REKABENTUK SISTEM KUMBAHAN UNTUK PROJEK BANGUNAN

SESI 9:

PENGENALAN DAN KONSEP KERJA PEMBETUNGAN

Oleh

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Pengujian & Pemeriksaan Paip Pembetung

Ujian bagi Paip pembetungan:

- Ujian kebocoran, kelurusan, halangan dan Ujian Gred pemeriksaan CCTV.
- Ujian aliran (flow test)
- mana-mana ujian dan kaedah lain yang diluluskan.
- Ujian boleh dijalankan secara rawak di mana-mana seksyen pembetung
- QP hendaklah menjalankan ujian kebocoran dan mengemukakan laporan yang
- disahkan kepada CA
- CA hendaklah menentukan pemilihan pembetung untuk diperiksa

Pengujian & Pemeriksaan Paip Pembetung

Ujian cctv:

- Stage 1 – 10% daripada panjang keseluruhan paip pembetungan. Di pilih secara rawak oleh Ca. sekiranya didapati terdapat keadaan grade 3,4 dan 5. ujian cctv diteruskan ke stage 2
- Stage 2 – 40% daripada baki panjang keseluruhan paip pembetungan. sekiranya didapati terdapat keadaan grade 3,4 dan 5. ujian cctv diteruskan ke stage 3.
- Stage 3 – 50% daripada baki panjang keseluruhan paip pembetungan.
- Ujian cctv DITERIMA sekiranya hanya terdapat keadaan grade 1 dan grade 2.
- Ujian cctv dikira gagal sekiranya hanya terdapat keadaan grade 3,4 dan 5. paip pembetungan yang terlibat perlu dibuat pembaikan SEMULA SEBELUM DIBUAT PEMERIKSAAN SEMULA.

Pengujian & Pemeriksaan Paip Pembetung

Ujian cctv:

Table 4.2 Defect Grades Descriptions

Grade 1 Occurances without damage and no cracks of pipe but only acceptable displacement on joint where no visual infiltration can be observe
Grade 2 Constructional and sewer product deficiencies or occurances with insignificant influence to tightness, hydraulic or static pressure of pipe, etc. Examples: Joint displaced large; badly torched intakes; minor deformation of plastic pipes (<5%); minor erosions; infiltration seeping; Cracks – joint, circumference, longitudinal; Debris, silt – 15%; Encrustation light.
Grade 3 Constructional, operational and maintenance deficiencies diminishing static, hydraulic, safety and tightness. Examples: Infiltration dripping. (OMD); Open joint; untorched intakes; cracks; minor drainage obstructions such as calcide build ups; protruding laterals; minor damages to pipe wall; individual root penetrations; corroded pipe wall; flexible pipe deformation (>5%); Lining defect.
Grade 4 Constructional and structural damages with no sufficient static safety, hydraulic or tightness. Examples: axial/radial pipebursts; visually noticeable infiltration/exfiltration; cavities in pipe-wall; severe protruding; laterals severe root penetrations; severe corrosion of pipe wall; Infiltration running; encrustation medium; minor deformation; flexible pipe deformation >15%.
Grade 5 Major structural damaged where pipe is already or will shortly be impermeable. Examples: collapsed or collapsed eminent; major deformation; deeply rooted pipe; any drainage obstructions; pipe loses water or danger of backwater in basements etc.

