TRAINING OUTLINE

CHAPTER I – INTRODUCTION

1.1 Technical Support
1.2 Overview – General Facts about ASAD
- 1.2.1 Description of Typical ASAD Project
- 1.2.2 Program Features
- 1.2.3 Program Limitations and Assumptions

1.3 File Structure – Files Used by ASAD
- 1.3.1 Executable program file (ASAD3.EXE)
- 1.3.2 Database Files (*.MDB and SEEDv3.MDB)
- 1.3.3 CAD files
  - 1.3.3.1 Drawing Files (*.DGN)
  - 1.3.3.2 Level Name Libraries (*.DGNLIB)
- 1.3.4 CAD Cell Libraries (*.CEL)
- 1.3.5 Cross Section Top Drawing Files (*.TOP)
- 1.3.6 Report Generation Files (*.RPT)

1.4 ASAD Master Level List
1.5 User Flowchart

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2.1 Creating/Opening a Project Database
2.2 Setting the Path/File Names Files
2.3 Projects Settings

Lab #2 Geometry
2.4 Defining the Geometry
- 2.4.1 Baseline Geometry
  - 2.4.1.1 Importing from GEOPAK
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  - 2.4.1.3 Manually Entered Data
- 2.4.2 Profile Geometry
  - 2.4.2.1 Importing from GEOPAK
  - 2.4.2.2 Importing from another ASAD Database
  - 2.4.2.3 Manually Entered Data
- 2.4.3 Cross Slopes (typical section)
- 2.4.2 Cross Widths

Lab #3 Structures & Pipes
2.5 Defining Structures
- 2.5.1 Editing Structure Definitions File
- 2.5.2 Updating Structure Definitions from a Seed

2.6 Defining Pipes

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3.2 Defining Storm Events
- 3.2.1 FDOT Intensity-Duration-Frequency (IDF) Curves
- 3.2.2. User Defined Time-Intensity Tables

3.3 Defining the Storm Sewer System Header Information
- 3.3.1 Outfall

3.3.2. Tailwater Conditions
3.3.3 Selecting a Storm Event
3.3.4 Setting Report Heading Labels (designer/checker)

CHAPTER IV - STORM SEWER LAYOUT

Lab #5 Storm Sewer Layout
4.1 Creating Nodes & Reaches Automatically
4.2 Nodes
4.2.1 Drainage Structure Nodes
4.2.2 Ditch Nodes
4.2.3 Time of Concentration (Tc) Calculation
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4.3.1 Solid Pipes
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. Low Point Station Adjustment
. North & East Coordinates from Baseline/Station/Offset
. Reaches Lengths
. Inlet/Top/Grate Elevation
. Drainage Areas
5.2 Computing Pipe Sizes
5.3 Computing Flow Line (Invert) Elevations
5.4 Computing Hydraulics (Storm Tabs)
5.4.1 Setting Options
5.4.2 Verifying Data
5.4.3 Printing Reports
5.4.4 Changing the Node Printing Order on Storm Tabs
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Lab #7 Computing Other
5.6 Cost Analysis
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Lab #8 Summary of Dr. Structures
5.9 Summary of Drainage Structures
5.10.1 Building SDS Data Table
5.10.2 Modifying SDS Data
5.10.2 Text Size/Line Spacing Worksheet
5.10.3 Row Layout
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5.10.5 Symbology & Font Size (Headings, Details and Totals)
5.10.6 Drawing SDS into CAD
5.10.7 Exporting SDS Data to Excel (Tab-Delimited Text)

CHAPTER VI – DRAWING

	6.1	CAD Window
	6.2	Reference Files
Lab #9	6.3	Drawing Cells into a Grid
Draw Plan	6.4	Levels
& Profile		6.4.1 Levels Display
		6.4.2 Level/Layer Manager
		6.4.3 ASAD Master Level List
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		6.5.1 Drawing Templates and Setting Defaults
		6.5.2 General Level/Symbology
		6.5.3 Drainage Elements in Plan View
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		6.5.6 Drainage Elements in Profile View
		6.5.7 User Defined Text Labels
Lab #10	6.6	Drawing Drainage Structures (Cross Section View)
Draw Drainage		6.6.1 Single Structure (One at a Time)
Structures		6.6.2 Multiple Structures Using GEOPAK Cross Section Cells
		6.6.3 Multiple Structures Drawn in Plan View
		6.6.4 Multiple Structures Drawn into a Grid
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CHAPTER VII – MISCELLANEOUS

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	7.3	Tools
		7.3.1 Options
		7.3.2 PCS Dialog Windows
	7.4	Editing TOP Files

CHAPTER I: INTRODUCTION

1.1 Technical Support

- Phone: (352) 383-4191 Fax: (352) 383-4650
- eMail: tim@hiteshew.com http://www.hiteshew.com
- Program updates: http://www.hiteshew.com/download.htm
- Frequently asked questions: http://www.hiteshew.com/faq.htm

1.2 Overview – General Facts about ASAD

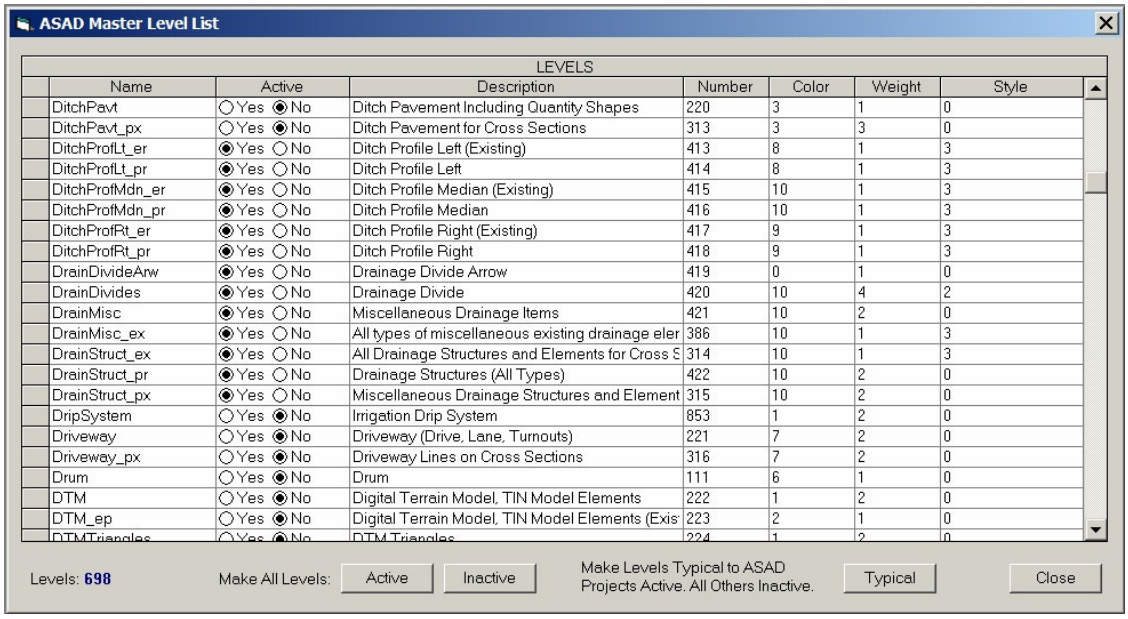
1.2.1 Description of Typical ASAD Project
1.2.2 Program Features
1.2.3 Program Limitations and Assumptions

1.3 File Structure – Files Used by ASAD

1.3.1 Executable program file (ASAD3.EXE)
1.3.2 Project Database Files (*.MDB and SEEDv3.MDB)
1.3.3 CAD Cell Libraries (*.CEL)
1.3.4 Cross Section Top Drawing Files (*.TOP)
1.3.5 Report Generation Files (*.RPT)
1.3.6 CAD files
1.3.6.1 Drawing Files (*.DGN)
1.3.6.2 Level Name Libraries (*.DGNLIB)

1.4 ASAD Master Level List (table within the project database (MDB))

CAD> Levels> ASAD Master Level List



ASAD Master Level List

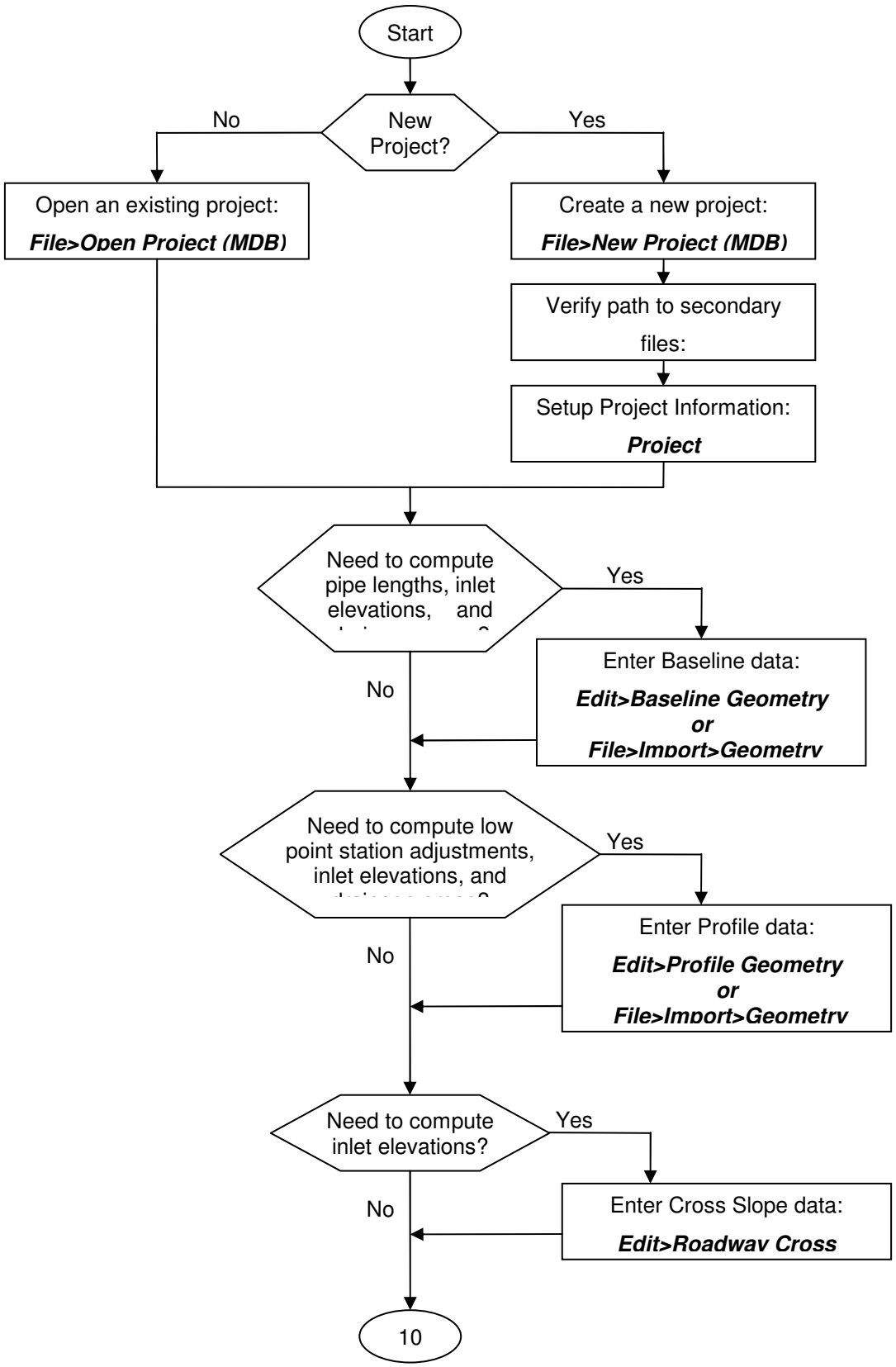
LEVELS

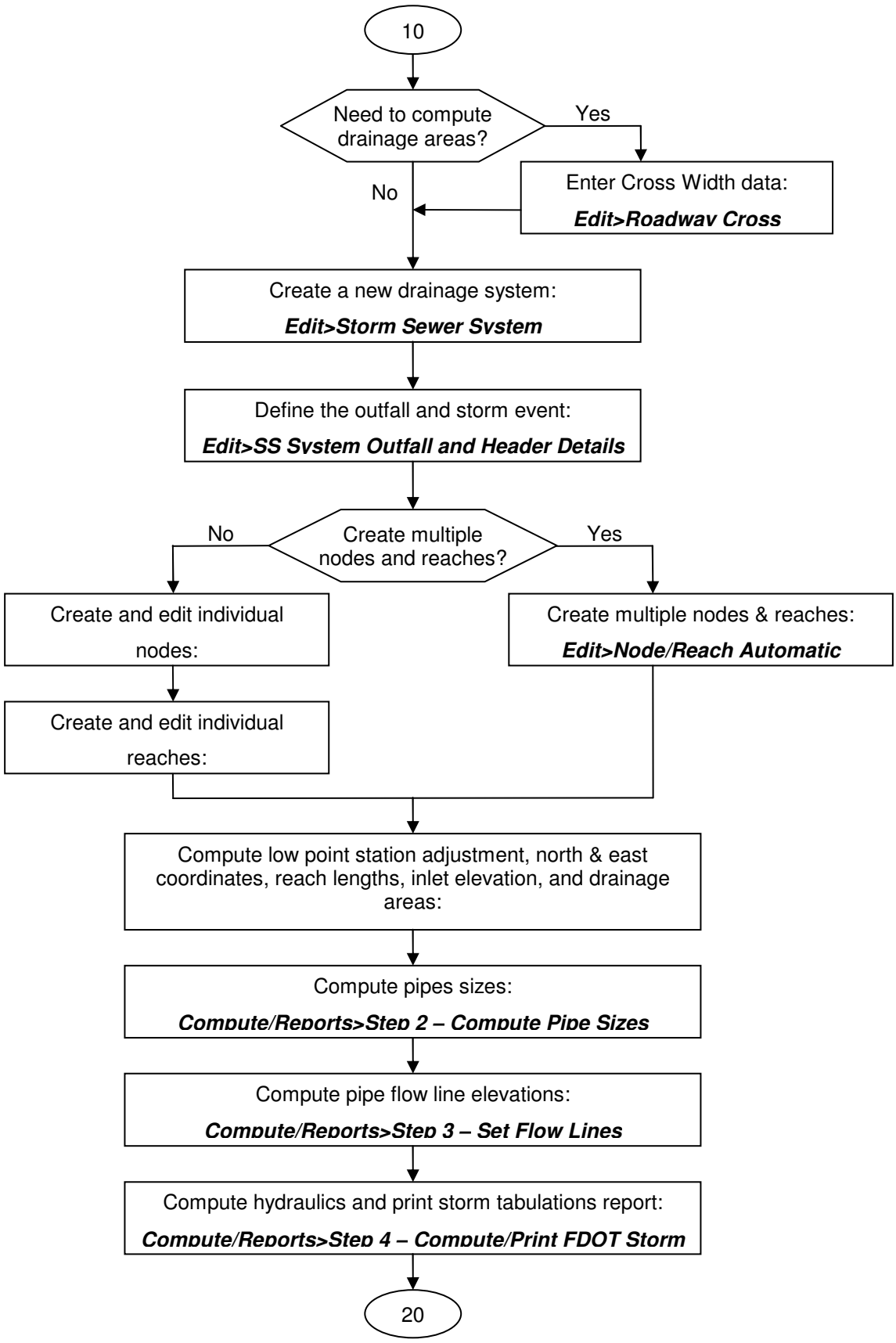
Name	Active	Description	Number	Color	Weight	Style
DitchPavt	○Yes ◉No	Ditch Pavement Including Quantity Shapes	220	3	1	0
DitchPavt_px	○Yes ◉No	Ditch Pavement for Cross Sections	313	3	3	0
DitchProfLt_er	◉Yes ○No	Ditch Profile Left (Existing)	413	8	1	3
DitchProfLt_pr	◉Yes ○No	Ditch Profile Left	414	8	1	3
DitchProfMdn_er	◉Yes ○No	Ditch Profile Median (Existing)	415	10	1	3
DitchProfMdn_pr	◉Yes ○No	Ditch Profile Median	416	10	1	3
DitchProfRt_er	◉Yes ○No	Ditch Profile Right (Existing)	417	9	1	3
DitchProfRt_pr	◉Yes ○No	Ditch Profile Right	418	9	1	3
DrainDivideArw	◉Yes ○No	Drainage Divide Arrow	419	0	1	0
DrainDivides	◉Yes ○No	Drainage Divide	420	10	4	2
DrainMisc	◉Yes ○No	Miscellaneous Drainage Items	421	10	2	0
DrainMisc_ex	◉Yes ○No	All types of miscellaneous existing drainage eler	386	10	1	3
DrainStruct_ex	◉Yes ○No	All Drainage Structures and Elements for Cross S	314	10	1	3
DrainStruct_pr	◉Yes ○No	Drainage Structures (All Types)	422	10	2	0
DrainStruct_px	◉Yes ○No	Miscellaneous Drainage Structures and Element	315	10	2	0
DripSystem	○Yes ◉No	Irrigation Drip System	853	1	2	0
Driveway	○Yes ◉No	Driveway (Drive, Lane, Turnouts)	221	7	2	0
Driveway_px	○Yes ◉No	Driveway Lines on Cross Sections	316	7	2	0
Drum	○Yes ◉No	Drum	111	6	1	0
DTM	○Yes ◉No	Digital Terrain Model, TIN Model Elements	222	1	2	0
DTM_ep	○Yes ◉No	Digital Terrain Model, TIN Model Elements (Exis	223	2	1	0
DTMTriangles	○Yes ◉No	DTM Triangles	224	1	2	0

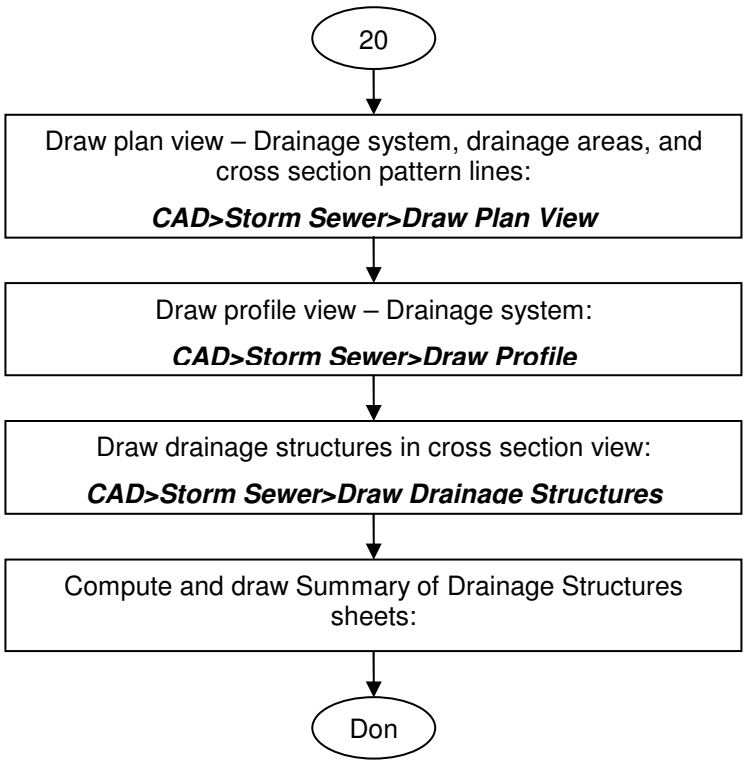
Levels: 698 Make All Levels: Active Inactive Make Levels Typical to ASAD Projects Active. All Others Inactive. Typical Close

