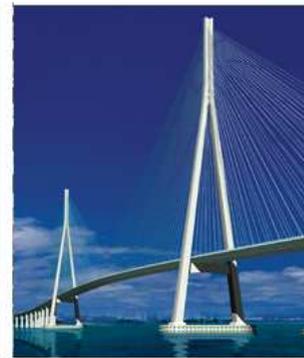


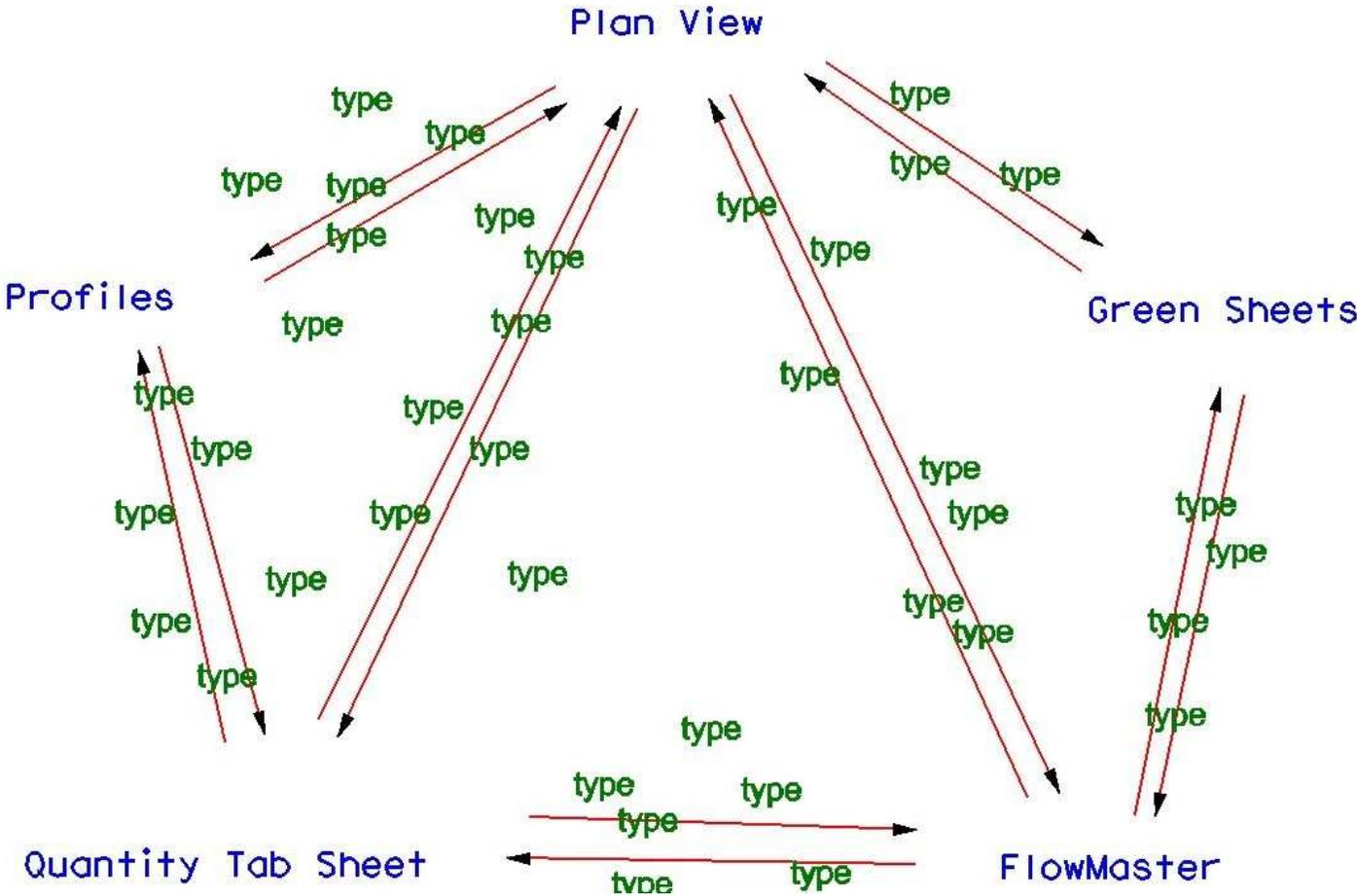
## 2009 ROADS AND BRIDGES