FLORIDA DEPARTMENT OF TRANSPORTATION

STRUCTURES DESIGN

CADD Manual

Structures Design
605 Suwannee Street • MS 33
Tallahassee, Florida 32399
Phone 850.414. 4255, SC 994.4255 • Fax 850.488.6352

Table of Contents

General

This manual provides information about the Structures Design Office (SDO) CADD Setup and is to be used with the Plans Preparation Manual, Structures Design Guidelines, Structures Detailing Manual and appropriate MicroStation Manual(s) for production of structures plans for the Florida Department of Transportation. All CADD Operators involved in structures plans production should be familiar with MicroStation. District CADD Managers should follow this guide in support of structures plans production.

Information shown in this manual is based upon the SDO CADD Setup on the Windows 95/NT platform only. All programs are available on the FDOT STRUCTURES WEB page =http://www.dot.state.fl.us/structures/ or our FDOT Intranet site at http://designweb/structures/ *Structures CADD Manual Online.*

The SDO CADD Development section welcomes your comments concerning improvements, additions, and changes. The Florida Department of Transportation makes no warranty, expressed or implied, as to the documentation, function or performance of the programs described within this document.

The information described in this document is subject to change without notice. For additional information and support contact:

Structures Design / CADD Development
605 Suwannee Street
Tallahassee, Fl 32399-0450
Phone 850-414-4255, SC 994-4255

Software Requirements

The Structures Design Office (SDO) uses Bentley Microstation. CADD Production is supported on Microsoft Windows 95/98 /NT operating systems. All references to Microstation pertain to Bentley Version 95 and later. As a drawing aid, the SDO provides a software interface;.

System Requirements

For best results, the software should be loaded on a Pentium machine with minimum 128K memory, and a video card.

The CADD Load

The SDO CADD setup is available as one executable file downloadable from our Internet site at http://www.dot.state.fl.us/structures/ or FDOT Intranet site at http://designweb/structures

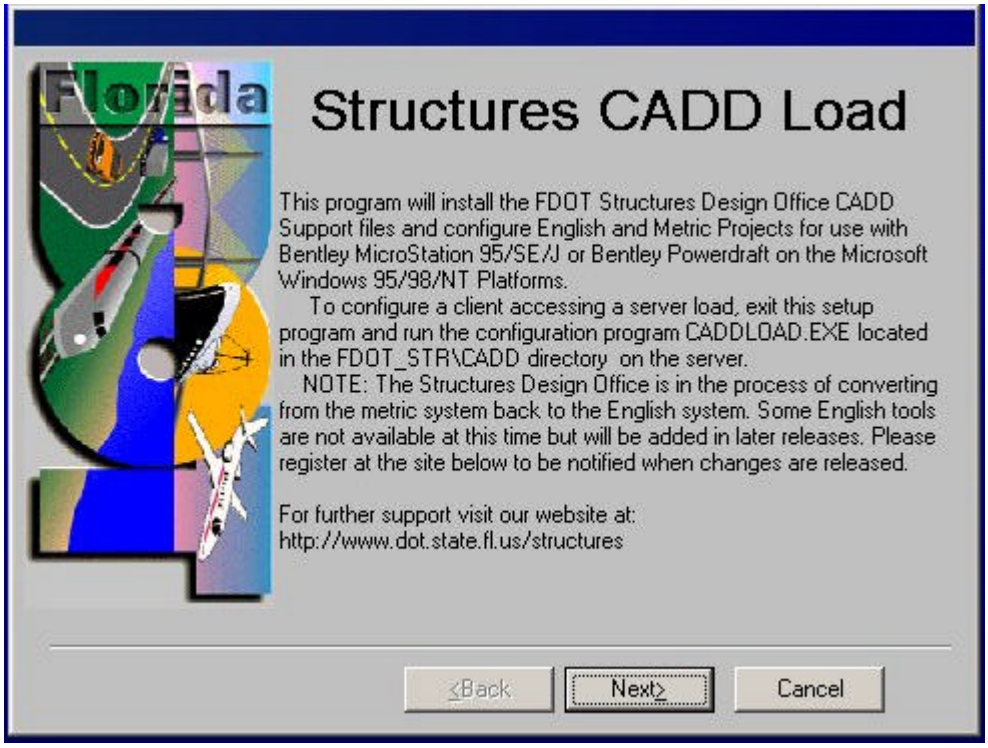
This setup can be used for configuring Bentley MicroStation SE/95/J or Bentley Powerdraft on the Microsoft Windows 32bit Platform.

The following instructions will describe how to configure a standalone workstation, load needed resource files onto a file server, and how to configure a workstation to access shared server resources.

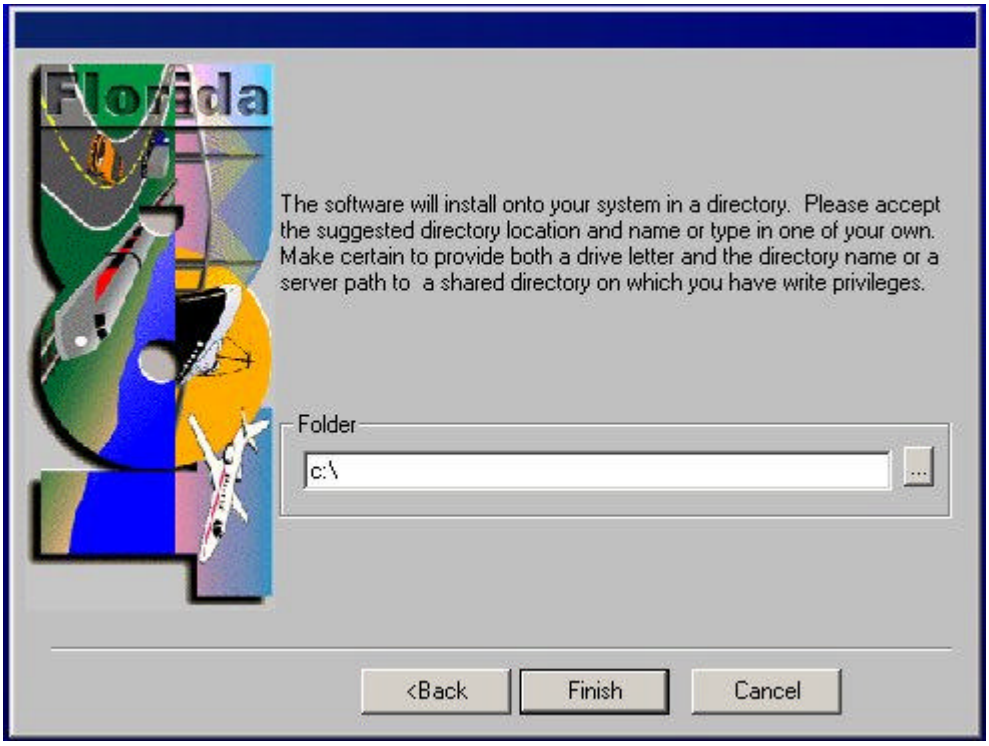
Standalone Workstation Install and Server Resource File Installation

The installation process is started by clicking on the CADDinst.exe.

An Introduction screen will explain what this program will perform.



Choose Next>, You will be presented with a dialog box asking for a directory location in which to store the Structures CADD resource files. This location can be a local hard drive or mapped drive letter. The load program will create it's own directory structure starting with FDOT_STR and will only copy files into this and no other locations. A mapped drive must be used for a network installation location, but clients can access this location via UNC path name after installation is complete.



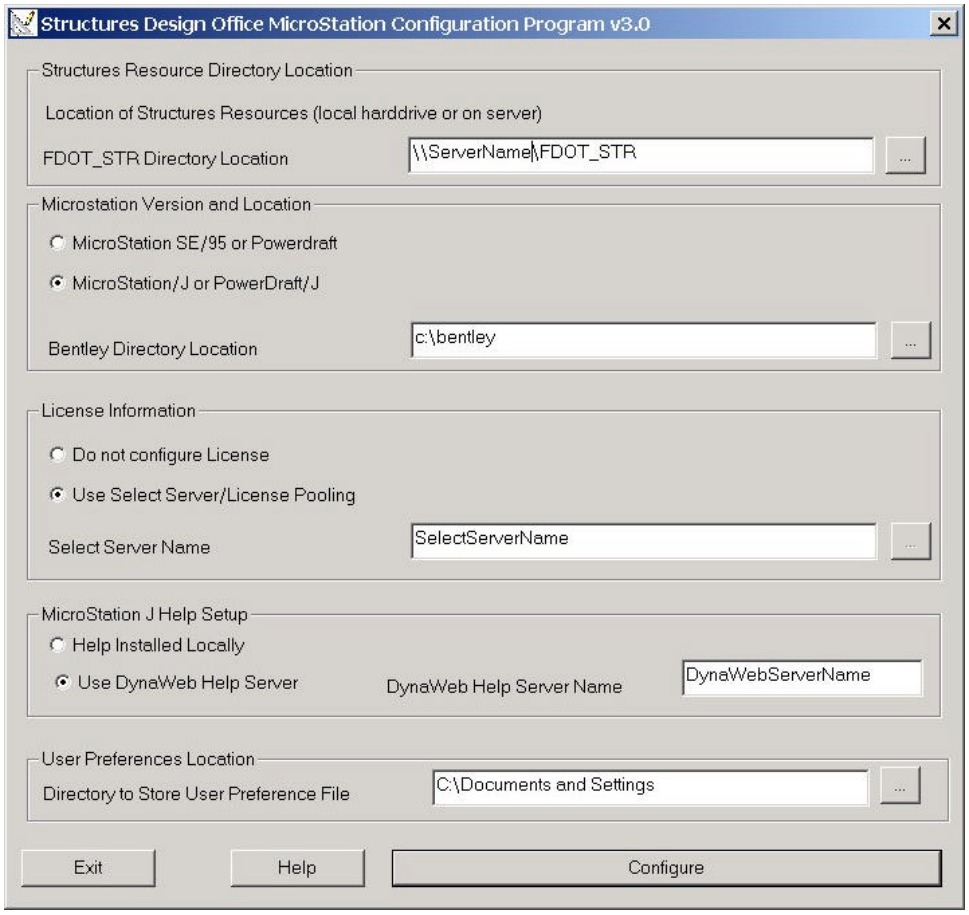
When satisfied with the destination directory, press the **Finish** button.

The resource file copy portion of the CADD load is now complete and the MicroStation configuration portion of the CADD load will start after the next step

Configuring the MicroStation environment on the Workstation Standalone or Server Client

If you are installing the resource files on a file server, press Cancel to exit the MicroStation configuration program when it starts.

This portion of the CADD load will configure MicroStation to use the Structures CADD resources. This portion of the program will automatically run following the copying of resource files to the Standalone Workstation or may be executed separately to configure a Client Workstation accessing server resources, or may also be used to reconfigure a Standalone Workstation. This file is named CADDLOAD.EXE and is located in the FDOT_STR/CADD directory and may be run from either a server or locally.



Structures Resource Directory Location:
The location of FDOT_STR directory may be a local drive, a mapped network drive, or a UNC pathname.

MicroStation Version and Location:

Choose the version of MicroStation you are using and enter the location of the MicroStation or Powerdraft installation directory (not the executable itself). Normal installation paths are as follows:

MicroStation SE/95:	drive:\win32app\ustation
MicroStation J:	drive:\Bentley
PowerDraft:	drive:\win32app\draft
PowerDraft J:	drive:\Bentley

License Information:

Determine if you are using a standalone license located in the local MicroStation directory structure or if you are using select server or a pooled license on a server (SE/95).
If using a pooled license, enter the path to the license pool directory (not the license file itself). This path may use a mapped server drive or a UNC pathname.
If using select server, enter the servername (not the UNC name.)

Microstation J Help Setup

If using DynaWeb Help Server, enter the server name (not the UNC name.)

User Preference Location:

Enter the directory location for storage of the user preference file steng.upf or stmet.upf. This may be either a local or network location.

When the required input is entered, press the Configure button to complete the configuration of MicroStation to use the Structures Design Office CADD Resources. At this time four (4) files are created with the MicroStation directory structure as follows:

MicroStation SE/95:

ustation\config\project\steng.pcf	(English project configuration file)
ustation\config\project\stmet.pcf	(Metric project configuration file)
ustation\config\user\steng.ucf	(English user configuration file)
ustation\config\user\stmet.ucf	(Metric user configuration file)

MicroStation J:

bentley\workspace\projects\steng\steng.pcf	(Eng. project configuration file)
bentley\workspace\projects\stmet\stmet.pcf	(Metric project configuration file)
bentley\workspace\users\steng.ucf	(English user configuration file)
bentley\workspace\users\stmet.ucf	(Metric user configuration file)

If these files already exist they will be renamed to stengpcf.old, stmetpcf.old, stengucf.old, & stmetucf.old. If the *.old files already exist. They will be deleted.

These are the only files written into the MicroStation directory structure.

Entering a Structures Workspace for the first time:

Start MicroStation. If this is the first time you have run MicroStation, you may be asked for License information. Choose the 15 minute tryout button which will take you to the MicroStation Manager window.

From the Workspace pull down, choose either **steng99** to use the Structures English Workspace or **stmet** to use Structures Metric Workspace. Select an existing file or create a new file and press the **OK** to continue. Resources such as the menubar, cells, seed files, settings, applications, etc. will be available to you.

General Production

The following files are automatically attached when you run the **SDO CADD Load**, and choose the steng Workspace in MicroStation Manager.

Cell Library: StEng.cel

Color Table: color.tbl

Proj2d.cel -this cell library is intended to be a "users" library available on each platform. Users can save "job specific" cells here. This "project" library, along with the "master," should be archived with the design files at the close of the job. Any "proj2d" cells that may be of use to others should be brought to the attention of the CADD Development Section so that it may be included in the master cell library.

Level Symbology - Use of established symbologies is required and can be selected from the SDO Menubar.

Scales, Text/Dimensions and Borders

All elements should be drawn at "Full Size" and completed before placing text or dimensions.
After all elements are drawn, then determine the "Overall" Border scale required.
Any details that may need to be scaled up or down should be done at this time.
Select the Border scale from the Menubar and place the Border Cell at this scale. (You may want to use the Scale Tables provided in this manual)
Select the Text Level from the Menubar, select the appropriate size, then place text and Dimensions.
It is helpful to show the Scale of your Drawing and related details inside the Display area of your file but outside the Border area. This will be helpful to you and others 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 9.72" x 15.37" drawing area on the border.

Drawing Scale	Active Scale (AS)	Height (FT.)	Width (FT.)
1/16" = 1'	192	155.52	245.92
3/32" = 1'	128	103.68	163.95
1/8" = 1'	96	77.76	122.96
3/16" = 1'	64	51.84	81.97
1/4" = 1'	48	38.88	61.48
3/8" = 1'	32	25.92	40.99
½" = 1'	24	19.44	30.74
3/4" = 1'	16	12.96	20.49
1" = 1'	12	9.72	15.37
1 ½" = 1'	8	6.48	10.25
3" = 1'	4	3.24	5.12
6" = 1'	2	1.62	2.56
1' = 1'	1	.810	1.28

FORMULAS :

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 32 / .25 = 128, Therefore W = 128.
H = Sheet Height (in.) / Drawing Scale
Ex. 1/4" = .25 in., then 19.5 / .25 = 78, Therefore H = 78.

Symbology

The following element symbologies are required for Structures Design production.

Element	Level	Color	Weight	Style
Reinforcing Steel	46	4 Yellow	1	0
Concrete (Solid)	40	2 Green	3	0
Concrete (Hidden)	40	2 Green	2	2
Centerline	39	3 Red	0	7
Existing Structure (Solid)	41	3 Red	0	3
Existing Structure (Hidden)	41	3 Red	0	2
Structural Steel (Solid)	42	6 Orange	1	0
Structural Steel (Hidden)	42	6 Orange	0	2
2D Text, Dimensions	43	0 White	Varies	0
3D Text, Dimensions	Top 54 Front 53 Rt., Lt. 55	0 White	Varies	0
Prestressing Steel	44	4 Yellow	1	0
Post-Tensioning Steel	45	4 Yellow	1	0
Miscellaneous (Solid)	50	3 Red	0	0
Miscellaneous (Hidden)	50	3 Red	0	2
Border	51	0 White	Varies	0
Timber	30	142 Dk. Bn.	2	0
Timber (Hidden)	30	142 Dk.	1	3
Navigation Lights & Access	15	7 Cyan	1	0
Navigation Lights & Access (Hidden)	15	7Cyan	0	3
Conduit, Junction Boxes, Pull Boxes & Access.	14	7 Cyan	1	0
Conduit, Junction Boxes, Pull Boxes & Access. (Hidden)	14	7 Cyan	1	3
Riprap Sand-Cement & Rubble	50	3 Red	1	0
Riprap Sand-Cement & Rubble (Hidden)	50	3 Red	0	3
Slope Pavement	40	3 Green	3	0
Slope Pavement (Hidden)	40	3 Green	2	3
Electric Lines	10	3 Green	1	3

Element	Level	Color	Weight	Style
Fence	43	6 Orange	1	0
Site Gas Lines	10	0 white	1	3
R/W Line	37	0 White	2	0
Site Sewer Lines	10	3 Green	1	3
Site Telephone Lines	10	6 Orange	1	3
Site Water Lines	10	7 Cyan	1	3

Colors: colors are dependent upon your design file color table. "Color.tbl" has the above colors. Therefore, it is important that "color.tbl" is loaded.

Text Size: Annotation = 0.0063 x (Active Scale). The SDO CADD Menubar provides all needed text sizes. The absolute minimum text size after plotting shall be .0063'. This is the smallest text size you should use on plans due to "half-sizing."

Text Sizes and Weights

All standard text sizes may be selected from the Menubar. The SDO uses special, custom fonts in its drawings and programs, specifically, Fonts 68 and 69. So that text displays properly, a font library is included in the purchase of a set of Standard Drawing files.

