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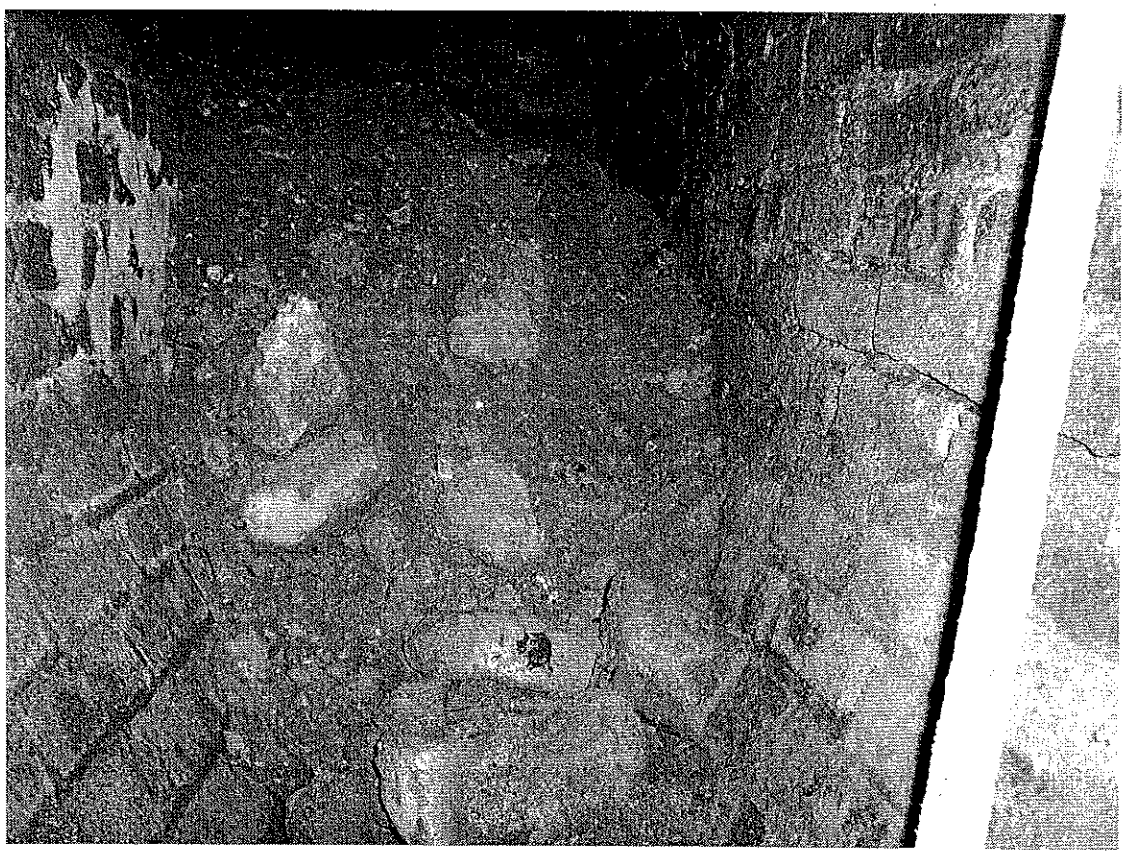
PRE-CONSTRUCTION SURVEY OF THE SEWER AT LAMBETH HILL PRIOR TO WORKS BEING UNDERTAKEN ON ST MARY SOMERSET TOWER



CITY OF LONDON

DOCUMENT CONTROL

PRE-CONSTRUCTION SURVEY OF THE SEWER AT LAMBETH HILL PRIOR TO WORKS BEING UNDERTAKEN ON ST MARY SOMERSET TOWER

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Report prepared by: Name: Paul Jones
Designation: Drainage Engineer

Signed:

Date: 11th July 2008

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Designation: Contract Manager

Signed:

Date: 11th July 2008

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1. INTRODUCTION

1.1 Location Lambeth Hill by St Mary Somerset Tower.

1.2 Purpose of Survey To verify the condition of the sewer prior to adjacent construction works.

1.3 Method of Survey

The survey was undertaken by a man-entry sewer survey gang who measured the location of current defects and noted their type and, if necessary, the severity and recorded them photographically. Connections within the sewer in the vicinity of the proposed construction works were also noted and recorded photographically.

The works within confined space were carried out in accordance with the Policy, Procedures and 'Safe Systems of Work in Sewers' manual, produced by the London Boroughs Drainage Group, the Association of Thames Drainage Authorities and Water Training International.

