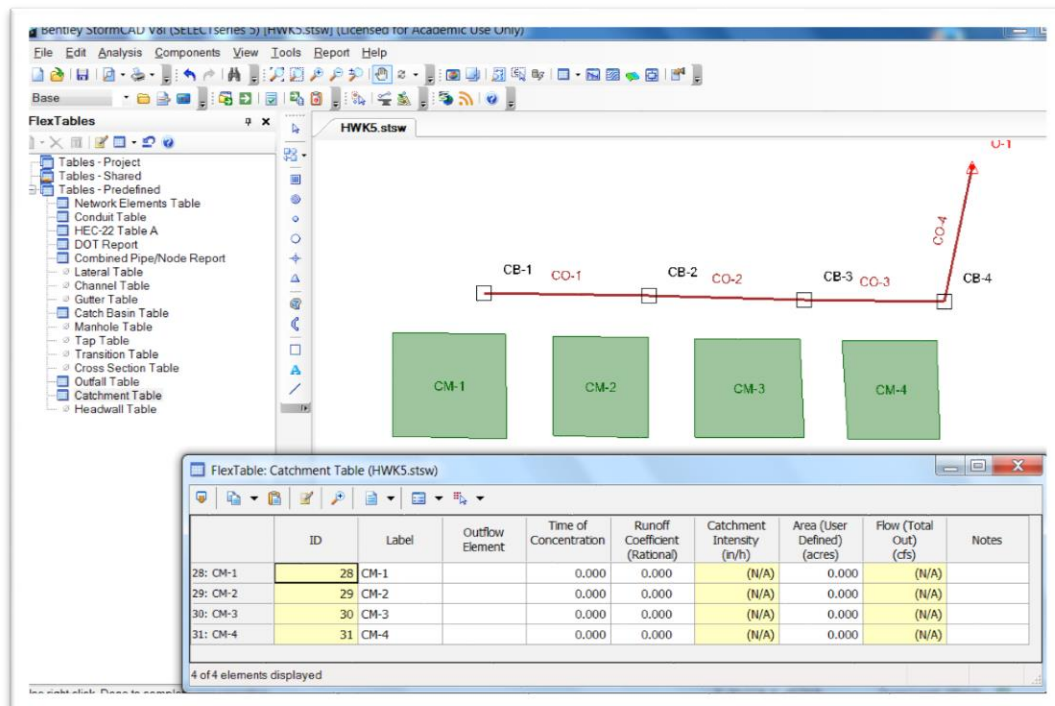




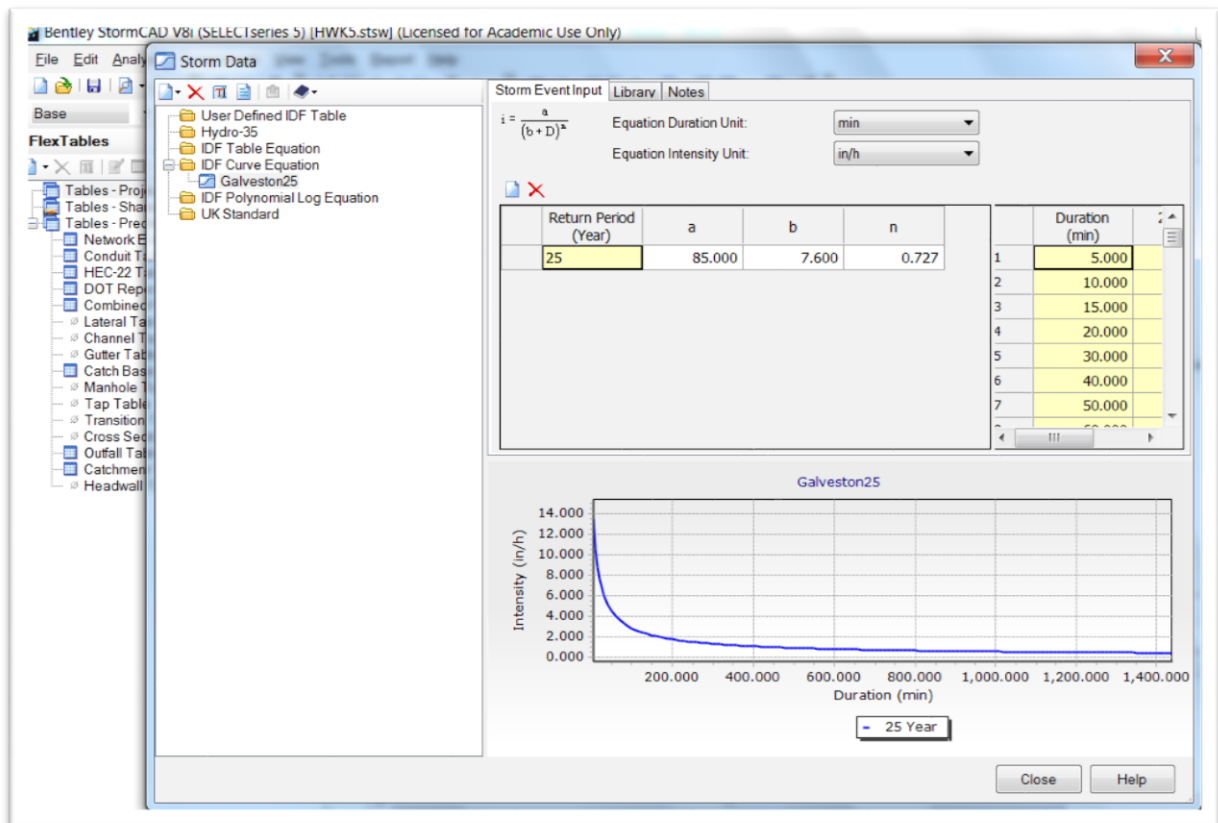
StormCad User Notes: Feb 15, 2016

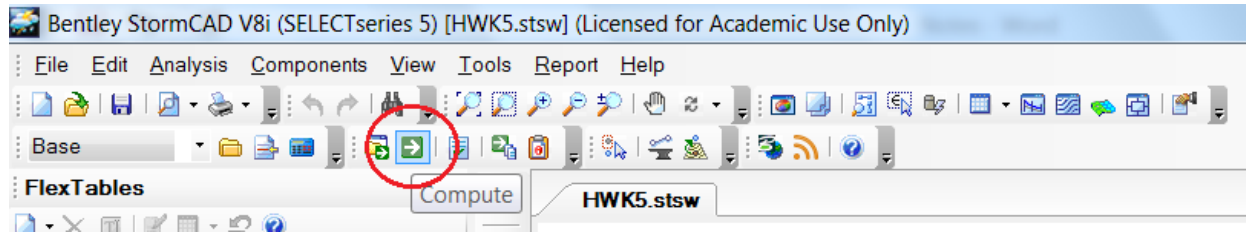
1. To draw a catchment
 - a. Select the catchment icon
 - b. Go into the drawing area – left click to set a vertex, move cursor, left click to set another vertex, move cursor, etc
 - c. Right click, select Done to finish drawing the catchment.
2. To draw pipes
 - a. Select the network icon
 - b. Pulldown – Select Conduit
 - i. Go into drawing area, right click – Select Catch Basin as termination object
 - c. Left click to begin a pipe, Move cursor, Left click to apply, Move cursor, etc, etc
 - d. Right click – Select Outfall as the termination object.
 - e. Move cursor, Left click to apply
 - f. Right click – Select Done
3. Editing the drawing
 - a. To undo last drawing element – Edit, Undo or Cntrl Z
 - b. To clear individual elements – Select it (left click it with the pointer), Right click, Delete
 - c. To clear everything – Edit, Select All, Delete
 - d. To reset the numbering sequence – Tools, Options, Labelling, Reset





- 4. Flex Tables
 - a. To enter or edit data – View, Flex Tables
 - b. Double click the table of interest
 - c. Enter/Edit data in the unshaded fields
 - i. Adjust the units or display digits by right clicking in the heading field
 - ii. Add or remove fields by left clicking the edit icon (pencil and paper)
- 5. Enter all the data for the various elements
 - a. For the Catchment Table 'Outflow Element' field, Use the Pointer Tool and the Ellipsis Button to select an appropriate catch basin from the drawing.