TITLE	WEIGHT	SIZE (Ft)
Special Small/Revisions	0	.0050
Annotation	1	.0063
View/Sheet/Sect Titles	2	.0073
Large	3	.0084
Extra Large	3	.0100

NOTE: Sizes shown are a 1:1 ratio.

Special Symbols

The SDO also uses special symbols that are part of the SDO font library. For example, in Font 68, if you key in a question mark, the result will be a Roman numeral one on the screen. The symbols are listed below:

!	Roman Numeral 5	1/3	Baseline
?	Roman Numeral 1	1/64	plate
\	diameter mark	3/64	plus/minus sign
^	Degree symbol	5/64	squared ^{2}
|	Centerline	7/64	cubed ^{3}

Design File Naming

In order to facilitate the indexing, archival and retrieval of design files, FDOT has developed a naming convention. All standard drawings shall be named using the individual index number. (Ex. index 700 = 700.dgn) Use the following format for selecting a name for a particular design file:

Structural Plans

Design File Name	Sheet Description
AccessOpen	Access Opening
ApproachSlab	Approach Slab
BaileyBridge	Bailey Bridge Details
BeamLay	Beam Layout
BeamLayBulbT	Bulb-T Beam Layout
BeamLayInvT	Inverted T Beam Layout
BeamLayT	T Beam Layout
BearingDet	Bearing Details
BearingPads	Neoprene Bearing Pads
BearingPlates	Beveled Bearing Plates
Borings	Foundation Investigation (Borings)
BridgeHydro	Bridge Hydraulic Recommendation Sheet
BrigeSection	Section through bridge showing the superstructure. Use this filename for the BDR or 30% plans.
Bulkhead	Bulkhead
BulkheadDet	Bulkhead Details
Camber	Camber Diagrams
ClosureJoint	Closure Joint Details
ContinuityTend	Continuity Tendon
CoverSheet	Cover Sheet
ConstNotes	Construction Notes
ConstDet	Construction Details
ConstSeq	Construction Sequence
ConduitDet	Utility Conduit Details
CPTSound	CPT Soundings
CrashWall	Crash Wall
CrossFrameDet	Cross Frame Details
CulvertDet	Culvert Details
DiaphragmDet	Diaphragm Details
DrainDet	Drain Details
DrillShaft10	Drilled Shaft Pier No. 10
DrillShaftDet	Drilled Shaft Details
EndBent	End Bent
EndBent1	End Bent No.1
EndBentDet	End Bent Details
ErectSeq	Erection Sequence

Structural Plans

Design File Name	Sheet Description
ErectProced	Erection Procedure for Launching Girder
ExpJointDet	Expansion Joint Details
ExistingPlans	Existing Bridge Plans
FinishGrEL	Finish Grade Elevations
FoundLay	Foundation Layout
Footing3	Footing No.3
FootingDet	Footing Details
FramingPlan	Framing Plan
FenderSystem	Fender System
FenderDet	Fender Details
FieldSplice	Bolted Field Splice
FieldSpliceDet	Bolted Field Splice Details
FloorBeam	Floor Beams
FuturePTLay	Future Post-Tensioning Layout
GeneralNotes	General Notes
Handrail	Handrail
Index	Index of Sheets
IntBent	Intermediate Bent
IntBent5	Intermediate Bent No.5
IntBentDet	Intermediate Bent Details
JackingDet	Jacking Details
JunctionBox	Junction Box
KeySheet	Bridge Rehab Key Sheet
LadderDet	Ladder Details
LongPT10	Longitudinal Post-Tensioning Span 10
MiscDet	Miscellaneous details
MaintLight	Maintenance lighting plan
MaintLightDet	Maintenance lighting details
MSEwall	Mechanically stabilized earth wall
MSEwall25	25’ MSE Wall
PileData	Pile data table used in the foundation layout
PileDet	Pile Details
Pier2	Pier No.2
PierDet	Pier Details
PierPTDet	Precast Box Pier Post-Tensioning Details
PotBearing	Pot Bearing Details
Preliminary	Preliminary Plan and Elevation
PlanElevP	Plan and Elevation
PrestSlab	Prestressed Slab Units
PTDet	Post-Tensioning Details
PTQuantities	Post-Tensioning Quantities
RebarList	Reinforcing Bar List
ReinfSegABC	Reinforcing Segements A,B and C
ReinfPierSeg	Reinforcing in Pier Segments
ReinfAbutSeg	Reinforcing in Abutment Segments
RemoveExist	Removal of Existing Structures

Structural Plans

Design File Name	Sheet Description
RetainingWall25	25’ Retaining Wall
RiprapRubble	Rubble Riprap
RiprapSand	Sand Cement Riprap
SegLayout	Segment Layout
SegDimAbut	Abutment Segment Dimensions
SegDimBox	Precast Box Segment Dimensions
SegDimCap	Pier Cap Segment Dimensions
SegDimPier	Pier Segment Dimensions
SheetPileWall	Sheet Pile Retaining Wall
SheetPileWallST	Steel Sheet Pile Retaining Wall
SheetPileWallConc	Concrete Sheet Pile Retaining Wall
SheetPileWall20	20’ Sheet Pile Retaining Wall
SheetPileWallAnch	Anchored Sheet Pile Wall
SheetPileWallCant	Cantilever Sheet Pile Wall
SidewalkDet	Sidewalk Details
SlidingPlate	Sliding Plate Assembly
Superst	Superstructure
Superst100	100’ Span Superstructure
Superst45	45’ Span Superstructure
SuperstDet	Superstructure Details
SteelGirder	Steel Girder
SteelDet	Steel Girder Details
Stiffener	Stiffener Details
SurfaceFinish	Surface Finish Details
TendonCurveDet	Tendon Curvature Details
TransPTPier	Pier Transverse Post-Tensioning
TransPTAbut	Abutment Transverse Post-Tensioning
TransTendonDet	Transverse Tendon Details
TypicalSection	Typical section through bride deck
VertCurveSuperEL	Vertical Curve and Superelevation Transition

Mechanical and Electrical Bridge Plans

Design File Name	Sheet Description
BasculePier	Bascule Pier
BasculeSpan	Bascule Span
CatwalkDet	Catwalk Details
ConduitRiser	Conduit Riser
CommLayout	Communications Layout
ControlDesk	Control Desk
ControlTower	Control Tower
CounterWt	Counter Weight
DriveAssem	Drive Assembly
GridDeckDet	Grid Deck Details
Grounding	Grounding and Lighting Protection

HouseLayout	House, Lighting and Pier Layout
IOpoints	Input Output Points, PLC
LadderLogic	Ladder Logic, PLC
Legend	Symbol Legend
LockPlan	Lock Plan
LockDet	Lock Details
MechPlan	Mechanical Plan
MechDet	Mechanical Details
NaviLightDet	Navigation Lighting System Details
PanelBoardSch	Panel Board Schedule
PinionDet	Pinion Details
Plumbing	Plumbing
RestPier	Rest Pier
SingleLine	Single Line Diagram
SitePlan	Site Plan for Rest Area
SubCableDet	Submarine Cable Details
TrunAssem	Trunnion Assembly
TrunBrace	Trunnion Bracing
TrunDet	Trunnion Details
WorkID	Work Identification Sheet

Additional Scour Protection Plan File Names

Design File Name	Sheet Description
BotContourMap	Bottom Contour Map
ScourPlan	Plan View of Scour Protection
ScourProf	Profile of Scour Protection
ScourDetail	Scour Protection Details

Additional Load Test Plan File Names

Design File Name	Sheet Description
CompTestSetup	Compression Test Setup
DrillShaftLT123	Drilled Shaft Load Test Sites 1,2 & 3
InstruDet	Instrumentation Details
LTSumPile	Pile Load Test Program Summary
LTSumDrillShaft	Drilled Shaft Load Test Program Summary
LTFrame	Load Test Frame Configuration
LTBraceDet	Load Test Reaction Girder Bracing Details
LTGirderDet	Load Test Reaction Girder Details
OsterbergCell3000	Osterberg Cell 3000 ton Load Testing Device
PlatformDet	Service Platform Deck and Frame Details
StatnamicLT	Statnamic Load Test Details

LateralLT	Lateral Load Test Details

Geotechnical (Architectural Plans)

Design File Name	Sheet Description
B-FP	Floor plan
B-SP	Site plan
B-DP	Demolition plan
B-QP	Equipment plan
B-XP	Existing plan
B-EL	Elevation
B-SC	Section
B-DT	Detail
B-SH	Schedules
B-3D	Isometric/3D
B-DG	Diagrams

Civil (Architectural Plans)

Design File Name	Sheet Description
C-FP	Floor plan
C-SP	Site plan
C-D	Demolition plan
C-EP	Environmental
C-GP	Grading
C-RP	Roads/Topographic
C-SV	Survey
C-UP	Utilities
C-QP	Equipment plan
C-XP	Existing plan
C-EL	Elevation
C-SC	Section
C-DT	Detail
C-SH	Schedules
C-3D	Isometric/3D
C-DG	Diagrams

Process (Architectural Plans)

Design File Name	Sheet Description
D-FP	Floor plan
D-SP	Site plan
D-DP	Demolition plan
D-QP	Equipment plan

D-XP	Existing plan
D-EL	Elevation
D-SC	Section
D-DT	Detail
D-SH	Schedules
D-3D	Isometric/3D
D-DG	Diagrams

Electrical (Architectural Plans)

E-FP	Floor plan
E-SP	Site plan
E-CP	Communication
E-GP	Grounding
E-LP	Lighting
E-PP	Power
E-DP	Demolition plan
E-QP	Equipment plan
E-XP	Existing plan
E-EL	Elevation
E-SC	Section
E-DT	Detail
E-SH	Schedules
E-3D	Isometric/3D
E-DG	Diagrams

Fire Protection (Architectural Plans)

Design File Name	Sheet Description
F-FP	Floor plan
F-SP	Site plan
F-DP	Demolition plan
F-QP	Equipment plan
F-XP	Existing plan
F-EL	Elevation
F-VP	Evacuation plan
F-KP	Sprinkler plan
F-SC	Section
F-DT	Detail
F-SH	Schedules
F-3D	Isometric/3D
F-DG	Diagrams

Interiors (Architectural Plans)

Fire Protection (Architectural Plans)

Design File Name	Sheet Description
I-FP	Floor plan
I-SP	Site plan
I-DP	Demolition plan
I-QP	Equipment plan
I-XP	Existing plan
I-CP	Ceiling plan
I-EP	Enlarged plan
I-RP	Furniture plan
I-NP	Finish plan
I-EL	Elevation
I-SC	Section
I-DT	Detail
I-SH	Schedules
I-3D	Isometric/3D
I-DG	Diagrams

Mechanical (Architectural Plans)

Design File Name	Sheet Description
M-FP	Floor plan
M-SP	Site plan
M-DP	Demolition plan
M-QP	Equipment plan
M-XP	Existing plan
M-CP	Control plan
M-HP	HVAC ductwork plan
M-EL	Elevation
M-SC	Section
M-DT	Detail
M-SH	Schedules
M-3D	Isometric/3D
M-DG	Diagrams

Plumbing (Architectural Plans)

Design File Name	Sheet Description
P-FP	Floor plan
P-SP	Site Plan
P-DP	Demolition plan
P-QP	Equipment plan

P-PP	Plumbing Plans
P-XP	Existing plan
P-EL	Elevation
P-SC	Section
P-DT	Detail
P-SH	Schedules
P-3D	Isometric/3D
P-DG	Diagrams

Structural (Architectural Plans)

S-FP	Framing plan
S-NP	Foundation plan
S-SP	Site Plan
S-DP	Demolition plan
S-QP	Equipment plan
S-XP	Existing plan
S-EL	Elevation
S-SC	Section
S-DT	Detail
S-SH	Schedules
S-3D	Isometric/3D
S-DG	Diagrams

Telecommunications (Architectural Plans)

Design File Name	Sheet Description
T-FP	Floor plan
T-SP	Site Plan
T-DP	Demolition plan
T-QP	Equipment plan
T-DP	Data
T-TP	Telephone
T-XP	Existing plan
T-EL	Elevation
T-SC	Section
T-DT	Detail
T-SH	Schedules
T-3D	Isometric/3D
T-DG	Diagrams

Formats for Sheet File Names

General (Architectural Plans)

G-001	General
G-101	Plans
G-201	Elevations
G-301	Sections
G-401	Large Scale Views
G-501	Details
G-601	Schedules and Diagrams
G-701	User Defined
G-801	User Defined
G-901	3D Representation

Hazardous Material (Architectural Plans)

Design File Name	Sheet Description
H-001	General
H-101	Plans
H-201	Elevations
H-301	Sections
H-401	Large Scale Views
H-501	Details
H-601	Schedules and Diagrams

Civil (Architectural Plans)

C-001	General
C-101	Plans
C-201	Elevations
C-301	Sections
C-401	Large Scale Views
C-501	Details
C-601	Schedules and Diagrams
C-701	User Defined
C-801	User Defined
C-901	3D Representation

Landscape (Architectural Plans)

L-001	General
L-101	Plans
L-201	Elevations
L-301	Sections
L-401	Large Scale Views

L-501	Details
L-601	Schedules and Diagrams
L-701	User Defined
L-801	User Defined
L-901	3D Representation

Structural (Architectural Plans)

Design File Name	Sheet Description
S-001	General
S-101	Plans
S-201	Elevations
S-301	Sections
S-401	Large Scale Views
S-501	Details
S-601	Schedules and Diagrams
S-701	User Defined
S-801	User Defined
S-901	3D Representation

Architectural (Architectural Plans)

A-001	General
A-101	Plans
A-201	Elevations
A-301	Sections
A-401	Large Scale Views
A-501	Details
A-601	Schedules and Diagrams
A-701	User Defined
A-801	User Defined
A-901	3D Representation

Interiors (Architectural Plans)

I-001	General
I-101	Plans
I-201	Elevations
I-301	Sections
I-401	Large Scale Views
I-501	Details
I-601	Schedules and Diagrams

Interiors (Architectural Plans)

I-701	User Defined
I-801	User Defined
I-901	3D Representation

Equipment (Architectural Plans)

Design File Name	Sheet Description
Q-001	General
Q-101	Plans
Q-201	Elevations
Q-301	Sections
Q-401	Large Scale Views
Q-501	Details
Q-601	Schedules and Diagrams
Q-701	User Defined
Q-801	User Defined
Q-901	3D Representation

Fire Protection (Architectural Plans)

F-001	General
F-101	Plans
F-201	Elevations
F-301	Sections
F-401	Large Scale Views
F-501	Details
F-601	Schedules and Diagrams
F-701	User Defined
F-801	User Defined
F-901	3D Representation

Architectural Plans

P-001	General
P-101	Plans
P-201	Elevations
P-301	Sections
P-401	Large Scale Views
P-501	Details
P-601	Schedules and Diagrams
P-701	User Defined
P-801	User Defined
P-901	3D Representation

Mechanical (Architectural Plans)

Design File Name	Sheet Description

M-001	General
M-101	Plans
M-201	Elevations
M-301	Sections
M-401	Large Scale Views
M-501	Details
M-601	Schedules and Diagrams
M-701	User Defined
M-801	User Defined
M-901	3D Representation

Electrical (Architectural Plans)

E-001	General
E-101	Plans
E-201	Elevations
E-301	Sections
E-401	Large Scale Views
E-501	Details
E-601	Schedules and Diagrams
E-701	User Defined
E-801	User Defined
E-901	3D Representation

Telecommunication (Architectural Plans)

T-001	General
T-101	Plans
T-201	Elevations
T-301	Sections
T-401	Large Scale Views
T-501	Details
T-601	Schedules and Diagrams
T-701	User Defined
T-801	User Defined
T-901	3D Representation

Resource (Architectural Plans)

Design File Name	Sheet Description
R-FP	Floor plan
R-SP	Site plan
R-DP	Demolition plan
R-QP	Equipment plan
R-XP	Existing plan
R-EL	Elevation
R-SC	Section
R-DT	Detail

R-SH	Schedules
R-3D	Isometric/3D
R-DG	Diagrams

Other Disciplines (Architectural Plans)

X-001	General
X-101	Plans
X-201	Elevations
X-301	Sections
X-401	Large Scale Views
X-501	Details
X-601	Schedules and Diagrams
X-701	User Defined
X-801	User Defined
X-901	3D Representation

Contractor/Shop Drawings (Architectural Plans)

Z-001	General
Z-101	Plans
Z-201	Elevations
Z-301	Sections
Z-401	Large Scale Views
Z-501	Details
Z-601	Schedules and Diagrams
Z-701	User Defined
Z-801	User Defined
Z-901	3D Representation

Seed Files

The Structures Design Office CADD Load is delivered with the following active parameters set in the DGN seed files.