Figure 1

1.5 User Flowchart




10
Need to compute drainage areas?
Yes
No
Enter Cross Width data:
Edit>Roadway Cross
Create a new drainage system:
Edit>Storm Sewer System
Define the outfall and storm event:
Edit>SS System Outfall and Header Details
Create multiple nodes and reaches?
No
Yes
Create and edit individual nodes:
Create multiple nodes & reaches:
Edit>Node/Reach Automatic
Create and edit individual reaches:
Compute low point station adjustment, north & east coordinates, reach lengths, inlet elevation, and drainage areas:
Compute pipes sizes:
Compute/Reports>Step 2 – Compute Pipe Sizes
Compute pipe flow line elevations:
Compute/Reports>Step 3 – Set Flow Lines
Compute hydraulics and print storm tabulations report:
Compute/Reports>Step 4 – Compute/Print FDOT Storm
20


20
Draw plan view – Drainage system, drainage areas, and cross section pattern lines:
CAD>Storm Sewer>Draw Plan View
Draw profile view – Drainage system:
CAD>Storm Sewer>Draw Profile
Draw drainage structures in cross section view:
CAD>Storm Sewer>Draw Drainage Structures
Compute and draw Summary of Drainage Structures sheets:
Don

CHAPTER II: STARTING A PROJECT

2.1 Creating/Opening a Project Database
2.2 Setting the Path/File Names Files
2.3 Projects Settings

Lab #1 New Project

File>New Project (MDB)

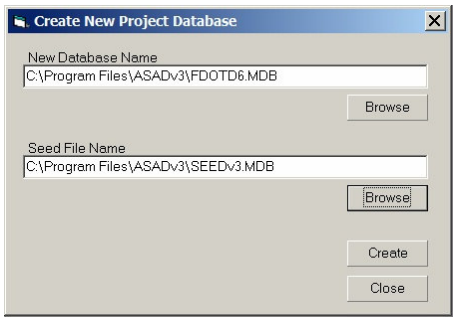


Figure 2

File>Open Project (MDB)
File> Top Files/Report Files/Cell Libraries/Level Name Library

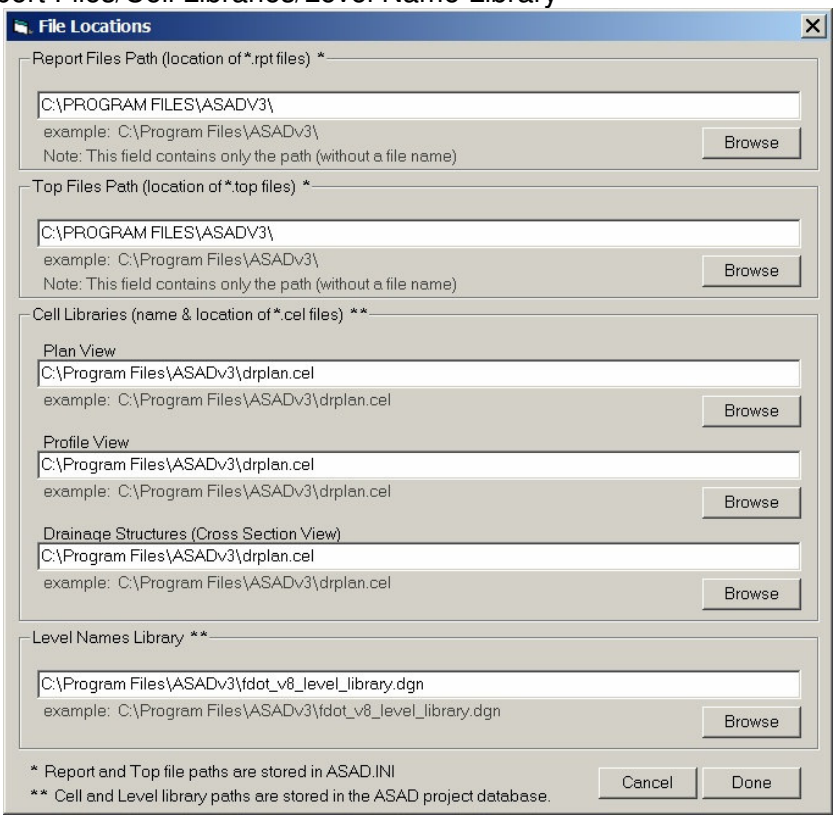


Figure 3

PROJECT

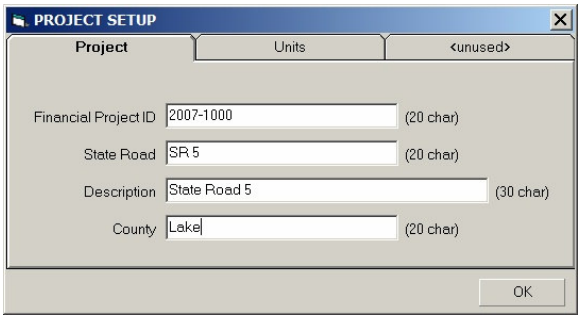


Figure 4

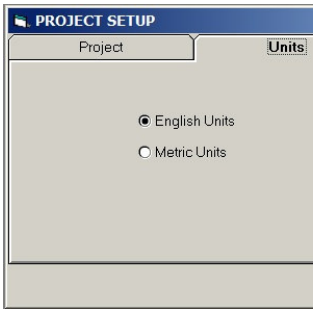


Figure 5

2.4 Defining the Geometry

2.4.1 Baseline Geometry
- 2.4.1.1 Importing from GEOPAK
- 2.4.1.2 Importing from another ASAD Database
- 2.4.1.3 Manually Entered Data

2.4.2 Profile Geometry
- 2.4.2.1 Importing from GEOPAK
- 2.4.2.2 Importing from another ASAD Database
- 2.4.2.3 Manually Entered Data

