WaPUG Autumn Meeting

5 November 1985, Birmingham

Paper No 11 - Sewer System Pipe Referencing

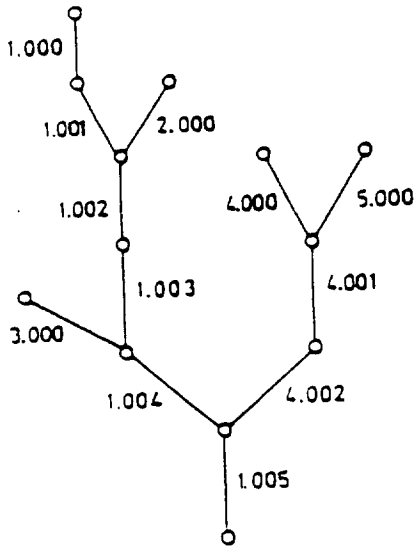
1.0 Introduction

1.1 This paper considers the pipe length referencing system currently required by WASSP and that recommended for sewer location records which will ultimately be transferred to digital data base systems now being planned.

1.2 The paper draws attention to the entirely different bases of the two systems and recommends that active consideration be given to the feasibility of amending the data organisation requirements of the WASSP programs to allow them to handle data directly extracted from digital data bases.

2.0 Current referencing systems

a) WASSP - the program requires a pipe label in the form of a branch number of up to 3 digits followed by a 3 digit pipe number. Branch numbers need not be in any logical sequence for the program to be able to handle them, though some logical pattern helps to avoid confusion. However, the pipe numbers must increase along the branch in a downstream direction. The labelling system is illustrated below.



b) Sewer Records and Digital Data Base - the numbering system is as recommended in Standing Technical Committee Report No 25 "Sewer and Water Main Records" with a minor modification. Under this system each manhole or other feature is given a unique reference number, part of which is derived from grid reference and part of which is a random number. Pipe lengths downstream of a manhole are identified by that manhole number with the addition of a suffix letter. The pipe length reference is therefore of the form SE2125/2806X. The first 2 letters and 6 digits identify the 100m grid square within which the manhole lies. The last 2 digits form a randomly allocated number of the manhole within that grid square. This is a departure from the recommendation of STC25 which was that the randomly allocated number should be single digit with a suffix letter starting at 'a' for numbers beyond 10 in a particular grid square. However, current thinking in relation to data base is that the 2 digit convention should be adopted. The suffix letter X, Y or Z is added to identify the pipe(s) downstream of the manhole

for the storm system Σ (Total Area) = 16 Ha
and for the foul system Σ (Total Area) = 4 Ha

This method makes the further assumption that PIMP will be consistent under these circumstances but experience has shown that this is not unreasonable.

The procedure therefore is, to assess the overall true value of PIMP for the developed areas as a whole from OS maps by sample squares. The paved and roof areas connected to the study system are then measured, divided by PIMP/100 and entered as Total Area in the SSD file. The percentages for paved and roof should then be modified to give the actual areas.

Solution 2

A refinement to Solution 1 is possible through the use of the global PR in the PCD file. The program will still derive PIMP from the SSD file however and use this value to generate the derivatives of PR for each surface type.

The following procedure avoids this difficulty;

1 Estimate the overall true value of PIMP as for Solution 1.

2 Calculate PR from equation 7.3 using PIMP above and appropriate values for SOIL and UCWI.

3 Measure individual paved and roof areas for each record in the SSD file.

4 Enter the sum of paved and roof for each record as Total Area in the SSD file, and percentages for paved and roof to give the correct individual area for each (ie % paved + % roof = 100 for each record).

Then, for the storm system Σ (Total Area) = 4 Ha
for the foul system Σ (Total Area) = 1 Ha

5 Instead of SOIL in the PCD file input the value $\frac{PR}{PIMP} \times 100$ and leave UCWI blank. Therefore, in the given example, if PR is 17%, the value to be input will be $\frac{17}{25} \times 100 = 68$. This is in fact the true value of the derivatives PR_{PAV} and PR_{ROOF}.

When PR_{PAV} is greater than 70% a discontinuity occurs which amounts to an extra contribution from pervious areas. At first it might appear that, since pervious areas have been omitted from the SSD file, this contribution will be missed. Fortunately, this is not the case since WASSP automatically reads PIMP as 100% and increases the contribution from paved surfaces to compensate.

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