STENG2D.DGN (2D File)

Views on = 1, 2
Levels Displayed = 1-63
Locks on = Snap (Keypoint)
Active Level (LV) = 40
Color (CO) = 2
Weight (WT) = 3
Angle (AA) = 0
Scale (AS) = 1 : 1
Line Code (LC) = 0
Grid Units (GU) = 0.008,12
Global Origin (GO) = 0,0
Font (FT) = 68
Text Size (TX) = 0.0063
Line Spacing (LS) = 0.0047 (75% of text size)
Line Length (LL) = 255
Cell Library = STENG.CEL (in drive:fdot_str\cadd\cell)
Color Table = COLOR.TBL (Microstation color table)

STENG3D.DGN (3D File)

Views on = 1 (Top), 5 (Iso), 6 (Top), 7 (Front), 8 (Right)
Levels Displayed = 1-63
Locks on = Snap (Keypoint)
Active Level (LV) = 40
    Color (CO) = 2
    Weight (WT) = 3
    Angle (AA) = 0
    Scale (AS) = 1
Line Code (LC) = 0
Active Point: XY = 0,0,0
Display Depth (DP) = -500,500
Window Center (WO) = 0,0,0
Grid Units (GU) =0.008,12
Global Origin (GO) = 0,0
Font (FT) = 68
Text Size (TX) = 0.0063
Line Spacing (LS) = 0.0047 (75% of text size)
Line Length (LL) = 255

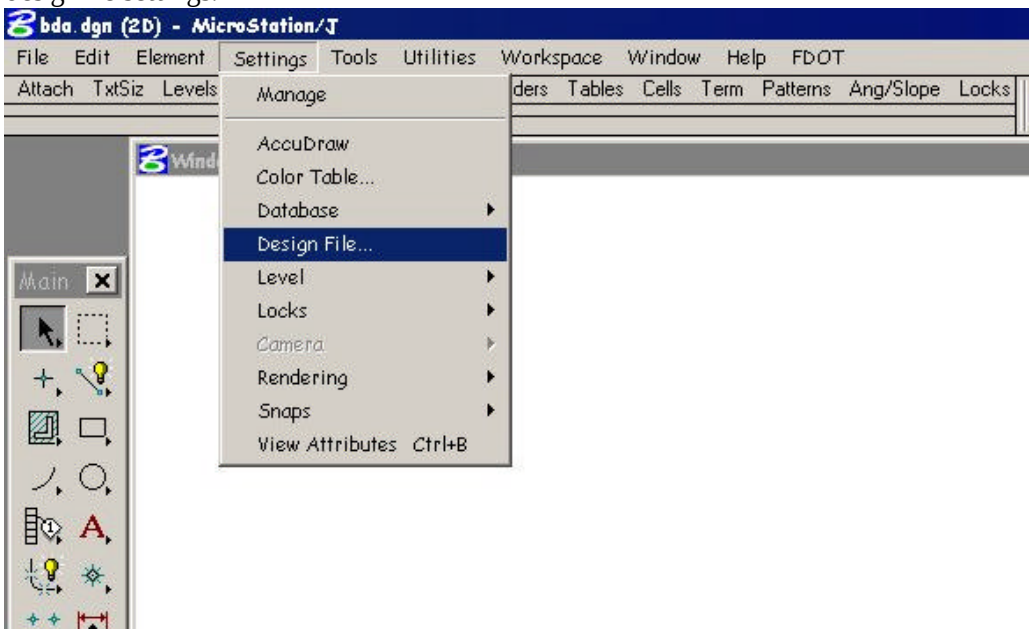
Cell Library = STENG3D.CEL (in drive:fdot_str\cadd\cell)

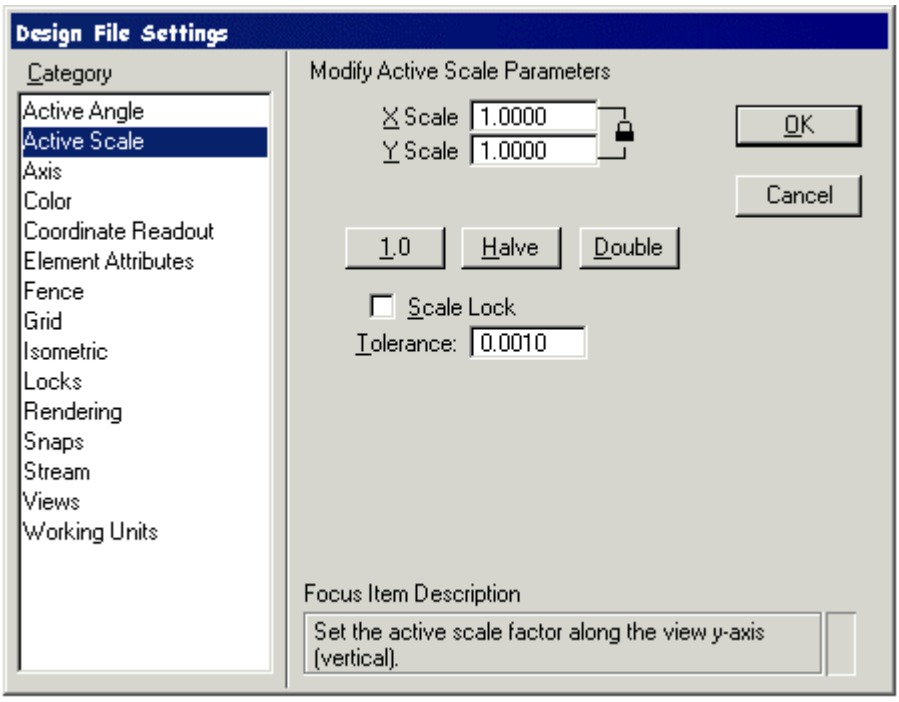
Color Table = COLOR.TBL (Microstation color table)

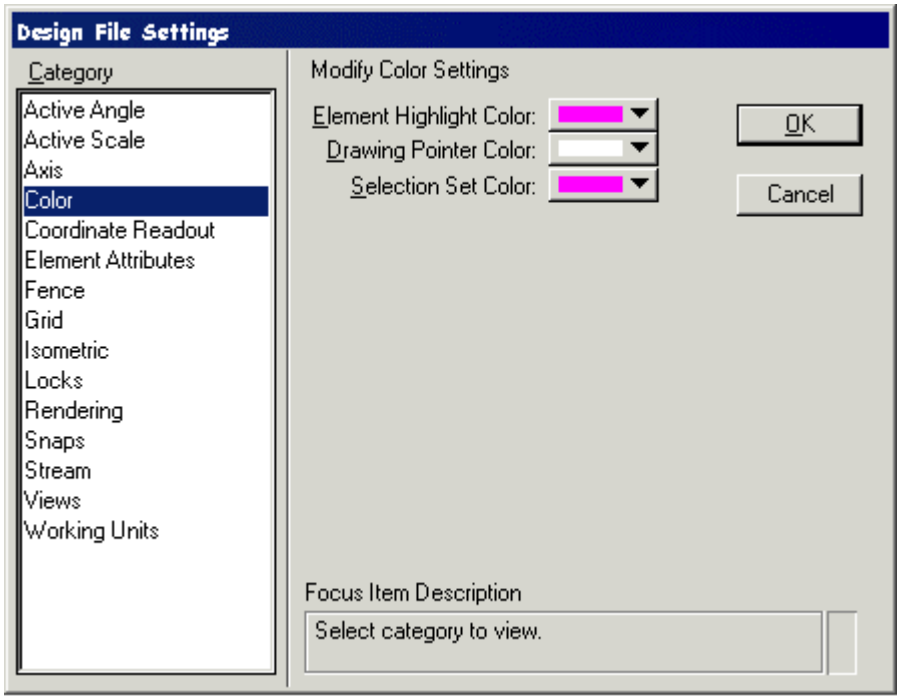
Additional Parameters: (Design Options)
Working Units (MU:SU:PU) = 1:12:1600 or 223696 sq ft.
Angle
Format = Degrees, Minutes, Seconds (DDD^MM'SS.SS")
Mode = Conventional
Data Readout
Format = Master Units
Accuracy = 0.1234
Angle Round-Off = 0^00'00.00"
Dimensioning
English, AEC
Substitute Symbol (Arrowhead) = ALT (Cell)
Linear Accuracy = 0.0001
Degree Accuracy = 0.001

Design File Settings

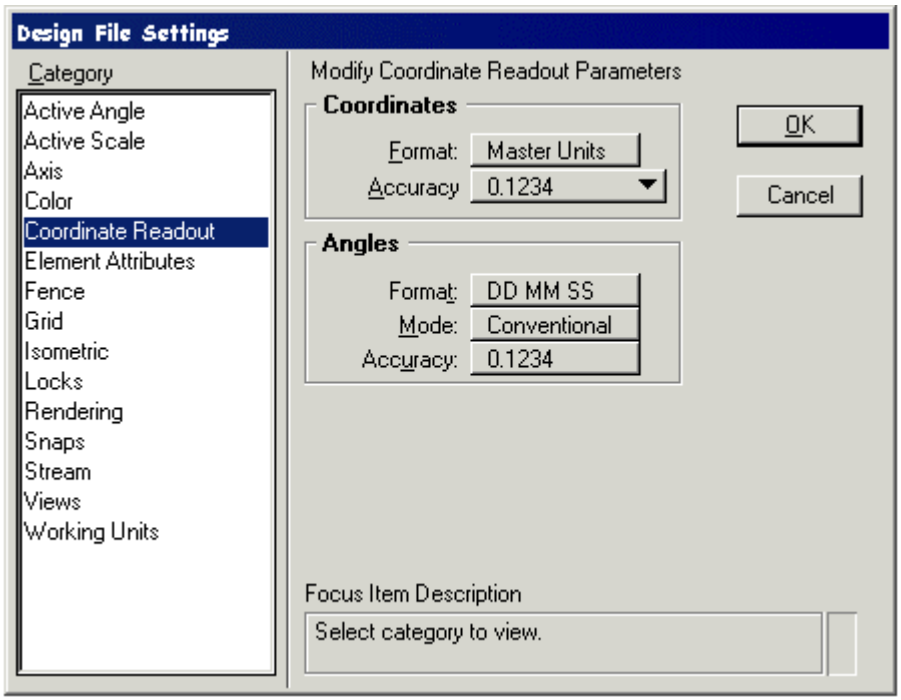
The Structures Design Office (SDO) CADD load is delivered with the following pre-set designfile settings.