2.4.3 Cross Slopes (typical section)

2.4.2 Cross Widths

Lab #2 <u>Geometry</u>

File>Import> Geometry from GEOPAK Input Text File

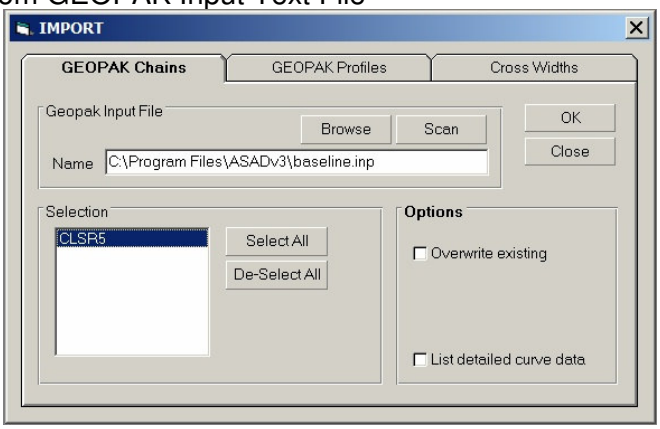


Figure 6

File>Import> All Data from ASAD Created Text File

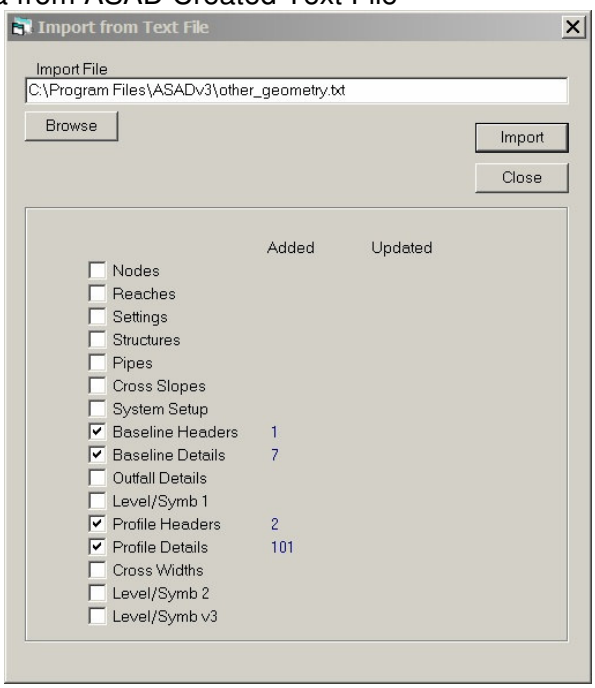


Figure 7

Re-Start ASAD
Edit>Baseline Geometry

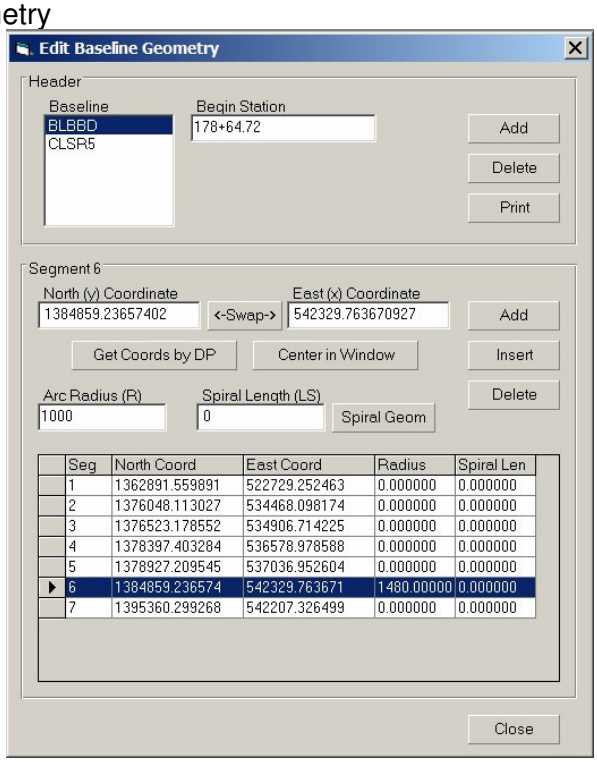


Figure 8

File>Import> Geometry from GEOPAK Input Text File

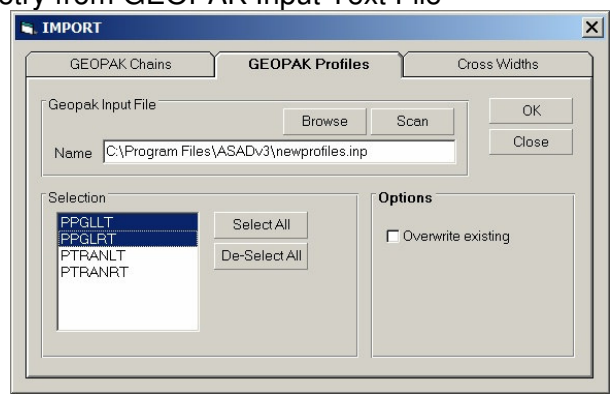


Figure 9

Edit>Profile Geometry

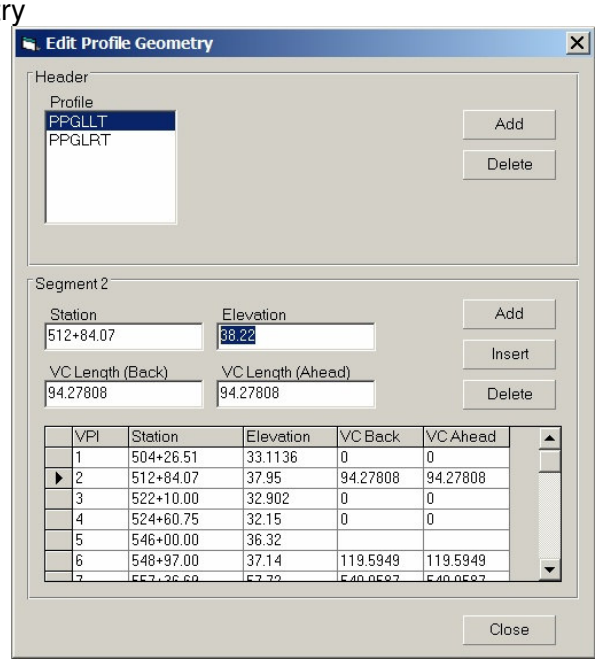


Figure 10

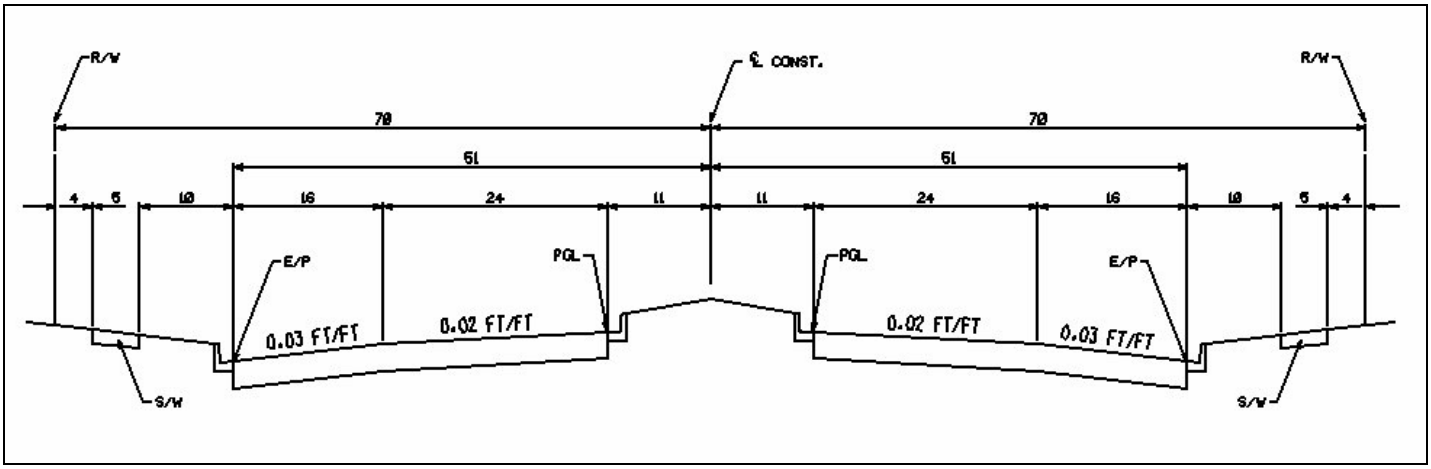


Figure 11

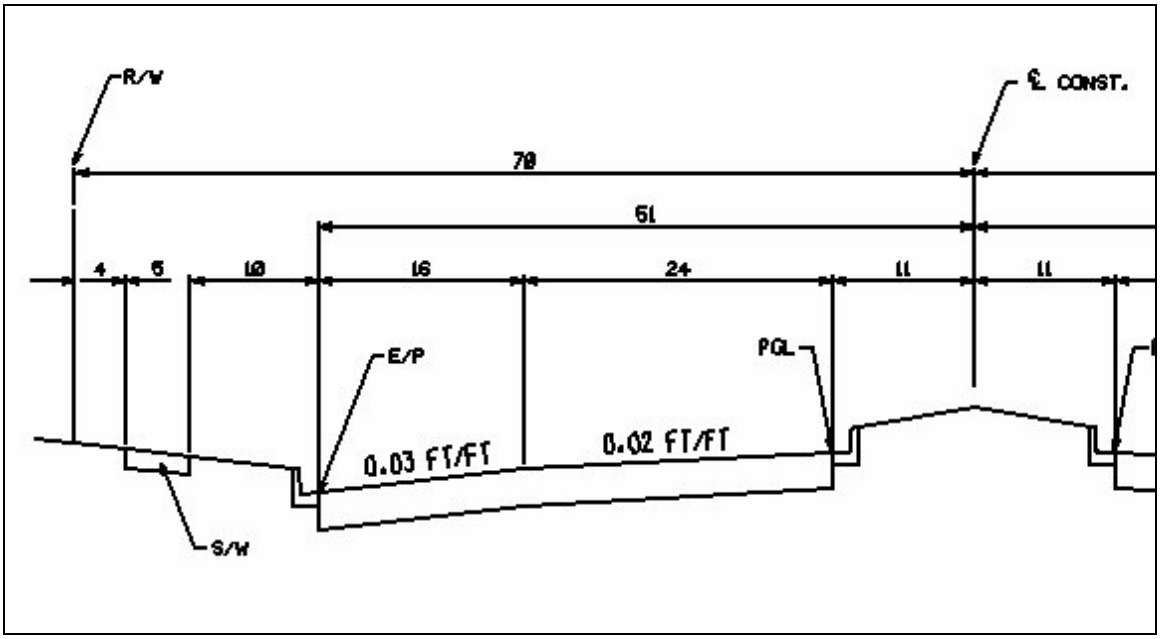


Figure 12

Edit>Roadway Cross Slopes

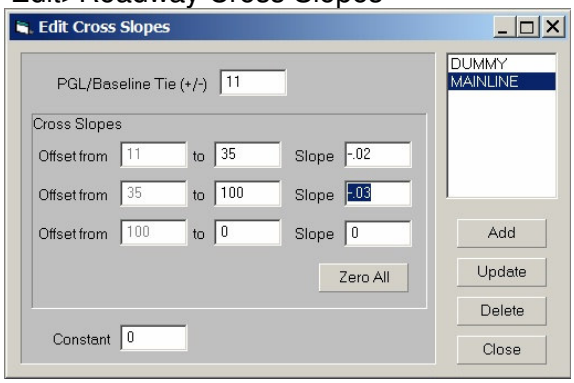


Figure 13

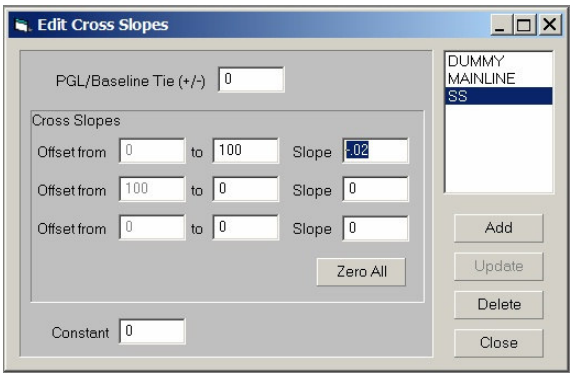


Figure 14

2.5 Defining Structures

2.5.1 Editing Structure Definitions File

2.5.2 Updating Structure Definitions from a Seed

2.6 Defining Pipes

Lab #3 Structures & Pipes

Edit> Structure Definitions

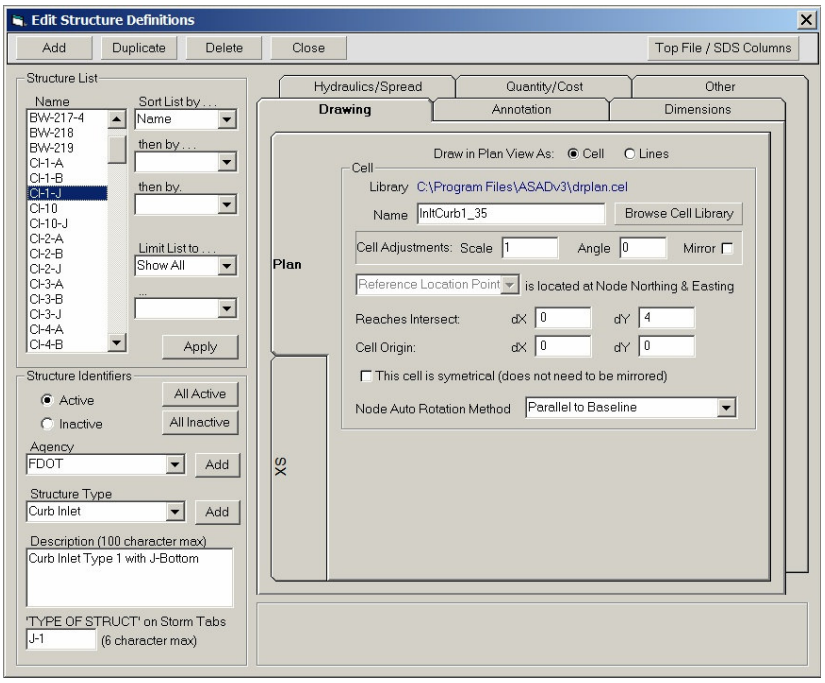


Figure 15

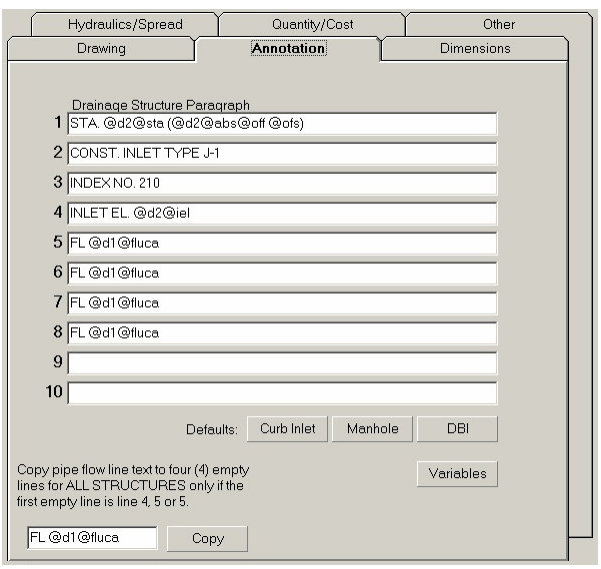


Figure 16

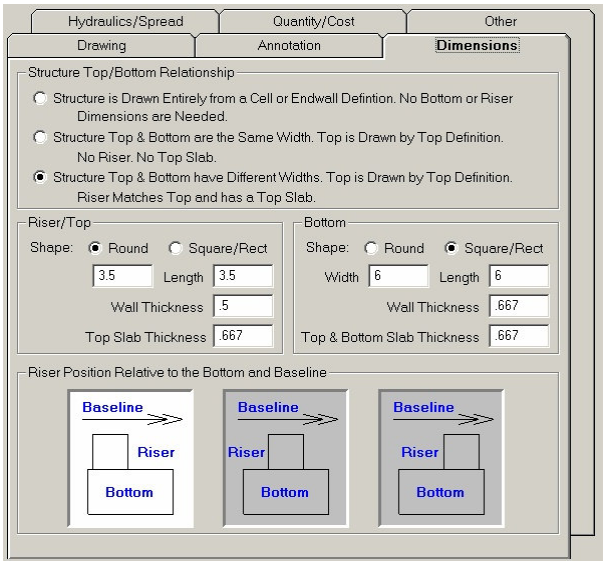


Figure 17

Drawing | Annotation | Dimensions
Hydraulics/Spread | Quantity/Cost | Other

Hydraulic Warnings
Hydraulic Intake Capacity 4.1
HGL Clearance 1

Gutter Spread & Intercept
Is this structure used in HEC-12 calculations? (•) Yes ( ) No
Gutter Width 1.5 Gutter Cross Slope .08333

( ) NO THROAT opening
(•) Vertical THROAT OPENING
Throat Length 13
Throat Height .5

(•) NO GRATE opening
( ) Horizontal GRATE OPENING
Grate Width 0
Grate Length 0
Grate Type 7

Figure 18

Drawing | Annotation | Dimensions
Hydraulics/Spread | Quantity/Cost | Other

Cost
Depth Less than 10' 1.00 Depth 10' or Greater 1.00

Quantities
DOT Index Number(s) 200, 201, 210 [Copy Headers to Other Structures]
Column: Identifier J-1 Order Number 1020110
SDS Header 1 CURB INLETS
SDS Header 2 1
SDS Header 3 J-BOT.
SDS Header 4 <10

[x] Use second Column Identifier based on structure depth.
For structures deeper than 10 (feet)
2nd Column: Identifier J-1(>10) Order Number 1020115
SDS Header 1 CURB INLETS
SDS Header 2 1
SDS Header 3 J-BOT.
SDS Header 4 >10

Figure 19

Drawing | Annotation | Dimensions
Hydraulics/Spread | Quantity/Cost | Other

Pipe Length Adjustment 2.5
Offset Adjustment -1.5
Minimum Cover 2.79

Inlet/Grate/Top Elevation
Inlet Elevation Adjustment 0
[x] Computing Hydraulics Profile View: [x] Drawing & Labeling
[x] Plan View: Labeling Drainage Structures: [ ] Drawing [x] Labeling
[x] Structure Depth in Summary of Drainage Structures

Sump Bottom
Does this structure have a sump bottom? (•) Yes ( ) No
Distance below the lowest invert elevation 4
Weep Hole Diameter .5

Figure 20

File>Update Structures from Seed File

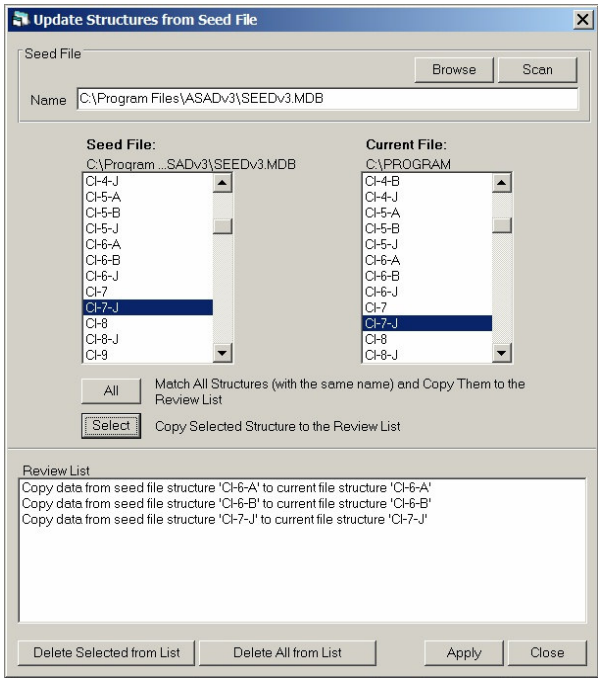


Figure 21

Edit>Pipe Definitions

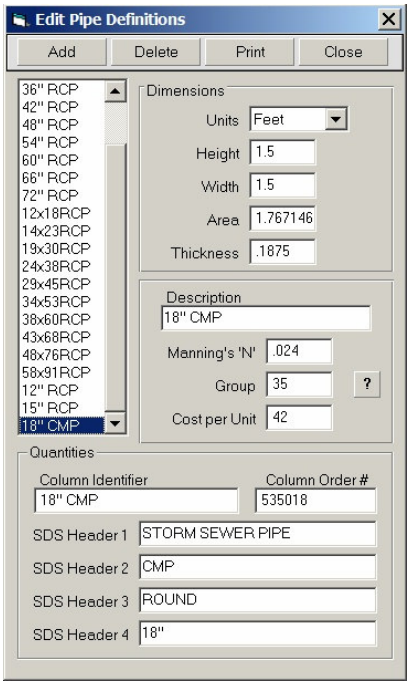


Figure 22

CHAPTER III: HYDRAULIC SETUP

3.1 Creating/Deleting/Renaming a Storm Sewer System
3.2 Defining Storm Events
3.2.1 FDOT Intensity-Duration-Frequency (IDF) Curves
3.2.2. User Defined Time-Intensity Tables
3.3 Defining the Storm Sewer System Header Information
3.3.1 Outfall
3.3.2. Tailwater Conditions
3.3.3 Selecting a Storm Event
3.3.4 Setting Report Heading Labels (designer/checker)

Lab #4 ***Storm Sewer Setup***

Edit> Storm Sewer System Add/Delete/Rename

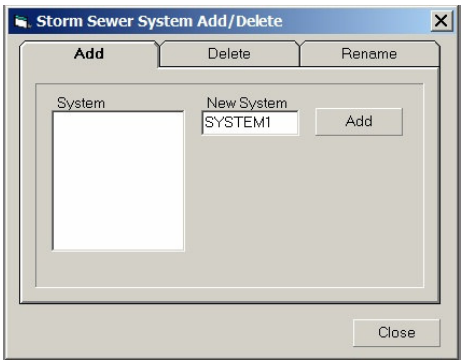


Figure 23

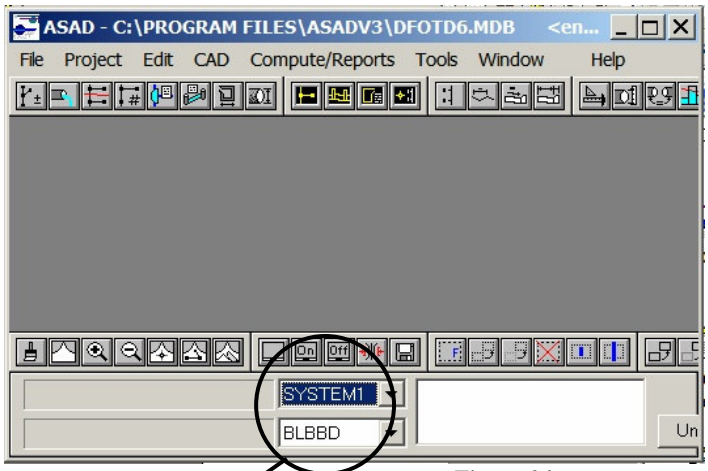
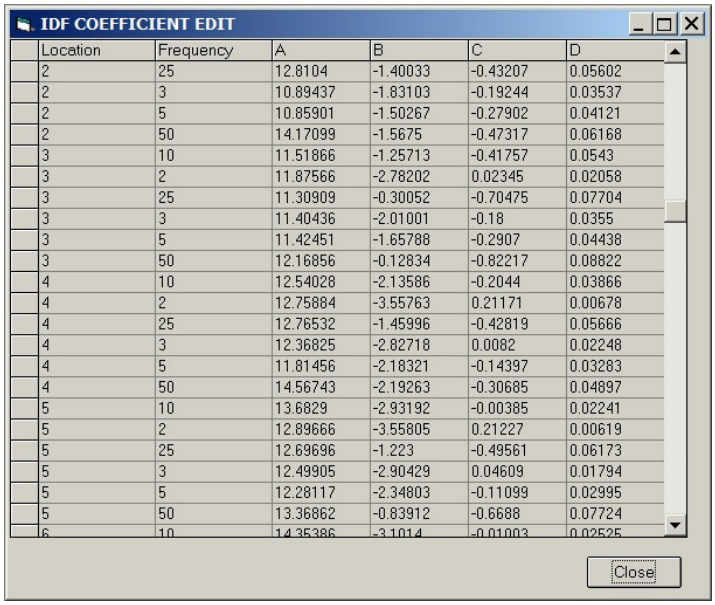


Figure 24

Current Active System

Edit>IDF Coefficients



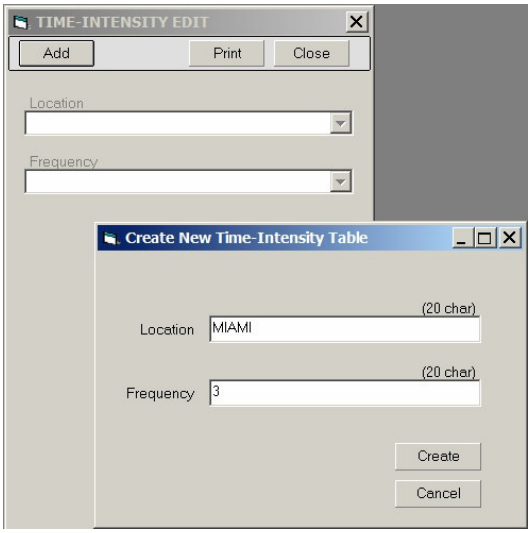
IDF COEFFICIENT EDIT

Location	Frequency	A	B	C	D
2	25	12.8104	-1.40033	-0.43207	0.05602
2	3	10.89437	-1.83103	-0.19244	0.03537
2	5	10.85901	-1.50267	-0.27902	0.04121
2	50	14.17099	-1.5675	-0.47317	0.06168
3	10	11.51866	-1.25713	-0.41757	0.0543
3	2	11.87566	-2.78202	0.02345	0.02058
3	25	11.30909	-0.30052	-0.70475	0.07704
3	3	11.40436	-2.01001	-0.18	0.0355
3	5	11.42451	-1.65788	-0.2907	0.04438
3	50	12.16856	-0.12834	-0.82217	0.08822
4	10	12.54028	-2.13586	-0.2044	0.03866
4	2	12.75884	-3.55763	0.21171	0.00678
4	25	12.76532	-1.45996	-0.42819	0.05666
4	3	12.36825	-2.82718	0.0082	0.02248
4	5	11.81456	-2.18321	-0.14397	0.03283
4	50	14.56743	-2.19263	-0.30685	0.04897
5	10	13.6829	-2.93192	-0.00385	0.02241
5	2	12.89666	-3.55805	0.21227	0.00619
5	25	12.69696	-1.223	-0.49561	0.06173
5	3	12.49905	-2.90429	0.04609	0.01794
5	5	12.28117	-2.34803	-0.11099	0.02995
5	50	13.36862	-0.83912	-0.6688	0.07724
6	10	14.35386	-3.1014	-0.01003	0.02525

Close

Figure 25

Edit>Storm Time-Intensity Tables (user defined)



TIME-INTENSITY EDIT

Add Print Close

Location

Frequency

Create New Time-Intensity Table

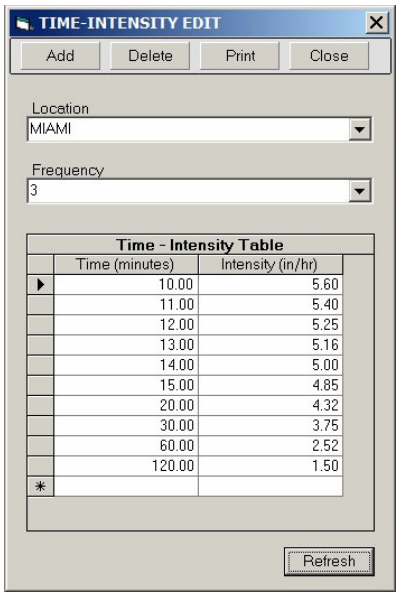
Location MIAMI (20 char)

Frequency 3 (20 char)

Create

Cancel

Figure 26



TIME-INTENSITY EDIT

Add Delete Print Close

Location

MIAMI

Frequency

3

Time - Intensity Table

Time (minutes)	Intensity (in/hr)
10.00	5.60
11.00	5.40
12.00	5.25
13.00	5.16
14.00	5.00
15.00	4.85
20.00	4.32
30.00	3.75
60.00	2.52
120.00	1.50

