgn B#MiscStrClvt.dgn B#MiscStrMastarm.dgn B#MiscStrHighMast.dgn B#MiscStrOHSign.dgn	Varies Culvert Mastarms High Mast Light Poles Overhead Sign Structures	B#-## / none		
217/Rdwy	B#ExistingPlans.**pdf**	Existing Bridge Plans	BX#-##	BX-##	Existing Bridge Sheets
218	B#DataTableLoadRating.dgn	Load Rating Charts	B1-##,B2-##, …	*	Load Rating Charts
Varies	B#DataTable##.dgn	(Design Standards) Data Tables	B#-##	*	(Varies – See Section 18.2)
	B#Preliminary.dgn	Preliminary Plan and Elevation			
	StrBorder.dgn	Referencing Structures Borders			

18.3 RESOURCE FILES

Files created for the Structures discipline shall use the resource files included with the FDOT CADD Software package. All files created for Structures Plans sheets shall be created from the supplied Structures seed files.

The Structures Seed file for the FDOT2008 workspace differs from other standard seed files in both working units and unit labeling. The structures seed file also contains definitions for both Text & Dimension styles.

Note: In V8 format files, working units DO NOT define design plane size, only the current method of measurement. Therefore, the design plane is the same size for all seed files.

The Structures Seed files (steng2dv7.dgn & steng2d.dgn) for FDOT2002_v7 & FDOT2002_v8 workspaces differ from other standard seed files in design plane size, working units and unit labeling.

18.4 ENGINEERING DATA

Engineering Data to be delivered with each project shall be located in the **…\eng_data** directory and include:

- ASCII files containing Q/C reports
- PostScript files of all Structures Plan sheets
- All computer input and output files used in the design (in native and PostScript file formats)
- All supplemental design hand calculations (scanned and saved in PDF or TIFF, and PostScript file formats)

Create separate sub-directories in the **...struct** directory for each bridge and/or structure in the project. Name these sub-directories using the sheet prefix and bridge numbers (when applicable). Locate the MicroStation design files for each bridge under the named sub-directory and create an **...eng_data** sub-directory in each, for the Engineering Data (e.g. **...struct\B\eng_data**, **...struct\B1-######\eng_data**, etc.).

Plot the MicroStation PostScript files from the MicroStation design files. Print all other PostScript files from the design and/or analysis programs. If the project requires electronic plans submittal signed & sealed, all the PostScript files located in the **…\eng_data** directory shall be electronically signed & sealed.

Computer input and output files include files used for all aspects of bridge, retaining wall, and/or miscellaneous structures design. These include, but are not limited to, files generated from the following computer programs:

FDOT Structural Software (listed in CADD Customer Support Guide), GTStrudl, STADD, RISA, Mathcad
Spreadsheets, Excel Spreadsheets, FBPier, LEAP Software, BD2, MDX, BC and Adapt.

Create a sub-directory in the **…struct\B#-#####\eng_data** directory for each bridge and/or structure in the project and then create a sub-directory for each program used, with two sub-directories, PostScript and Native. Place the appropriate input and output files in each sub-directory. Only sign and seal these PostScript files when required by Contract.

Scan any supplemental hand calculations used in the design and save the files in either PDF or TIFF and PostScript formats. Create a sub-directory in the **…struct\B#-######\eng_data** directory called HandCals, with two sub-directories, PostScript and PDF (or TIFF), and place the appropriate files in each sub-directory. (See figure 18-1 below)