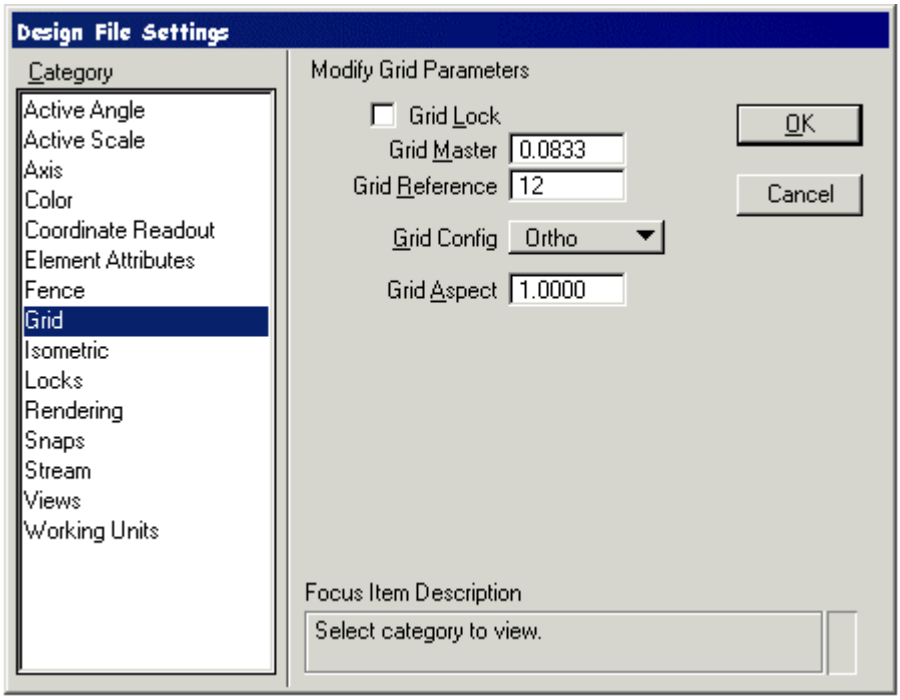




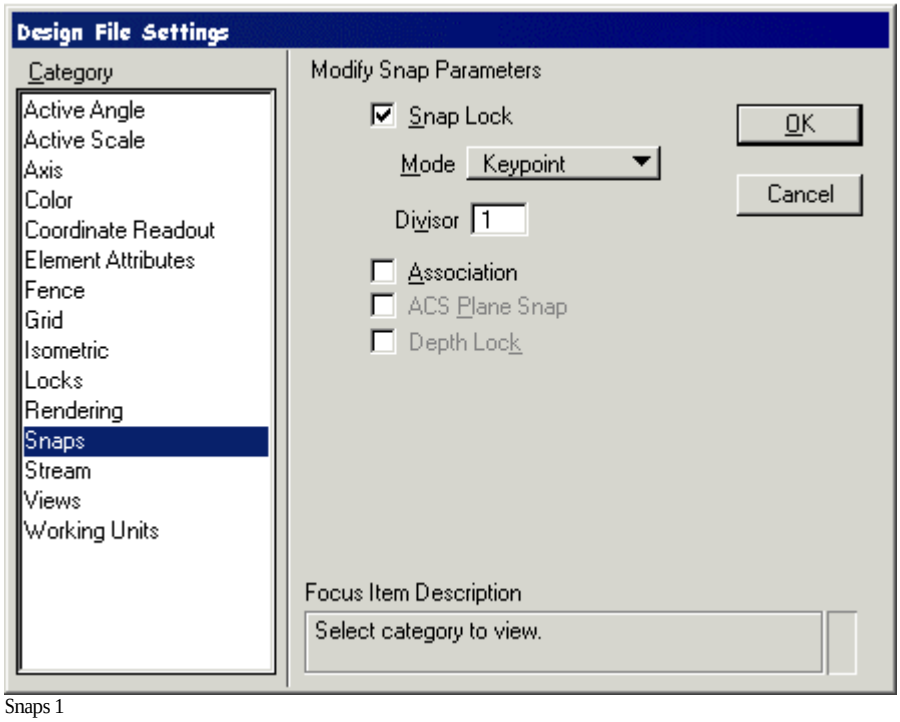
Color 1



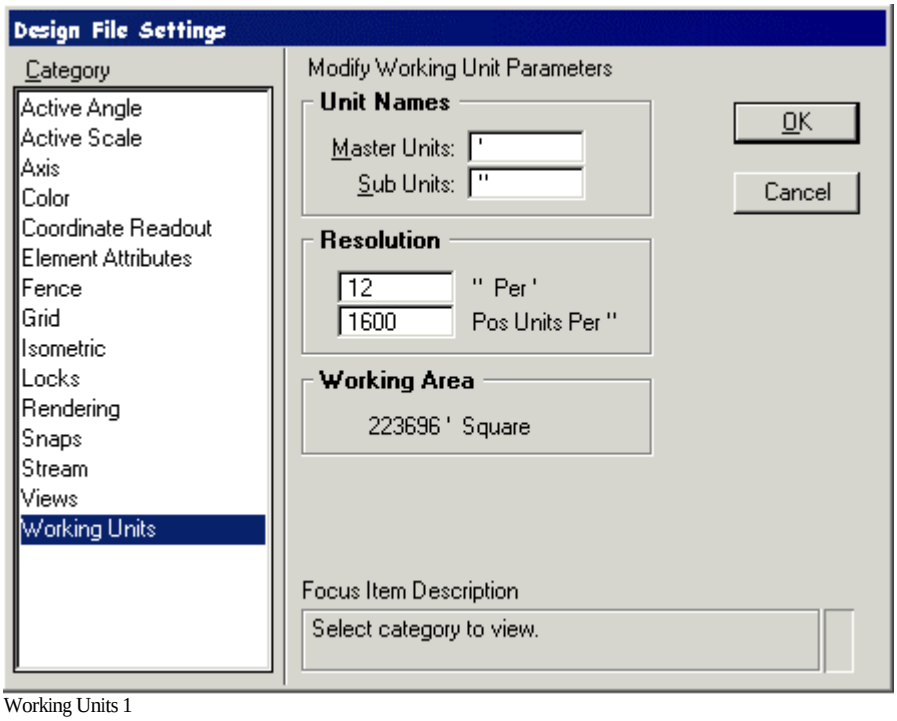
Coordinate Readout 1



Grid 1



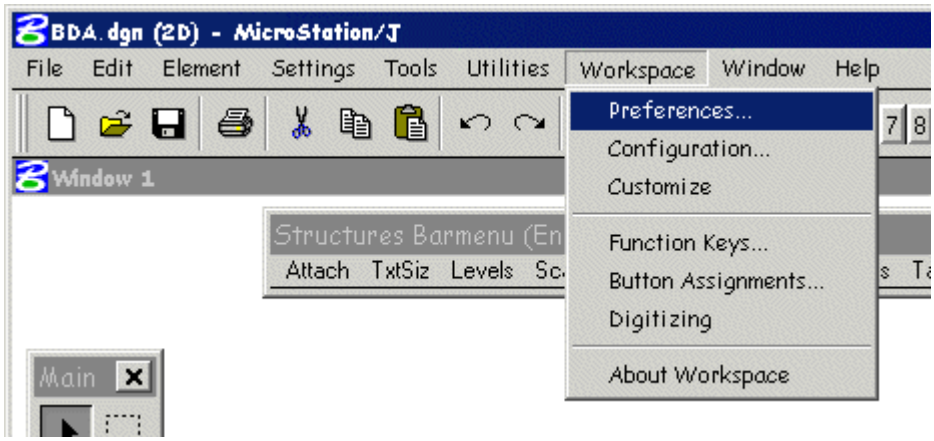
Snaps 1



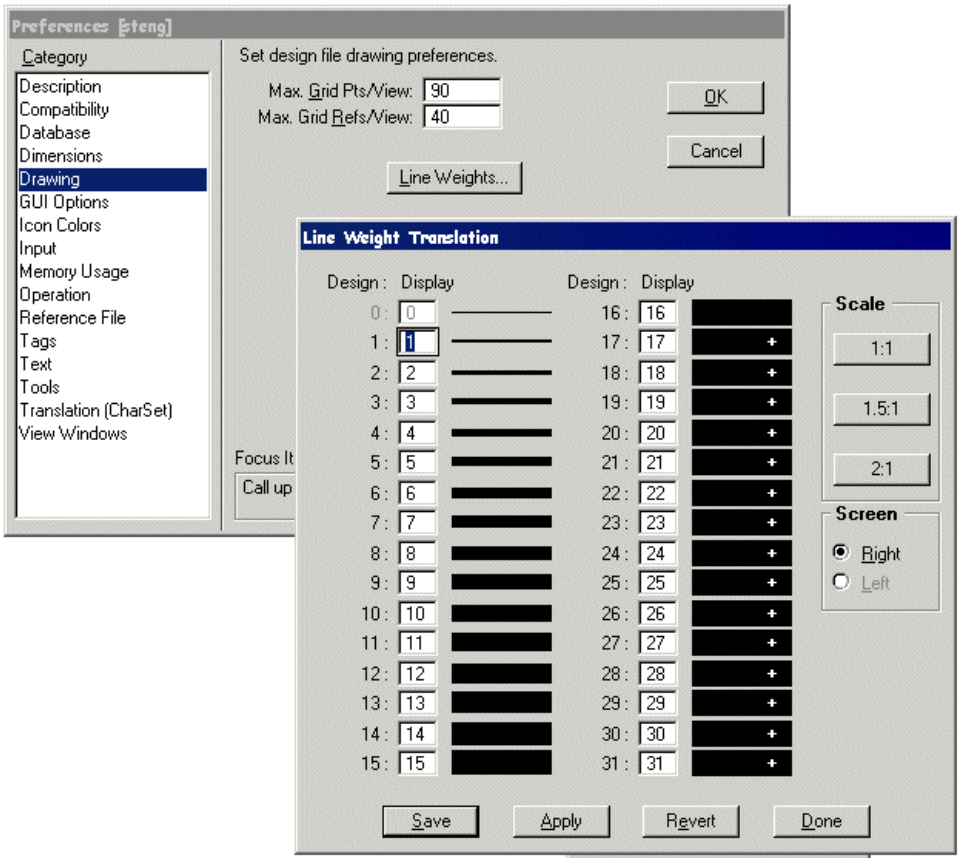
Working Units 1

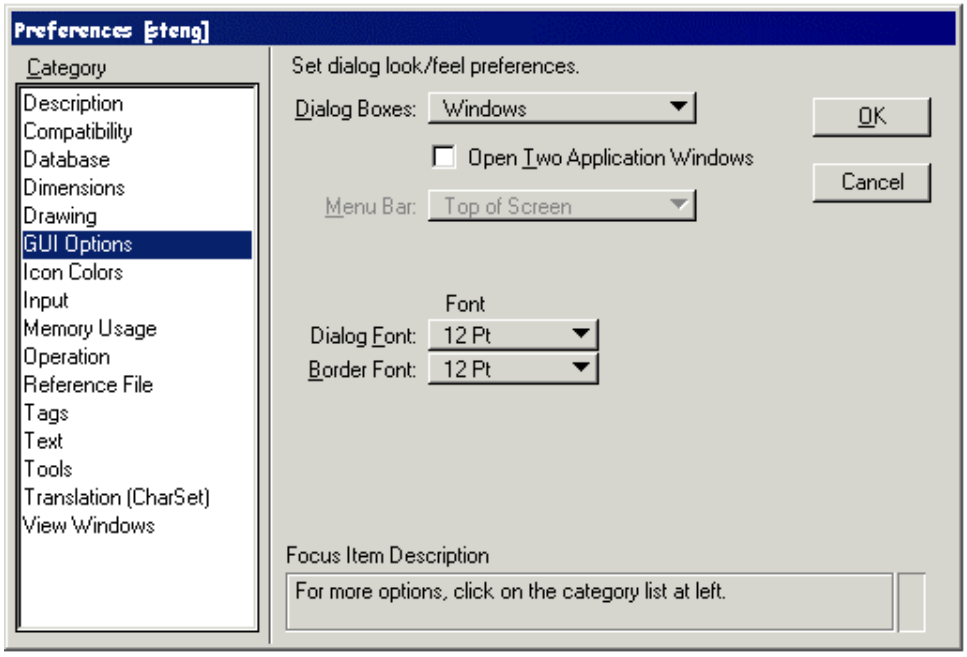
Workspace Preferences

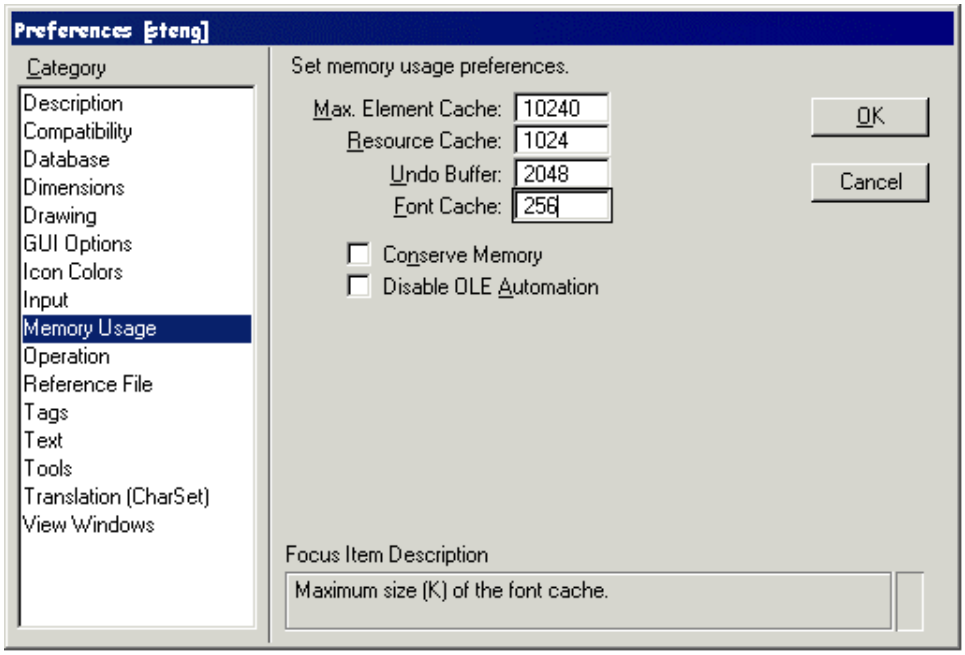
The Structures Design Office CADD load is delivered with the following preference settings.

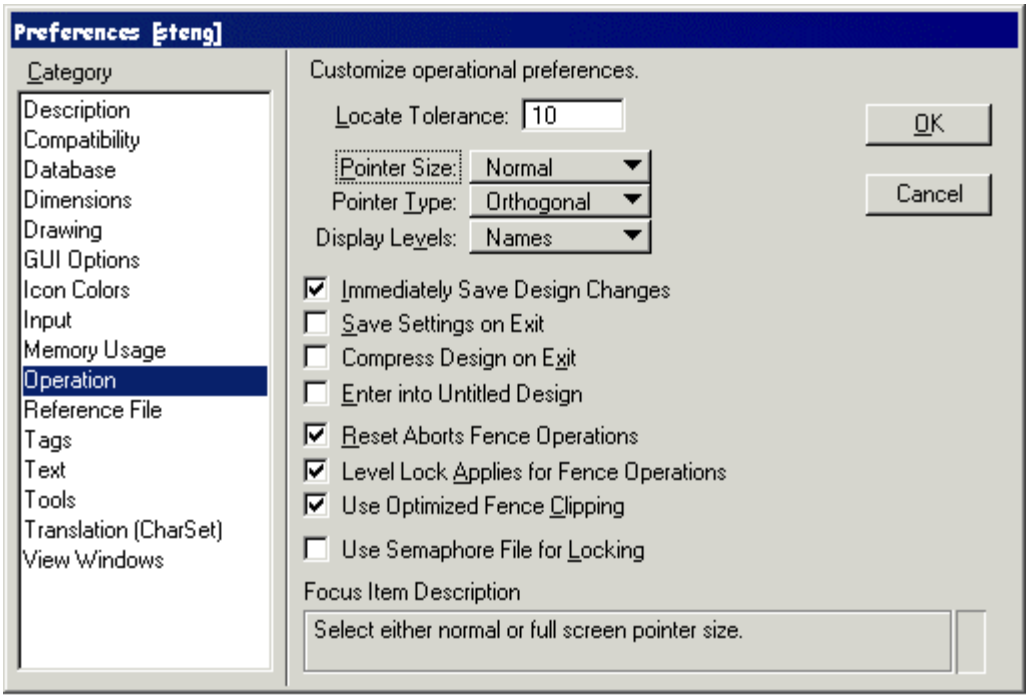


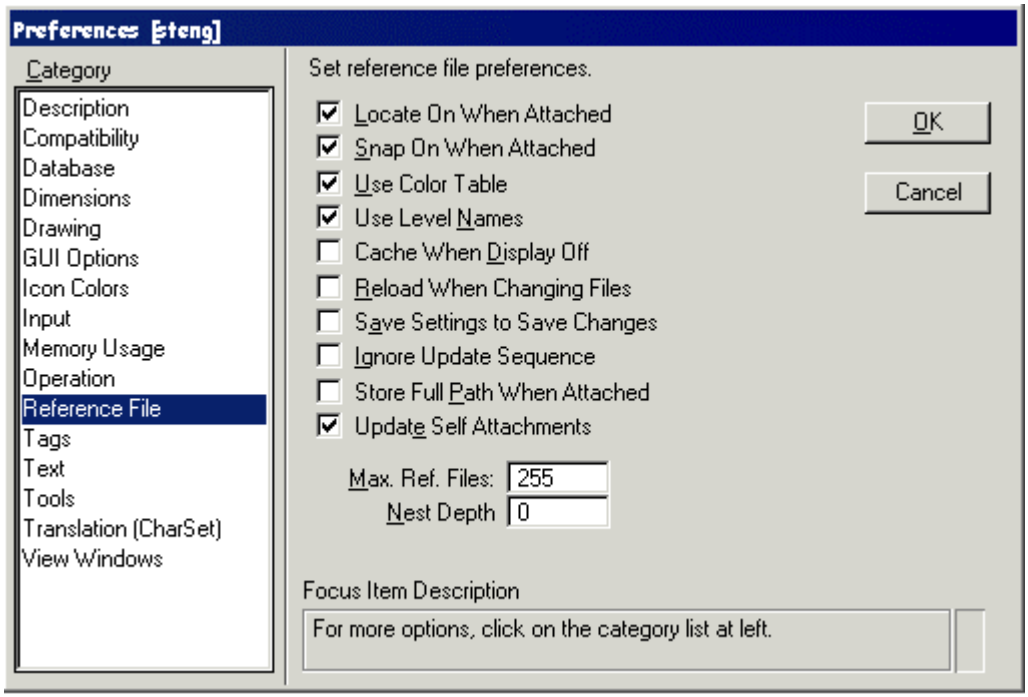
Line Weights 1

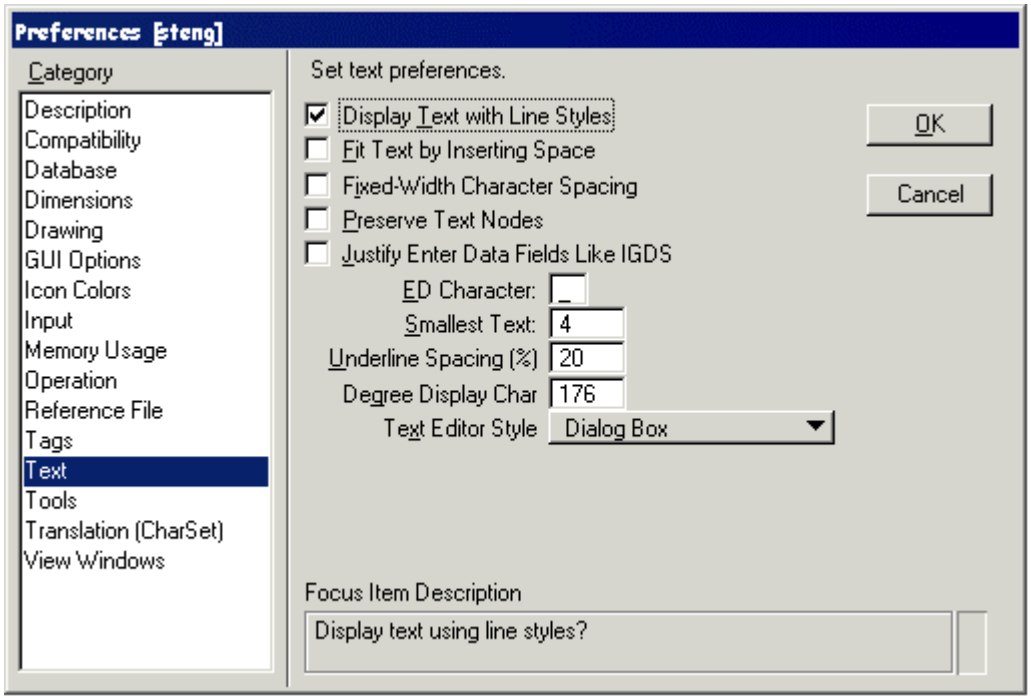


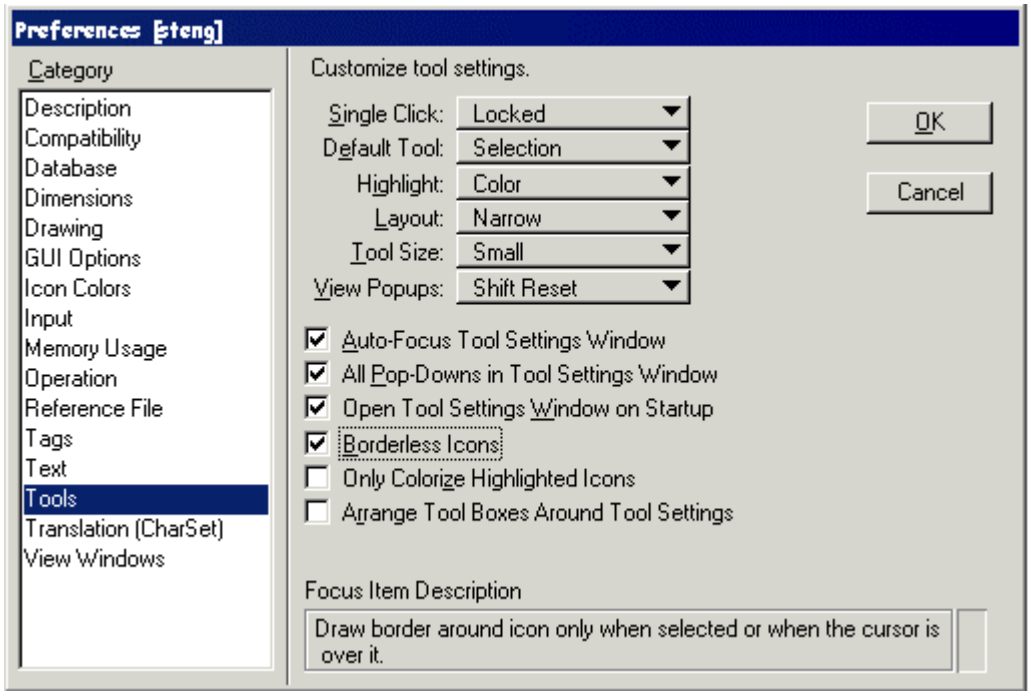

Preferences [steng]
Category
Description
Compatibility
Database
Dimensions
Drawing
GUI Options
Icon Colors
Input
Memory Usage
Operation
Reference File
Tags
Text
Tools
Translation (CharSet)
View Windows
Set dialog look/feel preferences.
Dialog Boxes: Windows
Open Two Application Windows
Menu Bar: Top of Screen
OK
Cancel
Font
Dialog Font: 12 Pt
Border Font: 12 Pt
Focus Item Description
For more options, click on the category list at left.

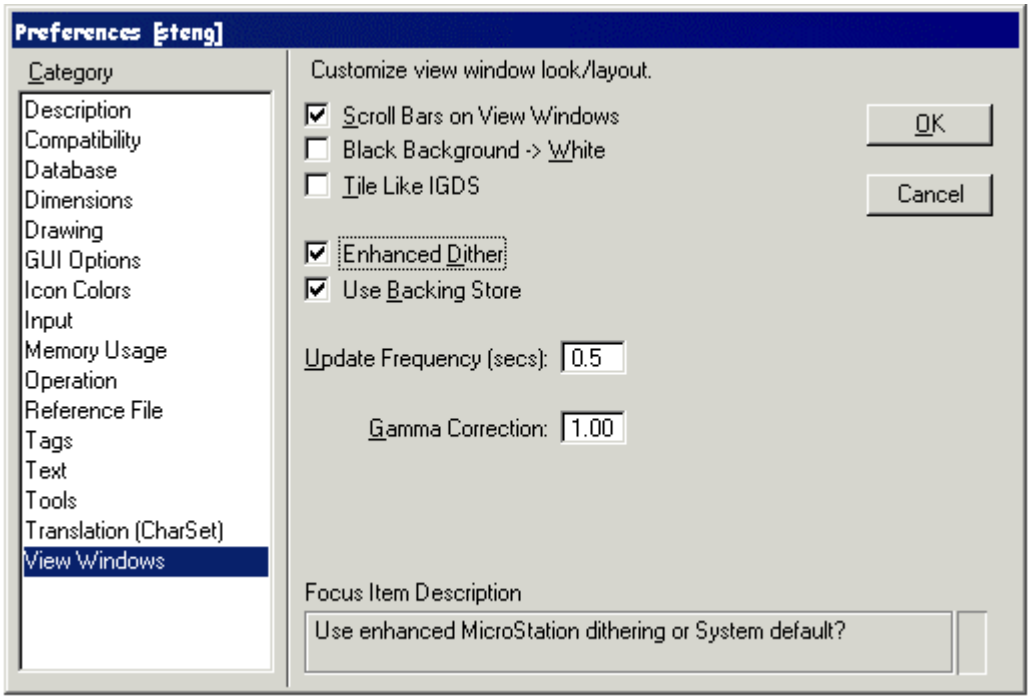

Preferences [steng]
Category
Description
Compatibility
Database
Dimensions
Drawing
GUI Options
Icon Colors
Input
Memory Usage
Operation
Reference File
Tags
Text
Tools
Translation (CharSet)
View Windows
Set memory usage preferences.
Max. Element Cache: 10240
Resource Cache: 1024
Undo Buffer: 2048
Font Cache: 256
Conserve Memory
Disable OLE Automation
OK
Cancel
Focus Item Description
Maximum size (K) of the font cache.