Refresh

Figure 27

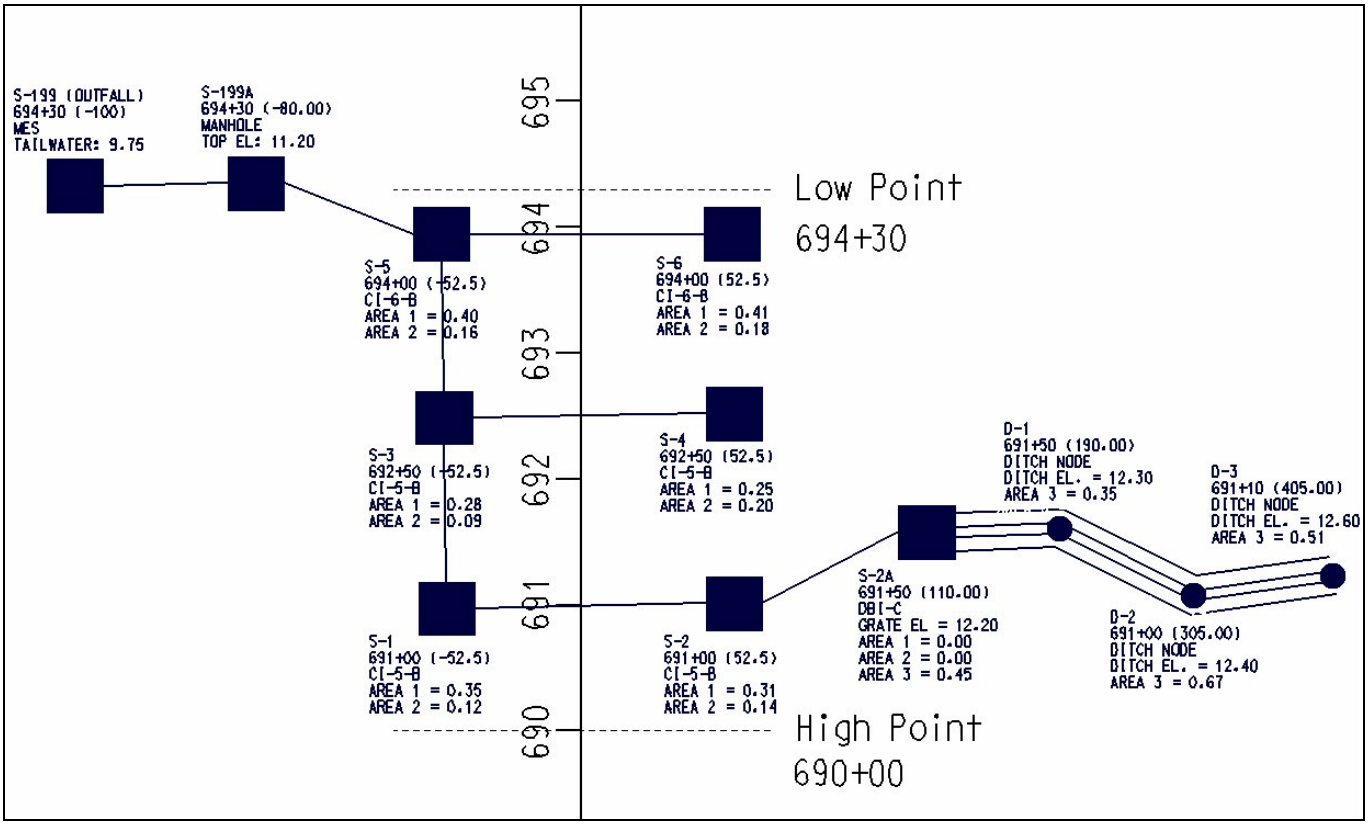


Figure 28

Edit> SS System Outfall and Header Details

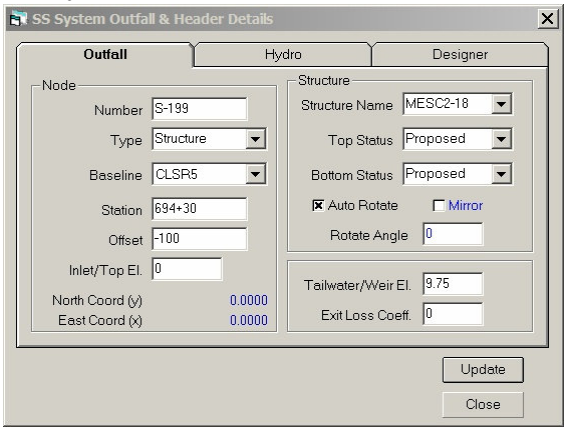


Figure 29

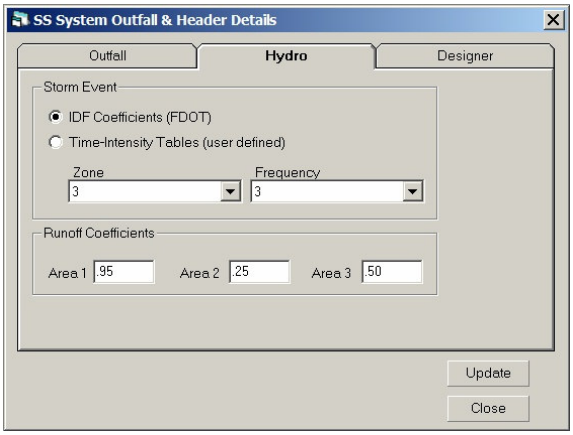


Figure 30

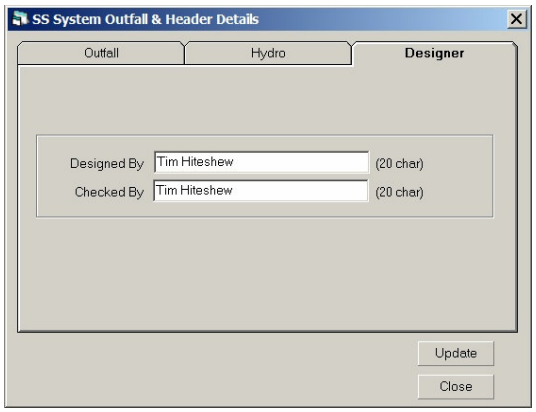


Figure 31

CHAPTER IV: STORM SEWER LAYOUT

4.1 Creating Nodes & Reaches Automatically
4.2 Nodes
4.2.1 Drainage Structure Nodes
4.2.2 Ditch Nodes
4.2.3 Time of Concentration (Tc) Calculation
4.3 Reaches
4.3.1 Solid Pipes
4.3.2 Perforated Pipe with Exfiltration Trench (French Drain)
4.3.3 Ditches & Swales