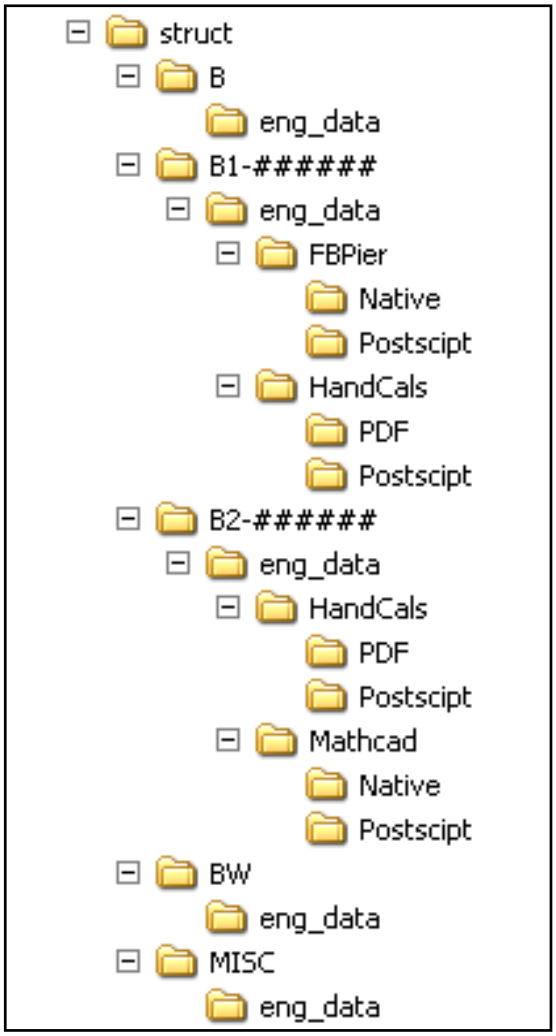

Figure 18-1

18.5 PROFESSIONALS' ELECTRONIC DATA DELIVERY SYSTEM (PEDDS)

PEDDS shall be used to Secure and Authenticate project data. When projects are received, the FDOT authenticates the data on the delivered CD. Each time data is transmitted to or received by FDOT the data shall be secured and authenticated. PEDDS shall also be used to authenticate any project specific data received as part of a delivery from an outside source or discipline. For example, an electronic delivery to Roadway from Structures should be secured and authenticated. Roadway shall electronically secure all files for delivery.

18.6 SYMBOLOGY STANDARDS

For the FDOT2008 workspace, element symbologies are defined in the StrLevels.dgnlib file and shall be selected from the MicroStation level picker. Each level contains a defined color, line weight, line style, and plot property. Color shall remain set to BYLEVEL (except as noted by ****** in the table below), line weight & line style may be modified as needed. User created levels ARE NOT allowed. If additional levels are needed, contact the Structures Design Office. The level named "Default" is not QC compliant and shall not be used for drawing elements. When updated, the StrLevels.dgnlib level library supersedes the symbology table below.

Table of Structures Symbologies for FDOT2008 Workspace

Level No.	Level	Description	ByLevel Color	ByLevel Style	Bylevel Weight	Plot?
3997	ActivePts-ConstElements	Active Points & Drawing Construction Elements	99	0	0	No
2400	AppSlabConc	Concrete	2	0	3	Yes
2401	AppSlabConc_h	Concrete Hidden	2	2	2	Yes
3600	ArchBlocks	Architectural Blocks	0	0	0	Yes
2004	BaseLineSurvey	Baseline Survey or Profile Grade Line	3	6	0	Yes
2110	BeamConc	Beams Concrete	2	0	3	Yes
2111	BeamConc_h	Beams Concrete Hidden	2	2	2	Yes
2451	Bearings	Pot, Rocker, Masonry Plates	**6****	0	1	Yes
2000	Border	Border Elements	0	0	1	Yes
3620	Casework	Casework	1	0	1	Yes
3621	Casework_h	Casework Hidden	1	3	0	Yes
3624	Ceiling	Ceiling	0	0	1	Yes
3625	Ceiling_h	Ceiling Hidden	0	3	0	Yes
2009	CLConst	Centerline Construction or Centerline Survey	3	7	0	Yes
2002	CL_Major	Centerline Major - Use as needed	3	7	0	Yes
2003	CL_Minor	Centerline Minor - Use as needed	0	4	0	Yes
3671	ConcArch_walls	Concrete Architectural Walls	1	0	2	Yes
3672	ConcArch_walls_h	Concrete Architectural Walls Hidden	1	3	1	Yes
3000	CounterWeight	CounterWeight	2	0	0	Yes
3001	CounterWeight_h	CounterWeight Hidden	2	2	2	Yes
3999	DDConstruction	Dimension Driven Cell Construction Lines	71	0	0	No
3998	DDDimensions	Dimension Driven Dimensions	71	0	0	No
2126	DeckSteel	Steel Grid Bridge Decking	6	0	1	Yes
2001	Dimension	Dimension Lines	0	0	0	Yes
3606	Doors	Doors	1	0	1	Yes
3607	Doors_h	Doors Hidden	1	3	0	Yes
2150	DrainDeck	Scuppers, Deck Inlets	3	0	1	Yes
2152	DrainMisc	Drain Miscellaneous Hardware	3	0	1	Yes
2151	DrainPipe	Drain Pipes PVC, Galvanized	3	0	1	Yes
2206	DrShaftConc	Drilled Shaft Concrete	2	0	3	Yes