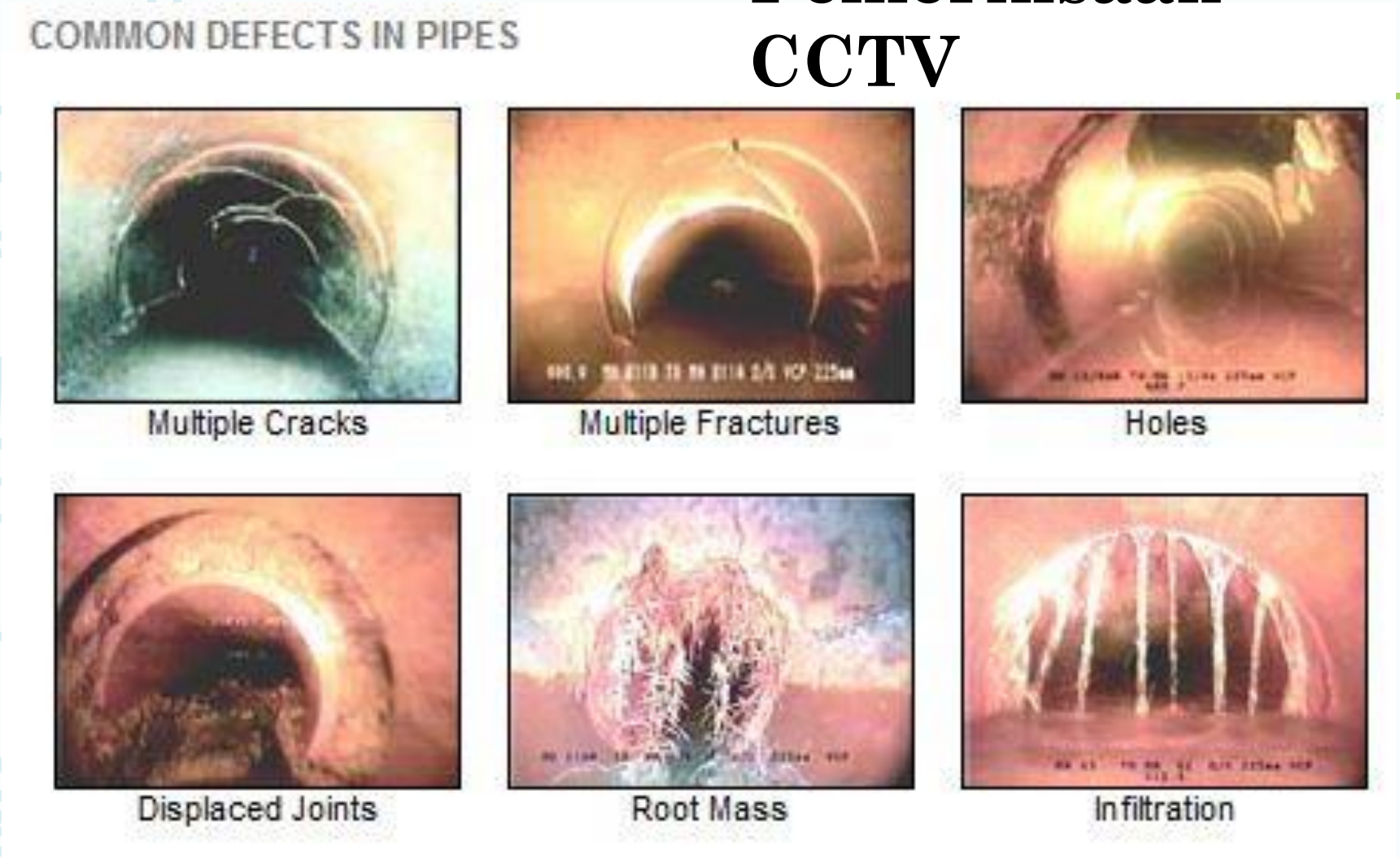
Pengujian & Pemeriksaan Paip Pembetung

Pemeriksaan CCTV

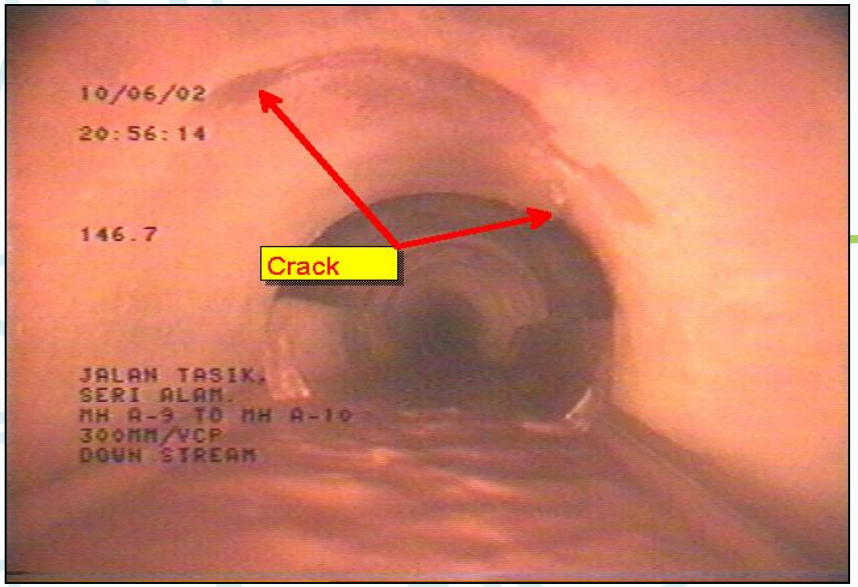
- to ensure sewers are properly constructed and laid so that deformation, gap, sag or other defects which could not be detected by means of normal inspection.