Lab #5 Storm Sewer Layout

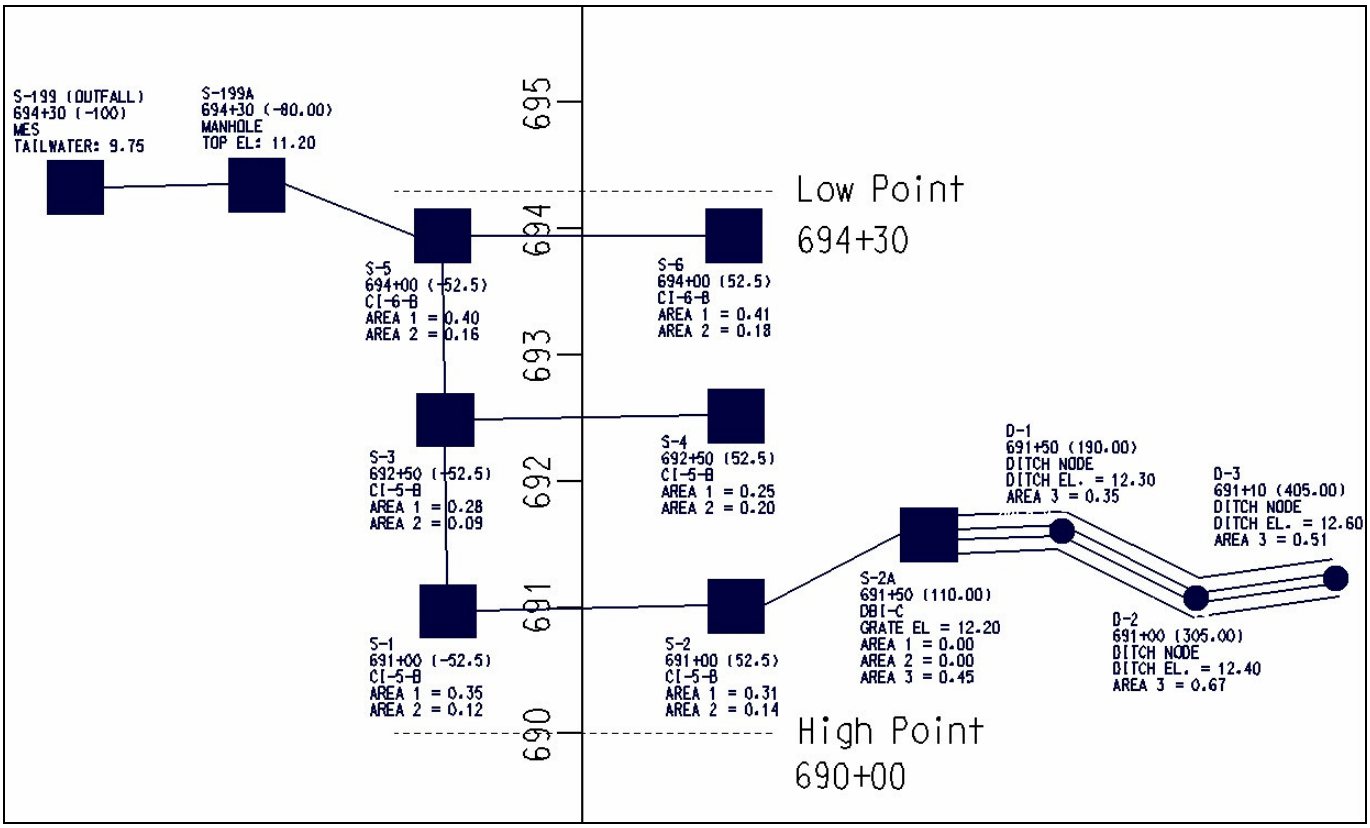


Figure 32

Edit> Node/Reach Automatic Creation

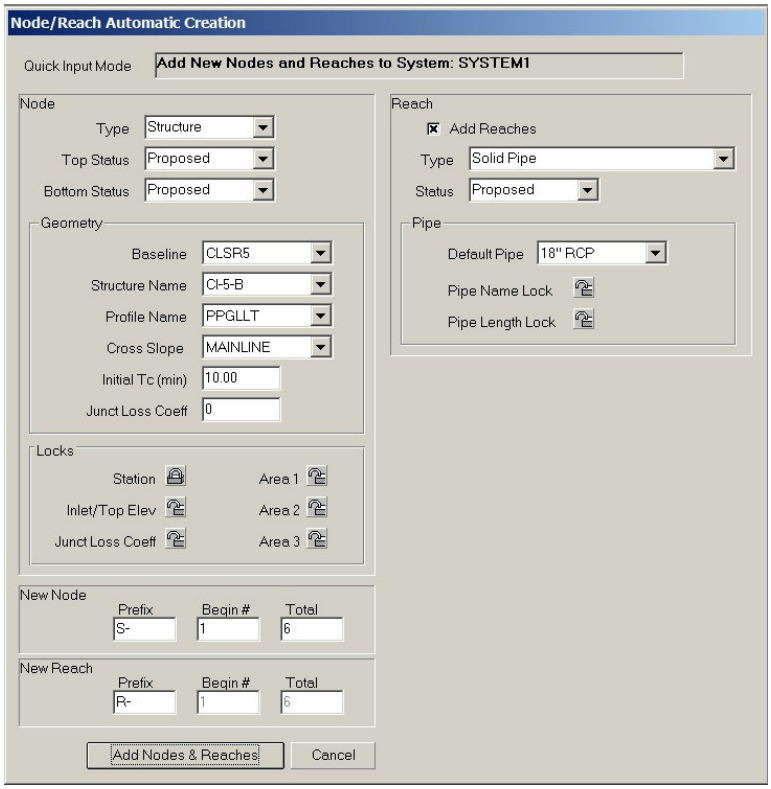


Figure 33

Edit> Nodes

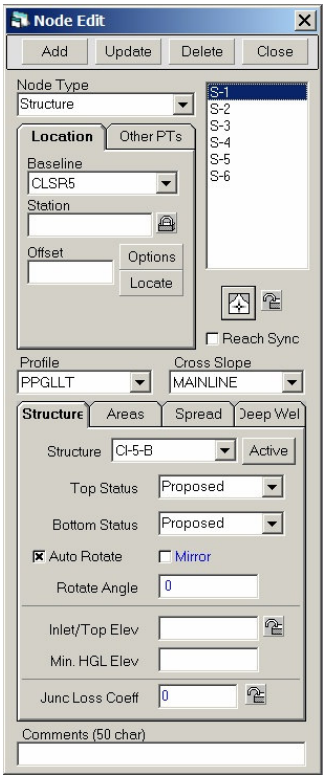


Figure 34

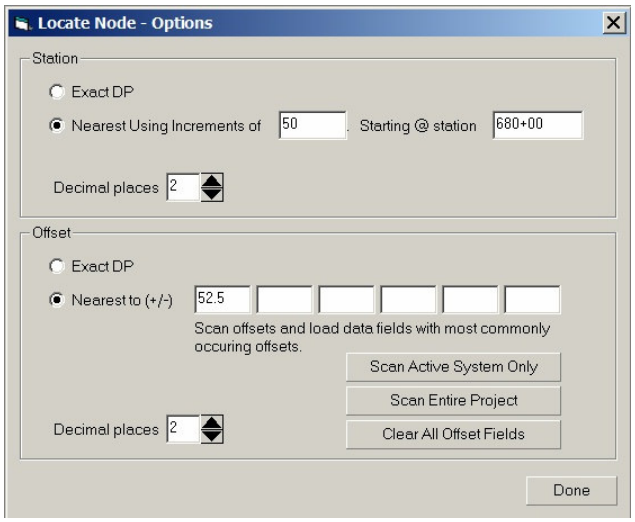


Figure 35

Figure 36

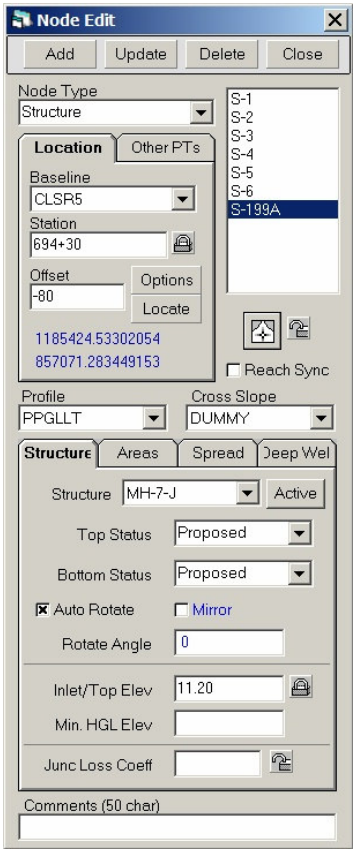


Figure 37

Figure 38

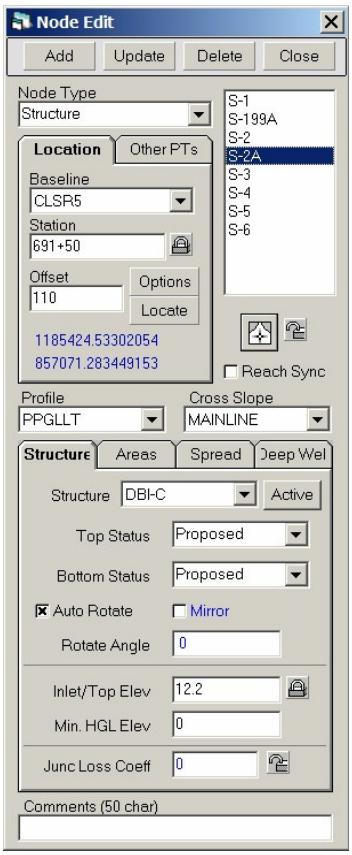


Figure 39

Edit> Node/Reach Automatic Creation

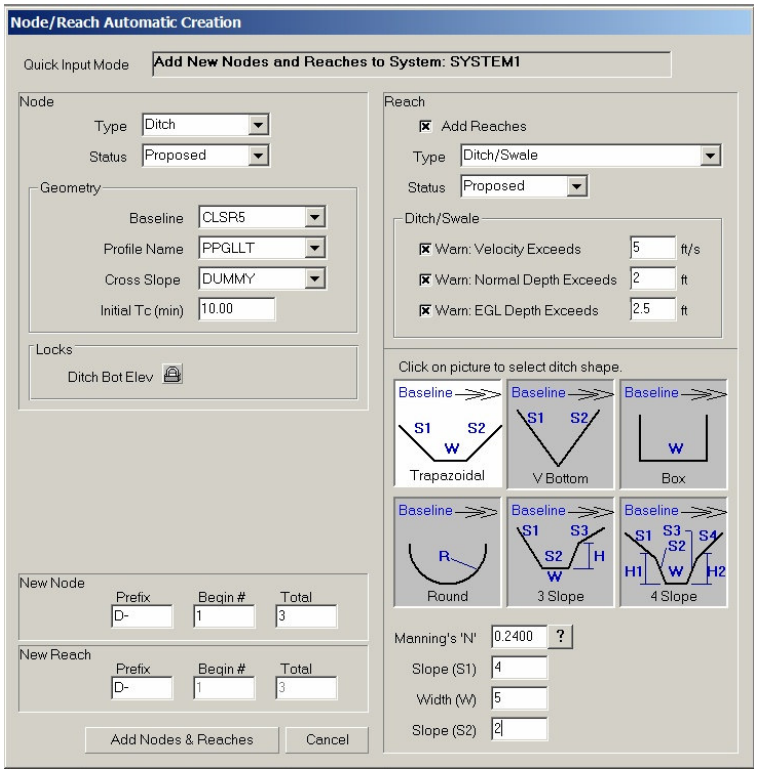


Figure 40

Edit> Nodes

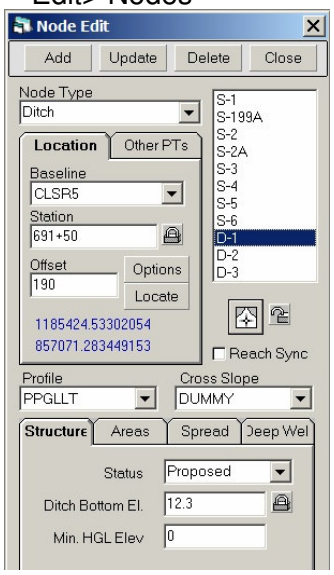


Figure 41

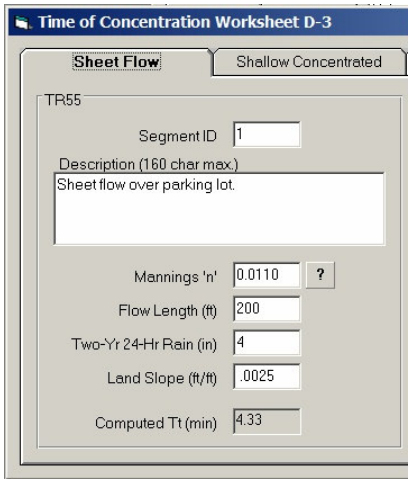


Figure 42

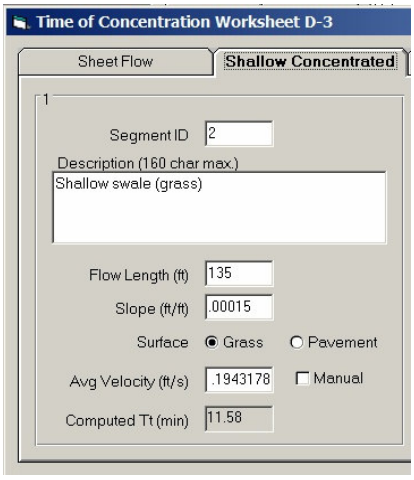


Figure 43

Edit> Reaches

Figure 44

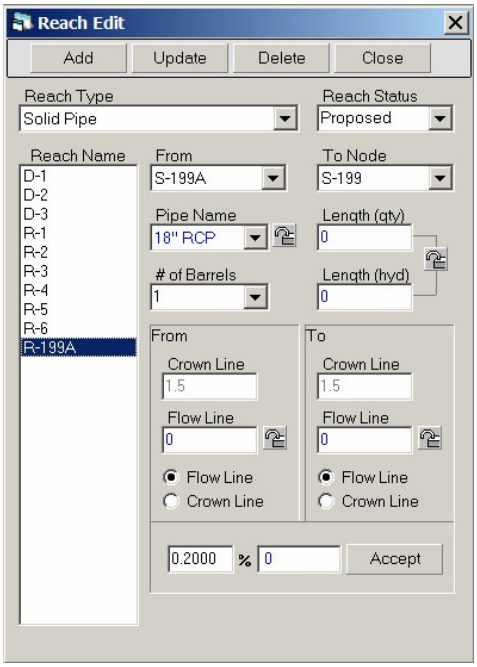


Figure 45

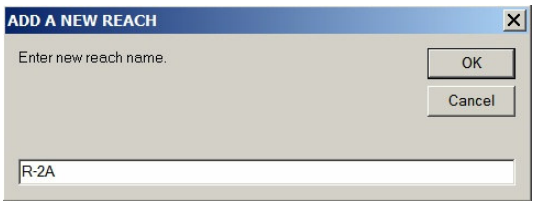


Figure 46

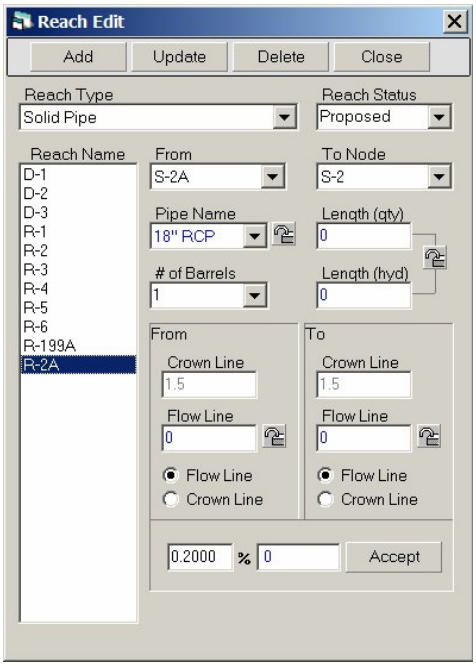


Figure 47

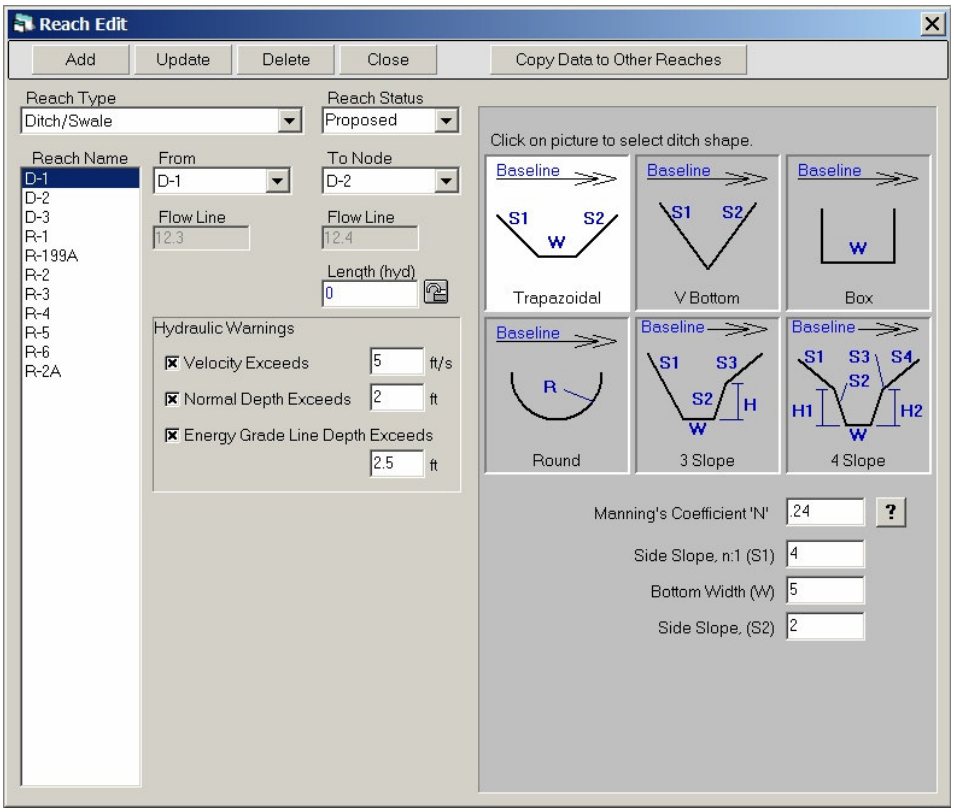


Figure 48

4.5 Dividing & Combining Systems

4.6 Renumbering Nodes & Reaches

CHAPTER V: CALCULATIONS & REPORTS

5.1 Computing Storm Sewer Geometry
- Low Point Station Adjustment
- North & East Coordinates from Baseline/Station/Offset
- Reaches Lengths
- Inlet/Top/Grate Elevation
- Drainage Areas

5.2 Computing Pipe Sizes

5.3 Computing Flow Line (Invert) Elevations

5.4 Computing Hydraulics (Storm Tabs)

5.4.1 Setting Options
5.4.2 Verifying Data
5.4.3 Printing Reports
5.4.4 Changing the Node Printing Order on Storm Tabs

5.5 Computing Roadway Spread & Inlet Intercept/Bypass (HEC-22)

Lab #6 Hydraulics

Compute/Reports> Step 1 - S.S. Geometry & Drainage Areas

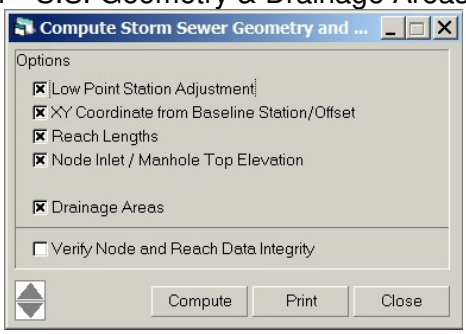


Figure 49

Compute/Reports> Step 2 - Compute Pipe Sizes

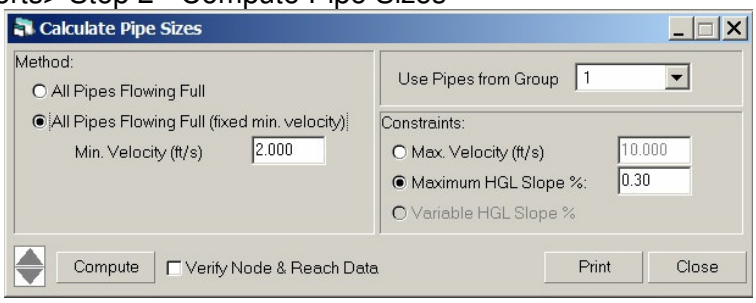


Figure 50

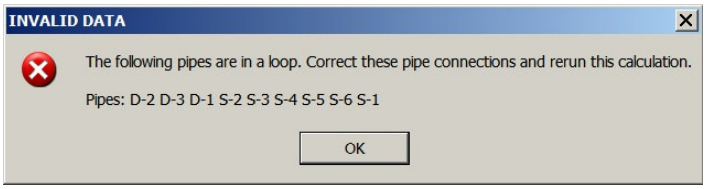


Figure 51

Compute/Reports> Step 3 - Set Flow Lines

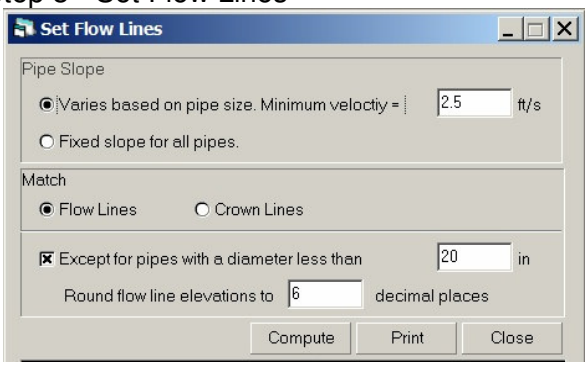


Figure 52

Compute/Reports> Step 4 - Compute\Print FDOT Storm Tabs

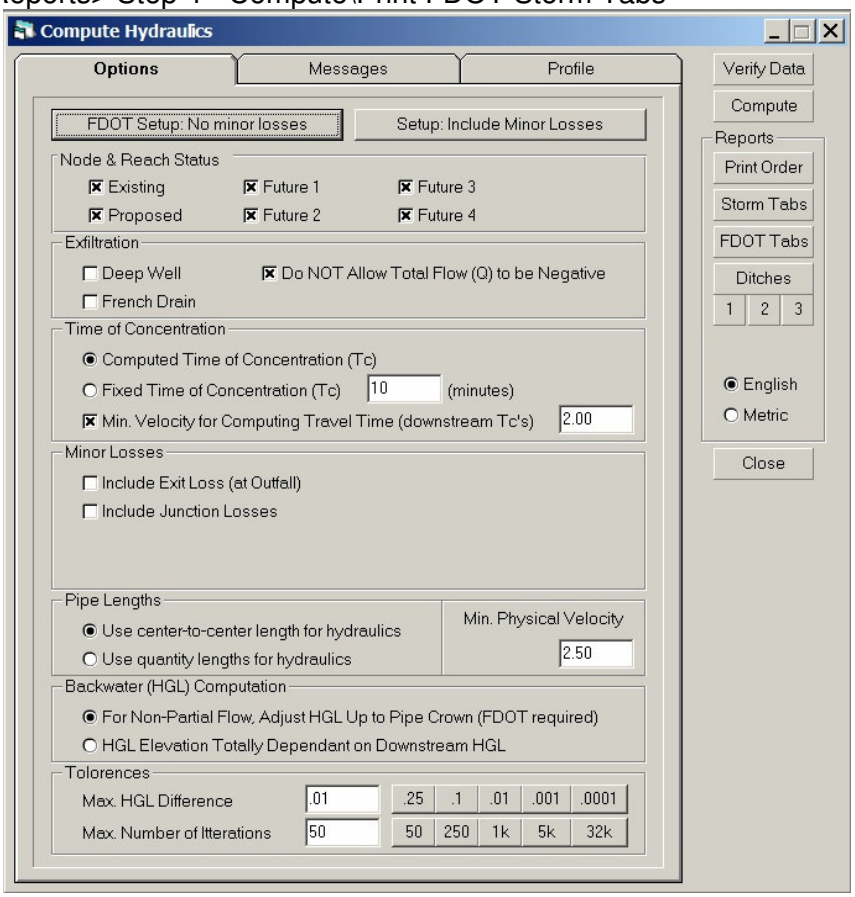


Figure 53

Compute/Reports> Step 4 - Verify Node & Reach Data or Verify Data (button)

Storm Tab Print Order

Sequence	From Node	To Node	Station	Offset	Structure
10	D-3	D-2	691+10	405	DITCH
20	D-2	D-1	691+00	305	DITCH
30	D-1	S-2A	691+50	190	DITCH
40	S-2A	S-2	691+50	110	DBI-C
50	S-2	S-1	691+00.00	52.5	CI-5-B
60	S-1	S-3	691+00.00	-52.5	CI-5-B
70	S-4	S-3	692+50.00	52.5	CI-5-B
80	S-3	S-5	692+50.00	-52.5	CI-5-B
90	S-6	S-5	694+30.00	52.5	CI-5-B
100	S-5	S-199A	694+30.00	-52.5	CI-5-B
110	S-199A	S-199	694+30	-80	MH-7-J

Sort by: Sequence From Node Close

Figure 54

5.6 Cost Analysis
5.7 Profile Elevation Inquiry
5.8 Utility Conflicts

Lab #7 <u>Computing Other</u>

Compute/Reports> Storm Sewer Cost Analysis

COMPUTE SYSTEM COST

Node\Reach Details
Node\Reach Sub-Totals
Grand Totals

Compute Close Print

Node	Inlet	Cost	Pipe	Length	Unit Cst	Cost	Total
D-1	..	0.00	18" RCP	79.00 @	1.00	79.00	79.00
D-2	..	0.00	18" RCP	125.40 @	1.00	125.40	125.40
D-3	..	0.00	18" RCP	100.50 @	1.00	100.50	100.50
S-1	CI-5-B	1.00	24" RCP	147.00 @	1.00	147.00	148.00
S-199A	MH-7-J	1.00	24" RCP	17.50 @	1.00	17.50	18.50
S-2	CI-5-B	1.00	18" RCP	102.00 @	1.00	102.00	103.00
S-2A	DBI-C	1.00	18" RCP	73.70 @	1.00	73.70	74.70
S-3	CI-5-B	1.00	24" RCP	177.00 @	1.00	177.00	178.00
S-4	CI-5-B	1.00	18" RCP	102.00 @	1.00	102.00	103.00
S-5	CI-5-B	1.00	24" RCP	23.50 @	1.00	23.50	24.50
S-6	CI-5-B	1.00	18" RCP	102.00 @	1.00	102.00	103.00

SUB TOTALS

PIPES:
18" RCP 684.60 @ $1.00 = $684.60
24" RCP 365.00 @ $1.00 = $365.00

INLETS/MANHOLES:
.. Qty: 3 = $0.00
CI-5-B Qty: 6 = $6.00
DBI-C Qty: 1 = $1.00
MH-7-J Qty: 1 = $1.00

TOTALS

Total Cost of Pipes: $1,049.60
Total Cost of Inlets/Manholes: $8.00

GRAND TOTAL FOR SYSTEM: $1,057.60

Figure 55

Compute/Reports> Profile Elevation Inquiry

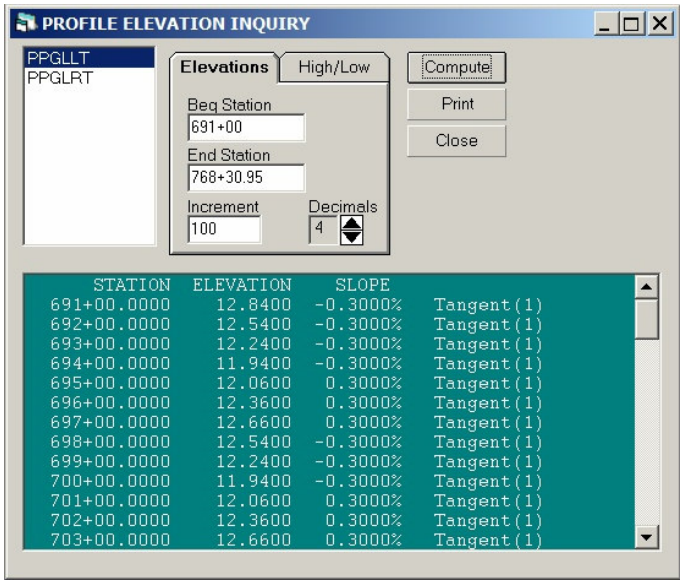

PROFILE ELEVATION INQUIRY
PPGLLT
PPGLRT
Elevations
High/Low
Beg Station
691+00
End Station
768+30.95
Increment
100
Decimals
4
Compute
Print
Close
STATION ELEVATION SLOPE
691+00.0000 12.8400 -0.3000% Tangent(1)
692+00.0000 12.5400 -0.3000% Tangent(1)
693+00.0000 12.2400 -0.3000% Tangent(1)
694+00.0000 11.9400 -0.3000% Tangent(1)
695+00.0000 12.0600 0.3000% Tangent(1)
696+00.0000 12.3600 0.3000% Tangent(1)
697+00.0000 12.6600 0.3000% Tangent(1)
698+00.0000 12.5400 -0.3000% Tangent(1)
699+00.0000 12.2400 -0.3000% Tangent(1)
700+00.0000 11.9400 -0.3000% Tangent(1)
701+00.0000 12.0600 0.3000% Tangent(1)
702+00.0000 12.3600 0.3000% Tangent(1)
703+00.0000 12.6600 0.3000% Tangent(1)

Figure 56

Compute/Reports> Utility Conflicts

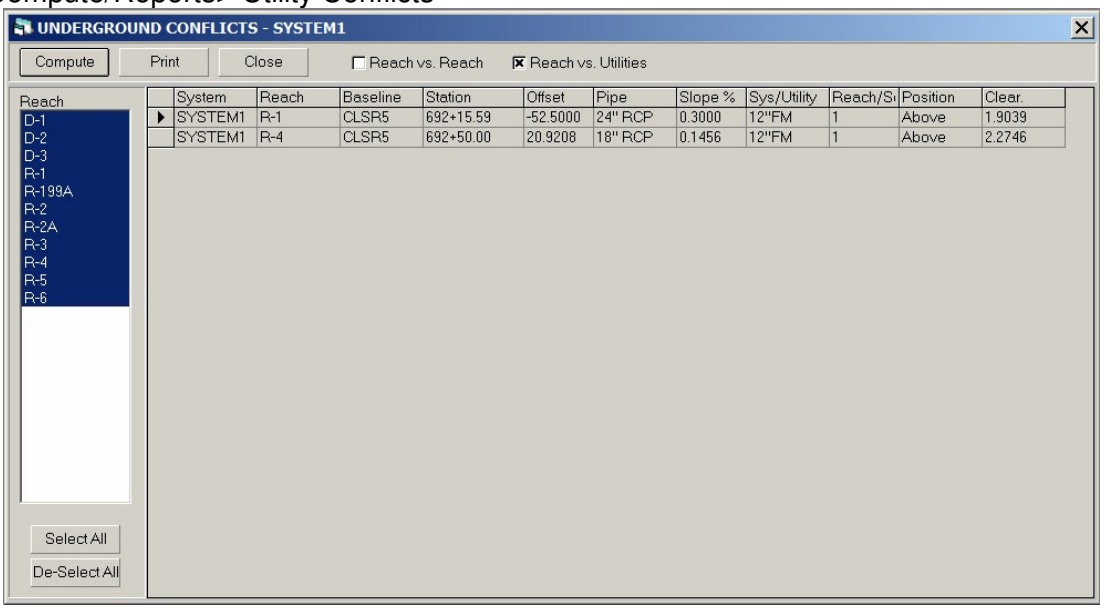


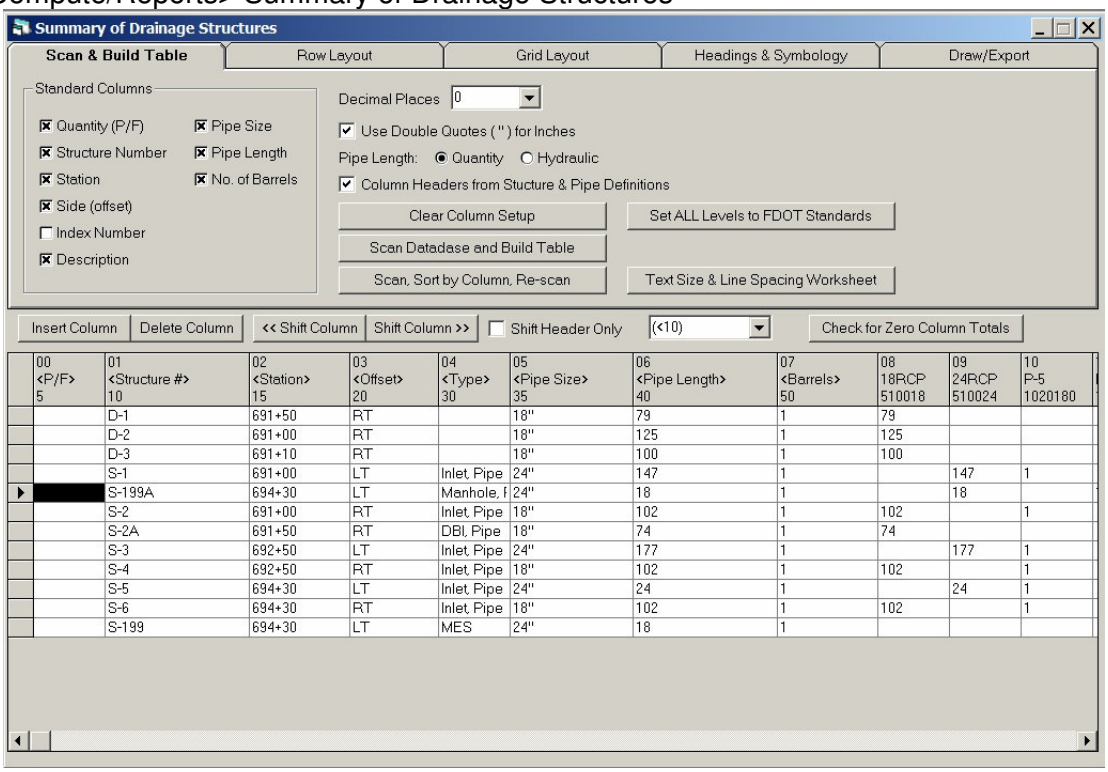
Figure 57

5.9 Summary of Drainage Structures

5.10.1 Building SDS Data Table
5.10.2 Modifying SDS Data
5.10.2 Text Size/Line Spacing Worksheet
5.10.3 Row Layout
5.10.4 Grid Layout
5.10.5 Symbology & Font Size (Headings, Details and Totals)
5.10.6 Drawing SDS into CAD
5.10.7 Exporting SDS Data to Excel (Tab-Delimited Text)

