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Reference (24) in WSD 3318/50 Pt.6

9 February 2018

To: Distribution List

Dear Sirs,

Enhanced Master Meter Requirements

To enhance the detection of water loss of inside service and fire service, the Water Supplies Department (WSD) has reviewed the Master Meter Requirements further to the WSD Circular Letter No. 5/2005. The enhanced requirements are stipulated at **Enclosure**.

The above requirements are applicable to new plumbing proposal applications (Form WWO 542) submitted **on or after 1 March 2018**. Such requirements will also be subsumed in "Technical Requirements for Plumbing in Hong Kong" to be promulgated soon. Should you have any enquiry, please contact our Engineer/Technical Support(5) at telephone no. 2829 4483.

Yours faithfully,

(Roger WONG)
Chief Engineer/Technical Support
Water Supplies Department

32806105

Distribution List

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ENHANCED MASTER METER REQUIREMENTS

Background

As a tool to detect water loss of inside service and fire service, as promulgated in the WSD Circular Letter No. 5/2005, all new developments except single detached village type buildings and single block buildings are required to install master meters near to their respective lot boundaries since 2006. For new developments with more than 1 detached village type building, master meter requirements could be exempted if the total length of underground and concealed pipes not exceeds 15m. Following the above requirements, about 240 nos. of developments have master meters already been installed as of end 2017. To enhance detection of water loss in underground buried and concealed pipes, the existing master meter requirements have been reviewed. The enhanced requirements are stipulated in paragraph 2 to 5 below.

Provision of Master Meters for all New Developments with more than 1 Building Block

2. **The existing exemption for new developments with more than 1 detached village type building if the total length of underground buried and concealed pipes not exceeds 15m should be removed.** In this regard, the master meter requirements are now scoped to include all new developments with more than 1 building block. **For detached village type buildings and single block buildings, master meters shall not be required but all pipework before meter positions should be exposed or laid in a proper service duct following the current practice.**

Provision of Sub-meter Chambers for Fresh Water Inside Service and Fire Service

3. To enhance detection of water loss in underground buried and concealed pipes, we consider useful to provide sub-meter chambers with check meter positions for prompt identification of any leakage. As a general principle,

- (a) **sub-meter chambers with check meter positions should be provided at branch mains on a building-cluster basis except for developments with 5 or less building blocks of the same type only; and**

- (b) **each building-cluster should not include more than 5 building blocks of the same type in general.**

