



NEWSLETTER FOR CCTV SEWER INSPECTION OPERATORS and ASSET MANAGERS using THE SEWER INSPECTION REPORTING CODE OF AUSTRALIA WSA 05 - 2008

Conduit Capers is intended to provide feedback and information to participants who have attended courses conducted by Streamline Learning. In particular, it addresses some of the common mistakes made in coding and operation as well as giving some guidance on improving the quality of information provided by CCTV Sewer Inspection Operators and contracting companies.

If you would like to make a contribution to future editions you are welcome to email or post your contribution to the above address.

Steve Weatherstone

Conduit unit length

All pipe lengths prior to metrication were (nearly always) in whole feet. Common lengths were - two feet (610mm), three feet (915mm), four feet (1 220mm), five feet (1 524mm), six feet (1 829mm), eight feet (2 438mm) and twelve feet (3 658mm). Of course some pipes were cut at odd lengths but the majority in a line would be whole feet.

It is important to establish the typical pipe length within the first five metres or so of the inspection and record that distance as a general comment and then later record the information in the report header. Knowing the conduit unit length allows the operator to better determine if a defect or other feature is continuous.

Vision at the start of the inspection

Make sure that the video record of the inspection includes the conduit where it enters the maintenance hole or structure. This is a location that often has defects and it is important to record images of the conduit/maintenance hole at that point.

Record images as the camera is being set up if you can't get the camera in the channel for a conventional start.

This technique is also important where the camera is being inserted through an external drop or drop chamber.

Continuous codes

'Where features continue over a length of more than 1 m or 3 out of 4 adjoining conduit lengths, as appropriate to the feature' - they can be regarded as continuous.

Many operators are recording features that extend less than 1 m as continuous. This practice requires additional unnecessary work by the operator.

Similarly, water level 'WL' is being recorded unnecessarily as a continuous code. Water level is an intrinsically continuous code and does not have to be recorded using the continuous code notation. Unless specified otherwise, the Code requires a new 'WL' to be recorded if the water level changes by 20% in conduits in service or 10% for newly constructed assets.

Continuous codes may be continued through short sections of a conduit that does not have the continuous feature **provided the length of that section is less than one metre**. One example of this is where a VC junction is used in a concrete sewer that exhibits continuous surface damage.

Repairs

Where a hole has been made in a pipe intentionally or unintentionally and that hole has been repaired, **do not record the original hole as 'broken-missing' or 'surface damage – hole'**. This is a **point repair** and the correct code is **'RP – H'**. You will find some unusual repairs!



Cracks, fractures breaks

Make sure you refer to the definitions in the Code before deciding on the correct coding for the observation.

A common mistake is to call the defect a crack when it meets the definition for a fracture. Look closely at the defect along its full extent before deciding on the code.

Cracks by definition are small. You cannot see into a crack. The width of the crack is therefore going to be less than one millimetre.

You can see into a fracture. The width of the fracture will generally be greater than one millimetre.

Sometimes the spigot end of a pipe will look rough and uneven because it was cut by hand with a cold chisel. It may appear like **surface damage – spalling, 'S-S'** or **broken - piece of pipe missing, 'B-M'**. This is likely in old VC or earthenware pipes and requires careful investigation before coding. If the joint is sound with no sign of infiltration or other significant defect it could be coded as **'JD-L'** with the average gap estimated and a remark about the irregularity of the pipe end.

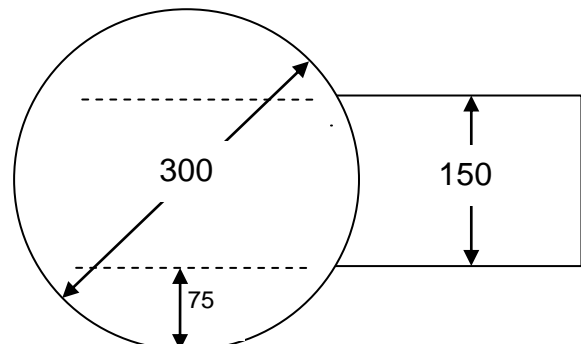
Crack or fracture-simple 'C/F-S-W' is a common defect and is a useful and easy code to use – see the following definition:

- *a straightforward single fracture or fractures whereby the fabric of the conduit appears to separate into a **small** number of pieces*
- *the general alignment of the fracture is other than circumferential or longitudinal and **typically starts and returns to the same joint***

Junctions and connections

The size of the junction branch/connecting pipe is sometimes difficult to estimate. Most common are 100mm and 150mm. One size or the other will be predominant in a particular area and you should establish what size was usually used by the asset owner when the sewer was constructed.