Level No.	Level	Description	ByLevel Color	ByLevel Style	Bylevel Weight	Plot?
2207	DrShaftConc_h	Drilled Shaft Concrete Hidden	2	2	2	Yes
2750	ElectricalConduit	Electrical Conduit	7	0	0	Yes
2724	ExistingMisc	Existing Misc.	**3****	1	0	Yes
2723	ExistingRebar	Existing Reinforcing	84	1	0	Yes
2722	ExistingUtility	Existing Utilities Electrical; FOC, Telephone, CableTV etc.	86	1	0	Yes
2721	ExistSubStruct	Existing Bridge Substructure, Piers & Bents; Existing Piling	5	1	0	Yes
2720	ExistSuperStruct	Existing Bridge Superstructure: Existing Beams & Diaphragms	5	1	0	Yes
3657	Ext_Misc	Exterior Miscellaneous	3	0	0	Yes
3658	Ext_Misc_h	Exterior Miscellaneous Hidden	3	3	0	Yes
3655	Ext_Ornimental	Exterior Ornamentation	6	0	0	Yes
3656	Ext_Ornimental_h	Exterior Ornamentation Hidden	6	3	0	Yes
3639	Fascia	Fascia	4	0	1	Yes
3640	Fascia_h	Fascia Hidden	4	3	0	Yes
2144	Fencing	Bridge Mounted Chain Link Fencing	6	0	1	Yes
3645	Fire_Equipment	Fire Equipment	1	0	1	Yes
3646	Fire_Equipment_h	Fire Equipment Hidden	1	3	0	Yes
3612	Floor	Floor	3	0	2	Yes
3613	Floor_h	Floor Hidden	3	3	1	Yes
3622	Furniture	Furniture	1	0	1	Yes
3623	Furniture_h	Furniture Hidden	1	3	0	Yes
3608	Glazing	Glazing	1	0	1	Yes
3609	Glazing_h	Glazing Hidden	1	3	0	Yes
2701	GroundLines	Proposed; Existing	2	0	1	Yes
3667	Gypsum_board	Gypsum Board	1	0	1	Yes
3668	Gypsum_board_h	Gypsum Board Hidden	1	3	0	Yes
3630	HVAC_Equip	HVAC Equipment	5	0	2	Yes
3631	HVAC_Equip_h	HVAC Equipment Hidden	5	5	1	Yes
3632	HVAC_Misc	HVAC Miscellaneous	3	0	1	Yes
3633	HVAC_Misc_h	HVAC Miscellaneous Hidden	3	5	0	Yes
3628	HVAC_Return	HVAC Return	5	0	2	Yes
3629	HVAC_Return_h	HVAC Return Hidden	5	2	1	Yes
3626	HVAC_Supply	HVAC Supply	5	0	2	Yes
3627	HVAC_Supply_h	HVAC Supply Hidden	5	3	1	Yes
3614	Insulation	Insulation	3	0	1	Yes
3615	Insulation_h	Insulation Hidden	3	3	0	Yes
3654	Int_Mis_h	Interior Miscellaneous Hidden	3	3	0	Yes
3653	Int_Misc	Interior Miscellaneous	3	0	1	Yes
2006	Leader	Leader lines, Weld Symbols	0	0	0	Yes
3002	LeafSteel	Leaf Structural Steel	6	0	0	Yes