1.4 General Observations

The sewer in the vicinity of the proposed construction works was in good condition, with no defects noted.

Up stream of the area surveyed, bricks and rubble were noticed in the invert of the sewer. This deposit does not seem to have had an affect on the function of the sewer, however, Thames Water Utilities Ltd have been informed of what was found.

SURVEY INSPECTION REPORT

SURVEYED BY (OPERATOR)	DATE	TIME
M. EDGAR	19/06/2008	11.00
START MANHOLE NO.	FINISH MANHOLE NO.	
-	HEAD WALL	
LOCATION - ROAD NAME		
ST MARY SOMERSET TOWER		
SIZE (DIA)	X SIZE	
SHAPE	MATERIAL	LINING
OVAL	BRICK	
COMMENTS - GENERAL		
UP STREAM		
FURTHER LOCATIONS DETAILS		
CASTLE BAYNARD STREET/LAMBETH HILL		

PHOTO NO	DISTANCE (METRES)	CONTIN'S DEFECT	LETTERS Code	NUMBERS Diameter JN/CN	Clock at to	Intrusion % mm	REMARKS
	0.0		MH				
	0.0		WL			5	
1	0.5		CN	225	4		
2	2.0		CN	225	4		
3	12.0		CN	150	4		
4	17.0		FC		1 12		Top of steps
5	18.2		INGz				Start of ingress brick/sand
6	19.1		H		10	70	Infiltration of sewer rubble
7							General view/rubble and head wall
	21.3		SF				Head wall

SEWER CONDITION CODES
(ALPHABETICAL ORDER)

Code	Definition
B(J)	Broken pipe at ... (OR from ... to .....) o'clock
BR	Start node type, major connection without manhole, reference number... in Dimension 1 Column.
BRF	Finish node type, major connection without manhole, reference number... in Dimension 1 Column.
CC(J)	Crack circumferential from ... to ... o'clock
CL(J)	Crack longitudinal at ... o'clock
CM(J)	Cracks multiple from ... to ... o'clock
CS	Cracks spiral from ... to ... o'clock
CN (*)	Connection other than junction at ... o'clock, diameter ... mm
CNC	Connection other than junction, closed at ... o'clock, diameter ... mm
CP	Start node type, catchpit, reference number ... in Dimension 1 Column
CPF	Finish node type, catchpit, reference number ... in Dimension 1 Column
CU*	Loss of vision
CU D	Loss of vision, silt
CU S	Loss of vision, steam
CU W	Loss of vision, camera under water
CU Z	Loss of vision, other
CX I	Connection intruding at ... o'clock, diameter ... mm, intrusion ...%
CX*	Connection defective at ... o'clock, diameter ... mm
CX B(I)	Connection defective, connecting pipe is blocked at ... o'clock, diameter ... mm, (intrusion ... %)
CX D(I)	Connection defective, connecting pipe is damaged at ... o'clock, diameter ... mm, (intrusion ... %)
CX P(I)	Connection defective, position incorrect at ... o'clock, diameter ... mm, (intrusion ... %)
CX Z	Defective connection, other
D	Deformed drain/sewer ...% (Pipe Only)
DH	Deformed horizontally ...% (Brick Only)
DV	Deformed vertically ...% (Brick Only)
DB	Displaced bricks at ... (OR from ... to ...) o'clock
DE C(J)	Settled deposits hard or compacted ...% cross-sectional area loss
DE E(J)	Attached deposits, encrustation at ... (OR from ... to ...) o'clock.... % cross-sectional area loss
DE F(J)	Attached deposits, fouling at ... (OR from ... to ...) o'clock.... % cross-sectional area loss