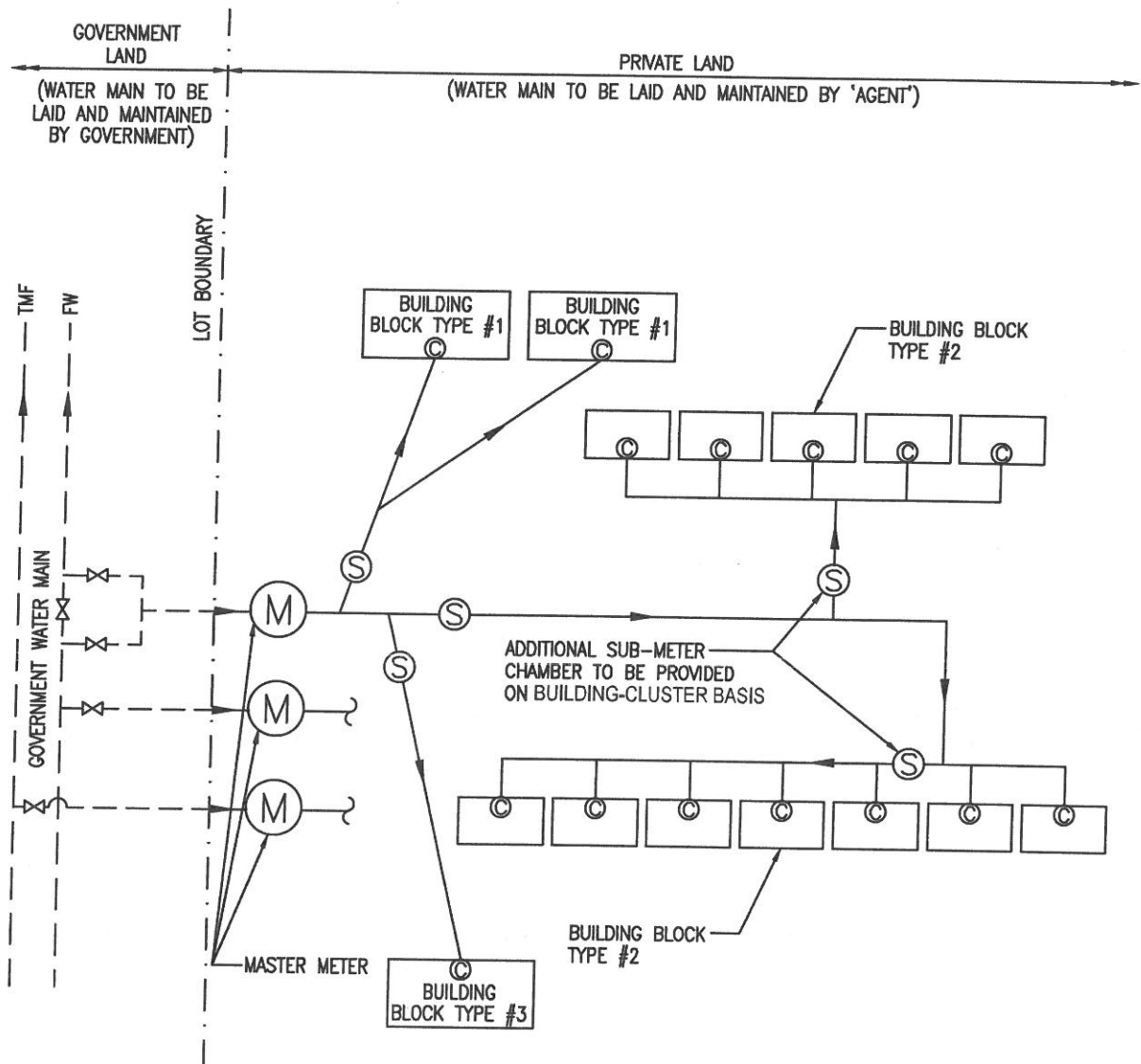
4. Typical configuration of master meter and sub-meter chambers in a multiple-block development is shown in **Figure 1** and details of sub-meter chambers are shown in **Figure 2**. As WSD has been actively carrying out salt water conversion to areas currently using temporary mains-water for flushing (TMF), the installation of sub-meter chambers for TMF inside service are considered not necessary. Should sub-meter chamber at a branch main is required but **i) the check meter room inside a building block is located less than one straight pipe length of 6m from the tee-connection or ii) all the pipework between the tee-connection and the building block is exposed**, construction of a separate sub-meter chamber would not be necessary.

Revised General Arrangement of Master Meter Room/Chamber

5. The standard master meter room/chamber configuration for all new developments has been reviewed and revised as shown in **Figures 3 to 7** with the following key amendments -

- (a) Straight pipe requirement to ensure accuracy of master meter – Two lengths of straight pipe, one upstream and one downstream of the master meter should be provided. In general, electromagnetic (EM) flowmeters would be used for master meter with pipe diameter exceeding or equal to 80mm. The length upstream and downstream should not be less than 3 and 2 times the nominal diameter of the master meter respectively. For master meter with pipe diameter less than 80mm, the length upstream should be increased to not less than 5 times the nominal diameter of the master meter.
- (b) Omission of by-pass pipe requirement –Taking into the consideration the rare usage of by-pass pipes over the lifespan of master meters, by-pass pipe requirement is not required for all inside service and fire service. If maintenance of master meter for fresh water supply is necessary, supply

suspension for meter replacement work would be similar to regular water tank cleansing work or other maintenance work carried out by individual building management offices (BMOs). If maintenance/replacement of master meters/check meters for fire service supply is necessary, the workflow as stipulated in **Annex** should be followed. With the omission of by-pass pipe arrangement for inside service and fire service, master meters could be housed in a box or cabinet instead of in a room or chamber for size of fresh water supply main not exceeding 100mm in diameter. Details of master meter box and cabinet are shown in **Figure 8**.