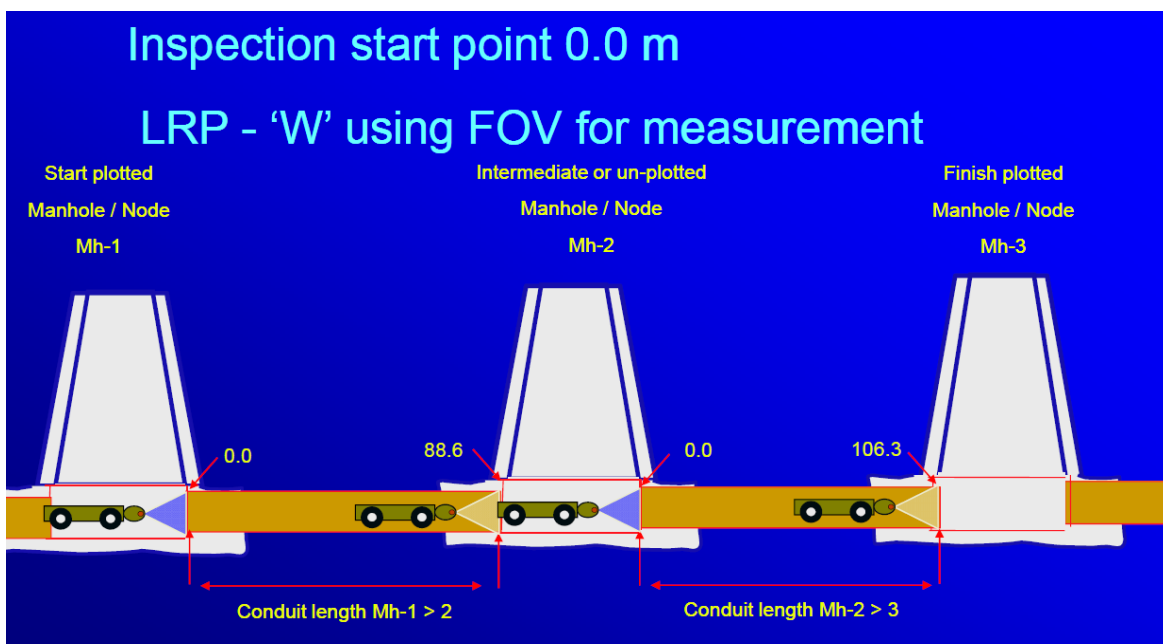
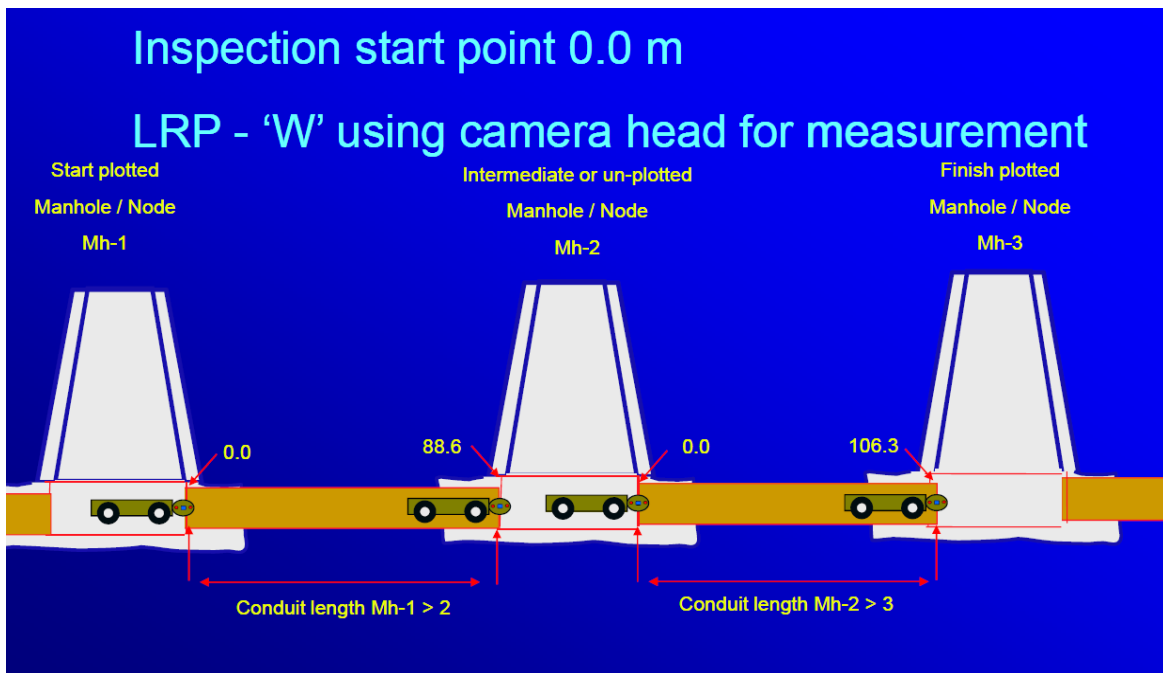
To estimate sizes project the lines of branch into the main sewer and estimate the gap between that projection and the inside of the pipe at the centre. Then you get $300 - 2 \times 75 = 150$.