Lab #8 Summary of Drainage Structures

Compute/Reports> Summary of Drainage Structures



00 <P/F> 5	01 <Structure #> 10	02 <Station> 15	03 <Offset> 20	04 <Type> 30	05 <Pipe Size> 35	06 <Pipe Length> 40	07 <Barrels> 50	08 18RCP 510018	09 24RCP 510024	10 P-5 1020180
	D-1	691+50	RT		18"	79	1	79		
	D-2	691+00	RT		18"	125	1	125		
	D-3	691+10	RT		18"	100	1	100		
	S-1	691+00	LT	Inlet, Pipe	24"	147	1		147	1
	S-199A	694+30	LT	Manhole, I	24"	18	1		18	
	S-2	691+00	RT	Inlet, Pipe	18"	102	1	102		1
	S-2A	691+50	RT	DBl. Pipe	18"	74	1	74		
	S-3	692+50	LT	Inlet, Pipe	24"	177	1		177	1
	S-4	692+50	RT	Inlet, Pipe	18"	102	1	102		1
	S-5	694+30	LT	Inlet, Pipe	24"	24	1		24	1
	S-6	694+30	RT	Inlet, Pipe	18"	102	1	102		1
	S-199	694+30	LT	MES	24"	18	1			

Figure 58

Text Size & Line Spacing Worksheet (button)

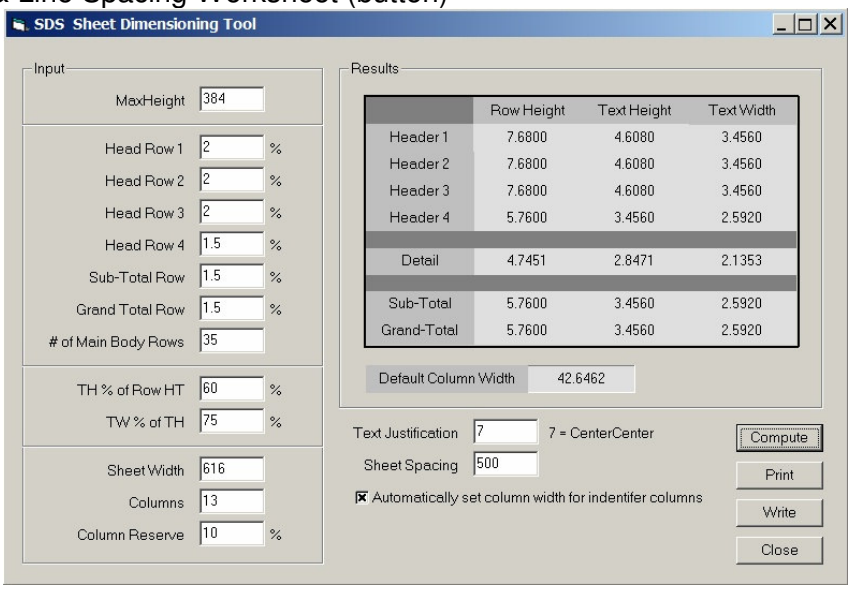


Figure 59

Compute/Reports> Summary of Drainage Structures – Row Layout (tab)

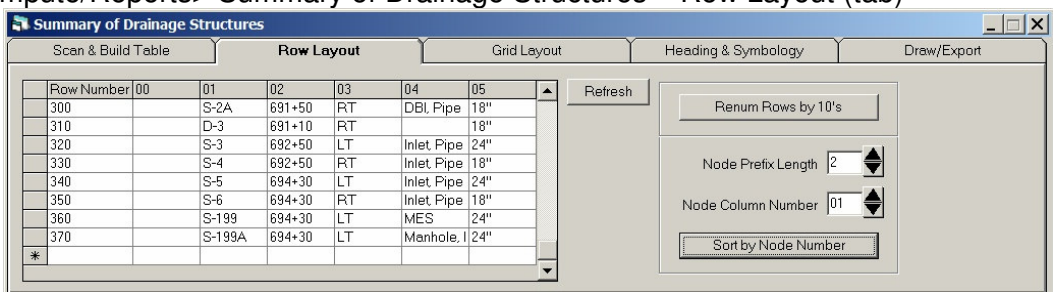


Figure 60

Compute/Reports> Summary of Drainage Structures – Grid Layout (tab)

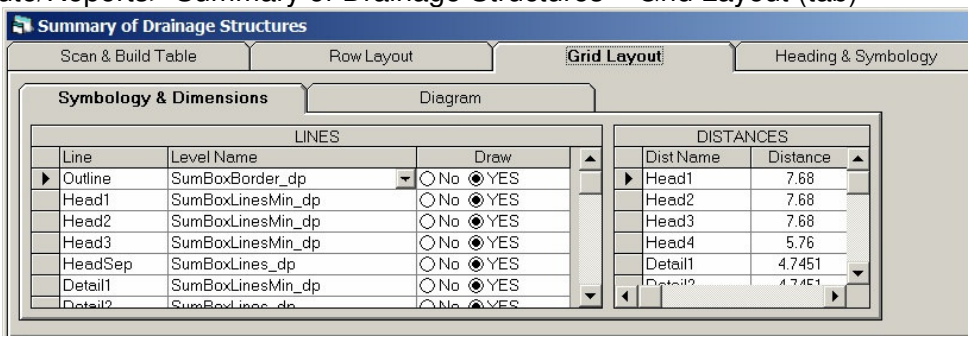


Figure 61

Compute/Reports> Summary of Drainage Structures – Heading & Symbology (tab)

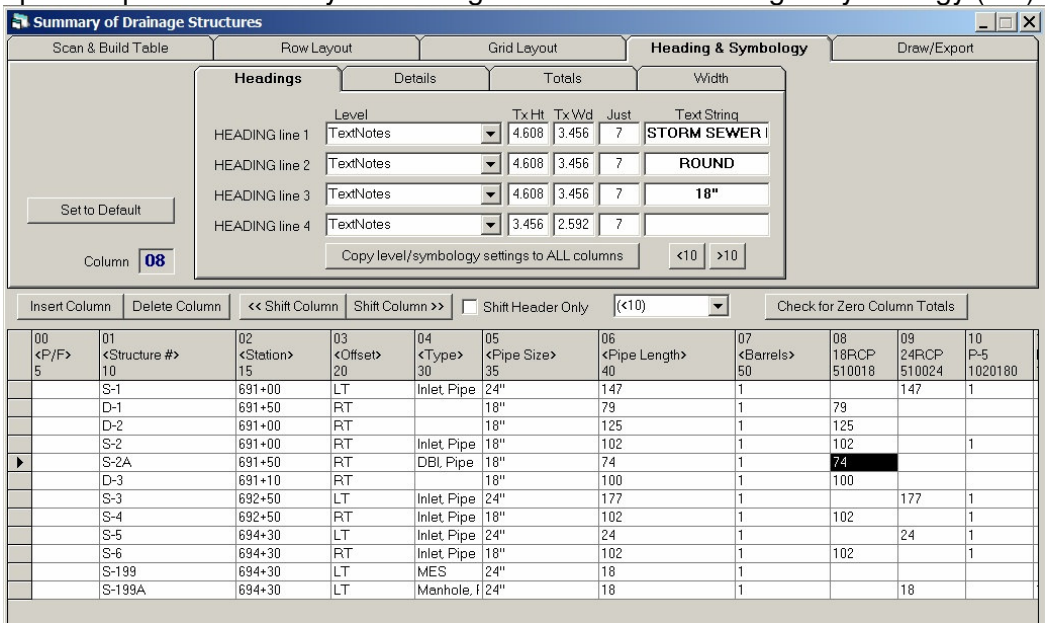


Figure 62

Compute/Reports> Summary of Drainage Structures – Draw (tab)

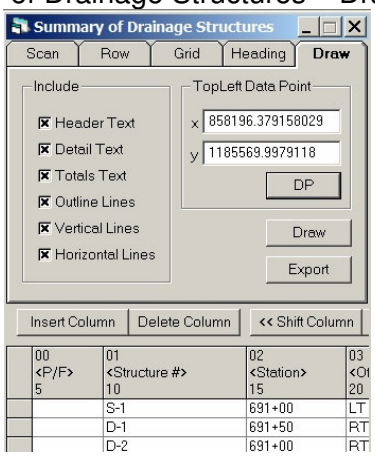


Figure 63

CHAPTER VI: DRAWING

6.1 CAD Window
6.2 Reference Files
6.3 Drawing Cells into a Grid
6.4 Levels
6.4.1 Levels Display
6.4.2 Level/Layer Manager
6.4.3 ASAD Master Level List
6.5 Drawing Plan View and Profile View Elements
6.5.1 Drawing Templates and Setting Defaults
6.5.2 General Level/Symbology
6.5.3 Drainage Elements in Plan View
6.5.4 Pattern Lines (Plan)
6.5.5 Drainage Areas (Plan)
6.5.6 Drainage Elements in Profile View
6.5.7 User Defined Text Labels

Lab #9 Draw Plan & Profile

CAD> Storm Sewer> Draw Plan View – Drainage (tab)

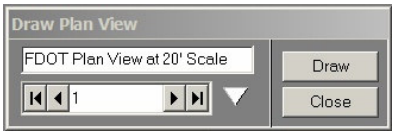


Figure 64

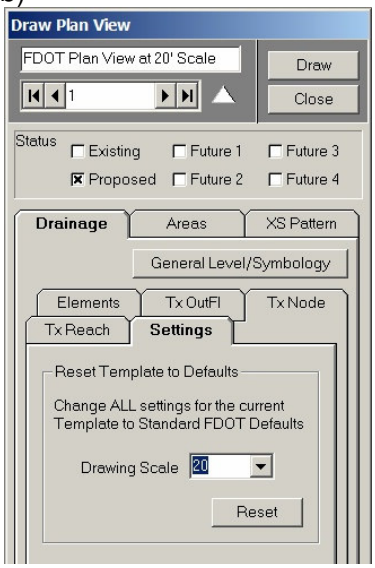


Figure 65

General Level/Symbology (button)

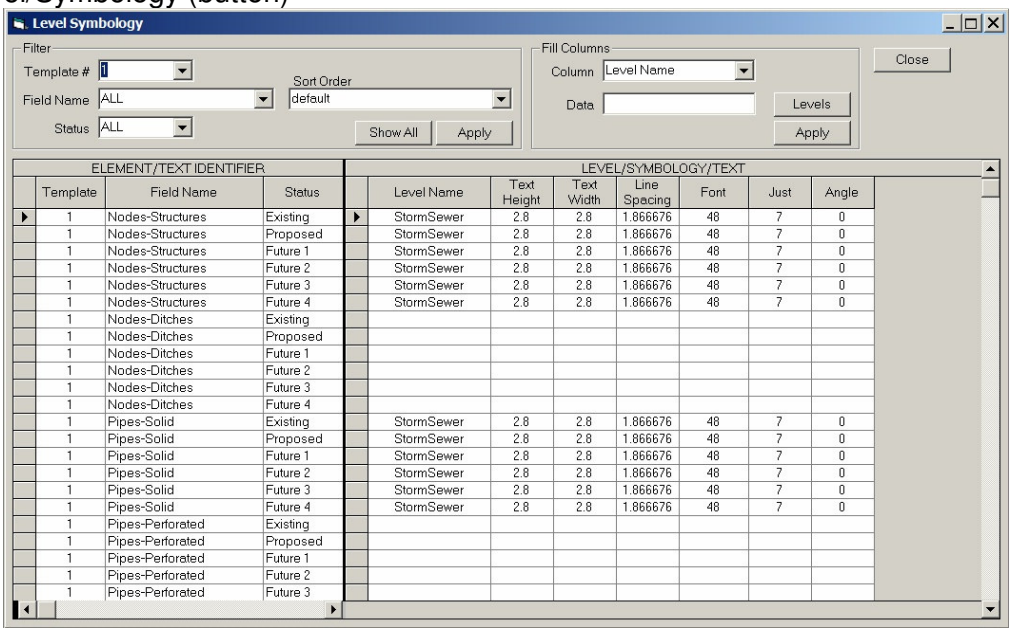


Figure 66

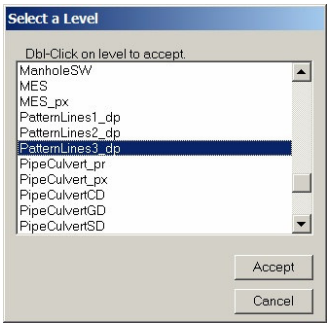


Figure 67

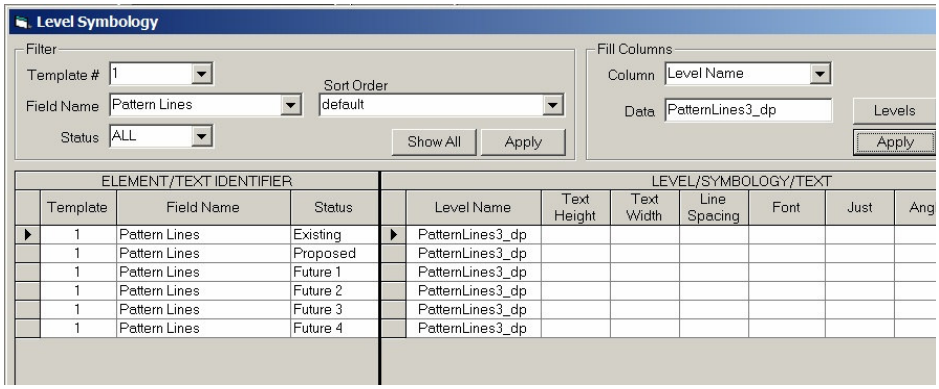


Figure 68

CAD> Storm Sewer> Draw Plan View – Drainage (tab)

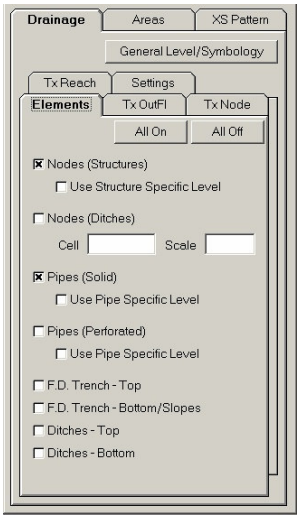


Figure 69

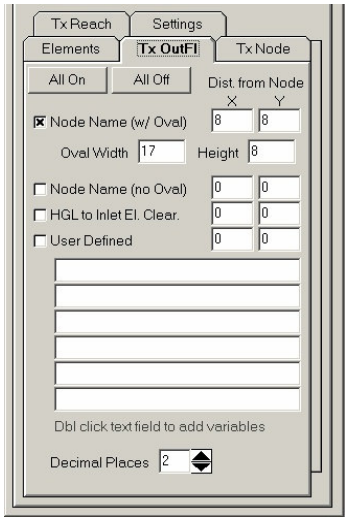


Figure 70

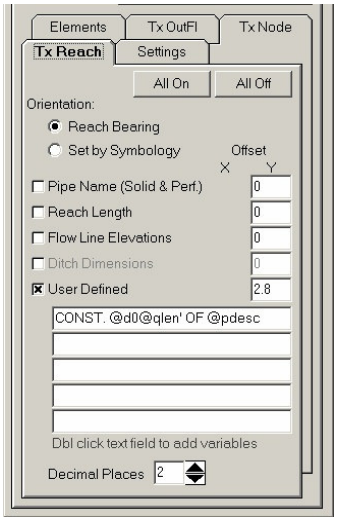


Figure 71

CAD> Storm Sewer> Draw Plan View Pattern (tab)

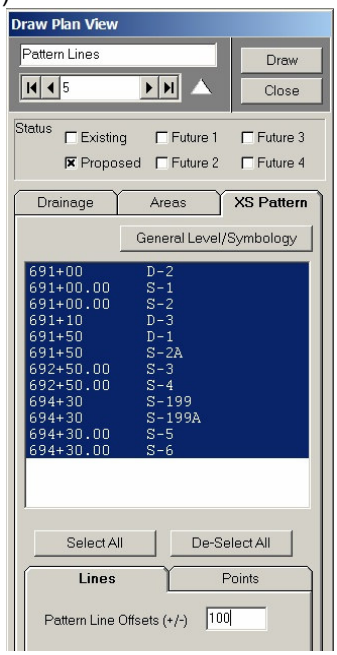


Figure 72

CAD> Storm Sewer> Draw Plan View XS Areas (tab)