DE G(J)	Attached deposits, grease at ... (OR from ... to ...) o'clock.... % cross-sectional area loss
DE R(J)	Settled deposits coarse ...% cross-sectional area loss
DE S(J)	Settled deposits fine ...% cross-sectional area loss
DE X(J)	Other settled deposits ...% cross-sectional area loss + qualifying remark
DI	Dropped invert, gap....mm
DE Z(J)	Other attached deposits at ... (OR from ... to ...) o'clock ...% cross-sectional area loss + qualifying remark
E (!)	Dropped invert, gap ... mm
EX	Exfiltration at ... (OR from ... to ...) o'clock
FC(J)	Fracture circumferential from ... to ... o'clock
FL(J)	Fracture longitudinal at ... o'clock
FM (J)	Fractures multiple from ... to ... o'clock
FS	Fracture spiral from... to... o'clock
FW (!)	Flow in incoming pipe, at... o'clock ...% of the vertical dimension
FW C (!)	Clear flow in incoming pipe, at... o'clock ...% of the vertical dimension
FW C S (!)	Wrong clear flow in incoming foul pipe, at... o'clock ...% of the vertical dimension (e.g. water main burst)
FW T (!)	Turbid flow in incoming pipe, at... o'clock ...% of the vertical dimension
FW T F (!)	Wrong turbid flow in incoming pipe, at... o'clock ...% of the vertical dimension (Pollution in SWS)
GP	General photograph reference... taken at this point
GY*	Start node type, gully, reference number... in Dimension 1 Column
GYF*	Finish node type, gully, reference number... in Dimension 1 Column
GZ (•)	Hazardous atmosphere, other [% or ppm]
H (J)	Hole in drain/sewer at... (OR from ... to ...) o'clock
HS (•)	Hazardous atmosphere, hydrogen sulphide [% or ppm]
I*	Infiltration
IC	Start node type, inspection chamber, reference number ... ... in Dimension 1 Column
ICF	Finish node type, inspection chamber, reference number ... ... in Dimension 1 Column
ID (J)	Infiltration dripping at ... (OR from ... to ...) o'clock
IG (J)	Infiltration gushing at ... (OR from ... to ...) o'clock
IR (J)	Infiltration running at ... (OR from ... to ...) o'clock
IS(J)	Infiltration seeping at ... (OR from ... to ...) o'clock
ING F (J)	Ingress of fine material at ... (OR from ... to ...) o'clock ...% cross-sectional area loss
ING G (J)	Ingress of gravel at ... (OR from ... to ...) o'clock ...% cross-sectional area loss
ING P (J)	Ingress of peat at ... (OR from ... to ...) o'clock ...% cross-sectional area loss
ING S (J)	Ingress of sand at ... (OR from ... to ...) o'clock ...% cross-sectional area loss
ING Z (J)	Ingress of soil, other at ... (OR from ... to ...) o'clock ...% cross-sectional area loss + qualifying remark
(J)*	Joint displaced
JD	Joint displaced ...% of diameter mm, (over 20% in mm)
JD (L)	Joint displaced large
JD (M)	Joint displaced medium
JN (*)	Junction at ... o'clock, diameter ... mm
JN C	Junction, closed, at ... o'clock, diameter ... mm
JX *	Junction defective at ... o'clock, diameter ... mm
JX B	Junction defective, connecting pipe is blocked at ... o'clock, diameter ... mm
JX D	Junction defective, connecting pipe is damaged at ... o'clock, diameter ... mm