Preferences [steng]
Category
Description
Compatibility
Database
Dimensions
Drawing
GUI Options
Icon Colors
Input
Memory Usage
Operation
Reference File
Tags
Text
Tools
Translation (CharSet)
View Windows
Customize operational preferences.
Locate Tolerance: 10
Pointer Size: Normal
Pointer Type: Orthogonal
Display Levels: Names
OK
Cancel
Immediately Save Design Changes
Save Settings on Exit
Compress Design on Exit
Enter into Untitled Design
Reset Aborts Fence Operations
Level Lock Applies for Fence Operations
Use Optimized Fence Clipping
Use Semaphore File for Locking
Focus Item Description
Select either normal or full screen pointer size.


Preferences [steng]
Category
Description
Compatibility
Database
Dimensions
Drawing
GUI Options
Icon Colors
Input
Memory Usage
Operation
Reference File
Tags
Text
Tools
Translation (CharSet)
View Windows
Set reference file preferences.
Locate On When Attached
Snap On When Attached
Use Color Table
Use Level Names
Cache When Display Off
Reload When Changing Files
Save Settings to Save Changes
Ignore Update Sequence
Store Full Path When Attached
Update Self Attachments
Max. Ref. Files: 255
Nest Depth 0
OK
Cancel
Focus Item Description
For more options, click on the category list at left.

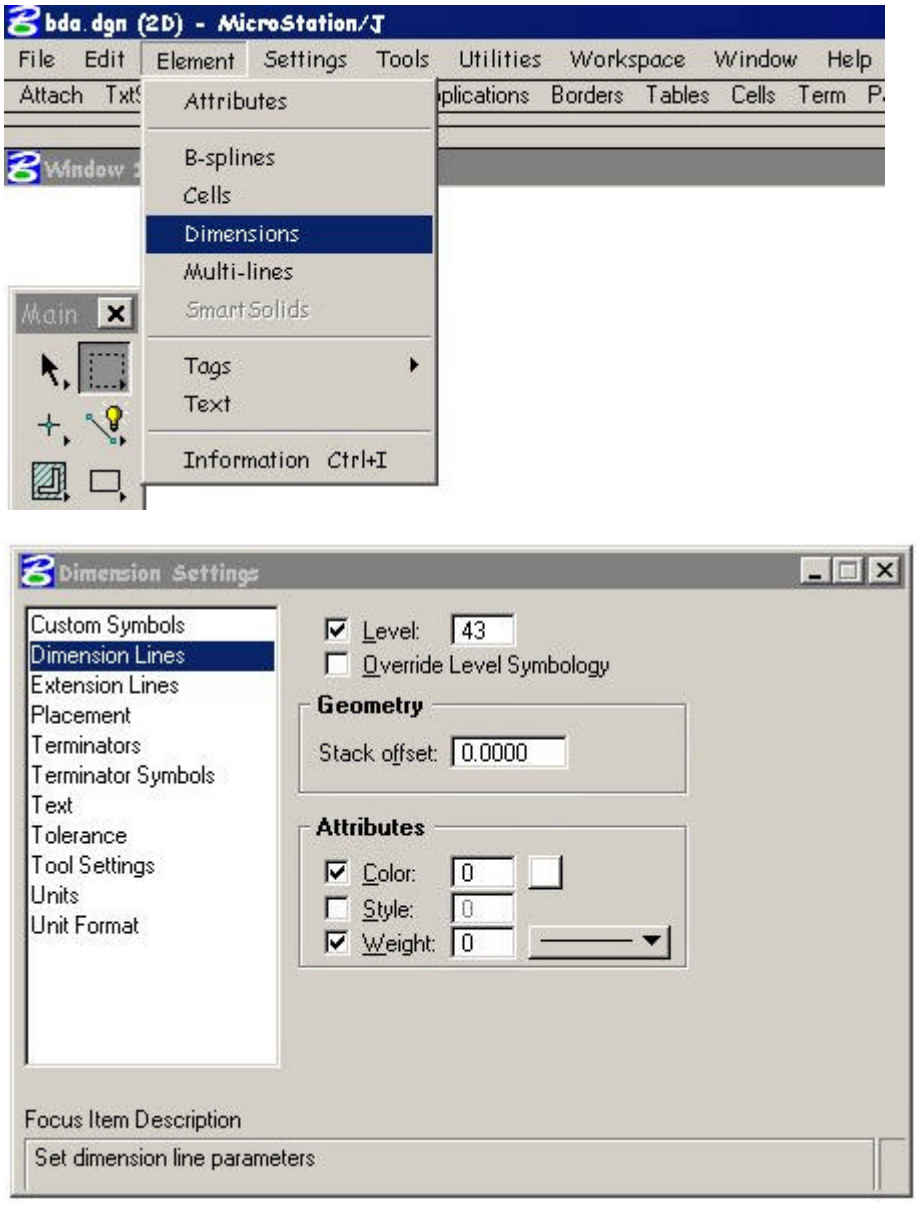

Preferences [steng]
Category
Description
Compatibility
Database
Dimensions
Drawing
GUI Options
Icon Colors
Input
Memory Usage
Operation
Reference File
Tags
Text
Tools
Translation (CharSet)
View Windows
Set text preferences.
Display Text with Line Styles
Fit Text by Inserting Space
Fixed-Width Character Spacing
Preserve Text Nodes
Justify Enter Data Fields Like IGDS
ED Character: _
Smallest Text: 4
Underline Spacing (%) 20
Degree Display Char 176
Text Editor Style Dialog Box
OK
Cancel
Focus Item Description
Display text using line styles?


Preferences [steng]
Category
Description
Compatibility
Database
Dimensions
Drawing
GUI Options
Icon Colors
Input
Memory Usage
Operation
Reference File
Tags
Text
Tools
Translation (CharSet)
View Windows
Customize tool settings.
Single Click: Locked
Default Tool: Selection
Highlight: Color
Layout: Narrow
Tool Size: Small
View Popups: Shift Reset
Auto-Focus Tool Settings Window
All Pop-Downs in Tool Settings Window
Open Tool Settings Window on Startup
Borderless Icons
Only Colorize Highlighted Icons
Arrange Tool Boxes Around Tool Settings
OK
Cancel
Focus Item Description
Draw border around icon only when selected or when the cursor is over it.

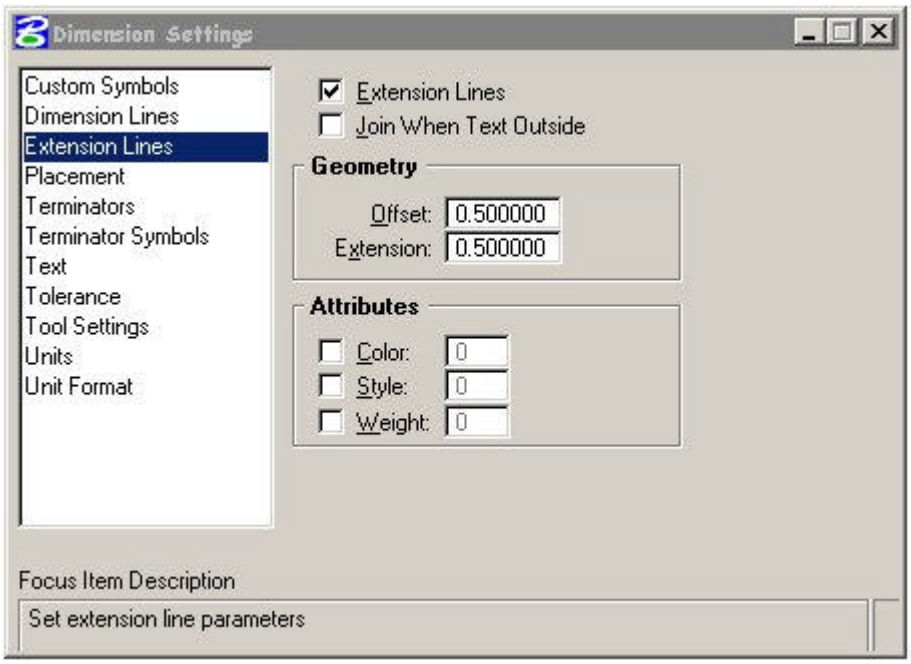

Preferences [steng]
Category
Description
Compatibility
Database
Dimensions
Drawing
GUI Options
Icon Colors
Input
Memory Usage
Operation
Reference File
Tags
Text
Tools
Translation (CharSet)
View Windows
Customize view window look/layout.
Scroll Bars on View Windows
Black Background -> White
Tile Like IGDS
Enhanced Dither
Use Backing Store
Update Frequency (secs): 0.5
Gamma Correction: 1.00
OK
Cancel
Focus Item Description
Use enhanced MicroStation dithering or System default?

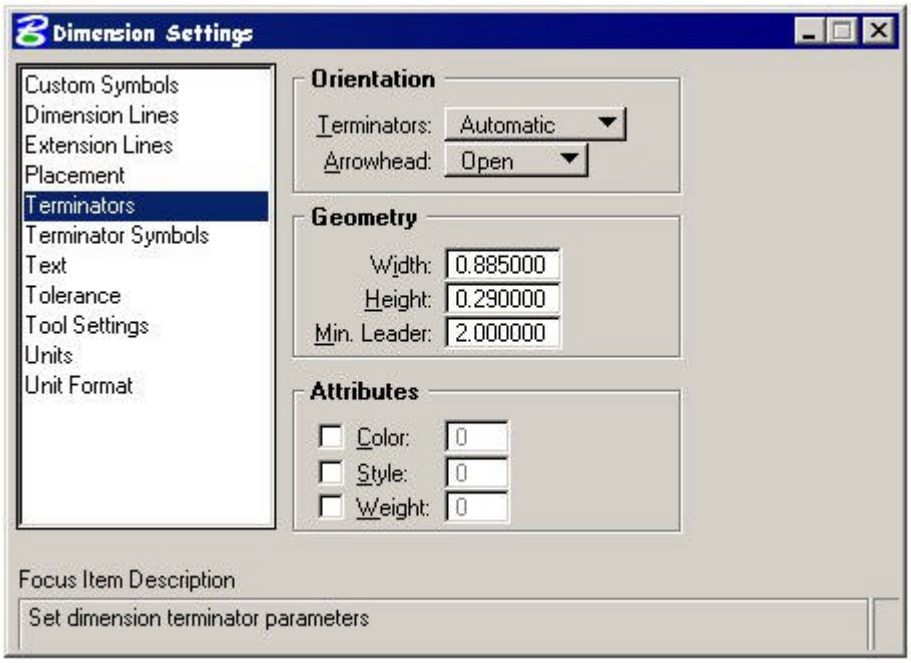
Dimension Settings

The SDO CADD load is delivered with the following pre-set Dimension Settings.