CONFERENCE



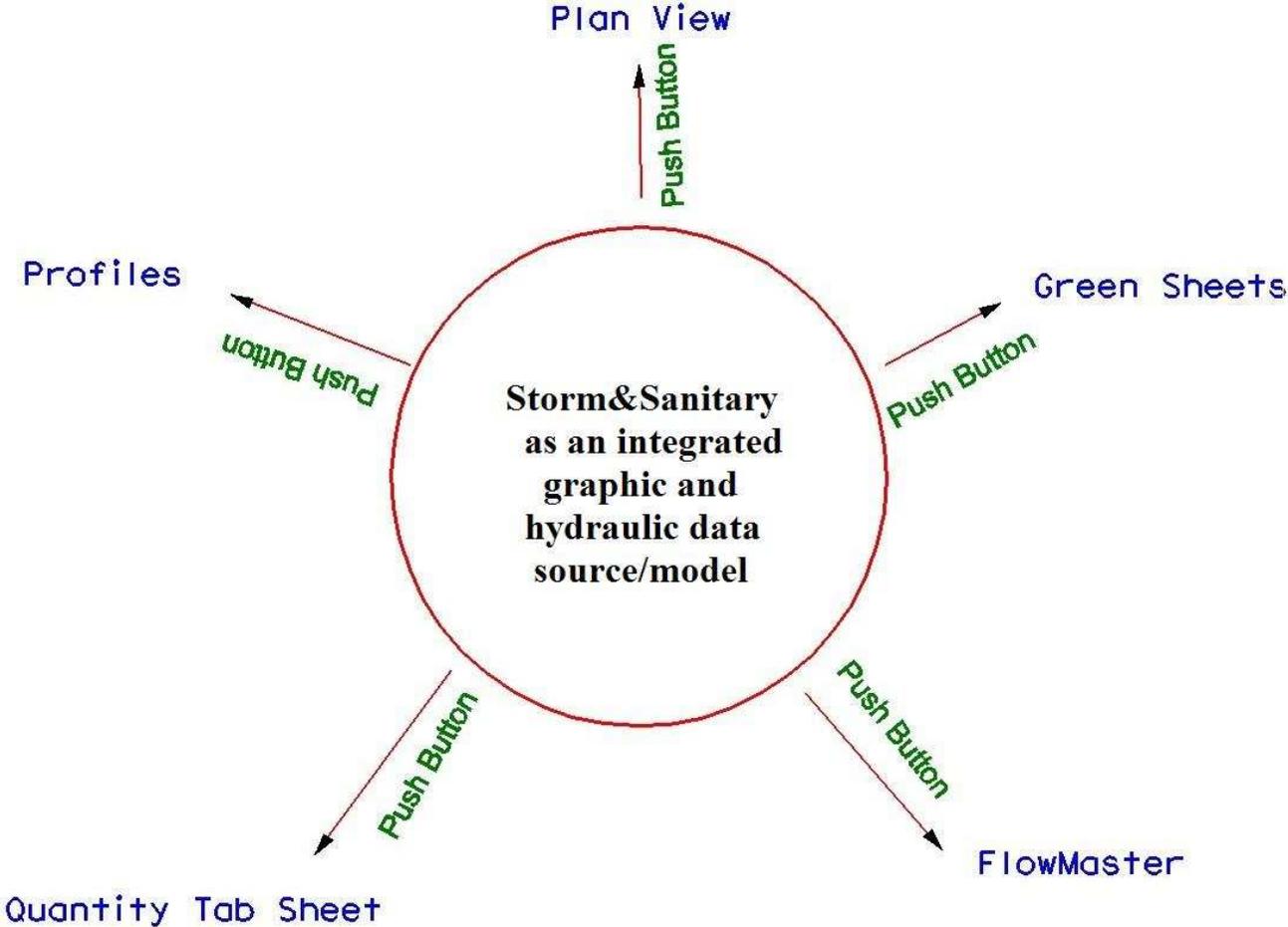
# What's the Latest with InRoads Storm & Sanitary SS1?