Level No.	Level	Description	ByLevel Color	ByLevel Style	Bylevel Weight	Plot?
3003	LeafSteel_h	Leaf Structural Steel Hidden	6	2	2	Yes
2711	Lighting	Lighting Bridge/Sign Mounted	31	0	0	Yes
2712	Lighting_h	Lighting Bridge/Sign Mounted Hidden	31	2	0	Yes
3610	LightingArch	Lighting Architectural	0	0	0	Yes
3611	LightingArch_h	Lighting Architectural	0	0	2	Yes
3010	MachineCompFixed	Machinery Components Fixed	7	0	2	Yes
3011	MachineCompFixed_h	Machinery Components Fixed Hidden	7	2	1	Yes
3012	MachineCompMoving	Machinery Components Moving	3	0	2	Yes
3013	MachineCompMovng_h	Machinery Components Moving Hidden	3	2	1	Yes
3014	MachineWeldments	Machine Weldments	4	0	2	Yes
3015	MachineWeldments_h	Machine Weldments Hidden	4	2	1	Yes
3669	Masonry	Masonry	3	0	1	Yes
3670	Masonry_h	Masonry Hidden	3	3	0	Yes
3663	Metal Framing	Metal Framing	4	0	1	Yes
3664	Metal Framing_h	Metal Framing	4	3	0	Yes
2700	Miscellaneous	No defined symbology	**3****	0	1	Yes
2709	NavLight	Navigational Lights	7	0	0	Yes
2710	NavLight_h	Navigational Lights Hidden	7	2	0	Yes
2450	PadMisc	Bearing/Misc Pads	**1****	0	1	Yes
2141	ParapetConc	Parapet Concrete	2	0	3	Yes
2703	Patterning	All; any	3	0	1	Yes
1084	Patternlines_ep	Cross Section Chain	2	1	0	
9530	PayItem_dp	Pay Item Number Label Elements	4	0	2	
2142	PedRail	Pedestrian Rail, Bullet, Picket and Guidrail	3	0	1	Yes
2143	PedRailMisc	Handrail Hardware Bullet, Picket and Guidrail	3	0	1	Yes
2202	PileConc	Piles Concrete	2	0	3	Yes
2203	PileConc_h	Piles Concrete Hidden	2	2	2	Yes
2520	PilePlastic	Pile Plastic	1	0	1	Yes
2521	PilePlastic_h	Pile Plastic Hidden	1	2	2	Yes
2204	PileSteel	Piles Steel H-Piles & Pipe	6	0	1	Yes
2205	PileSteel_h	Piles Steel H-Piles & Pipe Hidden	6	2	1	Yes
2510	PileTimber	Pile Timber	142	0	1	Yes
2511	PileTimber_h	Pile Timber Hidden	142	2	1	Yes
3016	PipeHydraulic	Hydraulic Pipe	7	0	1	Yes
3017	PipeHydraulic_h	Hydraulic Pipe Hidden	7	2	0	Yes
216	PlotBorder_dp	Plot Border	3	0	0	No
3651	Plumbing_Fixtures	Plumbing Fixtures	1	0	2	Yes
3652	Plumbing_Fixtures_h	Plumbing Fixtures Hidden	1	5	1	Yes
3647	Plumbing_Supply	Plumbing Supply	1	0	2	Yes
3648	Plumbing_Supply_h	Plumbing Supply Hidden	1	3	1	Yes
3649	Plumbing_Waste	Plumbing Waste	1	0	2	Yes
3650	Plumbing_Waste_h	Plumbing Waste Hidden	1	2	1	Yes

Level No.	Level	Description	ByLevel Color	ByLevel Style	Bylevel Weight	Plot?
1096	PointLocator_ep	Geopak Point Locator for COGO SMD Databas	4	0	0	
2300	PostTension	Post-Tensioning SteelStrands and Bars	6	0	1	Yes
2301	PostTension_h	Post-Tensioning Steel HiddenStrands and Bars	6	2	1	Yes
2302	PostTension2	Post-Tensioning SteelStrands and Bars	**46****	0	1	Yes
2303	PostTension2_h	Post-Tensioning SteelStrands and Bars	**46****	0	1	Yes
2304	PostTension3	Post-Tensioning SteelStrands and Bars	**46****	0	1	Yes
2305	PostTension3_h	Post-Tensioning SteelStrands and Bars	**46****	0	1	Yes
2307	PostTensionDucts	Post Tension Ducts Plastic and Metal	1	0	1	Yes
2306	PostTensionGrout	Post Tension Grout	2	0	1	Yes
2308	PostTensionMisc	Post Tensioning Hardware, Trumpets, Vents and Misc. Items	1	0	1	Yes
2270	PrestressSteel	Prestressing Steel	36	0	1	Yes
2271	PrestressSteel_h	Prestressing Steel Hidden	36	2	1	Yes
3618	RailingArch	Railing Architectural	6	0	2	Yes
3619	RailingArch_h	Railing Architectural Hidden	6	3	1	Yes
2012	RRBaselin	Rail road	3	rr2	0	Yes
2250	Rebar	Reinforcing Major	4	0	1	Yes
2251	Rebar_h	Reinforcing Hidden	**4****	2	1	Yes
2260	Rebar10	Auxiliary Rebar	**4****	0	1	Yes
2261	Rebar11	Auxiliary Rebar	**4****	0	1	Yes
2252	Rebar2	Auxiliary Rebar	**4****	0	1	Yes
2253	Rebar3	Auxiliary Rebar	**4****	0	1	Yes
2254	Rebar4	Auxiliary Rebar	**4****	0	1	Yes
2255	Rebar5	Auxiliary Rebar	**4****	0	1	Yes
2256	Rebar6	Auxiliary Rebar	**4****	0	1	Yes
2257	Rebar7	Auxiliary Rebar	**4****	0	1	Yes
2258	Rebar8	Auxiliary Rebar	**4****	0	1	Yes
2259	Rebar9	Auxiliary Rebar	**4****	0	1	Yes
9531	ReferencePt_dp	Survey Data Reference Point Details and El	4	0	2	
3643	Roof_Misc	Roof Miscellaneous	3	0	1	Yes
3644	Roof_Misc_h	Roof Miscellaneous Hidden	3	2	0	Yes
3634	Roof_Structure	Roof Structure	4	0	2	Yes
3635	Roof_Structure_h	Roof Structure Hidden	4	3	1	Yes
3637	Roofing	Roofing	4	0	1	Yes
3638	Roofing_h	Roofing Hidden	4	2	0	Yes
2011	RWLine_ep	Right of Way lines	3	{ Chain Double-Dash }	1	Yes
3500	SchemElectric	Electrical Schematic	7	0	1	Yes
3501	SchemElectricProp	Electrical Schematic Proposed	7	0	1	Yes
3502	SchemHydraulicAux	Hydraulic Schematic Auxiliary	4	0	1	Yes
3503	SchemHydraulicMain	Hydraulic Schematic Main	7	0	1	Yes