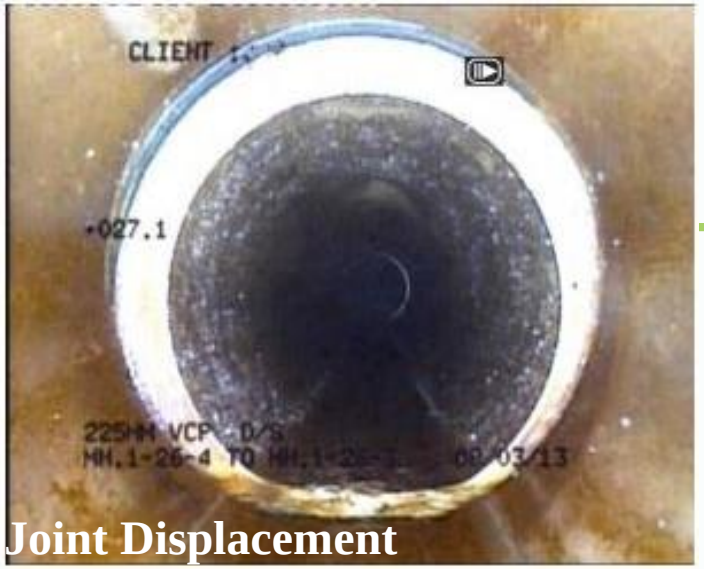
Pengujian & Pemeriksaan Paip Pembetung

Pemeriksaan CCTV



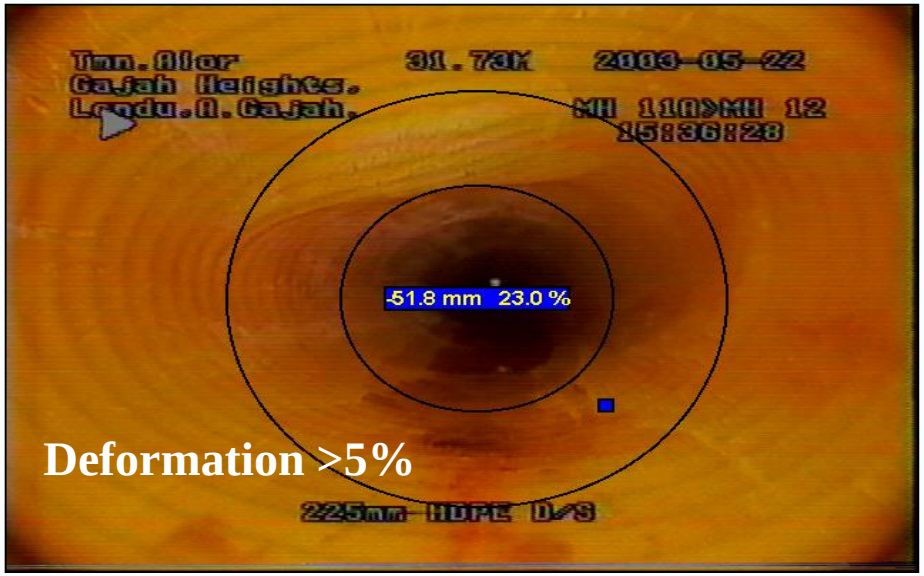
Pemeriksaan CCTV





Joint Displacement

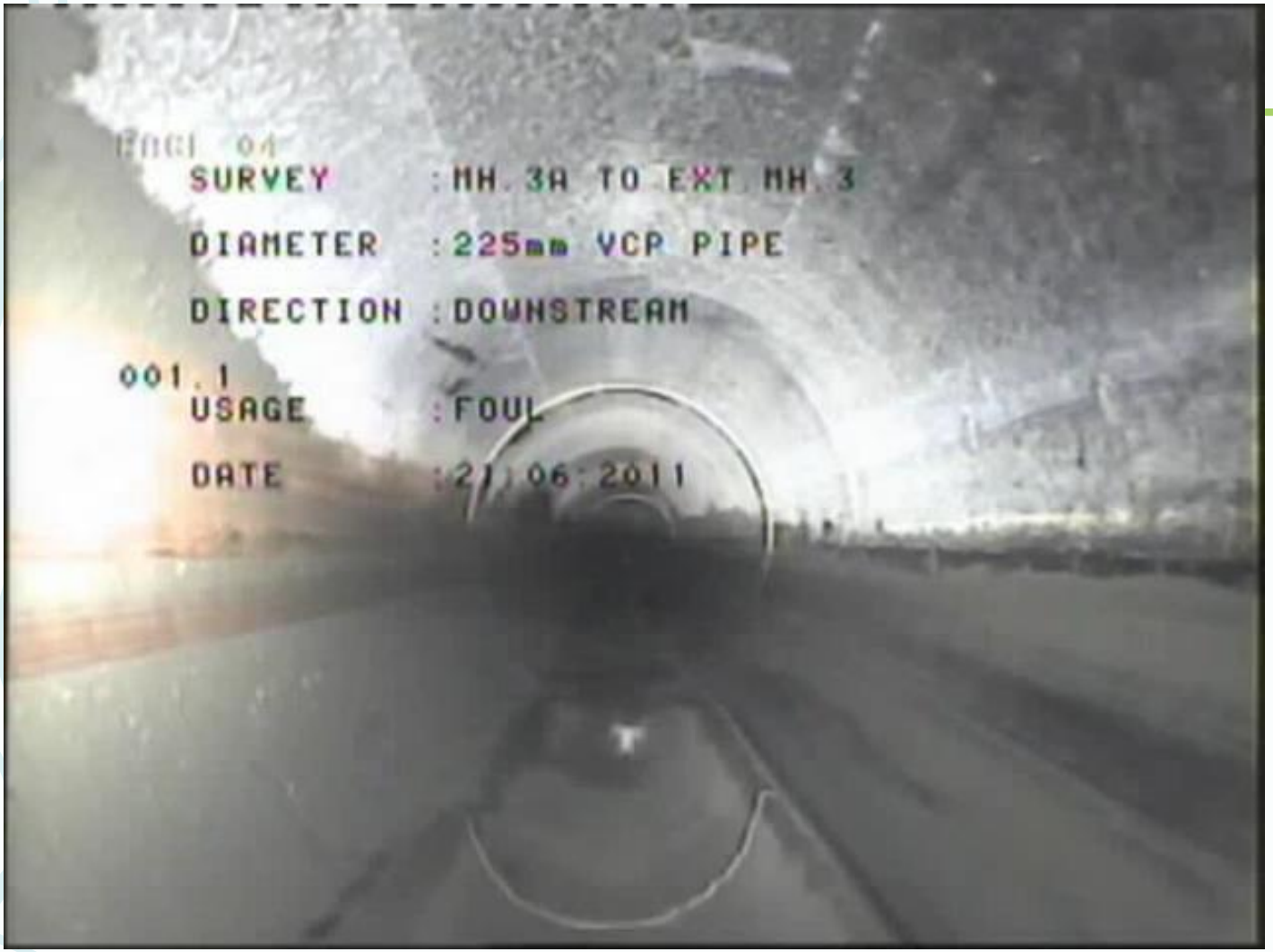
Seepage



Deformation >5%

Pengujian & Pemeriksaan Paip Pembetung

Pemeriksaan CCTV



Pengujian & Pemeriksaan Paip Pembetung

Pemeriksaan CCTV

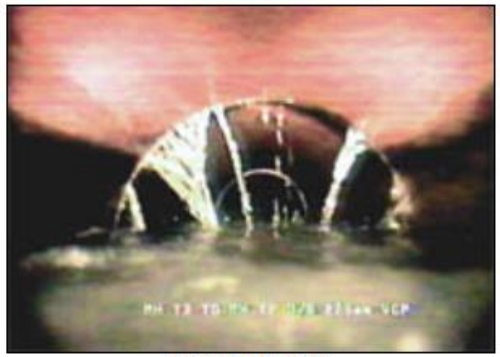
PEMBAIKAN Paip Pembetung

PEMBAIKAN PAIP PEMBETUNGAN MENGGUNAKAN CCTV

SECTIONAL PIPELINE REPAIR

For localised problems within a sewer length the patch system will renovate the damaged area and prolong the life of the sewer where full-length pipe lining would be unnecessary. Localised patch repairs are an effective way of carrying out in –situ structure