Joe Waxmonsky, Bentley Civil

# Why implement S&S? To avoid this:

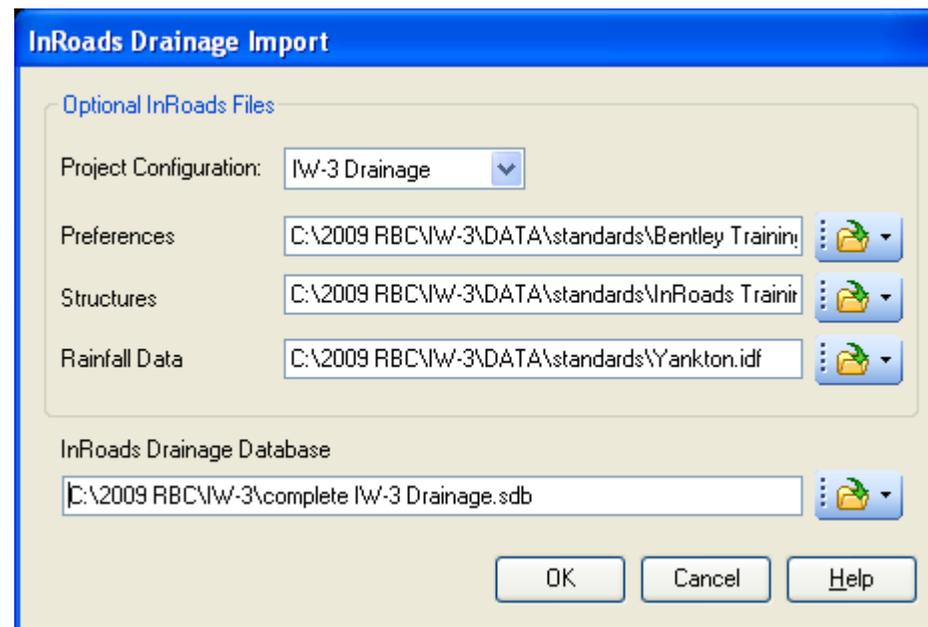


# Single-source it



# StormCAD reads S&S files!

- StormCAD v8i Project>Import>InRoads



## Workshop – X5 Using InRoads S&S

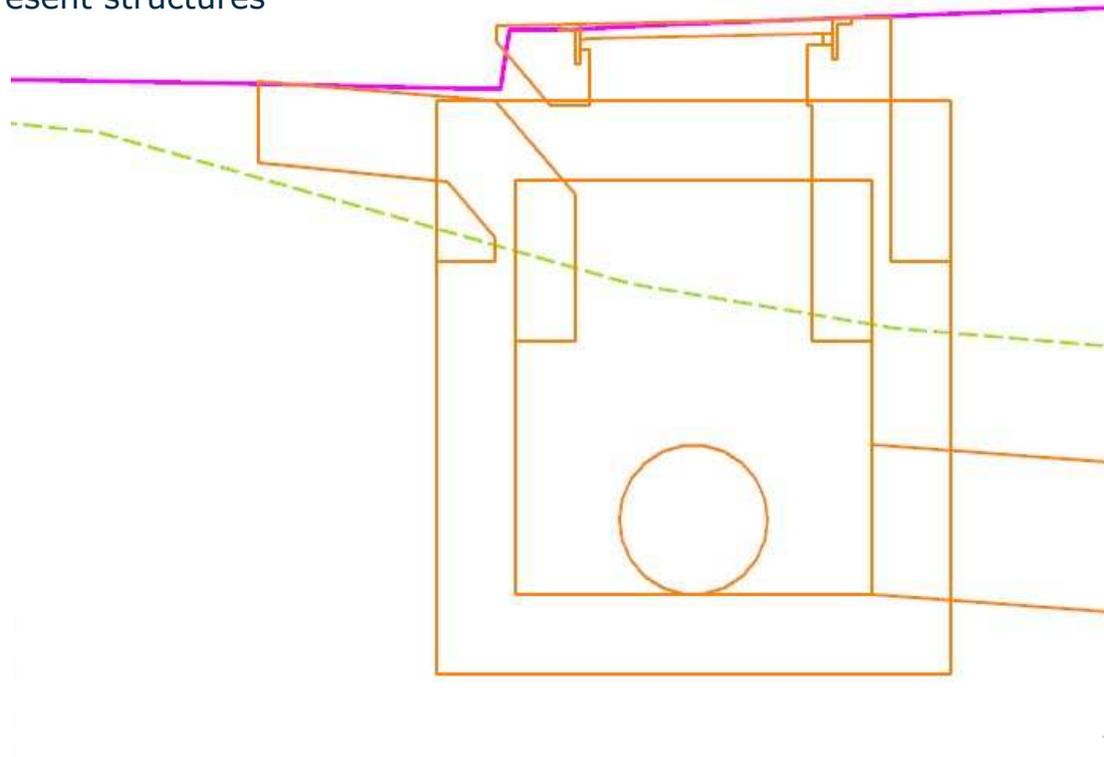
- *Monday at 2:30pm...Rob Nice*

## InRoads reads S&S files!

- Storm & Sanitary files are InRoads-readable
- Display and Plans Production functions
  - Plan/3D Drainage Display and Notes
  - Cross Section Display and Notes
  - Profile Notes

# Cross Sections See Drainage

- Storm & Sanitary are integrated into Cross Sections