 - b. Assume invert elevations are 4 ft below grade
 - c. Warning: When you enter Tc, it wants it in Hrs.
 - d. Warning: Be sure to set 'Inlet Location' to 'In Sag' in the Catch Basin Table. The default value is 'On Grade' and will produce a Fatal Error if left in the default condition.
- 6. Storm definition
 - a. Components – Storm Data – <new page icon> - User Defined IDF Eq - <new page icon>
 - i. Add Return Period
 - 1. Obtain e, b, d for Your County and Return Period from EBDLKUP
 - 2. Type the e into n, the b into a, and the D into b
 - b. Components – Global Storm Events - <Pick yours>





7. Compute Button

- a. Convergence was achieved !
- b. or troubleshoot the errors displayed in the message window.

8. Flex Tables to see results

- a. Conduit Table in particular
- b. Adjust Pipe Diameters in the Conduit Flex Table to Desired Flow Capacity Pct.

Adjust Pipe Diameters until Flow/Capacity is less than 100 %

	Section Type	Diameter (in)	Manning's n	Flow (cfs)	Velocity (ft/s)	Depth (Out) (ft)	Capacity (Full Flow) (cfs)	Flow / Capacity (Design) (%)	Depth (Normal) / Rise (%)	Area (Flow) (ft ²)	Area (Full Flow) (ft ²)	Note	
34:	CO-1	Circle	12.0	0.013	11.16	14.21	4.00	3.38	330.4	(N/A)	0.8	0.8	
36:	CO-2	Circle	12.0	0.013	20.45	26.04	4.00	2.72	752.6	(N/A)	0.8	0.8	
38:	CO-3	Circle	12.0	0.013	31.11	39.60	4.00	2.42	1,284.1	(N/A)	0.8	0.8	
40:	CO-4	Circle	12.0	0.013	41.47	52.80	1.00	4.11	1,009.1	(N/A)	0.8	0.8	

4 of 4 elements displayed



HWK SET #5

Assigned the week of Feb 14 Due Feb 22

Problem #1 Develop a StormCad network to determine storm sewer pipe sizes for the following property in SW Travis County.