Level No.	Level	Description	ByLevel Color	ByLevel Style	Bylevel Weight	Plot?
3504	SchemTextLine	Schematic Text Line	0	0	1	Yes
3505	SchemTextRung	Schematic Text Rung	4	0	1	Yes
2604	SheetPileConc	Wall Sheet Precast	2	0	3	Yes
2605	SheetPileConc_h	Wall Sheet Precast Hidden	2	2	2	Yes
2602	SheetPileSteel	Wall Sheet Pile Steel	6	0	1	Yes
2603	SheetPileSteel_h	Wall Sheet Pile Steel Hidden	6	2	2	Yes
2800	Signage	Bridge Mounted Signs and Cantilever Sign Structures	6	0	1	Yes
2801	Signage_h	Bridge Mounted Signs and Cantilever Sign Structures Hidden	6	2	1	Yes
3659	SignageArch	Signage Architectural	0	0	1	Yes
3660	SignageArch_h	Signage Architectural Hidden	0	3	0	Yes
2802	SignMisc	Sign Miscellaneous Plates and Hardware	3	0	1	Yes
2803	SignMisc_h	Sign Miscellaneous Plates and Hardware Hidden	3	2	1	Yes
2820	SlopeProtection	Sand Cement Riprap, Slope Pavement; Rubble Riprap	3	0	3	Yes
2821	SlopeProtection_h	Sand Cement Riprap, Slope Pavement; Rubble Riprap Hidden	3	0	3	Yes
3641	Soffit	Soffit	4	0	1	Yes
3642	Soffit_h	Soffit Hidden	4	3	0	Yes
3616	Stairs	Stairs	6	0	2	Yes
3617	Stairs_h	Stairs Hidden	6	3	1	Yes
3665	SteelArch_Misc	Steel Architectural Miscellaneous	4	0	1	Yes
3666	SteelArch_Misc_h	Steel Architectural Miscellaneous Hidden	4	3	0	Yes
2122	SteelDiapXFram	Steel Diaphragms and Cross Frames	6	0	1	Yes
2123	SteelDiapXFram_h	Steel Diaphragms and Cross Frames Hidden	6	2	0	Yes
2120	SteelGirder	Steel Girder, Stringers, Trusses	6	0	1	Yes
2121	SteelGirder_h	Steel Girder Stringers, Trusses Hidden,	6	2	0	Yes
2124	SteelMisc	Steel Miscellaneous Stiffeners, Plates, Bolts etc.	6	0	1	Yes
2125	SteelMisc_h	Steel Miscellaneous Hidden Stiffeners, Plates, Bolts etc.	6	2	0	Yes
2705	StrMisc	Structural Miscellaneous	**3****	0	1	Yes
2706	StrMisc_h	Structural Miscellaneous Hidden	**3****	2	1	Yes
2707	StrMiscConc	Structural Miscellaneous Concrete	**2****	0	3	Yes
2708	StrMiscConc_h	Structural Miscellaneous Concrete Hidden	**2****	2	2	Yes
3673	Stucco	Stucco	1	0	0	Yes
3674	Stucco_h	Stucco Hidden	1	3	0	Yes
2200	SubStrConc	Substructure Concrete	2	0	3	Yes
2201	SubStrConc_h	Substructure Concrete Hidden	2	2	3	Yes

