

RST Applications

RST is an iterative process, and the order in which each application is executed will result in distinct network segmentations. Although the skeletonize application is a direct one-step segmentation process, both the reduce and trim applications are iterative in nature because many consecutive segmentation levels may exist that meet the desired segmentation criteria. Figures 1a-c depicts a two-level network trimming application while Figures 2a-c illustrate a two-level network reduction application. In addition, mains removed during the execution of the skeletonize and trim applications may require the reduce routine to be re-executed to further remove excess nodes.

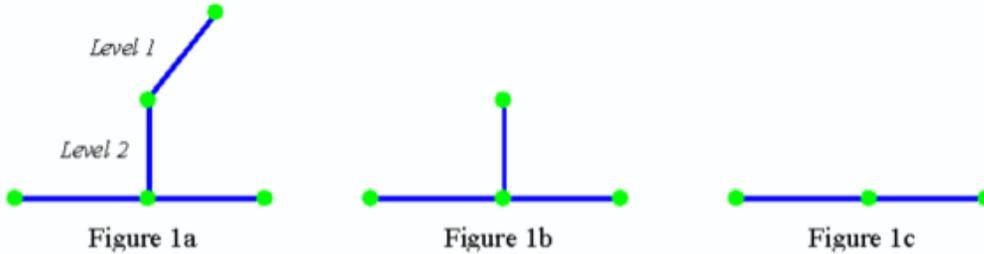


Figure 1 – Trim (Pipe Segmentation)

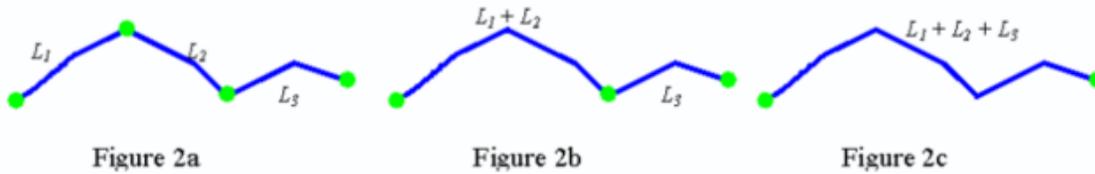


Figure 2 – Reduce (Pipe Segmentation)

While network skeletonization can be carried out directly using the Facility Manager of H₂ONET ANALYZER, the H₂ONET SKELETONIZER Skeletonizer effectively complements H₂ONET Suite by providing added capabilities for network data reduction, merging, and trimming. For these two added applications, the H₂ONET SKELETONIZER will automatically re-calculate and re-allocate demands at all affected junction node to preserve the total demand in the system. When trimming a pipe segment with a downstream dead end node, the demand at that node is automatically shifted to the pipe's upstream node as shown in Figures 3a-b. Two methods are provided for automatically re-allocating nodal demands during a network reduction application. These include a distance-weighted approach (Figure 4a) and an evenly-distributed approach (Figure 4b).

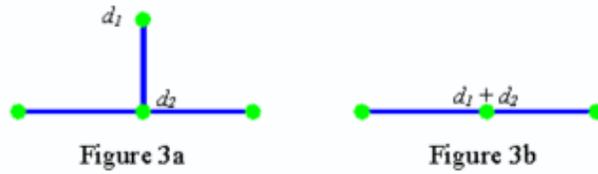


Figure 3 – Trim (Demand Allocation)

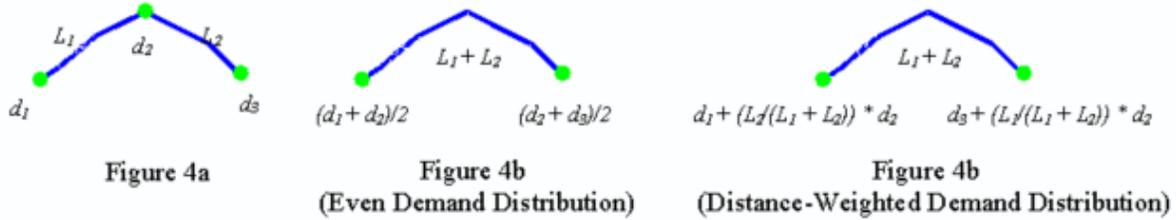


Figure 4 – Reduce (Demand Allocation)



Note 1: The order in which each RST application is executed will generally result in distinct network configurations.

Note 2: Considerable care must be exercised when removing pipe segments using the FACILITY MANAGER of H₂ONET ANALYZER for the purpose of network skeletonization. If disconnected nodes are created in this process, then the demands at these nodes will be excluded from the hydraulic analysis and thus the total system demand will not be preserved. You must ensure that proper network connectivity is retained.

Note 3: It is very important that you keep a saved copy of the original project. Once H₂ONET ANALYZER is executed, you will no longer be able to retrieve any removed facilities.

Note 4: Pipes with check valves or controls (Initial Status or Operational Controls) will not be considered for RST applications.