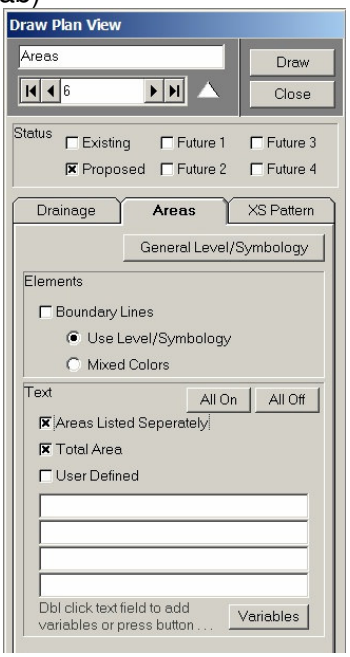


Figure 73

CAD> Storm Sewer> Draw Profile

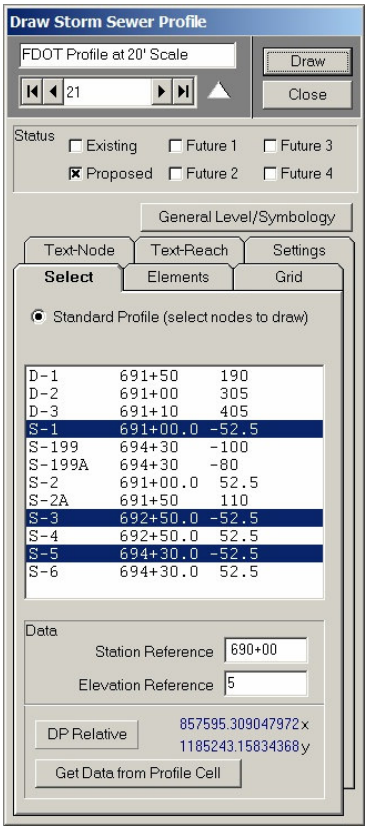


Figure 74

Dbl-click on User Defined Text field in Draw Plan View or Profile

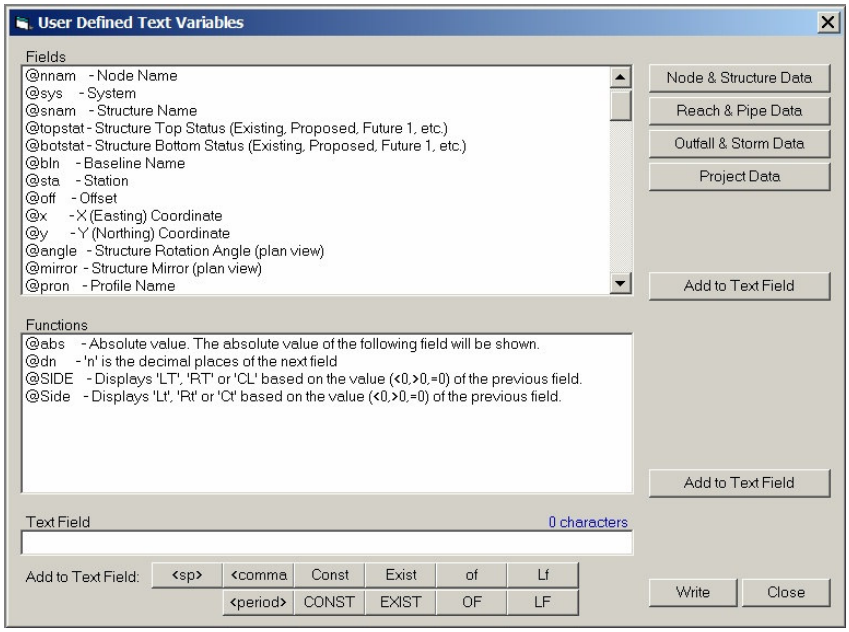


Figure 75

6.6 Drawing Drainage Structures (Cross Section View)

- 6.6.1 Single Structure (One at a Time)
- 6.6.2 Multiple Structures Using GEOPAK Cross Section Cells
- 6.6.3 Multiple Structures Drawn in Plan View
- 6.6.4 Multiple Structures Drawn into a Grid

6.7 Draw Baseline in Plan View

Lab #10 <u>Draw Drainage Structures</u>

CAD> Storm Sewer> Draw Drainage Structures (Single Structure mode)

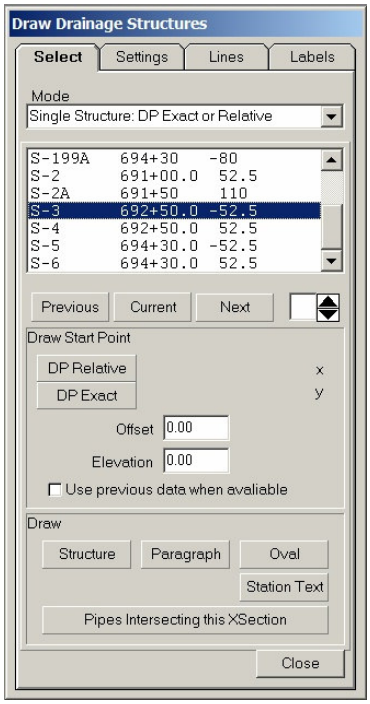


Figure 76

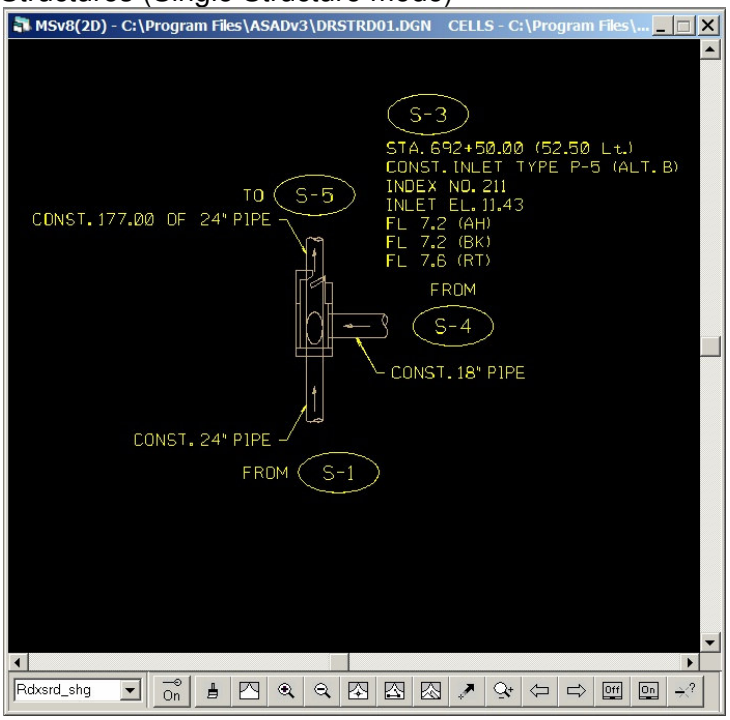


Figure 77

CAD> Storm Sewer> Draw Drainage Structures – Settings and Lines (tabs)

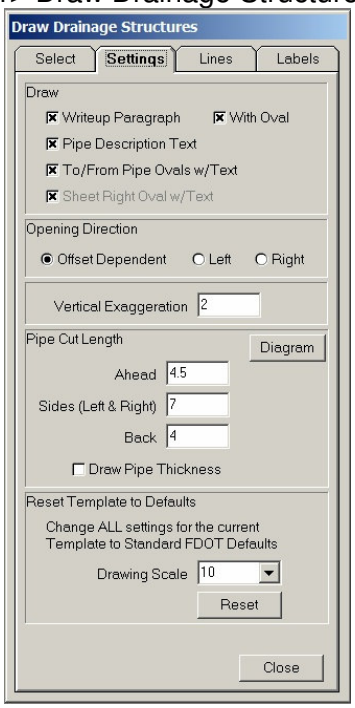


Figure 78

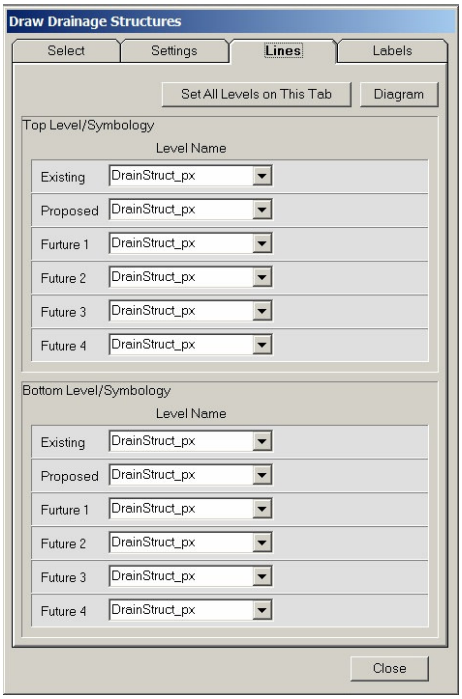


Figure 79

CAD> Storm Sewer> Draw Drainage Structures – Labels (tab), DS Paragraph (sub-tab)

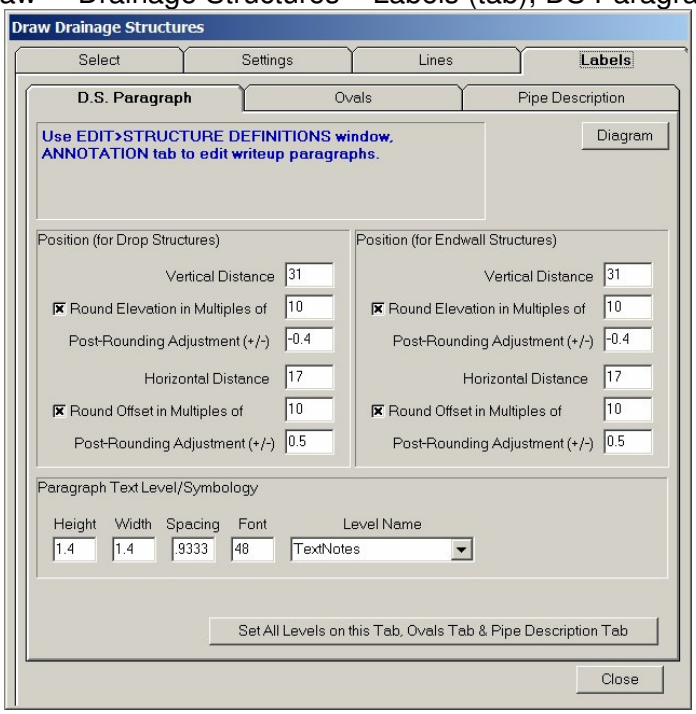


Figure 80

CAD> Storm Sewer> Draw Drainage Structures – Labels (tab), Ovals (sub-tab)

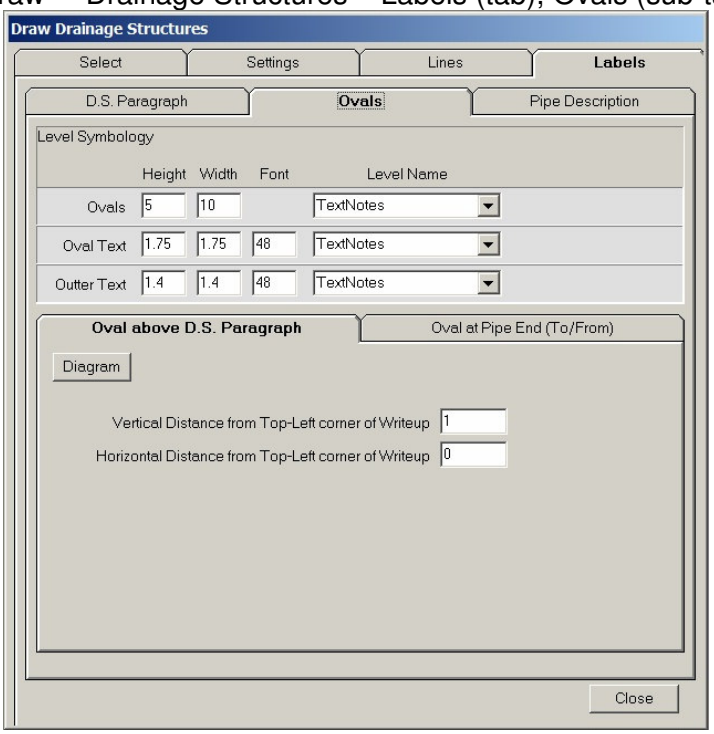


Figure 81

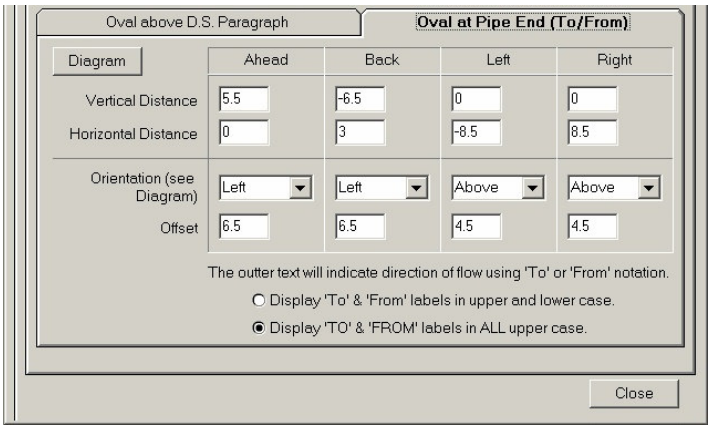


Figure 82

CAD> Storm Sewer> Draw Drainage Structures – Labels (tab), Pipe Description (sub-tab)

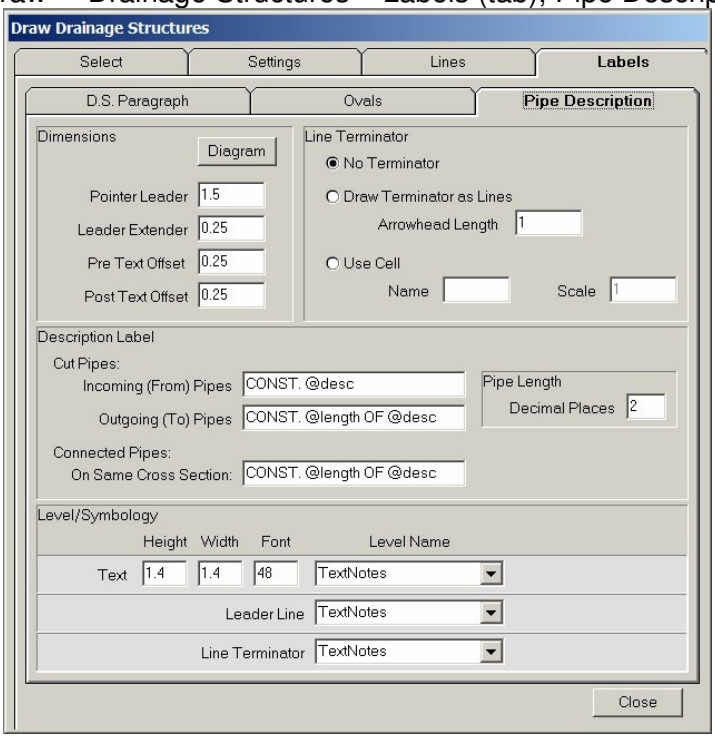
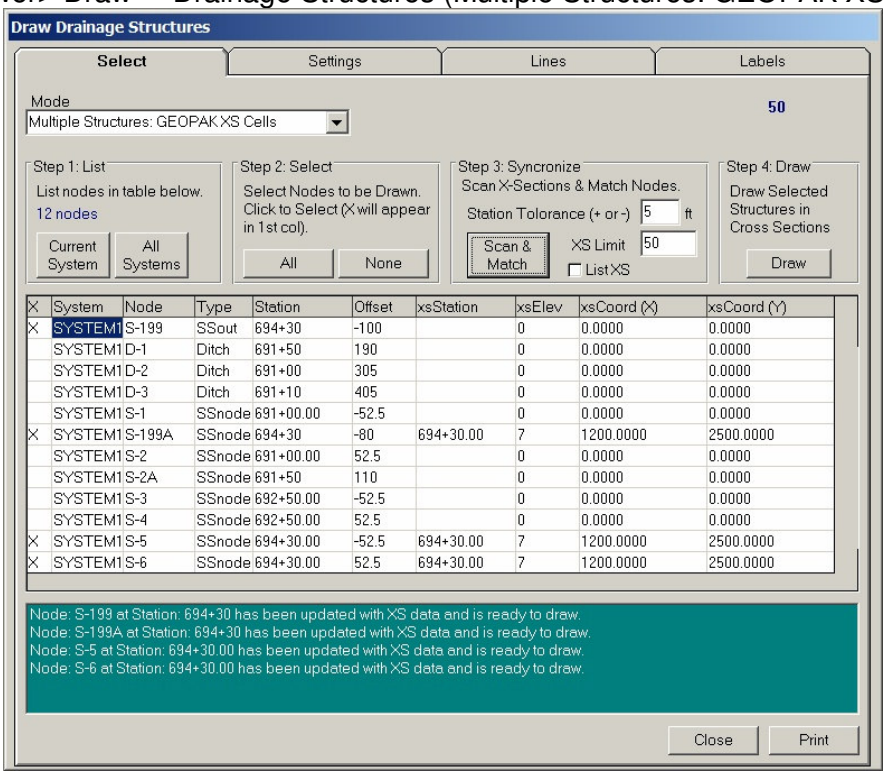


Figure 83

CAD> Storm Sewer> Draw Drainage Structures (Multiple Structures: GEOPAK XS mode)



X	System	Node	Type	Station	Offset	xsStation	xsElev	xsCoord (X)	xsCoord (Y)
X	SYSTEM1	S-199	SSout	694+30	-100		0	0.0000	0.0000
	SYSTEM1	D-1	Ditch	691+50	190		0	0.0000	0.0000
	SYSTEM1	D-2	Ditch	691+00	305		0	0.0000	0.0000
	SYSTEM1	D-3	Ditch	691+10	405		0	0.0000	0.0000
	SYSTEM1	S-1	SSnode	691+00.00	-52.5		0	0.0000	0.0000
X	SYSTEM1	S-199A	SSnode	694+30	-80	694+30.00	7	1200.0000	2500.0000
	SYSTEM1	S-2	SSnode	691+00.00	52.5		0	0.0000	0.0000
	SYSTEM1	S-2A	SSnode	691+50	110		0	0.0000	0.0000
	SYSTEM1	S-3	SSnode	692+50.00	-52.5		0	0.0000	0.0000
	SYSTEM1	S-4	SSnode	692+50.00	52.5		0	0.0000	0.0000
X	SYSTEM1	S-5	SSnode	694+30.00	-52.5	694+30.00	7	1200.0000	2500.0000
X	SYSTEM1	S-6	SSnode	694+30.00	52.5	694+30.00	7	1200.0000	2500.0000