Level No.	Level	Description	ByLevel Color	ByLevel Style	Bylevel Weight	Plot?
2210	SubStrConc2	Substructure Concrete Misc	2	0	3	Yes
2211	SubStrConc2_h	Substructure Concrete Misc Hidden	2	2	3	Yes
2100	SupstrConc	Concrete Deck, Segmental Box	2	0	3	Yes
2101	SupstrConc_h	Concrete Deck, Segmental Box Hidden	2	2	2	Yes
2102	SupstrConc2	Concrete Diaphragms, etc	2	0	3	Yes
2103	SupstrConc2_h	Concrete Diaphragms, etc Hidden	2	2	2	Yes
2704	Symbols	All Symbols not covered by Structures Site Menu	0	0	1	Yes
3506	SymbolsElectric	Electrical Symbols	0	0	1	Yes
2007	Tables	Data Tables	0	0	1	Yes
2014	TextNotes		0	0	0	
2010	TextStructures	Structures Text	0	0	1	Yes
2013	TextStructuresLabel	Used By Sheet Navigator	0	0	0	
2140	TrafBarrierConc	Traffic Barrier Concrete	2	0	3	Yes
2751	UtilityCableTV	UtilityCableTV	6	0	0	Yes
2752	UtilityFiberOptics	UtilityFiberOptics	6	0	0	Yes
2753	UtilityGasMain	UtilityGasMain	0	0	0	Yes
2754	UtilityPower	UtilityPower	2	0	0	Yes
2755	UtilitySewer	UtilitySewer	3	0	0	Yes
2757	UtilityTelephone	UtilityTelephone	6	0	0	Yes
2758	UtilityWater	UtilityWater	7	0	0	Yes
2500	Walkways-Ladders	Steel Ladder & Walkway Components; Timber, Steel, Plastic Landings & Catwalks	6	0	1	Yes
2600	WallConc	Wall Coping Concrete	2	0	3	Yes
2601	WallConc_h	Wall Coping Concrete Hidden	2	2	2	Yes
2612	WallHardware	Wall Hardware	3	0	0	Yes
2606	WallMSEPanel	Wall MSE Panels	2	0	3	Yes
2607	WallMSEPanel_h	Wall MSE Panels Hidden	2	2	2	Yes
3602	WallsArch	Interior Walls	6	0	2	Yes
3603	WallsArch_h	Interior Walls Hidden	6	3	1	Yes
2610	WallSoundConc	Precast Soundwall Concrete	2	0	3	Yes
2611	WallSoundConc_h	Precast Soundwall Concrete Hidden	2	2	2	Yes
2608	WallTempCritical	Wall Temporary Critical	3	0	1	Yes
2609	WallTempCritical_h	Wall Temporary Critical Hidden	3	2	1	Yes
2702	WaterLines	Water Line, Symbol	15	0	1	Yes
2501	Whaler	Whalers, Timber, Plastic	142	0	1	Yes
3604	Windows	Windows	3	0	2	Yes
3605	Windows_h	Windows Hidden	3	3	1	Yes
3661	Wood	Wood	142	0	1	Yes
3662	Wood_h	Wood Hidden	142	3	0	Yes

For the FDOT2002_v7 & FDOT2002_v8 workspaces, Element symbologies (color, level, line weight, line style) are set using the Symbology menu on the Structures Menu, not the MicroStation Level picker. Additional symbologies and standard practices are listed below. The latest version of the Structures Menu **ALWAYS** supersedes the Symbology Table below.

Table of Structures Symbologies for FDOT2002v7 & FDOT2002v8 Workspaces

Description	Level Name	Color	Weight	Line Style	Font	Cell
Border	51	0		0	68	BDR
Centerline	39	3	0	7	68	
Concrete (Hidden)	40	2	2	2	68	
Concrete (Solid)	40	2	3	0	68	
Conduit, Junction Boxes, Pull Boxes & Access.	14	7	1	0		
Conduit, Junction Boxes, Pull Boxes & Access. (Hidden)	14	7	0	3		
Electric Lines	10	2	1	3		
Existing Structure (Hidden)	41	3	0	2	68	
Existing Structure (Solid)	41	3	0	3	68	
Fence	37	6	1	0		
Miscellaneous (Hidden)	50	3	0	2	68	
Miscellaneous (Solid)	50	3	0	0	68	
Navigation Lights & Access	15	7	1	0		
Navigation Lights & Access (Hidden)	15	7	0	3		
Post-Tensioning Steel	45	4	1	0	68	
Post-Tensioning Steel (Hidden)	45	4	1	2		
Prestressing Steel	44	4	1	0	68	
Prestressing Steel (Hidden)	44	4	1	2		
R/W Line	37	0	2	0		
Reinforcing Steel	46	4	1	0	68	
Reinforcing Steel (Hidden)	46	4	1	2		
Riprap Sand-Cement & Rubble	50	3	1	0		
Riprap Sand-Cement & Rubble (Hidden)	50	3	0	3		
Site Gas Lines	10	0	1	3		
Site Sewer Lines	10	3	1	3		
Site Telephone Lines	10	6	1	3		
Site Water Lines	10	7	1	3		
Slope Pavement	40	2	3	0		
Slope Pavement (Hidden)	40	2	2	3		
Structural Steel (Hidden)	42	6	1	2	68	
Structural Steel (Solid)	42	6	1	0	68	
Text, Dimensions (Ann.)	43	0	1	0	68	
Text, Dimensions (Chart)	43	0	1	0	69	
Text, Dimensions (Sub.)	43	0	0	0	68	
Timber	30	142	2	0		
Timber (Hidden)	30	142	1	3		