  - Similar to Features w/ bandwidth
  - Cells can be used to represent structures



# InRoads Survey to Drainage

- Streamlined data flow from Survey to Storm&Sanitary
- Part of InRoads Survey

Survey Data To Drainage

Name: Default

Description:

Structure: Inlet

OK

Cancel

Preferences...

Help

Attribute Mapping:

Key	Map	Use
Inlet	IN	
ID	ID	IN.ID
Description	Desc	IN.Desc
Class	Class	IN.Class
Type	Type	IN.Type
Length	L	IN.L
Width	W	IN.W

Style Mapping

Available Styles:

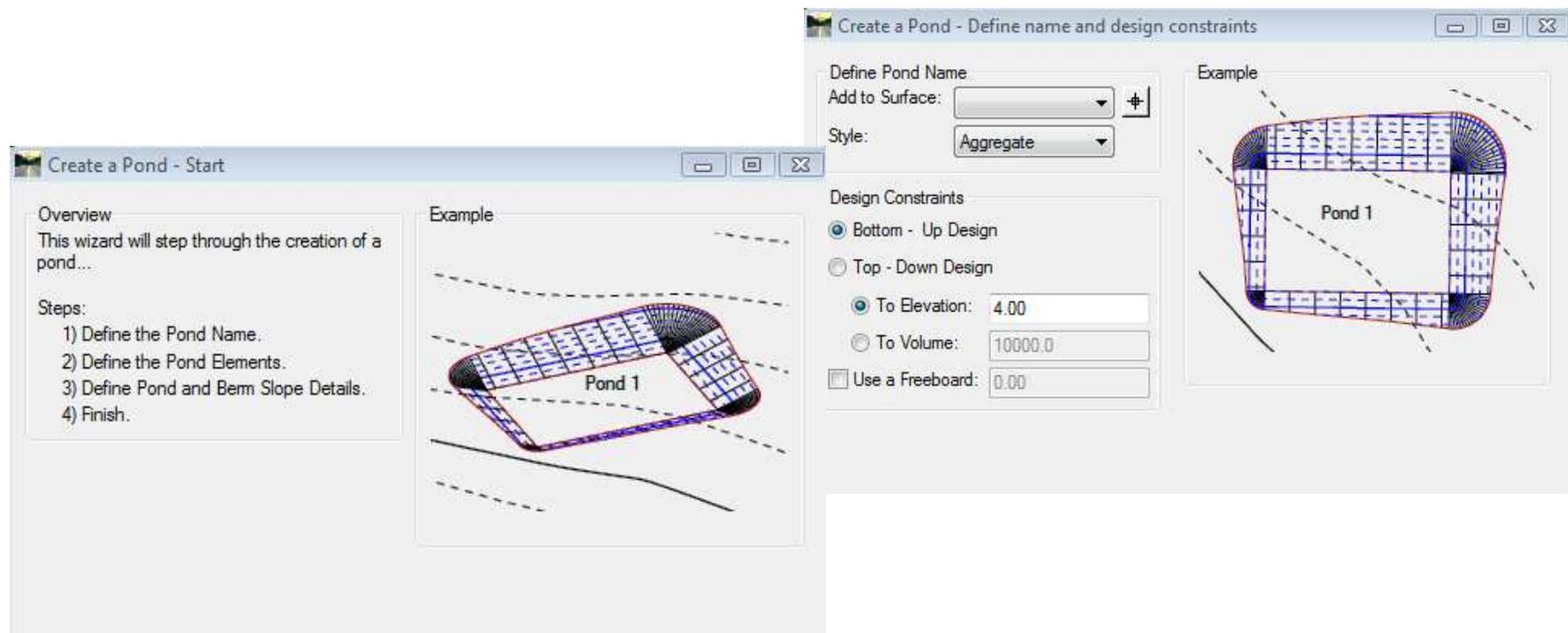
Mapped Styles:

## Products

- Included in InRoads (Suite)
- Included in PowerCivil for “Country”
- InRoads Site Suite
- InRoads Storm & Sanitary

# Site Modeler

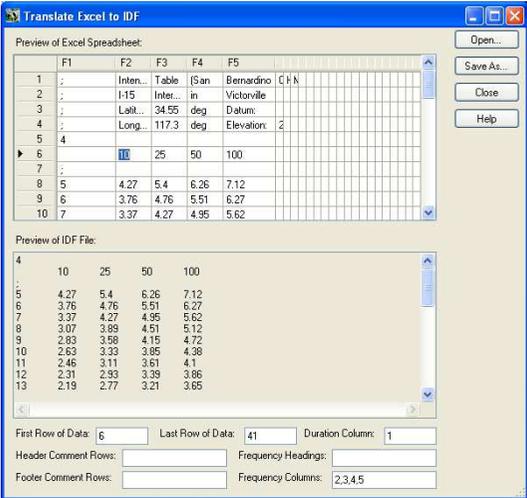
- Site Modeler is being plagiarized from GEOPAK to InRoads
- Get goodies like the Pond Wizard...



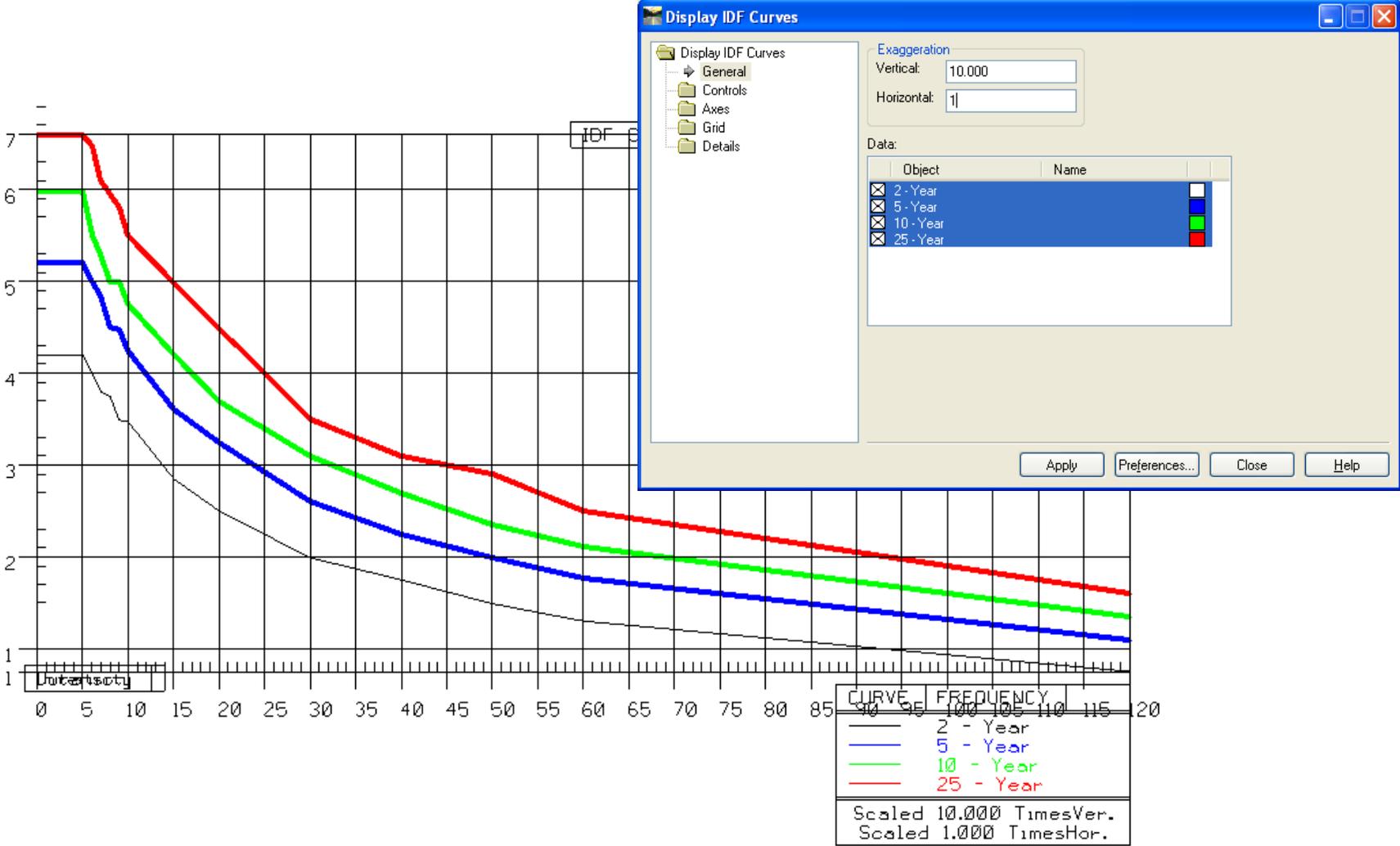
# SS1 Updates

- Import Excel file to IDF table.
- Generate Graphical IDF from IDF table
- Moved curbHeight, curbOpeningHeight, curbLength, orificeDepth from the Drainage Options to the structures.dat.
- Drainage > Utilities - add Edit Utilities to edit z values similar to the Edit Feature Points?
- DRAINAGE>VIEW>ANNOTATE STRUCTURES (Profile also) - Left and Right offset abbreviations from Tools>Options.
- Surface>View Surface>Annotate Feature>Crests and Sags tab. Helps locate crests and sags along a proposed flow line feature for laying out inlets.
- Drainage > Lay Out - Pipe Tab: Added an option "Use Centerline Elevations". This option is similar to the "Use Soffit Elevations" except the elevations are based on the centerline of the pipe.
- We added EC data to the drainage solids. So... if structures are displayed as solids, the same data that is available in the inroads explorer will appear in the EC Browser. The browser is opened by keying in "items browse" in the mstation keyin window. Look under "Active".