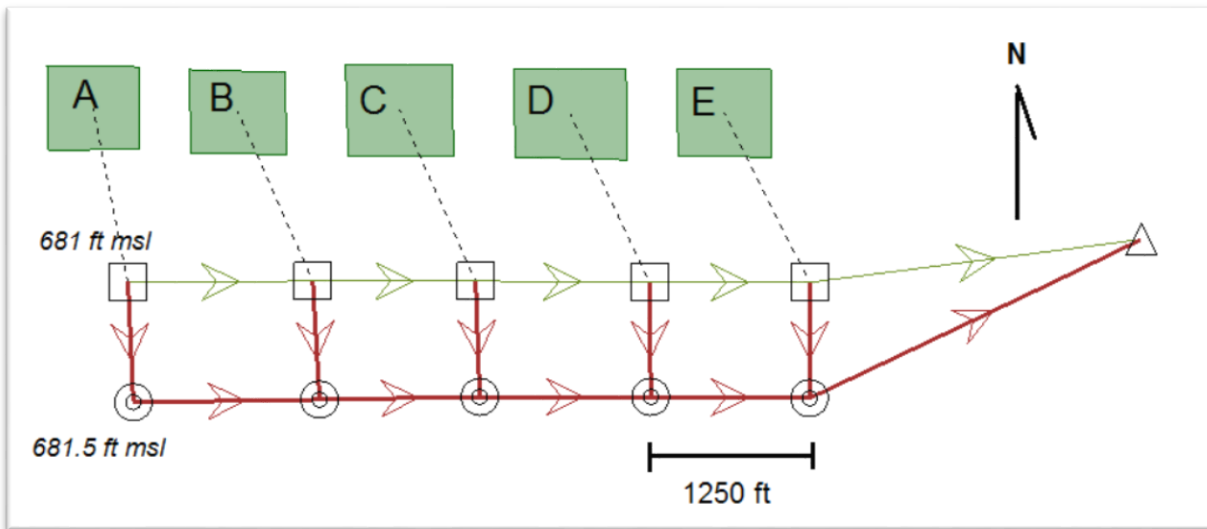


Element	Elev(msl)
Cw1	681.4
Cw2	678.2
Cw3	674.9
Cw4	673.0
Tco1	669.9
Pipe	Length(ft)
P1	356.0
P2	567.0
P3	411.0
P4	233.0
Area	Tc(mins)
A	64.00
B	60.00
C	81.00
D	68.00

Design for the 25 yr storm. Assume a Runoff Coefficient of 0.30 for the entire project area. Use a Manning Roughness Coefficient of 0.013, and select pipe sizes of integer inch diameter.



Problem #2 Determine the inlet sizes and storm sewer pipe sizes required to drain the following system:



Each catchment is 6.5 acres with $T_c = 48$ mins, and $C = 0.35$. The ground falls 1 ft per 1250 ft from West to East.

Catch Basins capture the overland flow using curb opening inlets on grade. That flow enters the subsurface storm sewer system according to the capacity of the inlet and the capacity of the storm sewer network itself. Excess flow is diverted to the surface drain system (the curb gutter). Set each catch basin to grade with an invert 4 ft below grade.

Standard Concrete Curb Gutters 1250 ft long run from catch basin to catch basin and conform to the terrain.

Manholes are located in the center of the street, 20 ft from the curb, and serve to connect Storm Sewer Conduits running from the Catch Basins to the Storm Sewer Main. Each manhole is set to grade with an invert 5 ft below grade.

The free outfall, with ground elevation equal to 670 ft msl and invert elevation equal to 666 ft msl, is 2500 ft from the most downstream manhole.

Curb Opening Inlets must be one of three standard designs:

Inlet Type 1: 5 ft X 5 ft with 4 ft opening 8" ht 4" X 36" depression vertical throat

Inlet Type 2: 5 ft X 10 ft with 9 ft opening 8" ht 4" X 36" depression vertical throat

Inlet Type 3: 5 ft X 15 ft with 14 ft opening 8" ht 4" X 36" depression vertical throat

Conduits must be RCP 15" - 18" - 24" - 30" - 36" - 42" or 48" diameter.

Design a system that will convey the 25 yr, Hays County Storm.

Allow no more than 3 cfs of carryover at each inlet.

Report Inlet types and Pipe Diameters on a Plan View Drawing.