

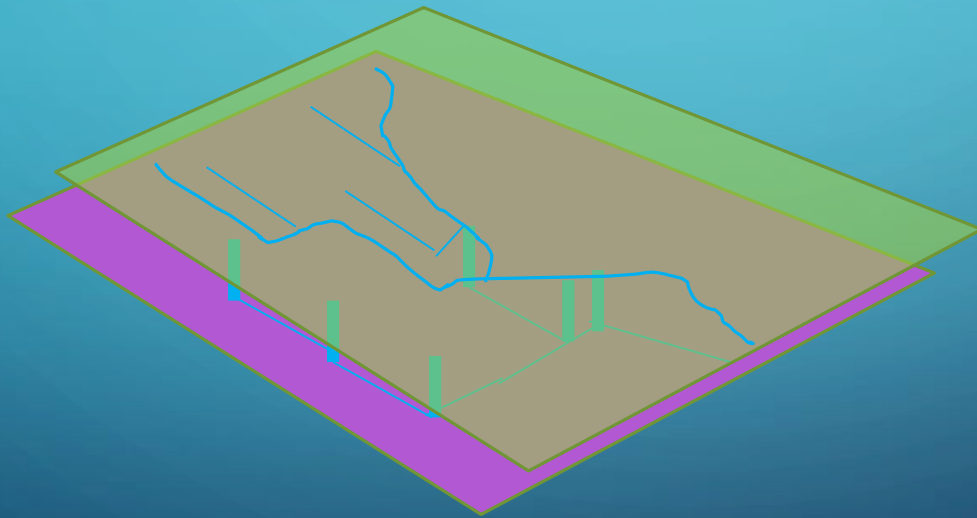


CE 3372 WATER SYSTEMS DESIGN

LESSON 20: DUAL DRAINAGE SYSTEM FALL 2020

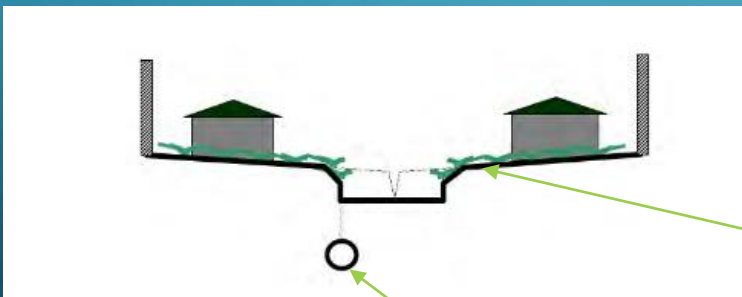
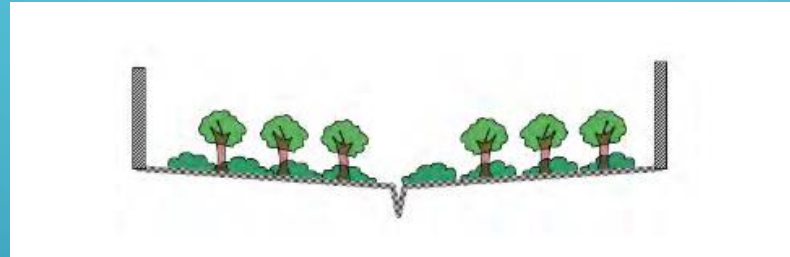
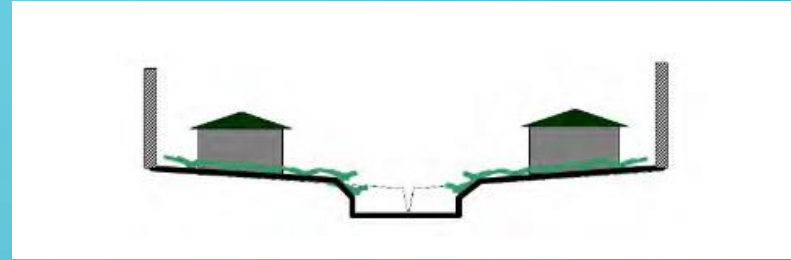
DUAL DRAINAGE CONCEPT

- Simulating surface and sub-surface (sewer) flow
 - “Two” drainage networks connecting to same outfall.
 - Occupy same physical space