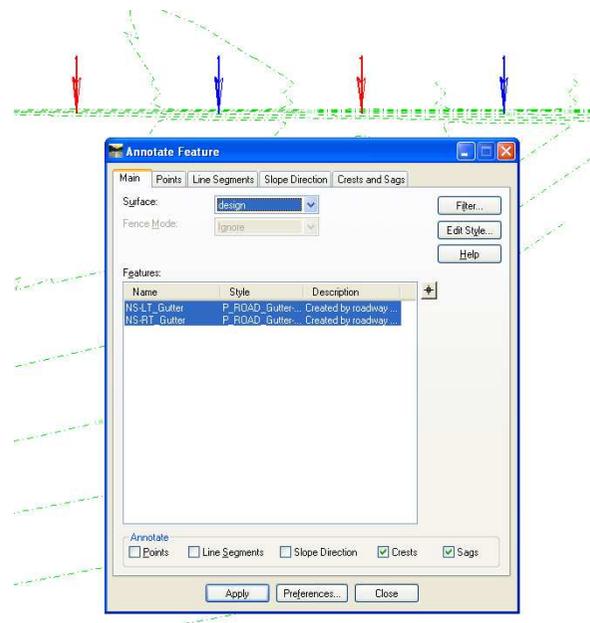
# Translate Excel to IDF File



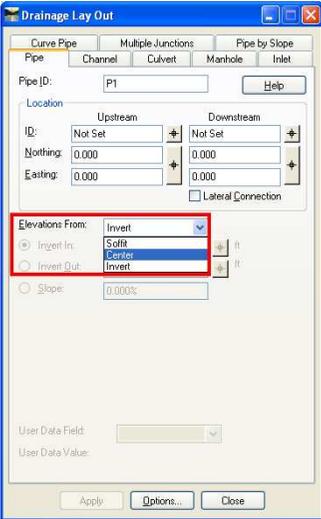
# Display IDF Curves



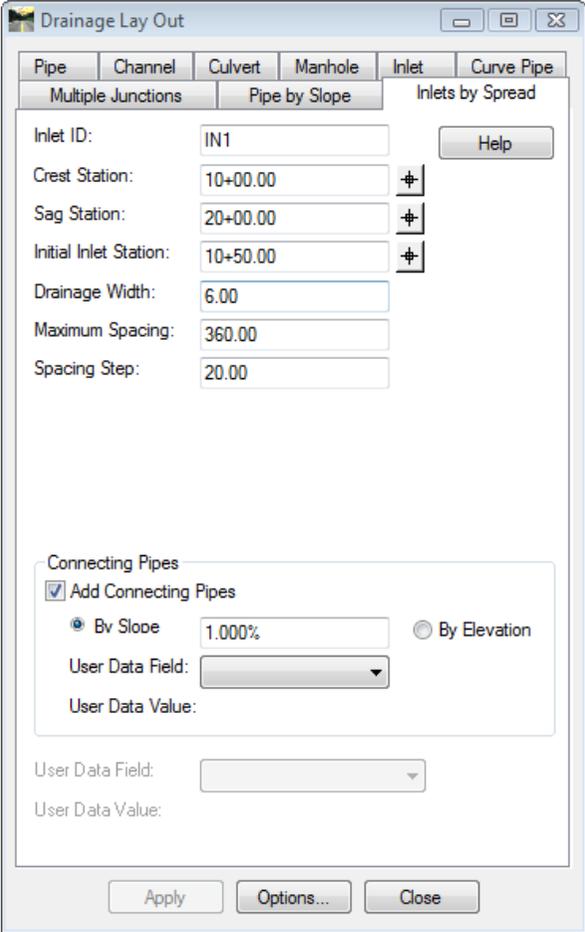
# Annotate Features Sag and Crest



# Lay Out Pipe Elevations from Center



# Inlets by Spread...NEW.

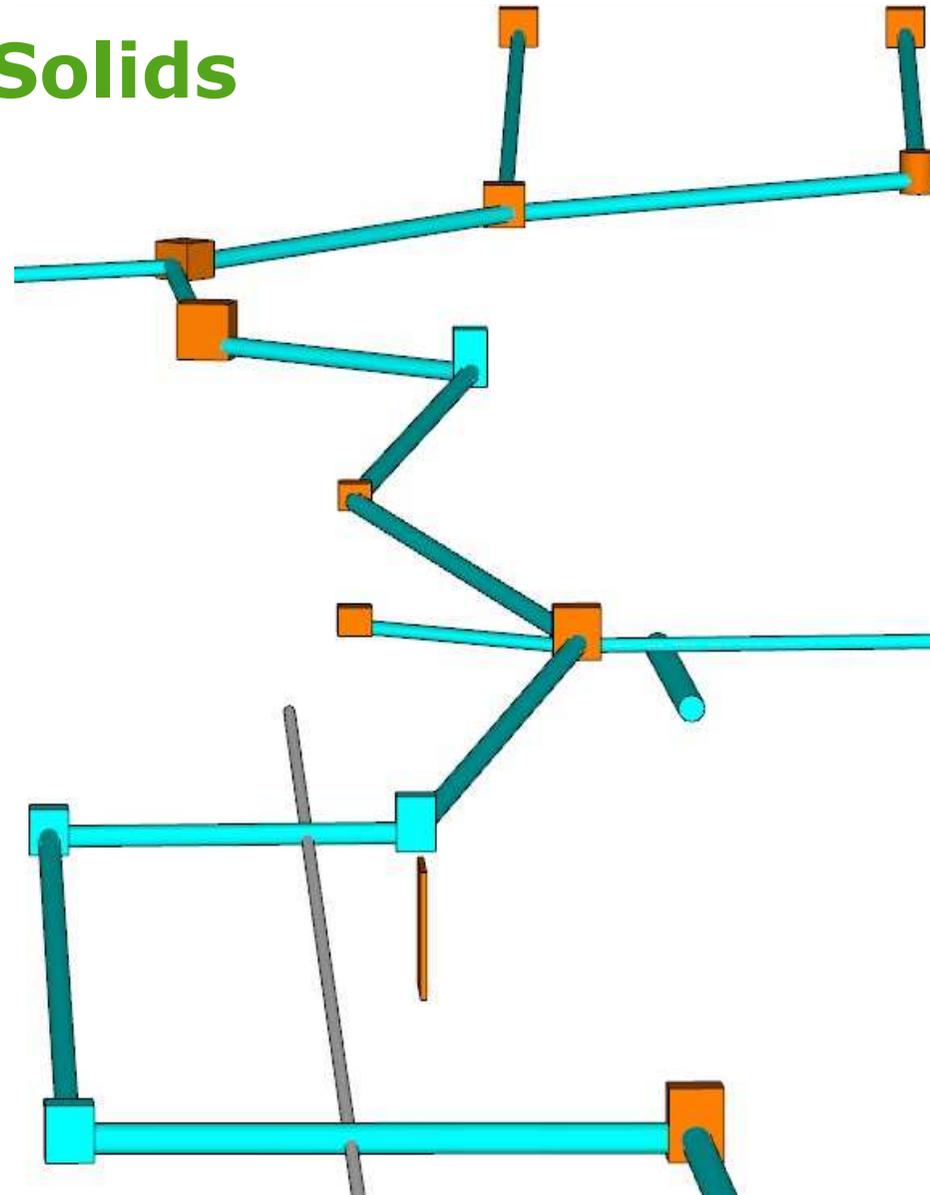


## V8i Updates

- View > Drainage As Solids display has been improved.
- Layout > Pipe. Locate buttons to pick elevations graphically were added for Invert In and Invert Out.
- Edit/Review > Styles tab. Read only fields were added to note the assigned style.
- Edit/Review > Inlets. Target buttons were added for slopes and inverts for pipes and elevations for inlets.
- Edit/Review. When scrolling through a network with the Edit Up and Edit Down buttons, the current ID, Upstream ID, and Downstream ID displays in the message center.
- Network > Design. Clear ALL existing design tables was added.
- Cross Section > Update Cross Section > Storm and Sanitary leaf. The All or None buttons were replaced with right click options in the list view.