18.6.1 Borders, Scales, Text Sizes and Weights

- **Borders**

Draw all elements at "Full Size" completely before placing text or dimensions. After drawing all elements, determine the "Overall" Border scale required. Scale any details up or down as required at this time. Select the appropriate Border scale from the Structures Menu and place the Border Cell. Sheets that reside in the Structures Component of the plan set shall use the Structures Border cell “Sheet-Border”. Sheets requiring Structures design that reside within other discipline components of the plan set (Roadway, Lighting, etc.) shall use the Border Roadway w/Initials cell “Sheet-Rdwy”. For FDOT2008 files, once the border scale is set, the Annotation Scale should be set via Structures Menu at the matching scale.

Select the text style from the Structures Menu, then place text and Dimensions. It is helpful to show the scale of the drawing and related details inside the display area of the file, but outside of the Sheet Border area. This is helpful to all users who work on the file.

- **Scales**

The following chart is intended to aid the user in determining the appropriate scale for placing the border and text on a drawing based on the actual size of the drawing. Calculations are based on a 9.60" x 15.40 drawing area inside the border.

Architect’s Scales

Drawing Scale	Active Scale (AS)	Height (FT.)	Width (FT.)
1/16" = 1'	192	153.59	246.39
3/32" = 1'	128	102.40	164.26
1/8" = 1'	96	76.80	123.20
3/16" = 1'	64	51.20	82.13
1/4" = 1'	48	38.40	61.60
3/8" = 1'	32	25.60	41.07
½" = 1'	24	19.20	30.80
3/4" = 1'	16	12.80	20.53
1" = 1'	12	9.60	15.40
1 ½" = 1'	8	6.40	10.27
3" = 1'	4	3.20	5.13
6" = 1'	2	1.60	2.57
1 = 1	1	.80	1.28

Engineer’s Scales

Drawing Scale	Active Scale (AS)	Height (FT.)	Width (FT.)
1” = 500’	6000	4799.81	7699.69
1” = 400’	4800	3839.85	6159.75
1” = 300’	3600	2879.88	4619.82
1” = 250’	3000	2399.90	3849.85
1” = 200’	2400	1919.92	3079.88
1” = 150’	1800	1439.94	2309.91
1” = 120’	1440	1161.95	1847.93
1” = 100’	1200	959.96	1539.94
1” = 80’	960	767.97	1231.95
1” = 60’	720	575.98	923.96
1” = 50’	600	479.98	769.97
1” = 40’	480	383.98	615.98
1” = 30’	360	287.99	461.98
1” = 20’	240	191.99	307.99
1” = 15’	180	143.99	230.99
1” = 10’	120	96.00	153.99

FORMULAS:
Architect's Scale:
AS = 12 / Drawing Scale,
Ex. 1/4" = .25 in., then 12 / .25 = 48, Therefore AS = 48.
W = Sheet Width (in.) / Drawing Scale
Ex. 1/4" = .25 in., then 15.36/ .25 = 61.44, Therefore W = 61.44.
H = Sheet Height (in.) / Drawing Scale
Ex. 1/4" = .25 in., then 9.72 / .25 = 38.88, Therefore H = 38.88.

Engineer's Scale:
AS = 12 x Drawing Scale,
Ex. 1"=500', then 12 x 500 = 6000, Therefore AS = 6000.
W = Sheet Width (in.) x Drawing Scale.
Ex. 1"=500', then 15.36 x 500 = 7680, Therefore W = 7680.
H = Sheet Height (in.) x Drawing Scale,
Ex. 1"=500', then 9.72 x 500 = 4860, Therefore H = 4860.

- **Text Sizes and Weights**

For FDOT2008 workspace:
Annotation = 0.0063 x (Annotation Scale). The use of annotation scale allows the text and dimensioning to be rescaled easily via the Scale>Annotation Scale Structures Menu items.

The SDO uses special, custom fonts in its drawings and CADD programs; specifically, Fonts 168 and169. These fonts are stored in the StrructureFont.rsc file supplied with the FDOT CADD software.