repairs within a live sewer without the need for over-pumping. It is quick to install and offers no disruption to property, service and surface activities. Patch repairs have tapered ends allowing a smooth virtually unnoticeable transition from pipe to repair and providing little resistance to flow. Patch repairs are installed to Water Industry Standard.

Renovated Clay Pipe

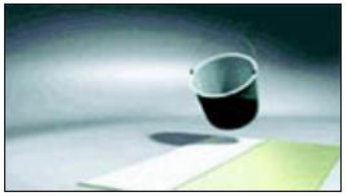


Before Patch

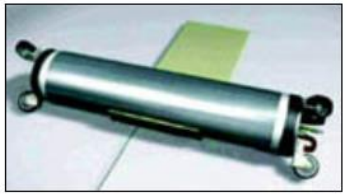
INSTALLATION PROCESS

Procedure for No-Dig Sectional Pipeline Repair

STEP 1: Preparing and Mixing the Resins



STEP 2: Impregnate the Fibre Glass withthe Resin

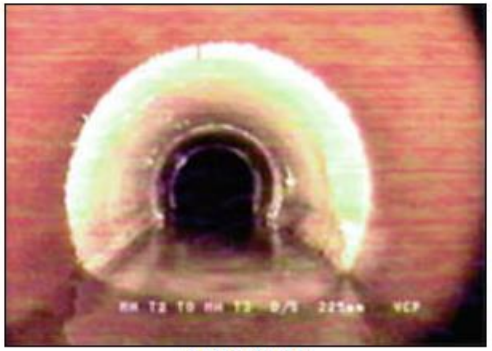


STEP 3: The impregnated Fibre Glass is attached to the packer

STEP 4: Air pressure is used to inflate the packer. The pipe adjacent to the defect

STEP 5: Air pressure is used to nflate the packer. The resin impregnated fibre glass is pressed over the defect and held in place until the resin cures

STEP 6: The packer is deflated and removed from the pipe. The section repair has now fully sealed the defect



After Patch

PEMBAIKAN Paip Pembetung

PEMBAIKAN PAIP PEMBETUNGAN MENGGUNAKAN CURED IN PLACE (CIPP) SECTIONAL PIPELINE REPAIR

PEMBAIKAN Paip Pembetung

PEMBAIKAN PAIP PEMBETUNGAN MENGGUNAKAN KAEDAH CURED IN PLACE (CIPP)

PEMBAIKAN Paip Pembetung

PEMBAIKAN PAIP PEMBETUNGAN MENGGUNAKAN KAEDAH CURED IN PLACE (CIPP PART 2)

PEMBAIKAN Paip Pembetung

PEMBAIKAN PAIP PEMBETUNGAN MENGGUNAKAN KAEDAH CURED IN PLACE (CIPP)

SEKIAN, TERIMA KASIH