Figure 84

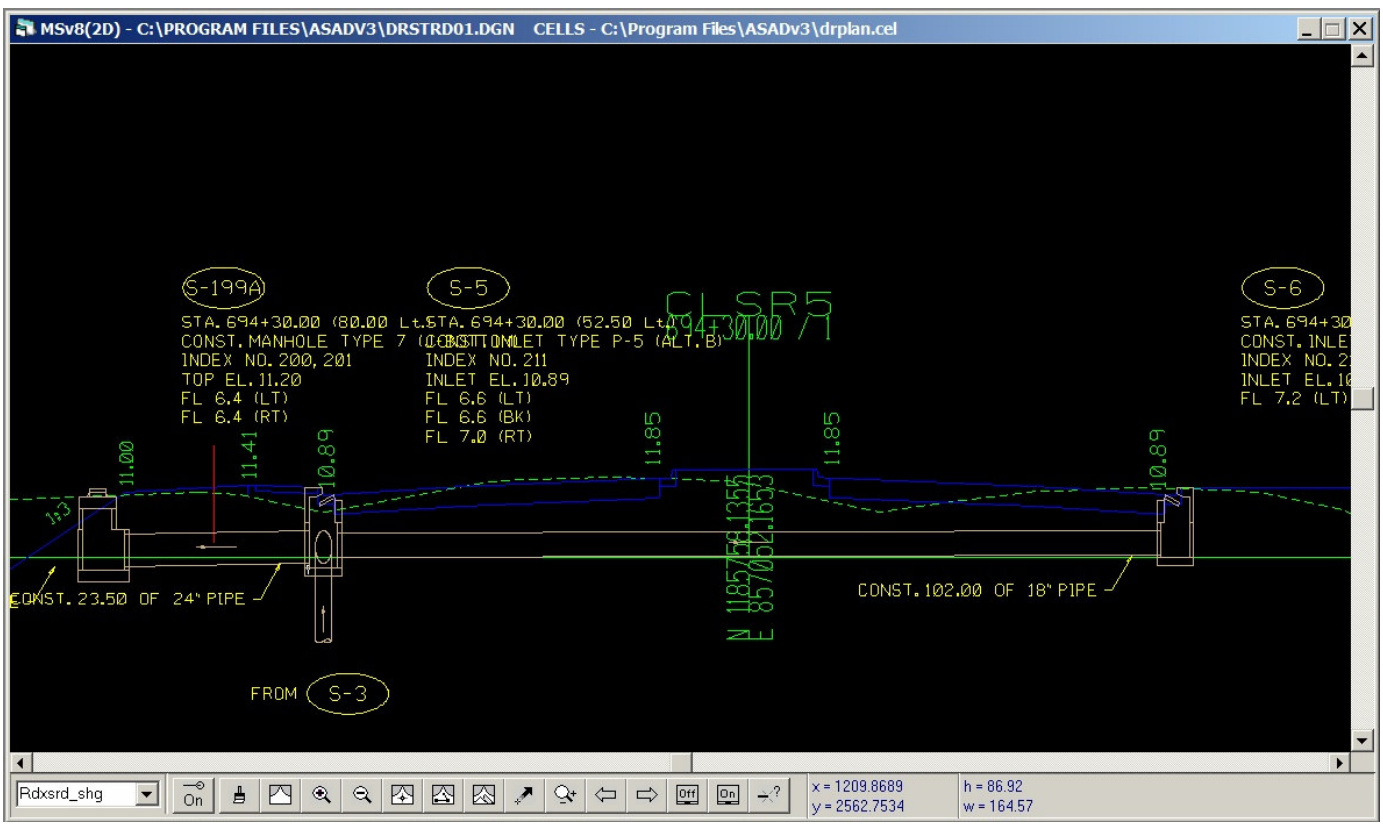


Figure 85

CAD> Storm Sewer> Draw Drainage Structures (Multiple Structures: Plan Drawing mode)

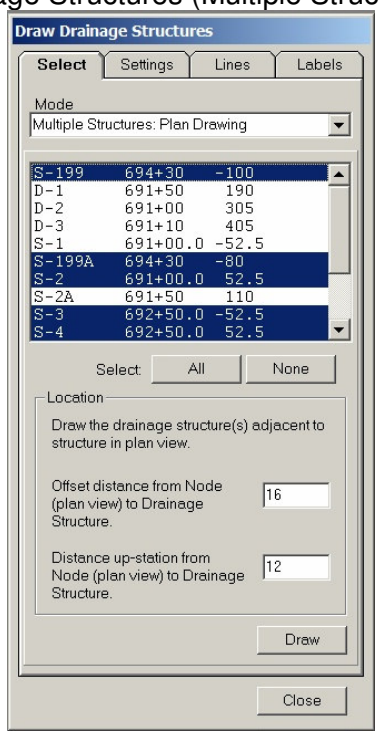


Figure 86

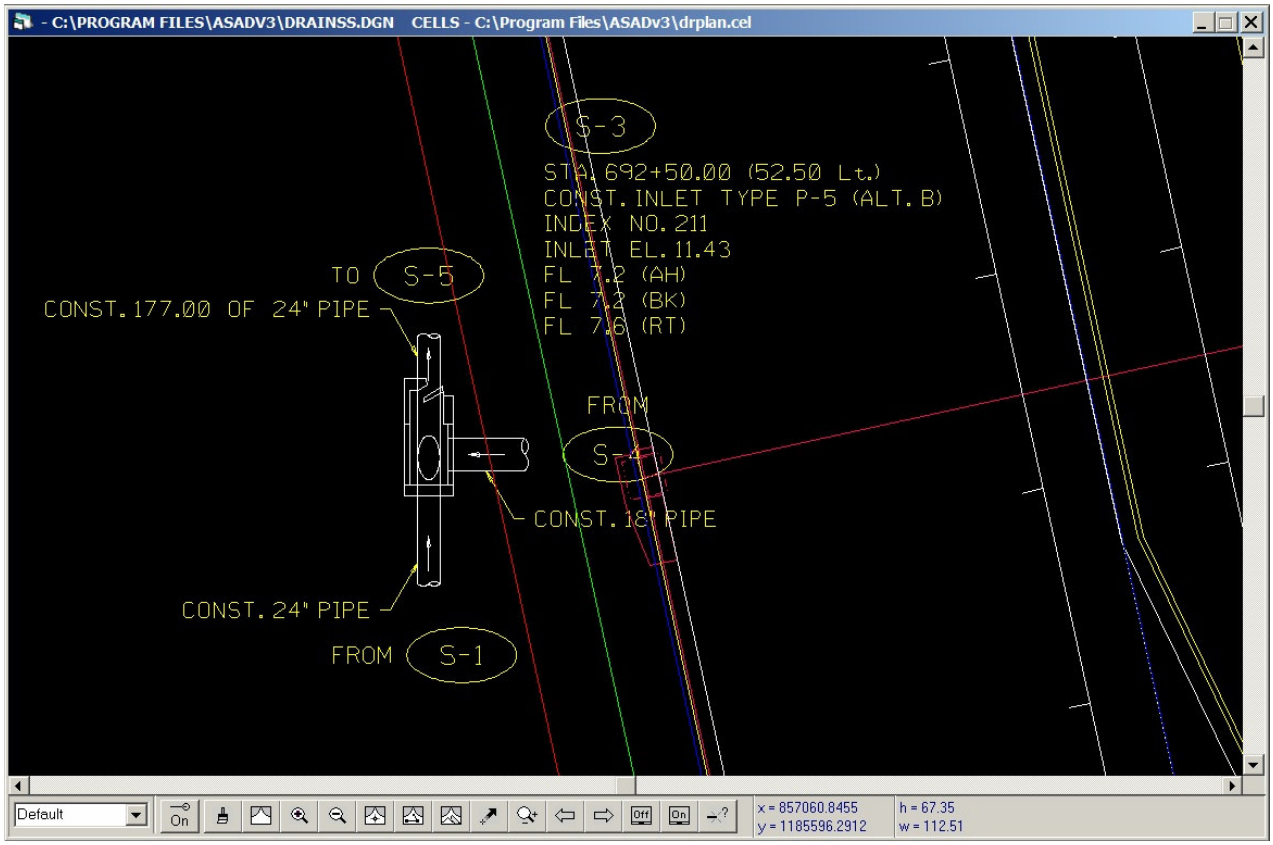


Figure 87

CAD> Storm Sewer> Draw Drainage Structures (Multiple Structures: Grid Layout mode)

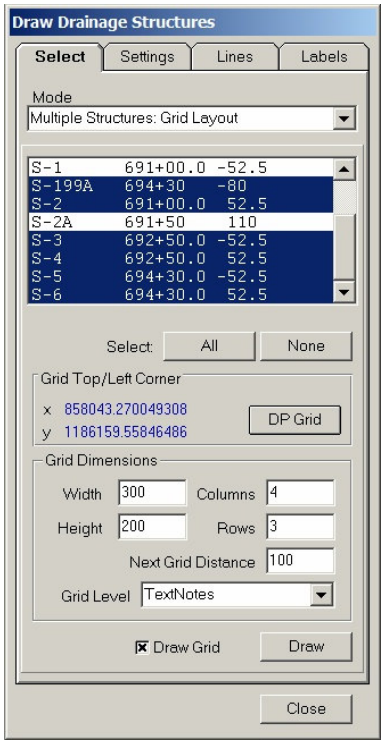


Figure 88

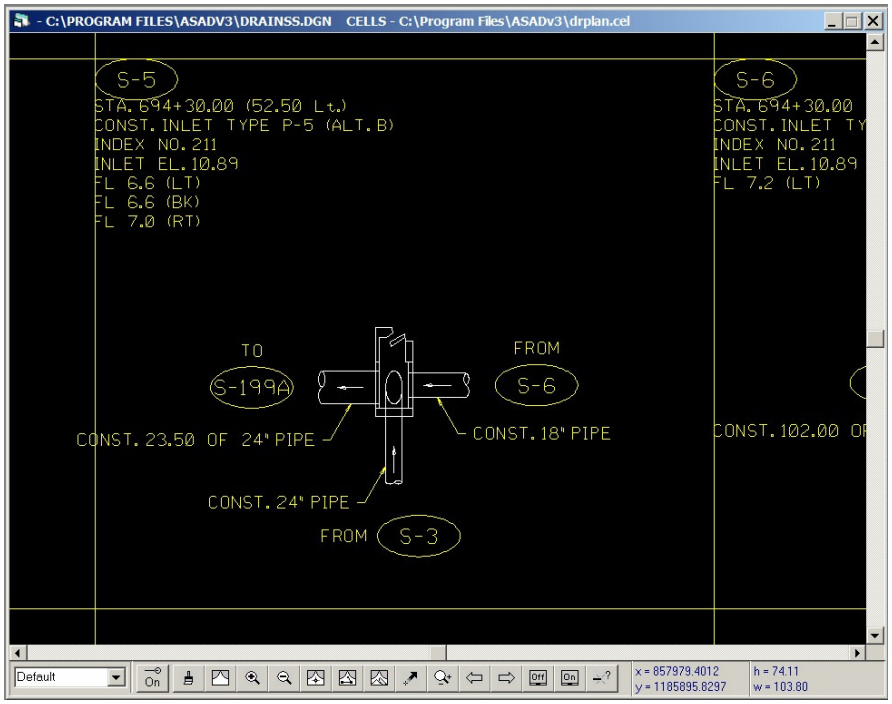


Figure 89

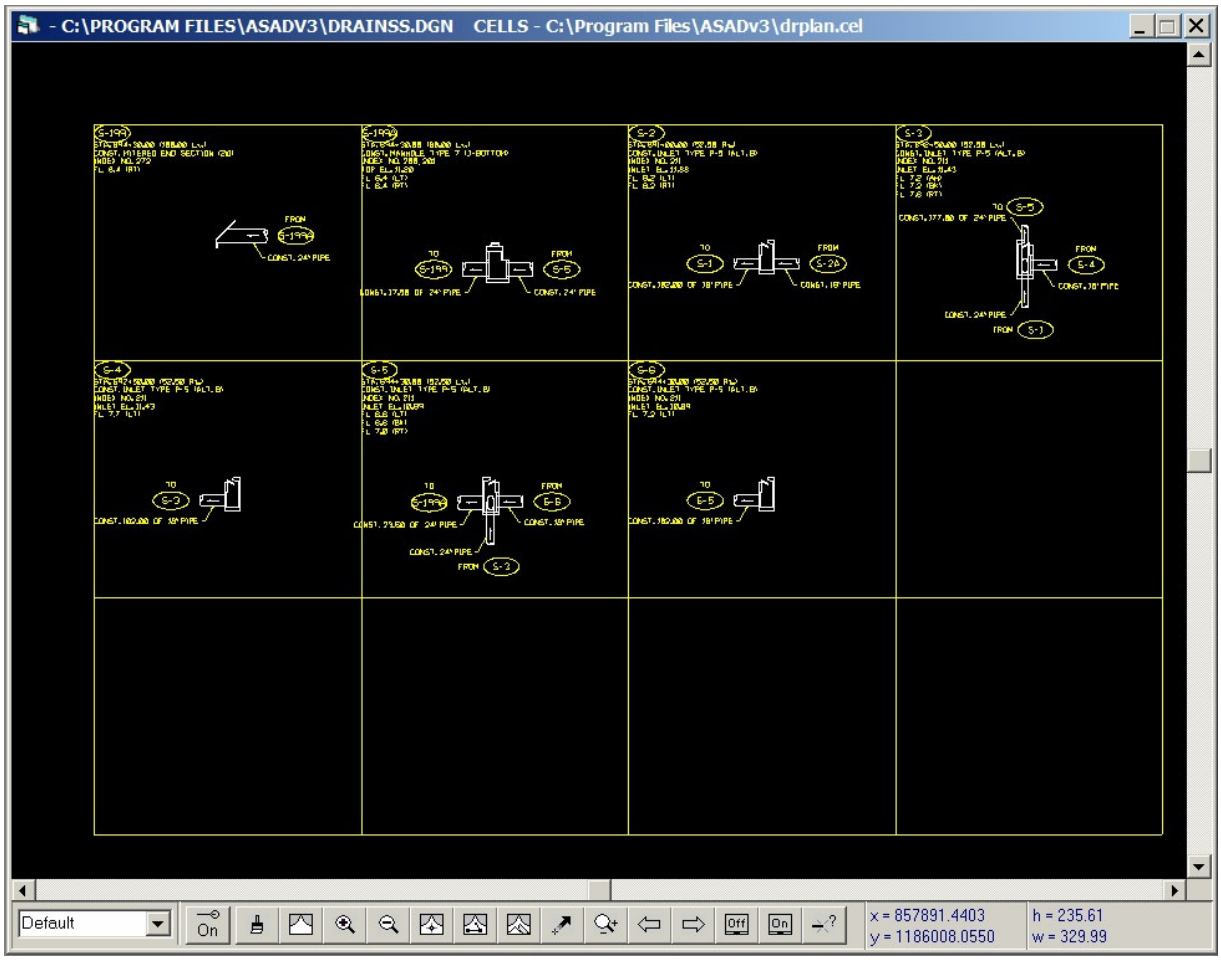


Figure 90

CHAPTER VII: MISCELLANEOUS

7.1 Exporting Data
7.2 Rebuilding (Compressing) Project Database
7.3 Tools
7.3.1 Options
7.3.2 PCS Dialog Windows
7.4 Editing TOP Files

Lab #11 Miscellaneous

File>Export to Text File

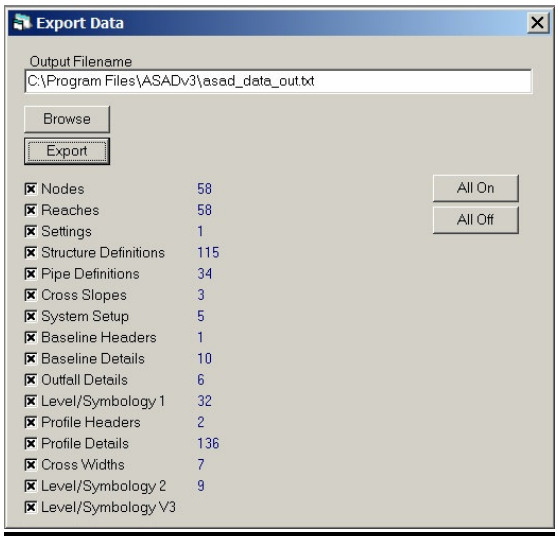


Figure 91

File>Rebuild Project Database

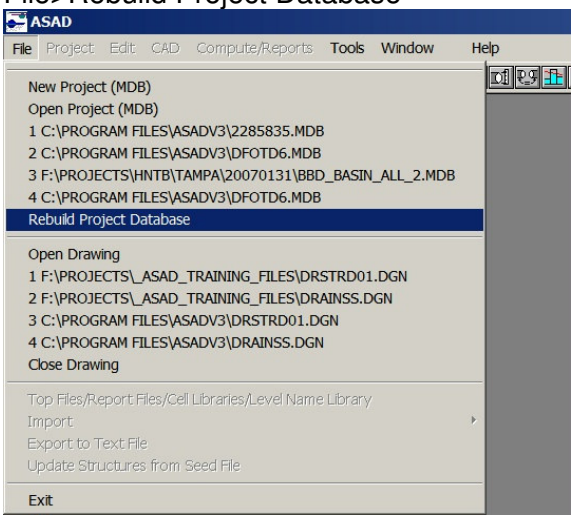


Figure 92

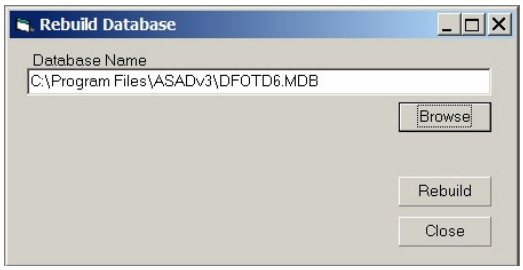


Figure 93

File>Rebuild Project Database

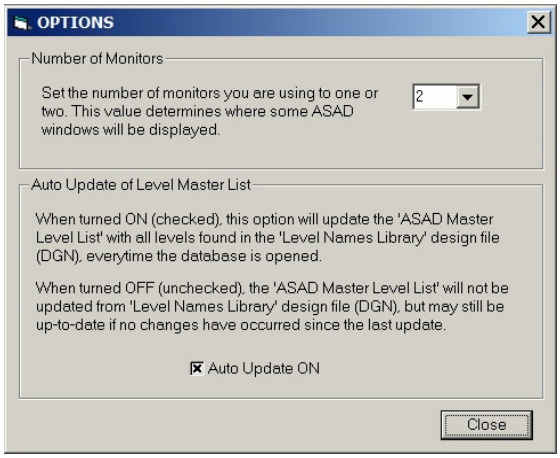


Figure 94

Use notepad to edit Drainage Structure 'TOP' files

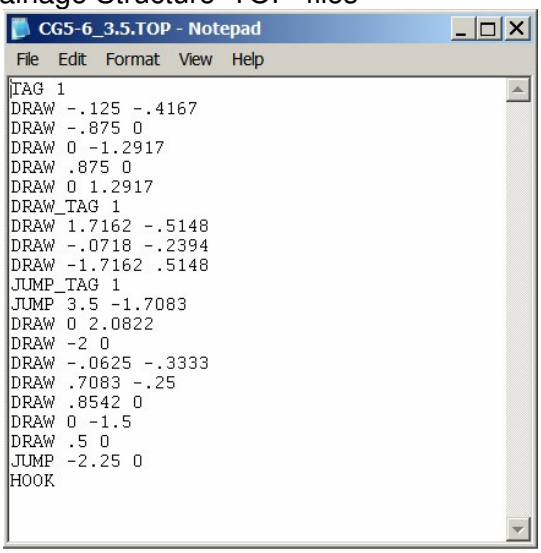


Figure 95