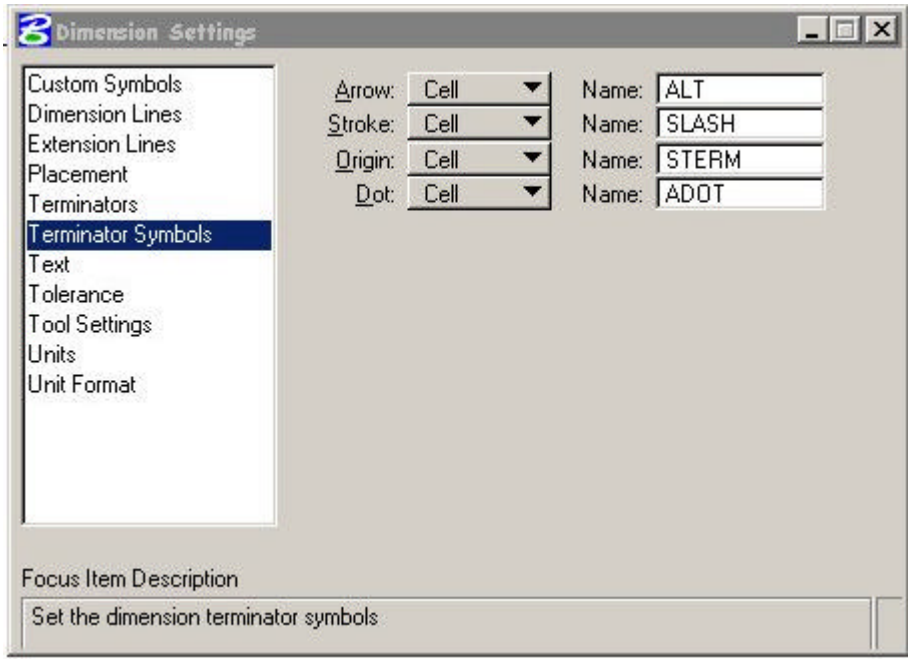


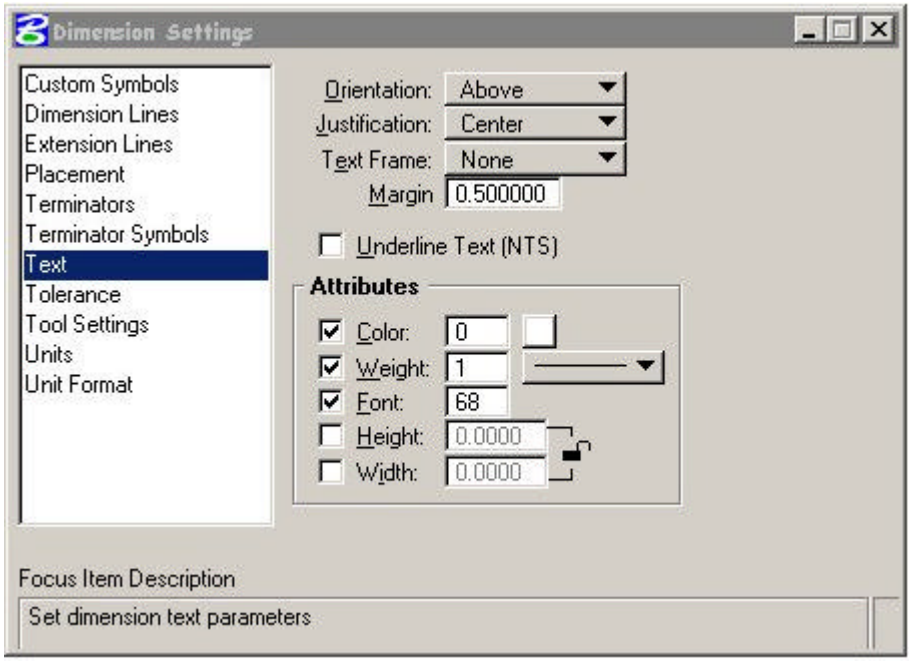
Dimension Settings; Lines 1



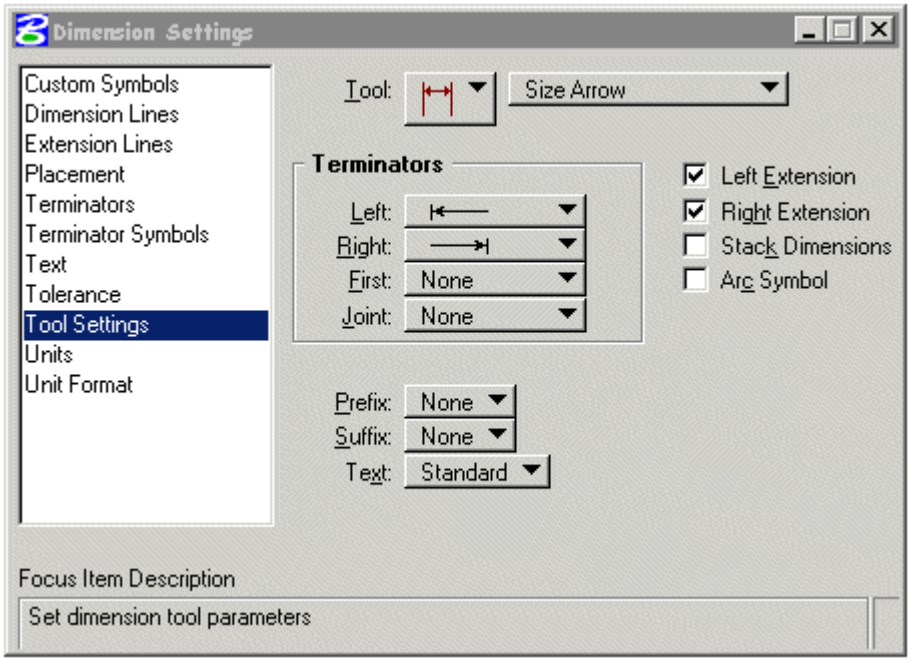


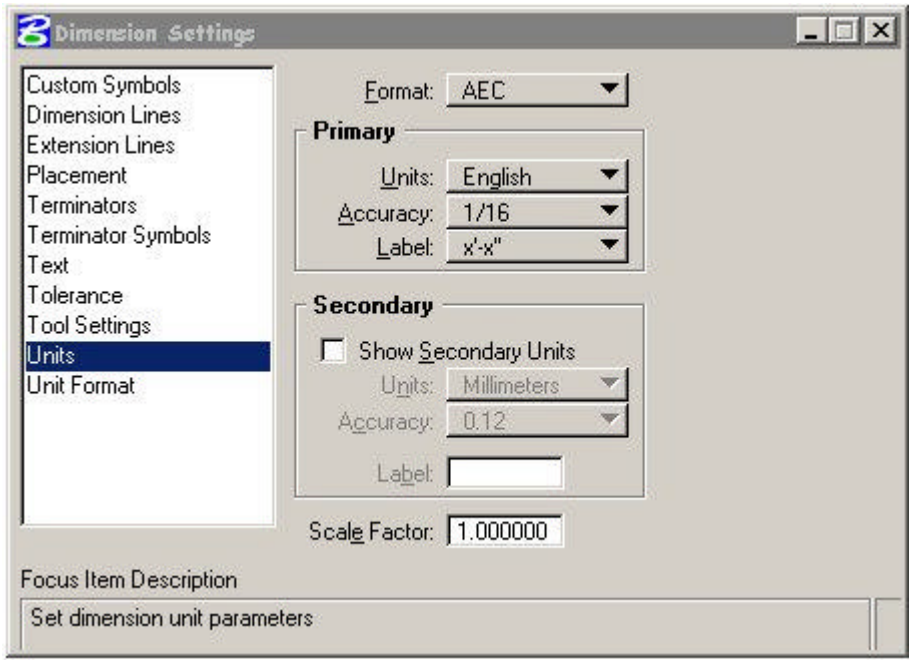
Dimension Settings; Terminators 1



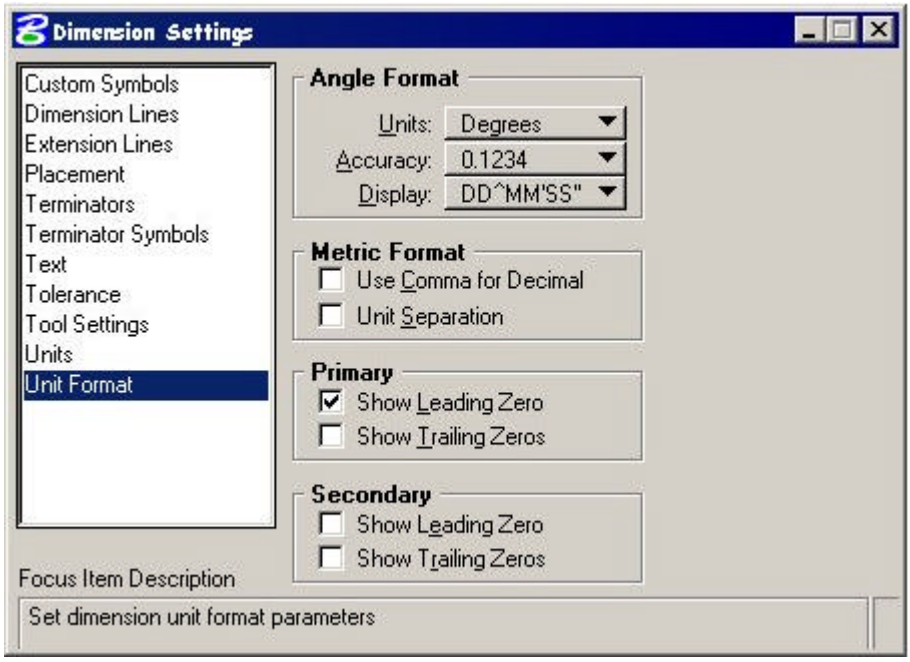


Dimension Settings; Text 1



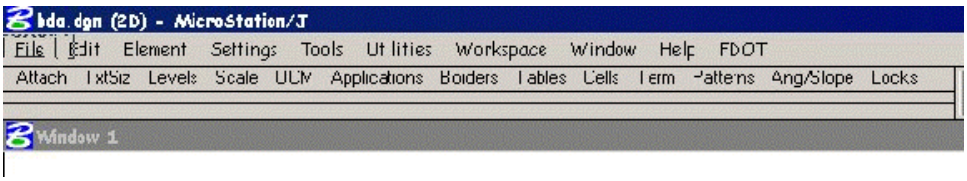


Dimension Settings; Units 1

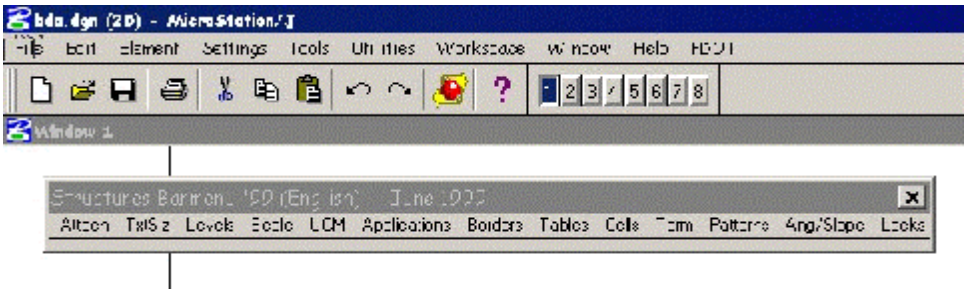

Dimension Settings
Custom Symbols
Dimension Lines
Extension Lines
Placement
Terminators
Terminator Symbols
Text
Tolerance
Tool Settings
Units
Unit Format
Angle Format
Units: Degrees
Accuracy: 0.1234
Display: DD^MM'SS"
Metric Format
Use Comma for Decimal
Unit Separation
Primary
Show Leading Zero
Show Trailing Zeros
Secondary
Show Leading Zero
Show Trailing Zeros
Focus Item Description
Set dimension unit format parameters

Structures Menu Bar

The Structures Design Office (SDO) CADD setup includes a custom “MDL” application, “barmenu.ma” The menubar is ‘dockable’ under the task bar,

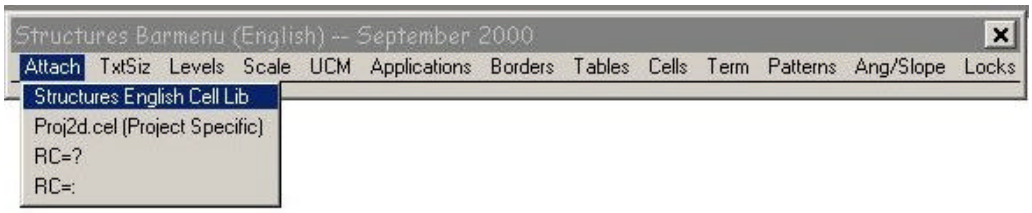


or may be “torn away”.



Menu bar items are shown as thirteen separate pull-down menus, "Attach" through "Locks". The following pages are a description of each feature included in the menus. These pull-downs are hierarchal in nature and cannot be "torn" away.

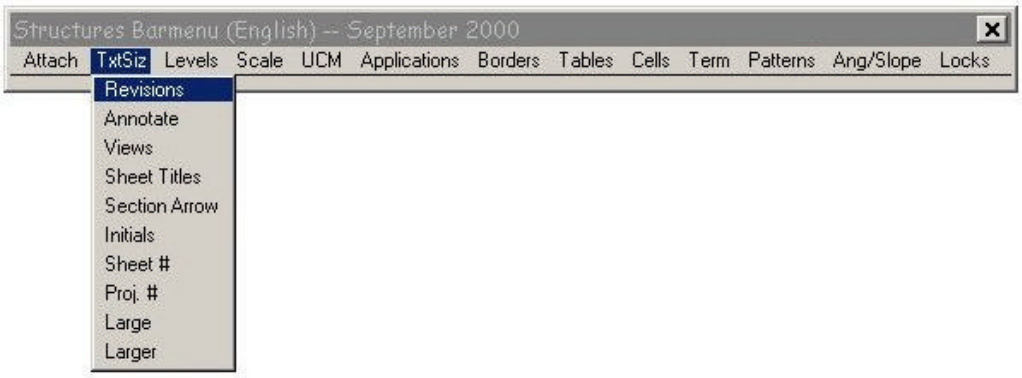
Attach



Structures English Cell Lib- Attaches the SDO English cell library (StEng.cel).
Proj2d.cel (Project Specific)- Attaches the user’s 2d project cell library.
RC=? - Returns the currently attached cell library.
RC=: - Brings up **Attach Cell Library** dialog box to browse for a cell library.

TxtSiz.

Using the **TxtSiz** pull-down keeps the drawing text within SDO standards. Select the border scale before selecting your text size (See '"Scale" Menu Item).

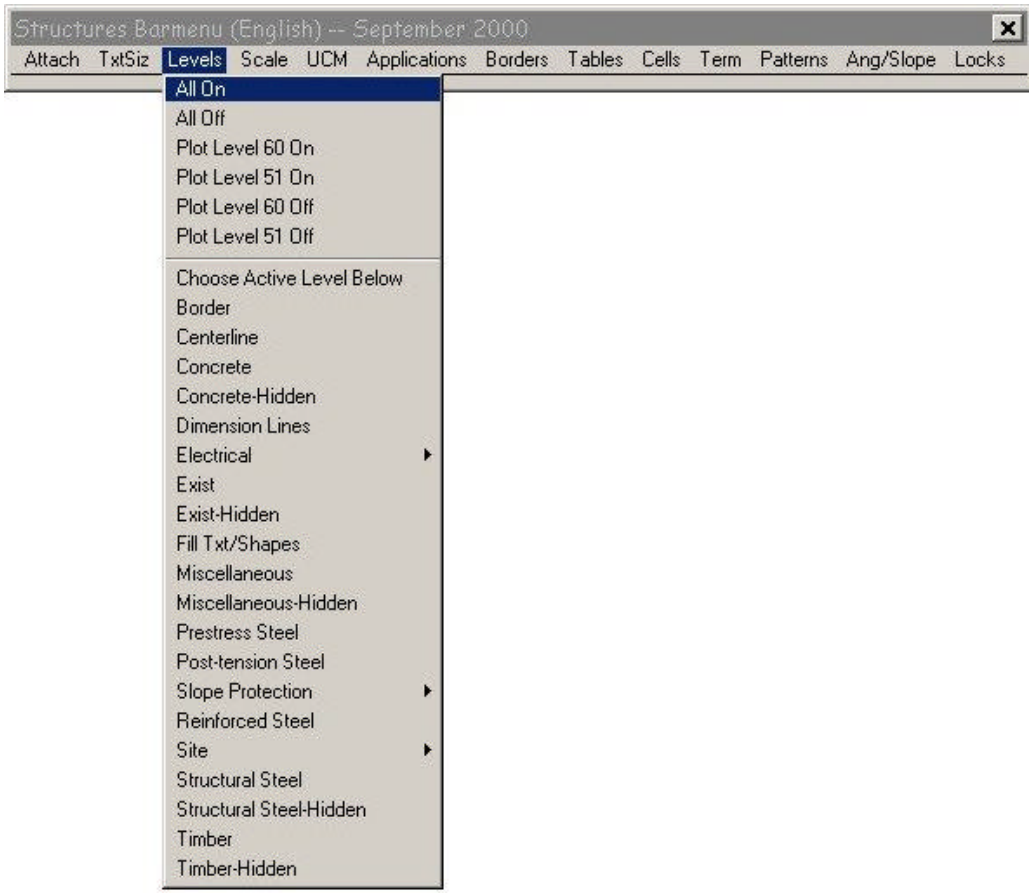


To determine size of placed text multiply the active scale by the test size shown.

Revisions - .0050'.
Annotate - .0063'
Section Arrow- .0080'
Initials - .0058'
Large - .0084'
Views- .0080'
Sheet Titles - .0073'
Sheet # - .0058'
Proj. # - .0058'
Larger - .0100'

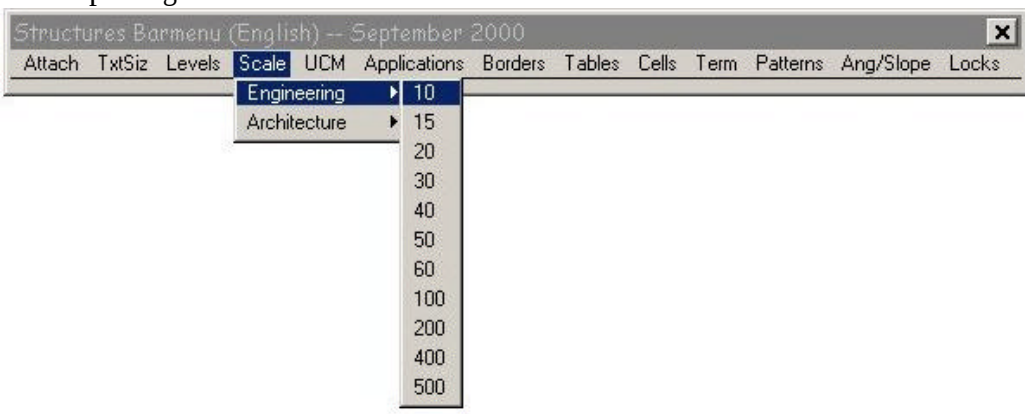
Levels

This menu provides most of the level symbology needed to produce plans that comply with the SDO CADD Standards. These selections will set your color, level, style and weight for each type of classification. Also provided are All On and All Off for all levels and specific levels such as Plot Level 60 (shape) and Plot Level 51 (linestring). These shortcuts do away with keying in "on=" and opening the "levels" dialog box



Scale

Scale selections are provided for Engineering units as well as Architectural Units. Select a scale before setting text size, choosing a line terminator, placing cells and before placing the border .



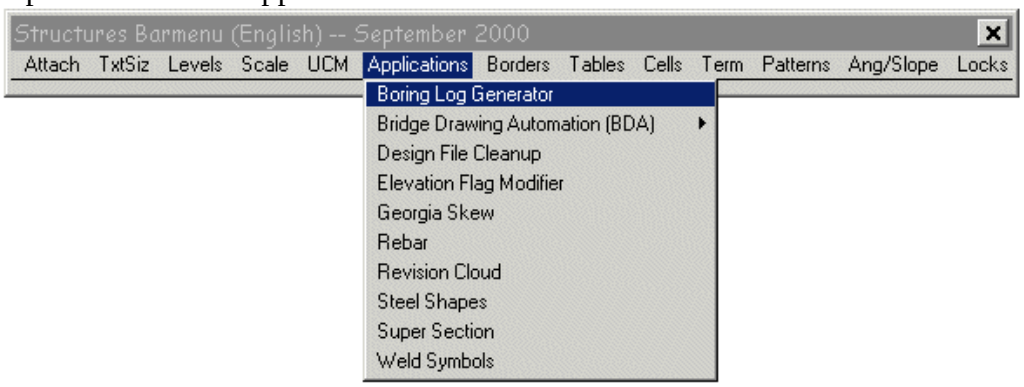
UCM (User Commands)

Set Active Ang 2pts - sets the active angle to the angle between two user defined data points.

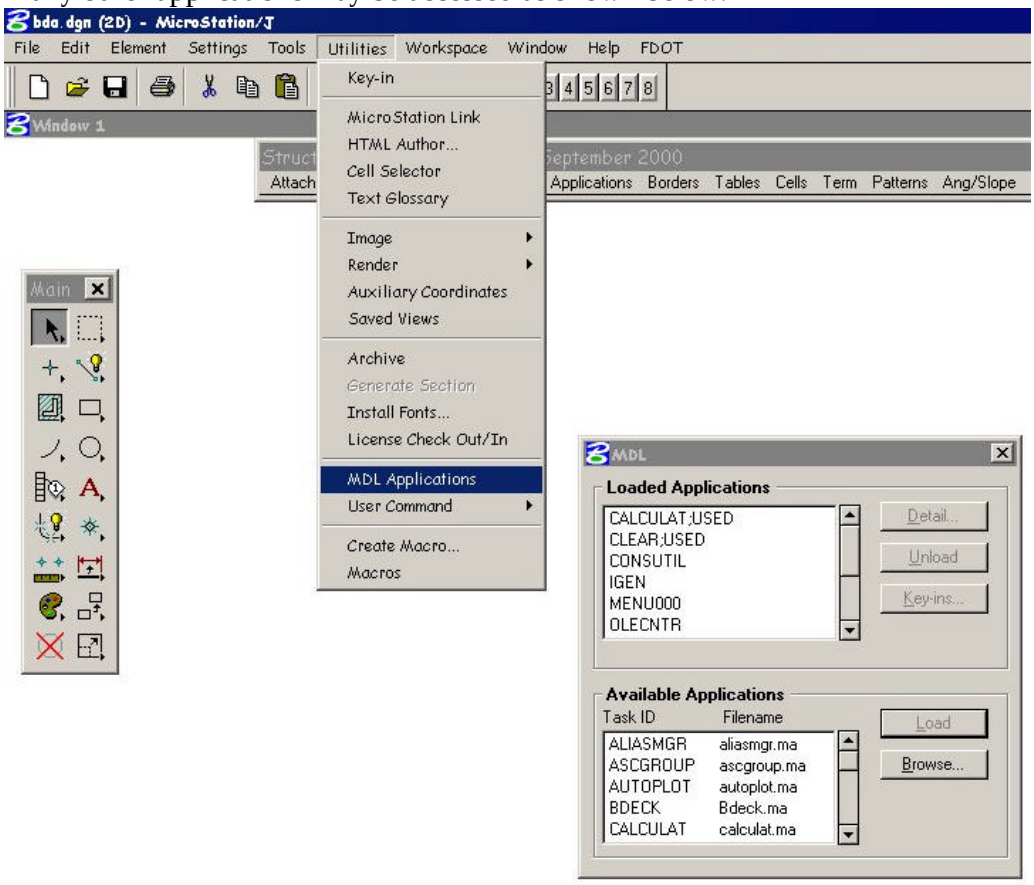
Set Active Ang 3pts - sets the active angle to the angle between three user defined data points.

MDLApps

The Structure's Menubar includes applications which have been developed specifically for use in detailing structures plans. See the Table of Contents for an explanation of each application

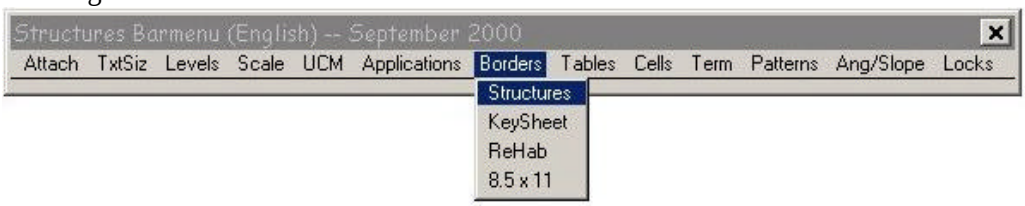


Many other applications may be accessed as shown below.