DUAL DRAINAGE CONCEPT

- Cross sections

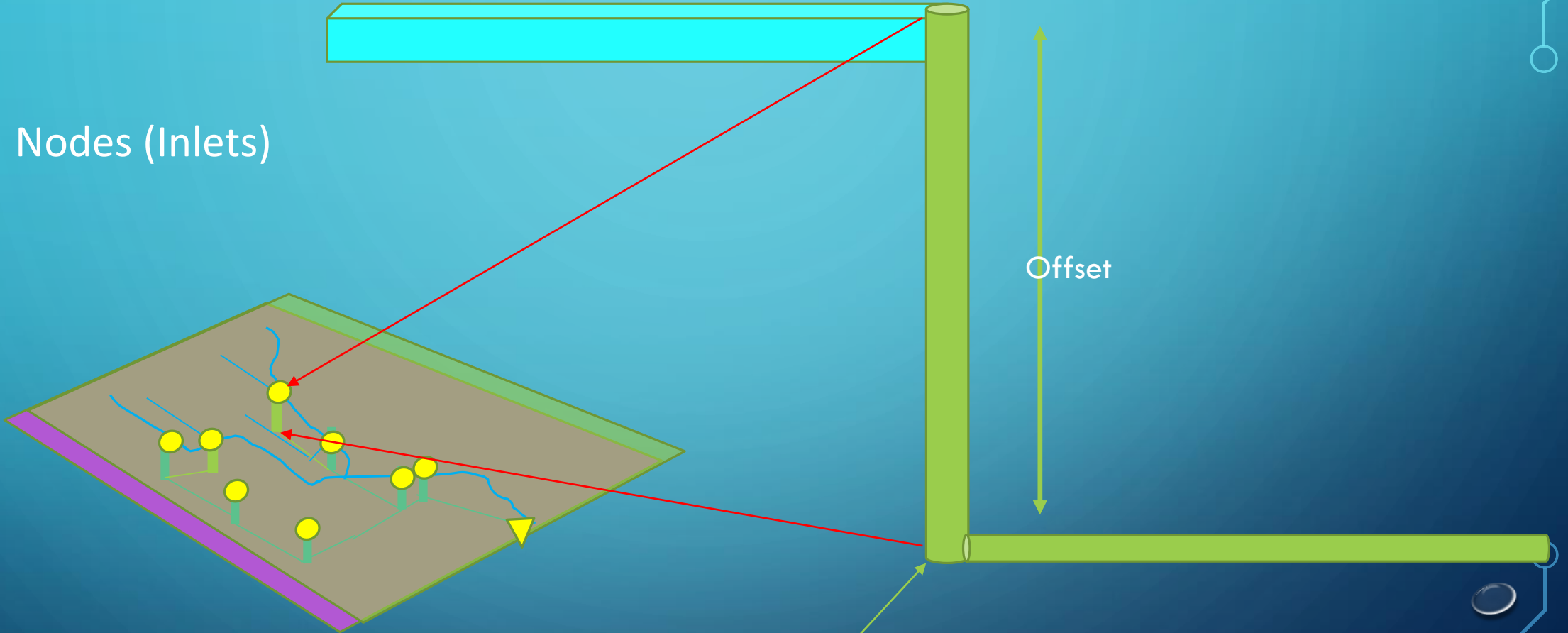


Street Cross Section: Street is a “conduit”
in our hydraulics model

Storm Sewer Pipe

DUAL DRAINAGE CONCEPT

- Nodes (Inlets)



Invert elevation

GOODWIN STREET EXAMPLE (CONTINUED)

- Add to our SWMM model a surface drainage system
 - Using simplistic cross sectional geometry
 - Add street section along Goodwin

GOODWIN STREET CROSS SECTION

- Glass wall
- Sidewalk
- Street
- Use IRREGULAR cross section

The screenshot displays the SWMM 5.1 software interface for editing a cross-section. The 'Transect Editor' dialog box is open, showing the following data:

Station (ft)	Elevation (ft)
0	3
0.1	2
17.9	1
18	0
49	1
51	1
82	0
82.1	1
99.9	2
100	3

The 'Transect Viewer' shows a cross-section plot with 'Overbank' (shaded) and 'Channel' (blue) areas. The 'Cross-Section Editor' shows various shapes like Rectangular, Trapezoidal, and Triangular. A 'Study Area Map' shows the location of Goodwin Street relative to Boneyard Creek. A 'Transect Editor' table lists properties for the 'StreetSection'.

Property	Value
Roughness:	
Left Bank	0.035
Right Bank	0.035
Channel	0.015
Bank Stations:	
Left	18
Right	82
Modifiers:	
Stations	0.0
Elevations	0.0
Meander	0.0

GOODWIN STREET DUAL DRAINAGE

- Run simulation
- Profiles
 - Manual to get the surface flow
- Invert elevations same both drawings
- Upper elevations (green lines) are same both drawings
- HGL is dark blue line both drawings