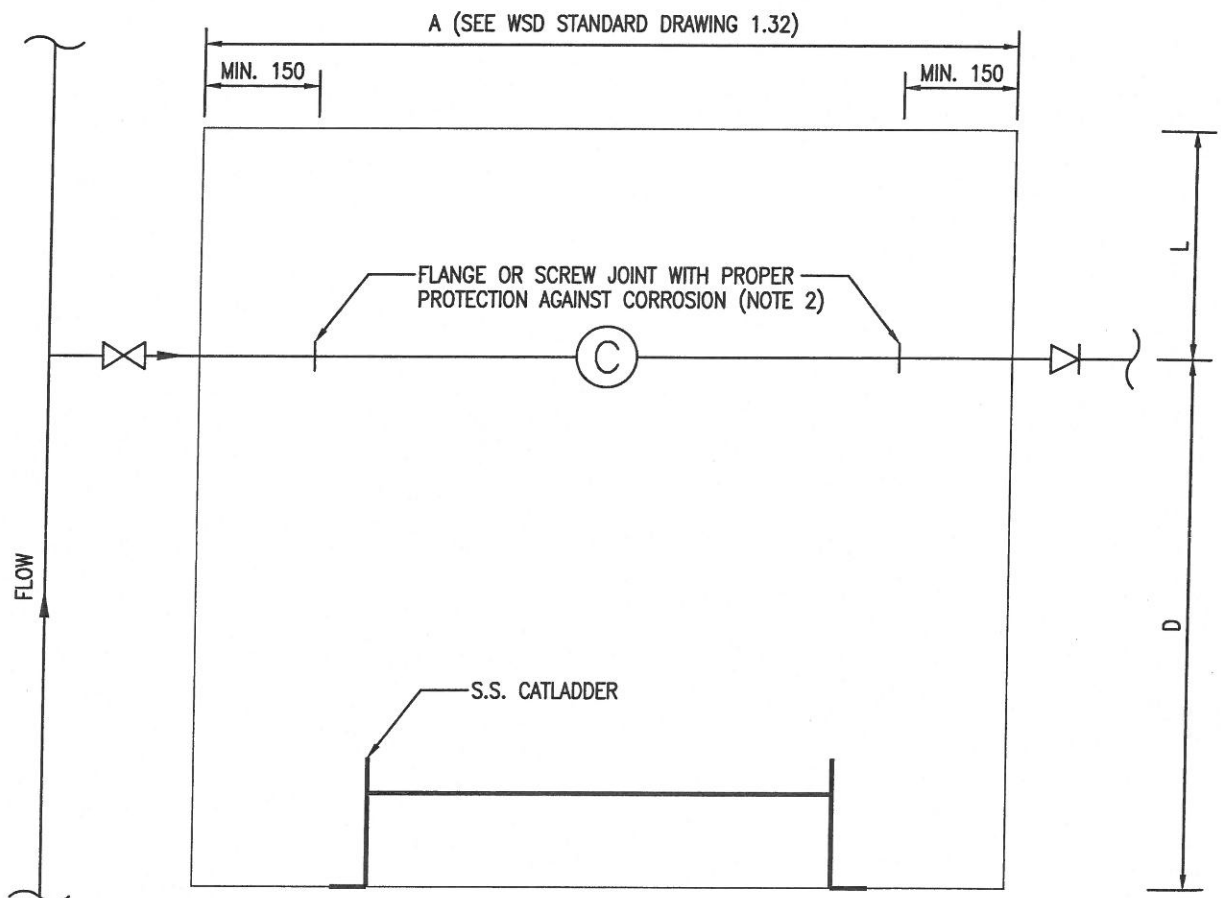
TYPICAL CONFIGURATION OF MASTER METER AND SUB-METER CHAMBERS
IN MULTIPLE-BLOCK DEVELOPMENT