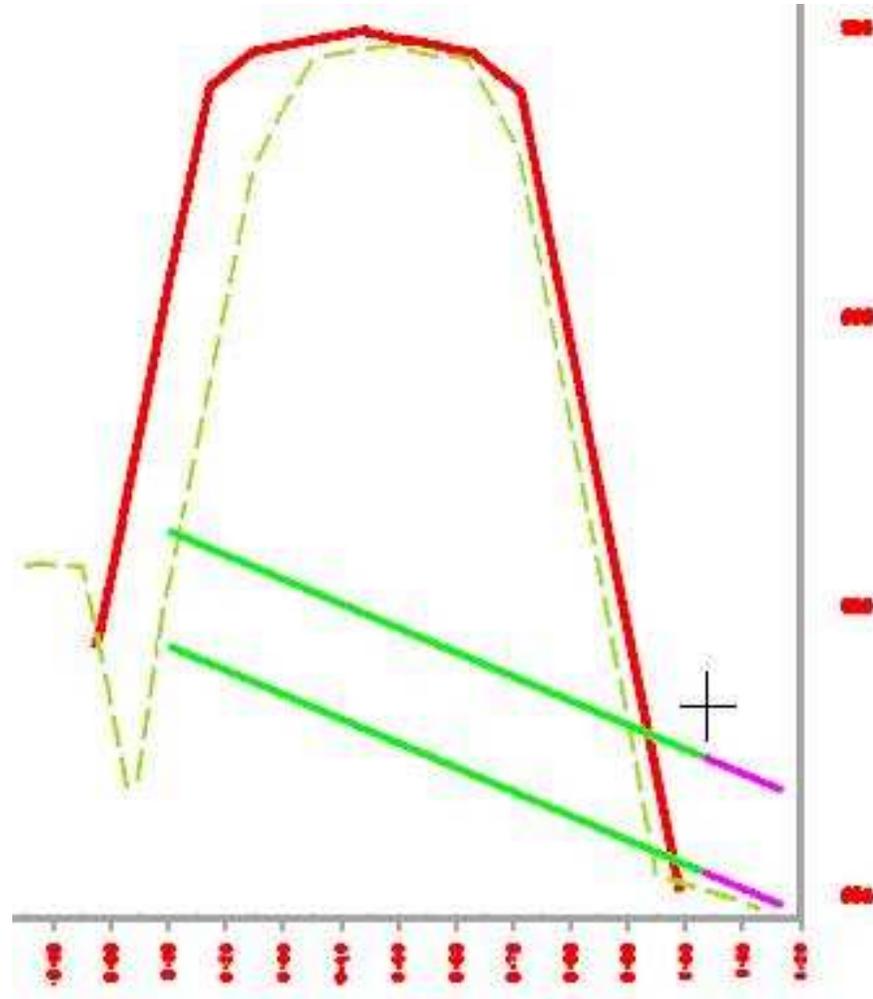
## View Drainage as Solids

- Smart Solids!
- Visual Collision Detection
- Introduced in v8.9 SP1
- Improved in v8.11
- Application Add-in
- Item Browser



# Extend Pipe and Channel in Profile

- “Extend Culvert” now works for pipes and channels



## Interface and Workflow Streamlined

- Laying Out and Editing Drainage Structures have always been a streamlined intuitive workflow, fully-integrated with the CAD and InRoads environments
- Recent Release continue making adds and edits faster and more intuitive

# Improvements to dialogs

- Layout > Pipe: Locate Buttons for Invert In and Invert Out
- Edit/Review
  - Locate Buttons for Inverts, Rims and Pipe Slopes, Gutter Slopes
  - Styles tab has additional feedback

## Edit Utility Points

- Added the ability to edit S&S Utility points
- Similar to Surface Edit Feature Point command
- “Report” button launches a report on Utility vertices’ XYZ and segments’ length and slope

**Edit/Review Utility**

Utility User Data

Utility ID: U3

Utility Name: ExWater ExWater

Feature Style: WATER LINE WATER LINE

Shape: Circle

Width: 12.00

Height: 12.00

Stored Elevation:

Top  Center  Bottom

Point K < 1 of 3 > >| + Insert Delete

Center View

Northing: 2026201.63

Easting: 2052938.30

Elevation: 939.00

Back

Length: 0.00

Direction: N 0°00'00" E

Slope: 0.00%

Elevation:

Ahead

Length: 35.90

Direction: N 76°27'07" E

Slope: 0.00%

Elevation: 939.00

Apply Close

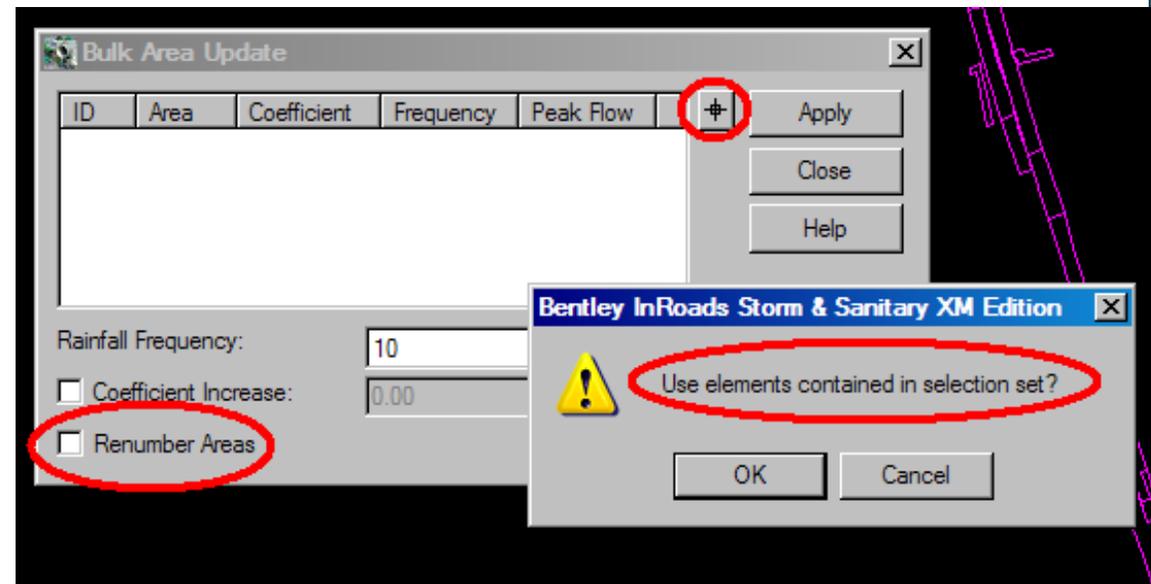
## Pipe ID Annotation

- Plan and Profile Annotation can now label attached Pipes' ID at junctions



# Renumber Areas Using Bulk Area Update

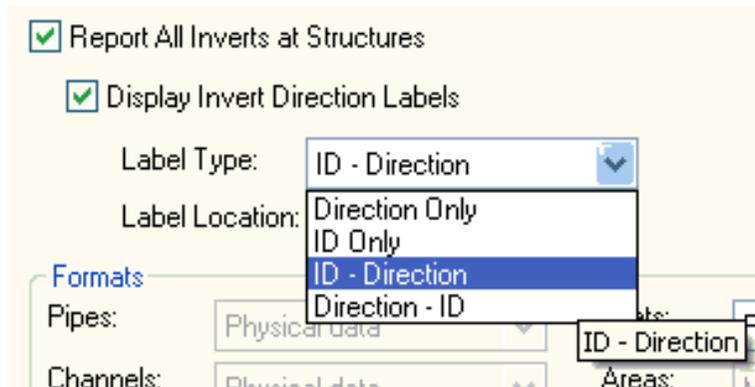
- Create Selection Set of the Areas to renumber.
- Use Pick Button and Click "OK" at the prompt.
- Check Renumber Areas and Click Apply.