SEWER CONDITION CODES
(ALPHABETICAL ORDER)

Code	Definition
JX P	Junction defective, position incorrect at ... o'clock, diameter ... mm
JX Z	Defective junction, other
LC*	Lining of drain changes
LC+[material code]	Lining of drain/sewer changes to … at this point
LD	Line of drain/sewer deviates down …[quarter/half/full*]
LH	Start node type, lamphole, reference number … in Dimension 1 Column
LHF	Finish node type, lamphole, reference number … Dimension 1 Column
LL	Line of drain/sewer deviates left … [quarter/half/full*]
LR	Line of drain/sewer deviates right … [quarter/half/full*]
LU	Line of drain/sewer deviates up … [quarter/half/full*]
LX*	Lining defect
LX B	Defective lining, blistering lining at … (OR from … to …) o'clock
LX C	Defective lining, discolouration of the lining at … (OR from … to …) o'clock
LX D	Defective lining, lining detached at … (OR from … to …) o'clock
LX E	Defective lining, defective end of lining at … (OR from … to …) o'clock
LX W C	Defective lining, circumferential wrinkled lining from … to … o'clock
LX W L	Defective lining, longitudinal wrinkled lining from … to … o'clock
LX W S	Defective lining, spiral wrinkled lining from … to … o'clock
LX Z	Defective lining, other lining defect at … (OR from … to …) o'clock + qualifying remark
MB	Missing bricks at ... (OR from ... to ...) o'clock
MC*	Material of drain changes
MC + [material code]	Material of drain/sewer changes to … at this point
ME(*)	Hazardous atmosphere, methane [% or ppm]
MH	Start node type, manhole, reference number … in Dimension 1 Column
MHF	Finish node type, manhole, reference number … in Dimension 1 Column
MM	Missing mortar between … mm and … mm at ..... (OR from ..... to .....) o'clock
OB*	Obstruction
OB B (J)	Other obstacles, brick or masonry in invert at … (OR from … to …) o'clock … % cross-sectional area loss
OBC	Other obstacles, through connection/junction at … (OR from … to …) o'clock … % cross-sectional area loss
OB I (J)	Other obstacles, protruding through wall at … (OR from … to …) o'clock … % cross-sectional area loss
OB M (J)	Other obstacles, pipe material in invert at … (OR from … to …) o'clock … % cross-sectional area loss
OB P	Other obstacles, external pipe of cable from … to … o'clock … % cross-sectional area loss + qualifying remark
OB S	Other obstacles, built into structure from … to … o'clock … % cross-sectional area loss + qualifying remark
OB X (J)	Other obstacles, other object in invert at … (OR from … to …) o'clock … % cross-sectional area loss + qualifying remark
OB Z (J)	Other obstacles, other from … to … o'clock … % cross-sectional area loss + qualifying remark
OC	Start node type, other special chamber, reference number … in Dimension 1 Column
OCF	Finish node type, other special chamber, reference number … in Dimension 1 Column
OD (•)	Hazardous atmosphere, oxygen deficiency [% or ppm]
OF	Start node type, outfall, reference number … in Dimension 1 Column
OFF	Finish node type, outfall, reference number … in Dimension 1 Column
OJ*	Open joint
OJ	Open joint … mm (over 20% in mm)
OJ (L)	Open joint large
OJ (M)	Open joint medium
OS	Start node type, oil separator, reference number … in Dimension 1 Column
OS F	Finish node type, oil separator, reference number … in Dimension 1 Column
PC	Length of pipe forming drain/sewer changes at this point, new length ... mm Dimension 1 Column
PP	Pipe material is porous at … (OR from … to …) o'clock
PVR	Photographic volume reference new volume … in Dimension 1 Column
R*	Roots
RE*	Start node type, rodding eye, reference number … in Remarks Column
REF*	Finish node type, rodding eye, reference number … in Dimension 1 Column
REM	General remark
RF(J)	Roots fine
RM (J)	Roots mass …% cross-sectional area loss
RP H	Point repair, hole repaired at …(OR from … to …) o' clock
RP I	Point repair, injected mortar at …(OR from … to …) o'clock
RP L	Point repair, localised lining from … to … o'clock
RP R	Point repair, pipe replaced from …to …o'clock
RP S	Point repair, other injected sealing material at …(OR from … to …) o'clock
RP Z	Point repair, other trenchless method at … (OR from … to …) o'clock + qualifying remark
R T (J)	Roots tap
RX M	Defective repair, part of wall missing at … (OR from … to …) o'clock
RX Z	Defective repair, other at …(OR from … to …) o'clock + qualifying remarks
S*	Surface damage
SA	Survey abandoned + qualifying remark
S AP	Aggregate projecting from surface at … (OR from … to …) o'clock
S AV	Visible aggregate at …(OR from … to …) o'clock

SEWER CONDITION CODES
(ALPHABETICAL ORDER)

Code	Definition
SC *	Dimension of drain/sewer changes to …mm (x …mm)
SC + [shape code]	Shape of drain/sewer changes to …mm (x …mm) (SC also = diameter change Dim1 …mm Dim2 …mm)
S CP	Corrosion products at…(OR from … to…) o'clock
SK *	Start node type, soakaway, reference number … in Dimension 1 Column
SKF *	Finish node type, soakaway, reference number … in Dimension 1 Column
SO	Other sealant intruding at …(OR from … to …) o'clock
SR	Sealing ring intruding at …(OR from … to…) o'clock
SR B	Sealing ring, broken from …to … o'clock
S RC	Corroded reinforcement at …(Or …from …to) o'clock
S RP	Reinforcement projecting from surface at …(OR from … to …) o'clock
S RV	Visible reinforcement at …(OR from …to…) o'clock
S S	Spalling at …(OR from … to …) o'clock
SV	Soil visible beyond defect
SW	Increased roughness at …(OR from … to …) o'clock
S Z	Other damage at …(OR from … to …) o'clock
V *	Vermin
V R	Rat
V R C	Vermin, rats observed in connection
V R J	Vermin, rats observed in open joint
V R Z	Vermin, rats observed other
VV	Void visible beyond defect
VVR	Video volume reference new volume … in Dimension 1 Column
WL	Water level …% height/diameter
WL C (!)	Clear water level …% height/diameter
WL T (!)	Turbid water level …% height/diameter
WX C	Weld failure circumferential from …to …o'clock
WX L	Weld failure longitudinal at …o'clock
WX S	Weld failure spiral from …to …o'clock
XB	Collapsed brickwork or masonry
XP	Collapsed drain/sewer