Distance measurement

Correct distances to defects or other features are critical. Asset owners have reported that some operators have logged defects several metres from where they were found by digging up.

Accurate distance measurement requires taut cables from the measuring wheel to the camera, clean measuring wheels/cable and consistent measurement protocol using 'camera head', 'field of view' or 'laser ring' correctly relating the location to the longitudinal reference point (0.0). The following slides illustrate the 'camera head' protocol where the defect/feature aligns with the head of camera as determined when the head is turned at 90° and 'field of view' protocol where the defect/feature aligns with the 'field of view'.



News

Peter Slingsby turned 70 on 23 April 2010 – Happy Birthday Pete

Peter is part of the Streamline Learning Team and his experience in the inspection of sewers and drains extends over 40 years starting with still cameras in Melbourne's sewers and then as technology developed, CCTV inspection systems in various parts of Australia. He has built systems, operated rigs, repaired cameras, tractors and cables as well as developing the Auscodes reporting software.

He occasionally still gets his hands dirty repairing cameras in between training courses and field coaching of operators.

His knowledge of Melbourne's sewers and drains, particularly those of brick construction, is legendary.

Peter is always looking at ways of improving operator techniques. Many have been introduced into our training courses. See www.auscodes.com.au for more information and services provided by Peter's company Underground Photographic Surveys.

He is taking a break from training for a short while to visit friends and family in the UK and holiday in France.



Peter explaining the importance of good connections at a course in Melbourne - 2008



Peter's stereoscopic camera in a Melbourne brick ovoid conduit – early 1970's

Doyle Trethowan from Rangedale Drainage Services, **Steve McGovern** from Bundaberg Regional Council and **Kevin Manning** from Pipe Solutions, after completing the rigorous workplace assessment requirements, have recently received their Statement of Attainment in *NWP331B Inspect conduit and report on condition and features*.

There are several other operators in the process of successfully completing their assessment requirements and their names will be recorded in future editions of Conduit Capers.

Photo prize

If you have an interesting photograph and story or a good example of one of the features included in Conduit Inspection Reporting Code send it to streamlearn@optusnet.com.au with background information.

The best photo received before the next publication date (1 July 2010) will receive a gift from the Water Services Association of Australia (WSAA).

Conditions of entry:

- Photos may be published, with acknowledgement, in Conduit Capers, course materials produced by Streamline Learning or in WSAA publications
- The decision of judges will be final

That's all for now folks. Next edition July 2010