NOTES :

1. SUB-METER CHAMBERS FOR FIRE SERVICE NOT SHOWN FOR CLARITY
2. SUB-METER CHAMBERS NOT REQUIRED FOR TMF

LEGEND :

- (M) MASTER METER
- (S) CHECK METER POSITION IN SUB-METER CHAMBER / BOX / CABINET
- (C) CHECK METER POSITION IN BUILDING BLOCK

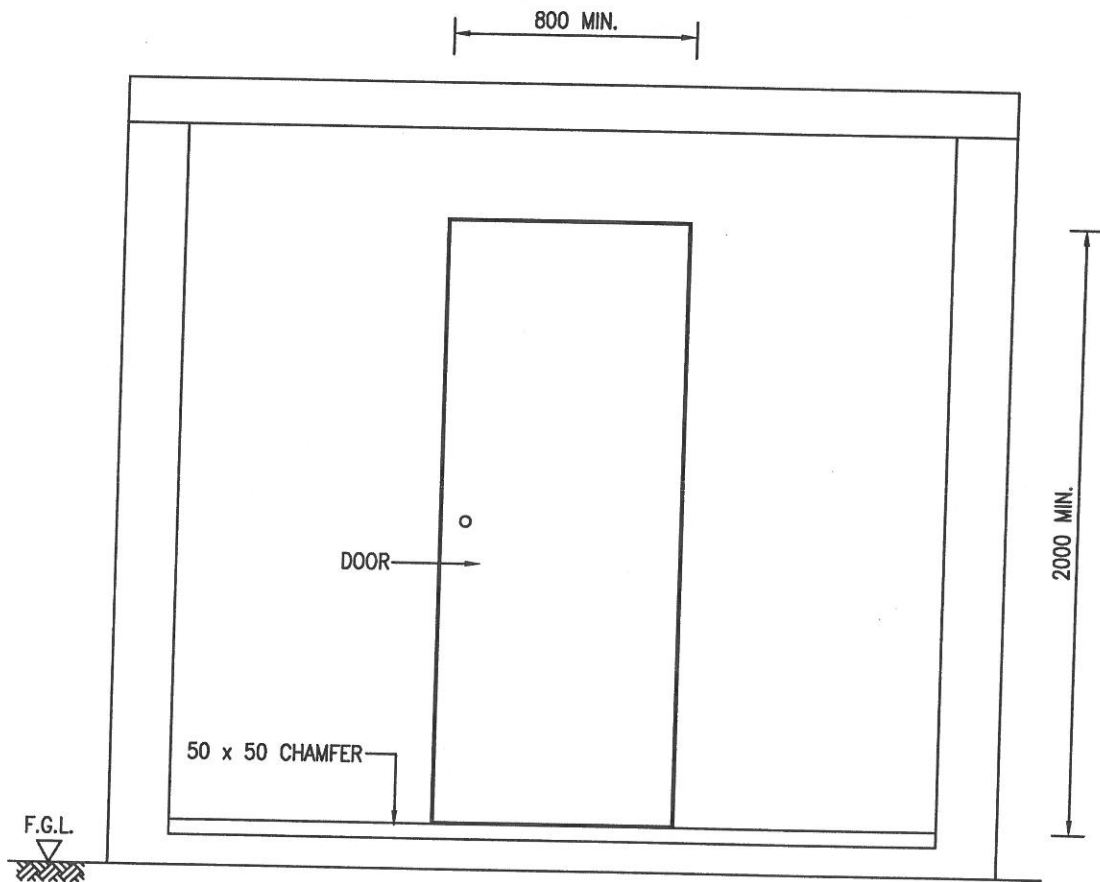


PLAN OF TYPICAL SUB-METER CHAMBER

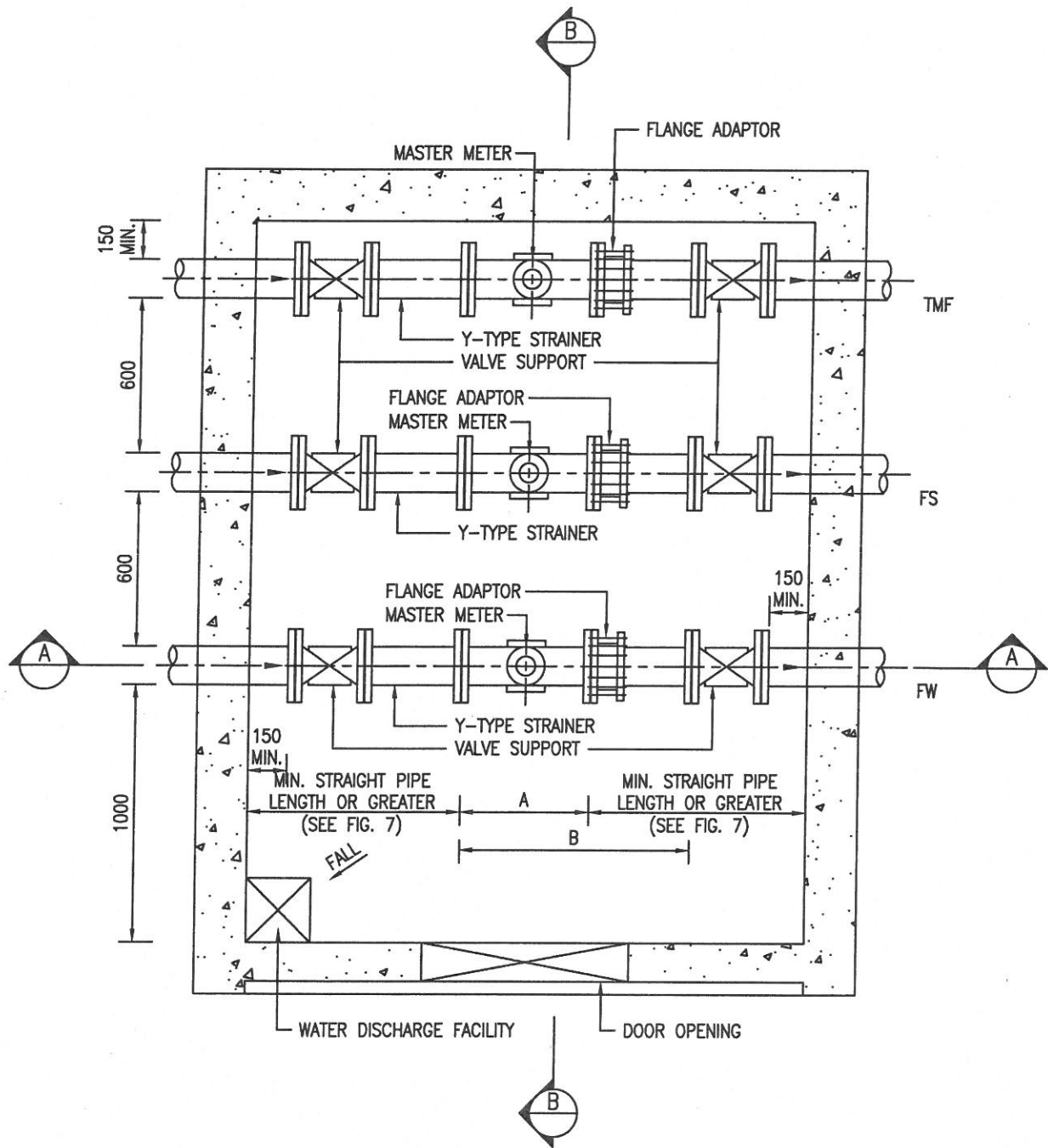
MAX PIPE DIAMETER (mm)	MIN. WORKING CLEARANCE L (mm)	MIN. DISTANCE BETWEEN CENTRELINE OF PIPE AND INTERNAL WALL FACE D (mm)
50	310	700
80	380	
≥100	400	

NOTES :