- Make sure rainfall frequency is correct.

# Report Improvements

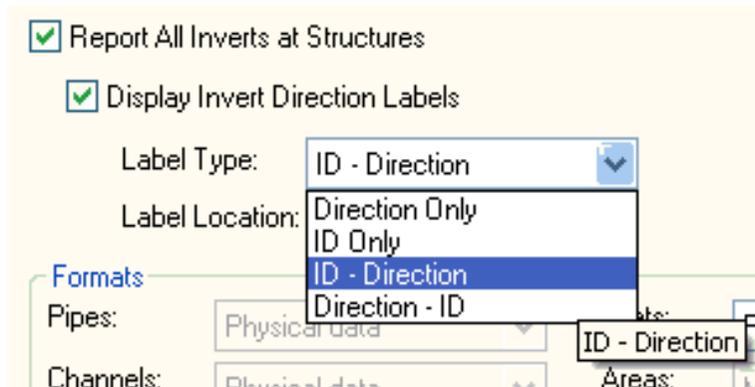
- New data available for Reports
  - Upstream and Downstream stations for ends of
    - Pipes
    - Culverts
    - Channels
  - All Pipe Names at Manholes and Inlets



IN41	950.49	(N - P75)
IN43	949.96	(N - P78)
	949.69	(E - P76)
	949.69	(W - P100)
IN45	948.86	(W - P81)
IN46	948.58	(NE - P80)
	948.56	(SW - P82)

# Report Improvements

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	948.56	(SW - P82)

# Updates in Sequence...

## V8.9 Updates

- Edit/Review > Inlet > Gutter tab – Added locate buttons for the slope fields.
- Drainage > Network > Renumber – Areas can be renumbered.
- Tools > Drainage > Structures File – The Drainage Structures File and the Sizes dialog boxes are now re-sizeable.
- Structure > Extend Culvert in Profile – Added the ability to extend Free Entrance and Free Exit ends of Pipes and Channels.

## V8.9 (SP1) Updates

- View > Drainage As Solids - Added new command to display pipes, culverts, manholes, inlets and utilities as Smart Solids for 3D viewing and visual collision detection.
- This is enabled through Tools > Application Add-Ins.
- When enabled, reports can now contain all inverts for manholes and inlets.

## V8.9 (SP2) Updates

- View > Annotate Structures and Evaluation > Profile > Annotate Drainage Profile. The option to annotate the ID of all inverts at structures was added.

## V8i Updates

- View > Drainage As Solids display has been improved.
- Layout > Pipe. Locate buttons to pick elevations graphically were added for Invert In and Invert Out.
- Edit/Review > Styles tab. Read only fields were added to note the assigned style.
- Edit/Review > Inlets. Target buttons were added for slopes and inverts for pipes and elevations for inlets.
- Edit/Review. When scrolling through a network with the Edit Up and Edit Down buttons, the current ID, Upstream ID, and Downstream ID displays in the message center.
- Network > Design. Clear ALL existing design tables was added.
- Cross Section > Update Cross Section > Storm and Sanitary leaf. The All or None buttons were replaced with right click options in the list view.

# SS1 Fixes

- NETWORK DESIGN - for Grate Inlets in a Sag, weir flow equation and orifice flow equation should be average depth across grate instead of depth of flow at curb. Filed for Jason Zhao, MSTHA According to HEC-22 equation 4-26, d needs to be average depth across the grate, not depth at curb. This applies to orifice flow as well
- View Drainage as solids: made a fix for utilities that had segments shorter than 0.05 master units.
- Analysis of arch pipes. Changed the way the arch properties are computed. Now the arch pipe is constructed using the radii that are provided and the Y coordinates for the corner radii are exact and the pipes are tangent at all radii. In the past, the bottom height was used from the structures.dat file. Well, those were values were rounded off to the nearest 1/8 inch in most cases for constructability. Now the bottom height is computed so that all radii are tangent. This will also fix problems with arch pipes in cross section and displayed as solids.
- HGL/EGL fixes for special cases.
- Insert in Profile. This was caused by the user trying to insert an inlet at the end of a pipe which is not allowed. Fixed the code so that users can't inset structures within 0.1 master units of the end of a pipe.
- Reports, queries, plan annotation, drafting notes all display the coordinates for the placement point. Changed the Annotate Drainage Profile to report the placement point instead of the vault location.
- Import Drainage From ASCII fixes/enhancements.
- SURVEY DATA TO DRAINAGE - Styles for new structures in database should come from structures.dat file instead of what is currently active in Tools>Drainage>Options.
- Layout - The target buttons displayed the last elevation picked on the surface, and does not update when new points are selected that are off of the surface.
- FIX: Now an error message will be output to the status bar and the elevation will set to 0.0. Check to make sure the message appears when clicking off the surface but still inside the DTM range rectangle and also when the data point is outside the range rectangle. Also check the behavior is correct when the coordinates are keyed in.