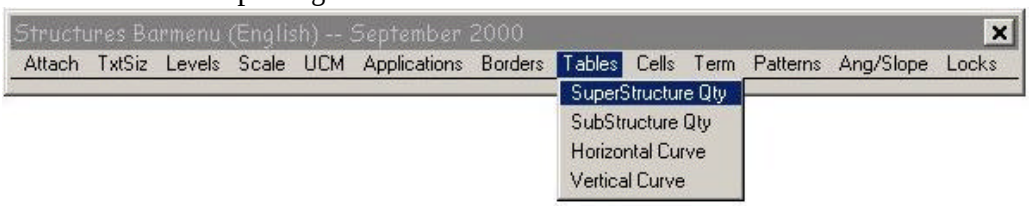
Borders

After selecting the proper scale, you may select the border you wish to place. The Structures Border is a “true half-size” border for plotting to 11 x 17 paper. The actual drawing area is 9.72" x 15.36". See “ Scales.”



Tables

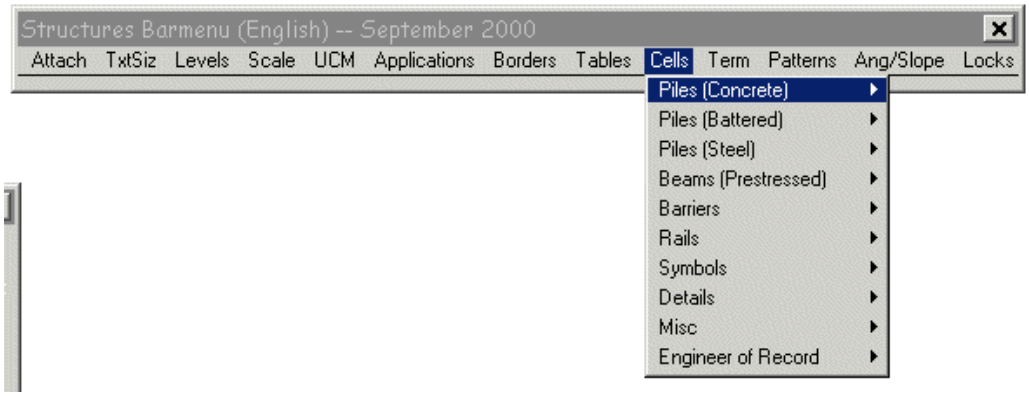
These tables assist in creation of commonly used items such as quantity boxes and geometry data. The horizontal and vertical curve data diagrams have data entry fields, and can be completed very quickly. Attach the Structures cell library and select the active scale before placing tables.



Cells

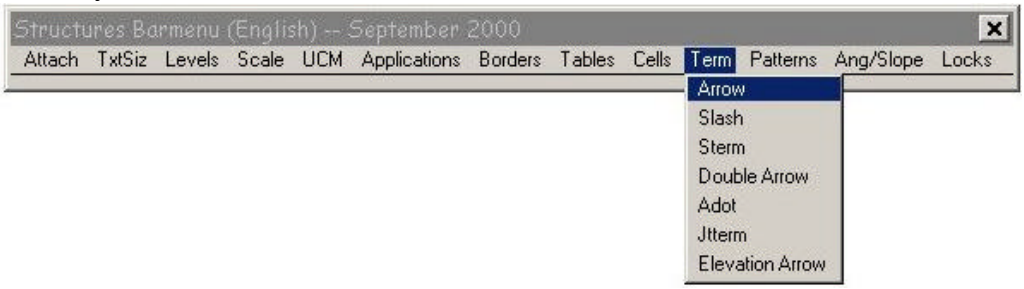
This menu item calls the most frequently used cells in the SDO cell library that are not called by another routine. Some of these cells must have an active scale set before use. Some are meant to be placed at AS=1. Preset battered pile angles are available for pile placement.

If you have any cells which may be useful to everyone as a group, please forward them to SDO CADD Development and Support Section for inclusion into the master cell library.



Term

These are line terminators. The appropriate scale must be set before use. Terminators can be used individually or with auto-dimensioning. Note: if you are using a scale other than one chosen from the Scales menu, the Terminator Scale (TS=) must be set manually.

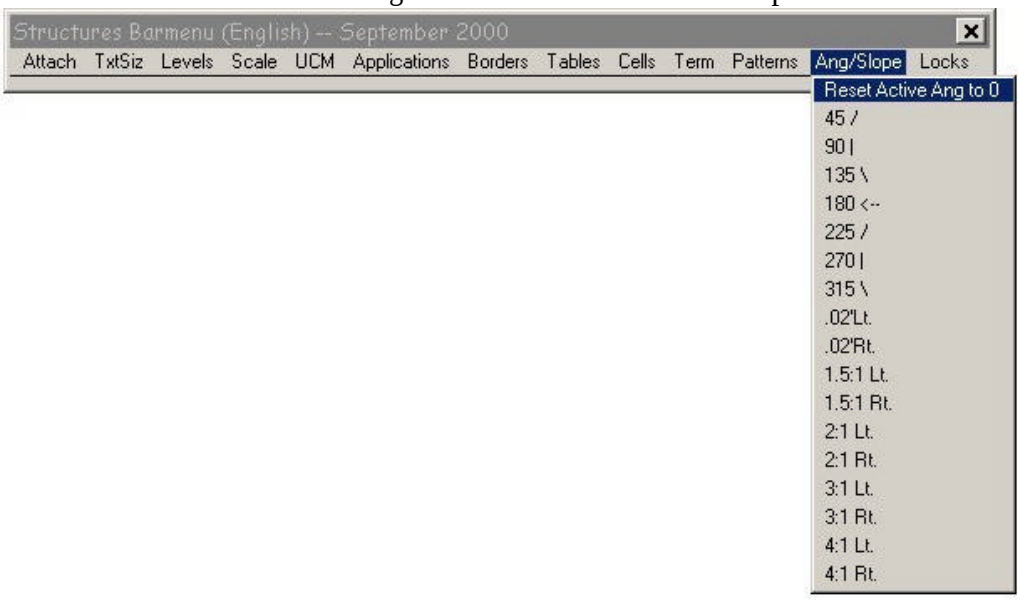


Patterns

Select the proper scale and attach the “Steng” cell library before selecting a pattern command. These patterns are set up for typical use on a set of bridge plans. The pattern deltas and pattern scales present a suitable pattern at the commonly used active scales for detailed reinforcing drawings. If a particular pattern is too "thick" and/or thin, choose a different scale and re-pattern. Patterning should have a similar appearance throughout the set of plans.

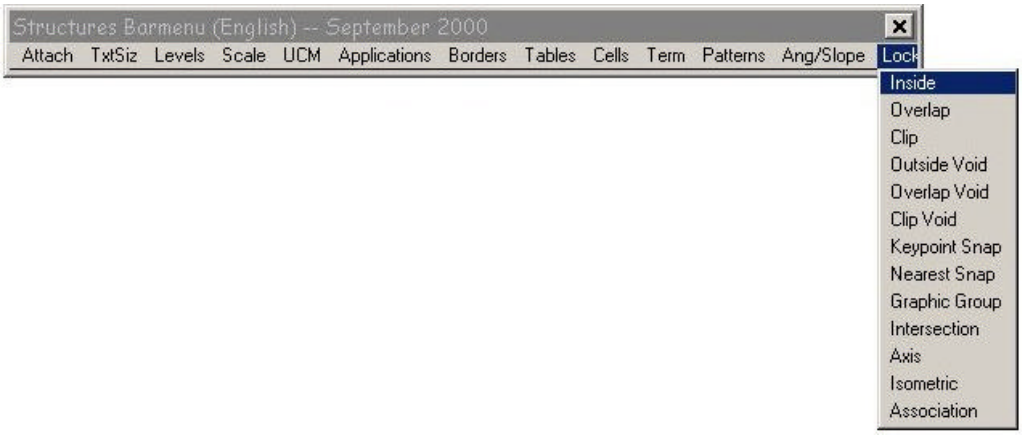
Slopes

These are some of the common angles or slopes that are used on FDOT drawings. A command to reset the active angle to zero is included at the top of the menu.



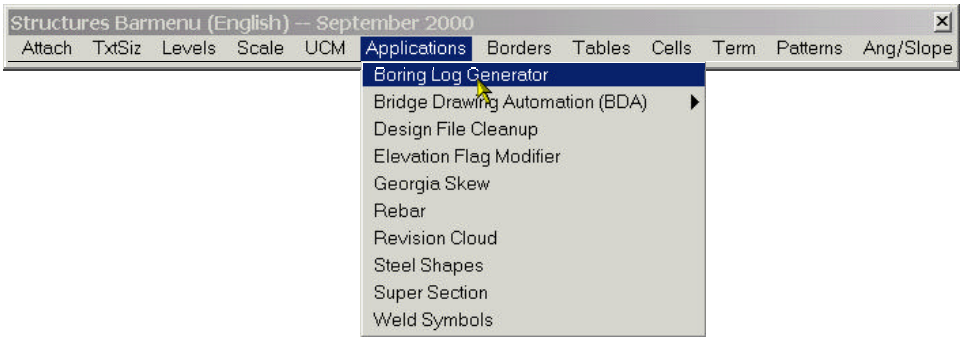
Locks

The Locks menu item is a convenient way to access the most used locks and fence modes.

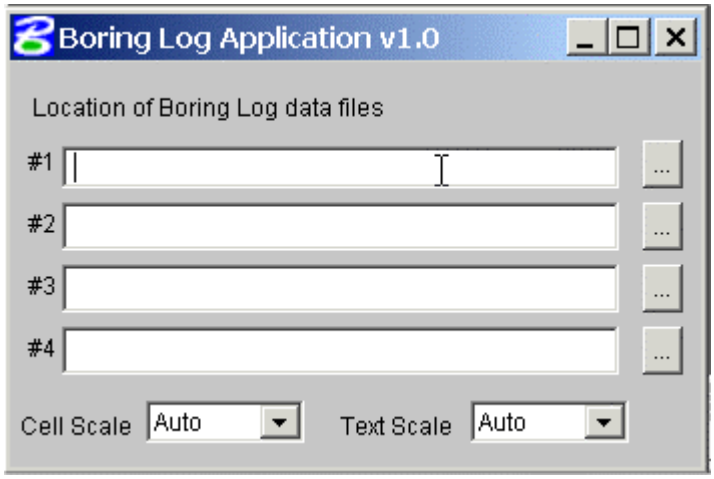


Boring Log Generator

The Boring Log Generator a JMDL application that creates boring sheets using the boring data created from within the SPT97 application available on the Structures Internet Site. This application only runs from within MicroStation/J & PowerDraft/J. The application can be invoked either from the Structures Barmenu from the applications pulldown or using the keyin "java fdotsdo.jBorelog.jBorelog".



Once invoked, enter the filename and location of the SPT97 data files that are to be used for the boring sheet generation. You may enter up to 4 input files that must all be of the same unit system (all English or all metric).



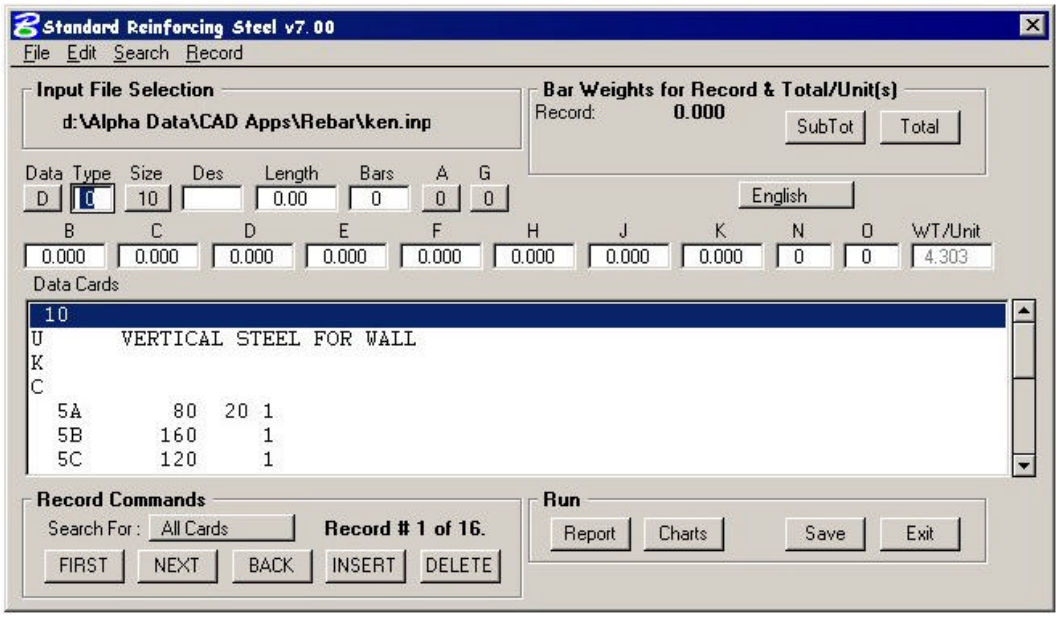
When at least one input file is chosen, the outline of the drawing will be attached to the cursor and you may place the sheet by pressing the accept button on the mouse.

The program will scale text & patterning to the correct size. If you wish to override the default scales you may change the Cell & Text scales independently using the drop down lists.

Reinforcing Steel Quantity Program

(Rebar)

REBAR is an MDL application for use with MicroStation. The program will calculate individual bar lengths and total up individual units (end bents, superstructures and etc). Reports can be generated and printed for use in a final computation book. All bar bends are based on the Structures Design Office Standard Index 1300. The Steng.cel must be attached to the current design file.



Program Operation:

Start Rebar by selecting the program from the Structures Menubar or key-in "MDL load rebar". A sample input file is delivered with the program.

Pull-down Menus:

File Files may be opened, saved, edited or the program may be exited.
Edit Full screen edit sessions of input files.
Search Search for a particular type of code.
Record Go to a particular record in the input file

Price Price per pound in the Unit Code. Program will use this number to calculate the total cost of reinforcing steel for an individual bar or the

Input Codes:

D-Data The reinforcing bars.
V-Vary Indicates a range of bars that vary in length.
***Identi.** The job number, county or another identifier.
U-Unit Defines the type of unit (i.e. End Bent, Wall, etc.)
K–Skip This code is used to show a blank line in the input.
Comment Use this code for any comment you might want to show
T–Total Total weight of rebar will be computed to beginning of job or to a preceding Total Column.
Z–Z Indicates End of Data

RECORDS COMMANDS:

Search Search for a particular record or type of record.
First Move to first record in input file.
Next Move to next record in input file.
Back Move to previous record in input file.
Insert Allows the user to Insert a new record
Delete Deletes the current record.

RUN:

Report Executes the REBAR program and creates a report (RPT) file for Reinforcing details. A report (RPT) file must be created before the Chart command can be used. (see Chart command below)
Charts Creates the Charts from the current report (RPT) file. (See Report command above)
Save Save any changes you may have made to the input file.
Exit Exits the REBAR program.

Georgia Skew

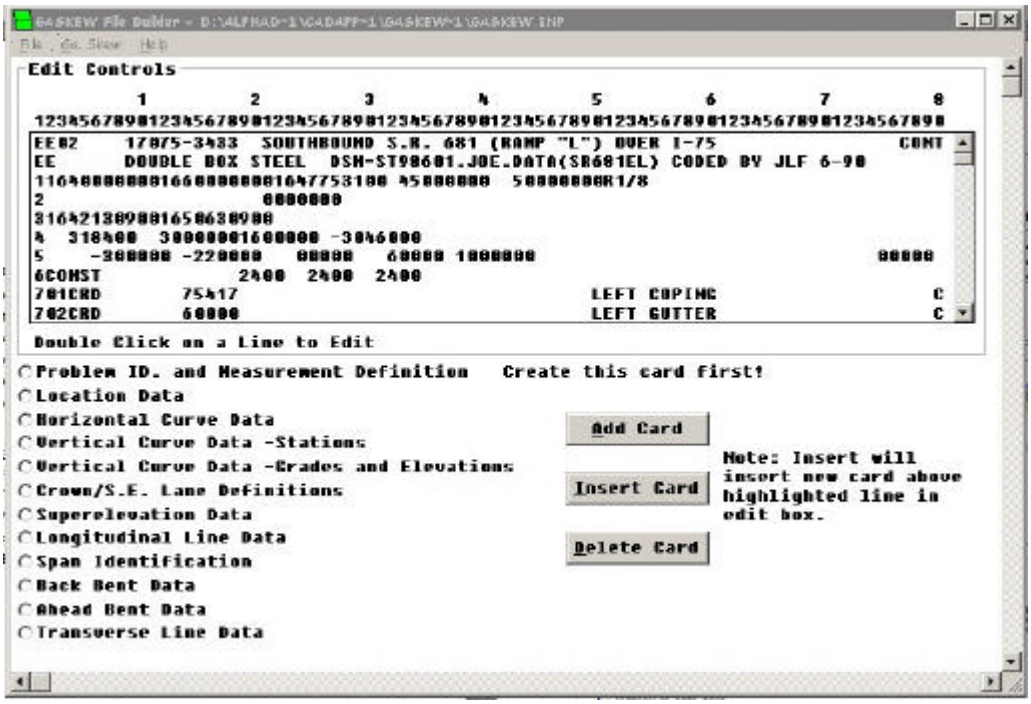
The Georgia Skew Program is a two step process. Data is entered into the Georgia Skew program and a report is generated. The Georgia Skew MDL application is run using this report to produce a drawing.

Georgia Skew Program Operation:

A program (GSKBLD.EXE) is included to help build input files for the Georgia Skew program. This program does not have to be used, input files can be built using a standard text editor to input column specific data, the file builder program just makes it easier to enter column specific data. The Georgia Skew program manual is still needed to understand how to code bridge input and in what order the input is expected.