For the FDOT2002_v7 & FDOT2002_v8 workspaces:
Annotation = 0.0063 x (Active Scale)
The SDO uses special, custom fonts in its drawings and programs, specifically, Fonts 68 and 69. These fonts are stored in the zdotfont.rsc file supplied with the FDOT CADD software.

The Structures Menu provides all needed text sizes. The minimum Annotation text size after plotting shall be .0063'.

All standard text sizes may be selected from the Structures Menu.

TITLE	WEIGHT	SIZE (Ft)
Revisions	0	.0050
Initials	0	.0058
Annotation/Table Data	1	.0063
View/Sheet/Sect Titles	2	.0080
Large	3	.0084
Larger	3	.0100

NOTE: Sizes shown are at 1:1 ratio.

18.6.2 Colors

Colors depend on the color table attached to the design file. Therefore, it is important that "color.tbl" provided by MicroStation is attached to all structures design files.

18.6.3 Special Symbols

The following special symbols used by the SDO in are provided in the str_font.rsc resource file.
Special Characters are now entered using the ASCII equivalent key stroke \xxx.
Example: enter text \192 to place the Baseline symbol.
This input method can be used with any of MicroStation text editor but only displays correctly with the WYSIWYG editor (all editors place the special characters correctly in the design file).
Special Characters are NOT to be used in sheet borders.

\192	Baseline	**\208**	Alpha α	**\224**	Super ^{0}	**\240**	Sub $_{0}$
\193	Plate	**\209**	Beta β	**\225**	Super ^{1}	**\241**	Sub $_{1}$
\194	Centerline	**\210**	Gamma γ	**\226**	Super ^{2}	**\242**	Sub $_{2}$
\195	Diameter	**\211**	Delta Δ	**\227**	Super ^{3}	**\243**	Sub $_{3}$
\196	$\leq$	**\212**	Theta θ	**\228**	Super ^{4}	**\244**	Sub $_{4}$
\197	$\geq$	**\213**	Mu μ	**\229**	Super ^{5}	**\245**	Sub $_{5}$
\198	Angle $\angle$	**\214**	Pi π	**\230**	Super ^{6}	**\246**	Sub $_{6}$
\199	Approximate $\approx$	**\215**	Sigma Σ	**\231**	Super ^{7}	**\247**	Sub $_{7}$
\200	$\pm$	**\216**	Phi ϕ	**\232**	Super ^{8}	**\248**	Sub $_{8}$
\201	Degree $^{\circ}$	**\217**	Psi ψ	**\233**	Super ^{9}	**\249**	Sub $_{9}$
\202	Square Root $\sqrt{}$	**\218** **\219**	Omega Ω L.C. Omega ω	**\234**	Super *	**\250**	

18.6.4 Dimension Settings

Dimension styles are defined in the StructuresSeed.dgn. Styles are provided for Dimensioning and Notes for various terminators and leaders. Make every effort to use automatic dimensioning with element association enabled.

18.7 PROJECT PACKAGE – ELECTRONIC SUBMITTAL

Drawing files used to create a project should be submitted on CD. The CD shall have all files in a directory tree as described Chapter 4, Project Directory Structure. The delivery CD is the “official” CD and should be kept in a safe place during the life of the project.

When the office responsible for the Structures project receives the CD, the contents of the CD shall be authenticated using PEDDS to ensure the data on the CD has not been modified.

The next step in the process is to create a project on the server or workstation that meets the FDOT directory structure standards. Using the Create Project Application provided with the FDOT CADD Software ensures adherence to this standard. See documentation on the Create Project Application for complete details.

Copy files from the delivered CD into the corresponding project directory created above.

18.8 QUALITY CONTROL

Refer to Chapter 7 for FDOT QC Requirements and instructions.

18.9 USE OF NON-STRUCTURES REFERENCE FILES

Information from other disciplines such as roadway, utilities, etc. should not be copied into Structures design files, as they will be flagged as invalid by the Quality Control Program and adversely affect the Quality Compliance Report.

When it is necessary to use or present this type of information, reference it into the Structures design file.. Include Reference files with the Electronic Plans Submittal.

Structures design files for projects let after July 1, 2003 must comply with the Quality Control process and may not be claimed as an exception in the Quality Control Report.

The preferred method of referencing another discipline's file is a "direct reference" to the working design file. This assures the reference data is always current. If access to the reference file is restricted or the file is not usable in its current form (i.e. incorrect symbology), the user should make a copy of the other discipline's file, manipulate the elements within the file and then reference it into the structures design file. The obvious drawback of the second method is that manipulations such as color and level changes, etc. may have to be done numerous times during the course of the project to keep the design file's content current.