(!) These codes are only used if requested by the client
(•) Man entry surveys
(*) Can be used for domestic and public

INSPECTION PHOTOGRAPH

PHOTO 1

INSPECTION PHOTOGRAPH

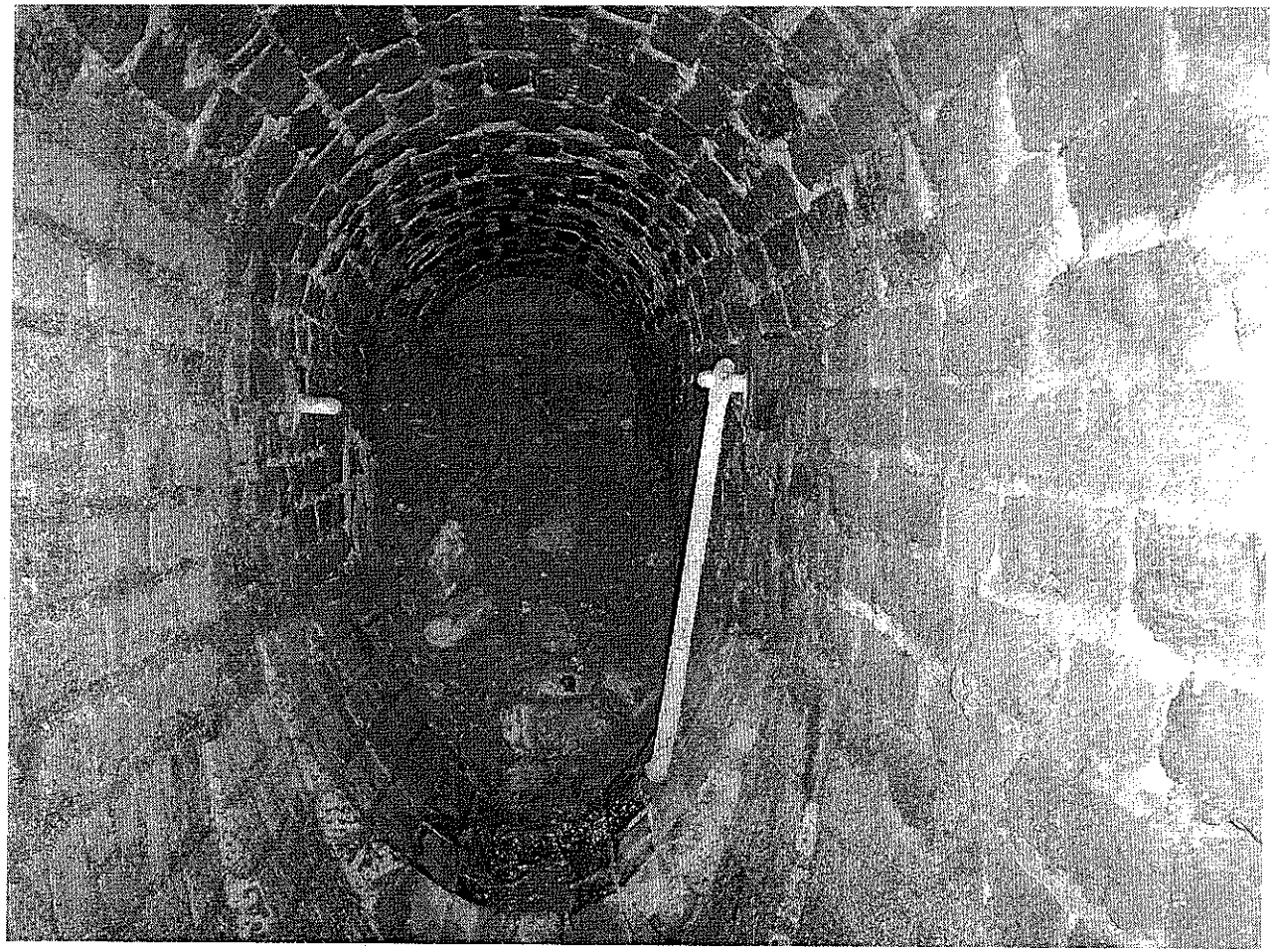
PHOTO 2

INSPECTION PHOTOGRAPH

PHOTO 3

INSPECTION PHOTOGRAPH

PHOTO 4



INSPECTION PHOTOGRAPH

PHOTO 5

INSPECTION PHOTOGRAPH

PHOTO 6

INSPECTION PHOTOGRAPH

PHOTO 7