Using the Georgia Skew File Builder Program:

Run the file GSKBLD.EXE to start the file builder program, you will be presented with a standard windows program interface that lets you open and/or save program data



Along the top of the edit box you will see the corresponding card column each piece of data is placed in. Each line in the box corresponds to one input card image. To

create a new card, choose the type of card to create from the list on the bottom left of the program screen and then press the **Add Card** button. A dialog box will appear asking for the pertinent card data. When finished entering data, press the **OK** button to keep the data or Cancel to discard the data. If **OK** is pressed, the card will be added to the end of the card list.

To insert a card into the card list. First, in the card list box, highlight the card which you would like the new card to be inserted above. Next, from the list on the bottom left of the program screen, choose the type of card you would like to insert and press the **Insert Card** button. A dialog box will appear asking for the pertinent card data. When finished entering data press the **OK** button to keep the data or **Cancel** to discard the data.

To edit an existing card just double click on the card in the card list and a dialog box will appear with the current data loaded. Change the data you need and then press **OK** to commit your changes or **Cancel** to disregard changes.

To delete a card just highlight the card in the card list you would like to delete and press the **Delete Card** button. You will need to acknowledge that you want the card deleted.

When input is completed, save your file. Then, from the Georgia Skew menu, choose **Make Report** to create an output report. This report is the file the Georgia Skew MDL uses to create MicroStation drawings. When the report is created, choose **View Report** from the Georgia Skew menu to check for any input errors. If there are no errors, you are ready to create your MicroStation drawing. Note: the report file will be created in same directory and with the same file name as the Input file except with a .rpt extension.

Note: At this time Coordinate input is not handled by the file builder, therefore, it must be entered using a text

Using the Georgia Skew MDL:

Open or create the .dgn file you want to create your Georgia Skew drawing in. Make sure you are using a file with the correct working units, if your Georgia Skew report contains metric output you should be using metric working units or visa-versa for English.

From the Structures Menubar choose MDL APPS.->GA. Skew or use the MicroStation key-in "MDL load bdeck".

The Georgia Skew MDL dialog box appears asking for certain information.

It is suggested that this program be run from an existing report. This will minimize undetected errors in the report file. The **Input from existing report** option must be enabled if using units for input or output. Enable the other Drawing options that you need. The **Text Scale** does not need to be set if you are using an existing report. Press **RUN** to start your drawing. If you are using an existing report, you will be presented with a standard file location dialog asking for the location of your report file. After choosing the report location, MicroStation will start your drawing and notify you when the drawing is complete.

Superstructure Cross Section Program

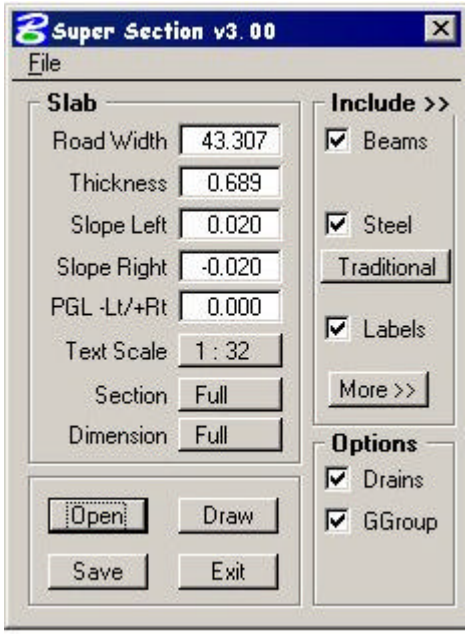
(SuperSect)

Supersect is an MDL application used with MicroStation that will generate a cross section of the superstructure.

The Suprsect.cel is automatically attached to the current design file when the application is started. You must manually reattach the previous cell library.

Program Operation:

After starting MicroStation, start Suprsect by selecting the program from the Structures Menu bar or key-in "MDL load suprsect". Once you have started the program, you can create a new file by filling in the data entry boxes and using the **File->Save** menu item, or open an existing file by using the **File->Open** menu item . A sample input file is delivered with the program.



Slab

Road Width Roadway width Gutter to Gutter
Thickness Slab Thickness
Slope Left Cross slope left of centerline
Slope Right Cross slope right of centerline
PGL -Lt/Rt Distance from Rt. Gutter to PGL
Text Scale Scale of section. Click for options
Section Draw Full or Half at a time. Click for options.
Dimension Dimension Full, Top, or Bottom. Click for Options.

Options

Drains Automatically draws deck drains.
Ggroup Makes entire section a graphic group
m/mm Shows meters or millimeters

OPEN: Allows a user to open an existing input file.
SAVE: Allows the user to save the existing input.
DRAW: Attaches section to cursor for user placement within the design file.
EXIT: Exits the program

More>>

Beams:
Pressing the More>> button with Beams chosen in the Include box displays the following Beam input categories appear:

BEAMS

Beam Type: Choose Beam Type, click to see choices
Offset First: Distance from Left Gutter to first beam.
Number: Number of Beams
Variable Spacing:_____Used for variable beam spacing.
Beam Spacing: Up to 13 beams. Use spacing #1 if spacing is constant.

DRAW DIAPHRAGM

Concrete: Draw concrete diaphragm
Steel: Draw reinforcing Steel in Diaphragm.
Skew Angle: Angle at bent (Used to calculate diaphragm reinforcing spacing)
Bottom Cover: Cover on stirrups in diaphragm.

STEEL

Pressing the More>> button with the Steel check box chosen in the Include box displays the following Steel input categories appear:

STEEL SPACING

Main: Spacing for Main Steel (in). Transverse Steel (Top & Bottom)
Distribution: Spacing for Distribution Steel (in). (Bottom of Slab)
Continuity: Spacing for Continuity Steel over piers. (Future Option)
Temperature: Spacing for Temperature Steel (in). (Top of Slab)

STEEL SIZE

Main: Size of Main Steel. (used for annotation)
Distribution: Size of Steel Distribution. (used for annotation)
Continuity: Size of Continuity Steel. (used for annotation)
Temperature: Size of Temperature Steel. (used for annotation).

DRAW

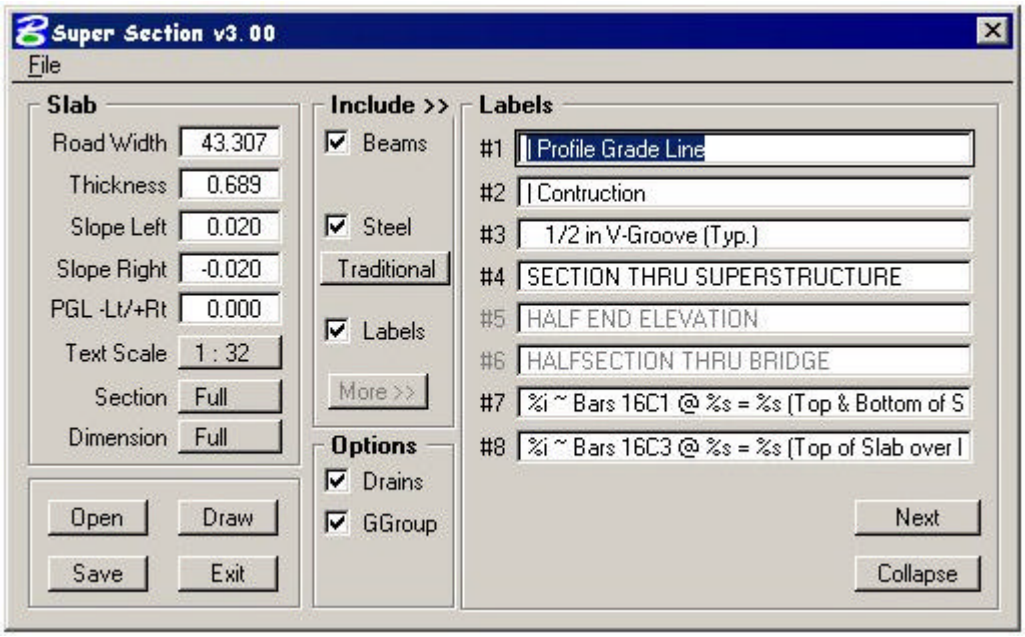
J-Bars: Additional Bars at gutter. Formally known as J-bars. Now shown straight.

STEEL COVER

Top: Cover on Top reinforcing steel.
Bottom: Cover on Bottom reinforcing steel.

LABELS

Pressing the **More>>** button with the Labels check box chosen in the Include>> box displays the Labels data entry fields. Labels may be edited for use with the program.



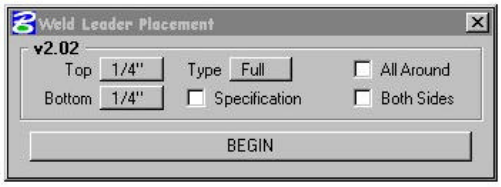
Weld

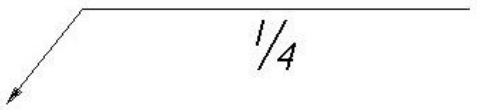
WELD is an MDL application for use with MicroStation. The program will draw weld symbols using metric or English annotation. The program reads the working units of the current design file before displaying the dialogue box. The Steng.cel or Stmet.cel must be attached to the current design file.

Program Operation:

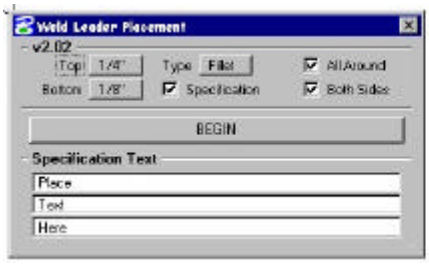
After starting MicroStation, start WELD by selecting the program from the Structures Menu bar or you can key-in "mdl load weld". Once you have started the program, select the weld size, type and a specification. Scale and text size must be selected before beginning to draw the symbol. To draw a symbol you simply "Click" on the **BEGIN** bar and place data points in the design file to create the leader symbol.

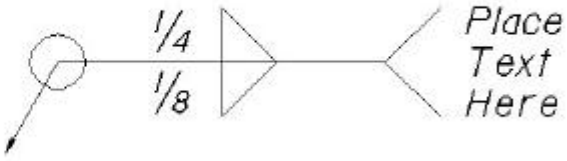
This example shows a ¼" full penetration weld on the arrow side.



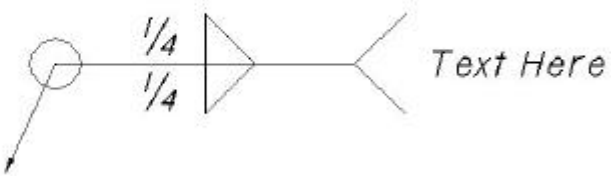


This example shows a 1/8" fillet weld on the arrow side and a 1/4" fillet weld on the otherwise. Clicking on the top or bottom boxes will reveal the range of weld sizes. This example also shows the weld on both sides with a specification. Specifications may be one to three lines in length. Various sizes of welds may be shown on the top or the bottom of the leader. There are three different types of welds; fillet, bevel and



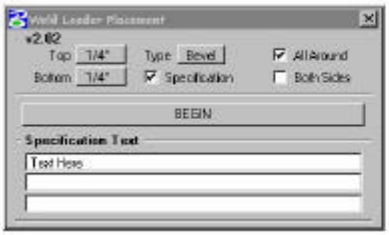


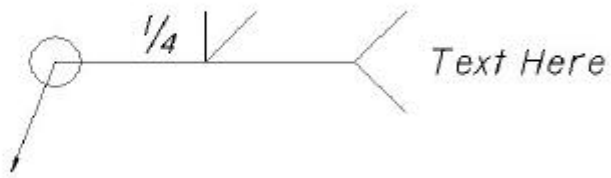
full. One side or both sides of the leader may be selected.



The above example shows a 1/4" fillet weld on the top and bottom of the leader with an all around symbol. It also shows the fillet symbol on both sides and a one line specification.

This example shows 1/4 Bevel weld on the far side with an all around symbol and a specification.

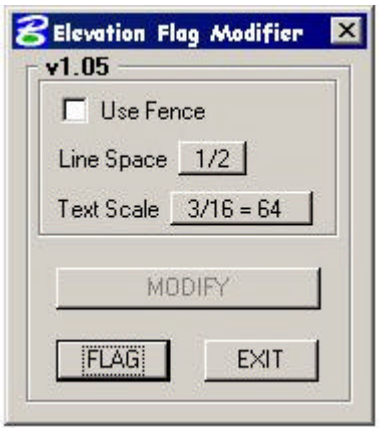




The weld symbol builder is very flexible, and almost any type of weld symbol can be created. Once a symbol is placed, the entire symbol and the annotation can be manipulated at once with the graphic group lock turned-on.

Elevation Flag Modifier (Elmod)

This mdl application is used with the "gaskew" application. Gaskew (Georgia Skew Geometry program) builds a design file after calculating all of the bridge deck elevations. The design file has all the elevations positioned on a flag in a plan view of the deck. Elevmod provides a quick and easy way to clean up any or all annotations the program could not fit well. The Text Scale and Line Spacing (spacing of text above the flag leader) is required as input. A line string "flag" of the proper size is required to be hand-built before using the application if you wish to change the size of the annotation flag. This application can be used to change one flag at a time or used with a fence to change multiple flags at one time.



INDEX

Fractions of Inch and Decimals of a Foot

0"	0.0000	1"	0.0833	2"	0.1667	3"	0.2500	4"	0.3333	5"	0.4167
1/16"	0.0052	1/16"	0.0885	1/16"	0.1719	1/16"	0.2552	1/16"	0.3385	1/16"	0.4219
1/8"	0.0104	1 1/8"	0.0937	1/8"	0.1771	1/8"	0.2604	1/8"	0.3437	1/8"	0.4271
3/16"	0.0156	1 3/16"	0.0990	3/16"	0.1823	3/16"	0.2656	3/16"	0.3490	3/16"	0.4323
1/4"	0.0208	1 1/4"	0.1042	1/4"	0.1875	1/4"	0.2708	1/4"	0.3542	1/4"	0.4375
5/16"	0.0260	1 5/16"	0.1094	5/16"	0.1927	5/16"	0.2760	5/16"	0.3594	5/16"	0.4427
3/8"	0.0312	1 3/8"	0.1146	3/8"	0.1979	3/8"	0.2812	3/8"	0.3646	3/8"	0.4479
7/16"	0.0365	1 7/16"	0.1198	7/16"	0.2031	7/16"	0.2865	7/16"	0.3698	7/16"	0.4531
1/2"	0.0417	1 1/2"	0.1250	1/2"	0.2083	1/2"	0.2917	1/2"	0.3750	1/2"	0.4583
9/16"	0.0469	1 9/16"	0.1302	9/16"	0.2135	9/16"	0.2969	9/16"	0.3802	9/16"	0.4635
5/8"	0.0521	5/8"	0.1354	5/8"	0.2187	5/8"	0.3021	5/8"	0.3854	5/8"	0.4687
11/16"	0.0573	11/16"	0.1406	11/16"	0.2240	11/16"	0.3073	11/16"	0.3906	11/16"	0.4740
3/4"	0.0625	3/4"	0.1458	3/4"	0.2292	3/4"	0.3125	3/4"	0.3958	3/4"	0.4792
13/16"	0.0677	13/16"	0.1510	13/16"	0.2344	13/16"	0.3177	13/16"	0.4010	13/16"	0.4844
7/8"	0.0729	7/8"	0.1562	7/8"	0.2396	7/8"	0.3229	7/8"	0.4062	7/8"	0.4896
15/16"	0.0781	15/16"	0.1615	15/16"	0.2448	15/16"	0.3281	15/16"	0.4115	15/16"	0.4948
6"	**0.5000**	**7"**	**0.5833**	**8"**	**0.6667**	**9"**	**0.7500**	**10"**	**0.8333**	**11"**	**0.9167**
1/16"	0.5052	1/16"	0.5885	1/16"	0.6719	1/16"	0.7552	1/16"	0.8385	1/16"	0.9219
1/8"	0.5104	1/8"	0.5937	1/8"	0.6771	1/8"	0.7604	1/8"	0.8437	1/8"	0.9271
3/16"	0.5156	3/16"	0.5990	3/16"	0.6823	3/16"	0.7656	3/16"	0.8490	3/16"	0.9323
1/4"	0.5208	1/4"	0.6042	1/4"	0.6875	1/4"	0.7708	1/4"	0.8542	1/4"	0.9375
5/16"	0.5260	5/16"	0.6094	5/16"	0.6927	5/16"	0.7760	5/16"	0.8594	5/16"	0.9427
3/8"	0.5312	3/8"	0.6146	3/8"	0.6979	3/8"	0.7812	3/8"	0.8646	3/8"	0.9479
7/16"	0.5365	7/16"	0.6198	7/16"	0.7031	7/16"	0.7865	7/16"	0.8698	7/16"	0.9531
1/2"	0.5417	1/2"	0.6250	1/2"	0.7083	1/2"	0.7917	1/2"	0.8750	1/2"	0.9583
9/16"	0.5469	9/16"	0.6302	9/16"	0.7135	9/16"	0.7969	9/16"	0.8802	9/16"	0.9635
5/8"	0.5521	5/8"	0.6354	5/8"	0.7187	5/8"	0.8021	5/8"	0.8854	5/8"	0.9687
11/16"	0.5573	11/16"	0.6406	11/16"	0.7240	11/16"	0.8073	11/16"	0.8906	11/16"	0.9740
3/4"	0.5625	3/4"	0.6458	3/4"	0.7292	3/4"	0.8125	3/4"	0.8958	3/4"	0.9792
13/16"	0.5677	13/16"	0.6510	13/16"	0.7344	13/16"	0.8177	13/16"	0.9010	13/16"	0.9844
7/8"	0.5729	7/8"	0.6562	7/8"	0.7396	7/8"	0.8229	7/8"	0.9062	7/8"	0.9896
15/16"	0.5781	15/16"	0.6615	15/16"	0.7448	15/16"	0.8281	15/16"	0.9115	15/16"	0.9948