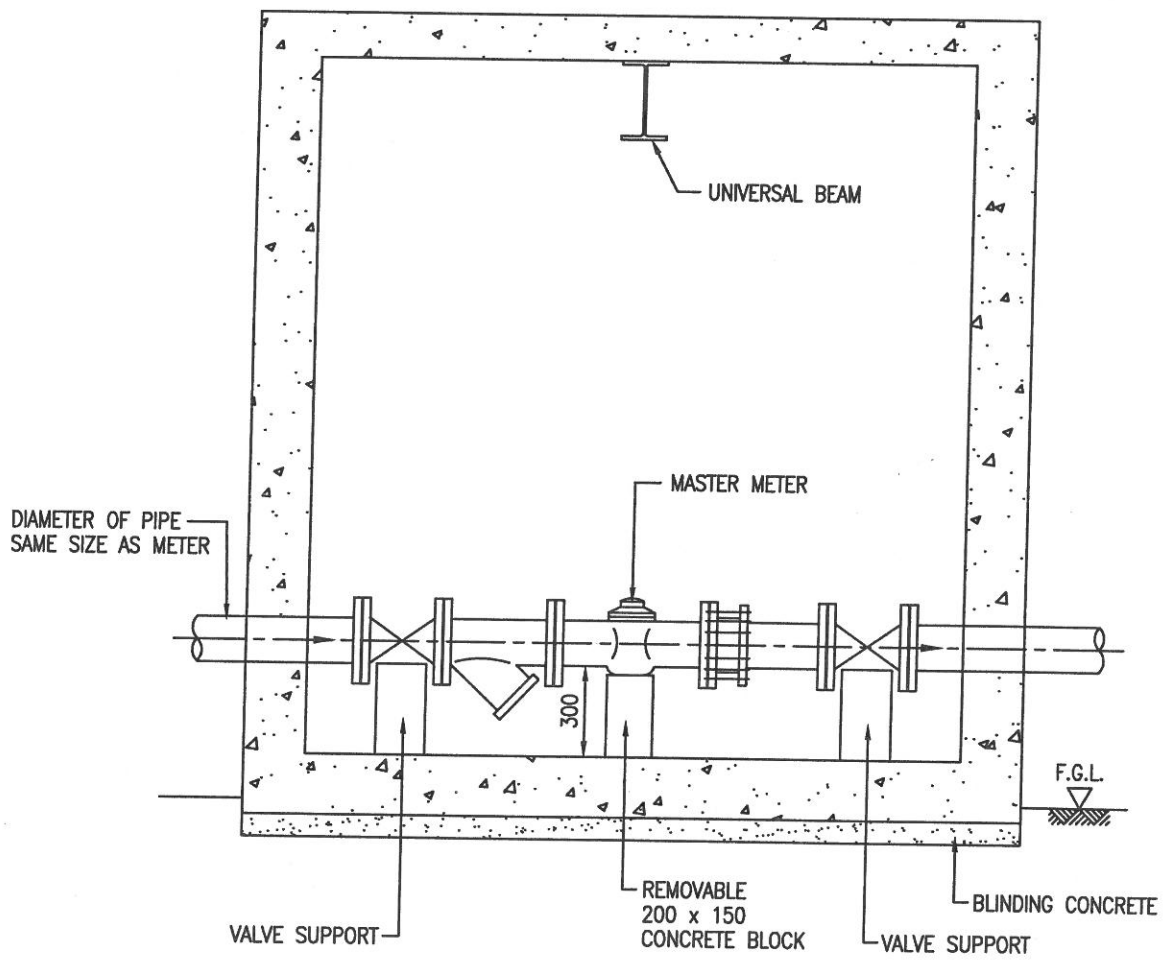
1. DETAILS OF THE CHAMBER SIMILAR TO WASTE DETECTION CHAMBER AND SHALL BE REFERRED TO WSD STANDARD DRAWING 1.32.
2. PROTECTION TO FLANGE JOINT / COUPLING / ADAPTOR SHALL BE PROVIDED USING PETROLEUM ANTICORROSION TAPES WITH PRIMER AND MASTIC FILLER.



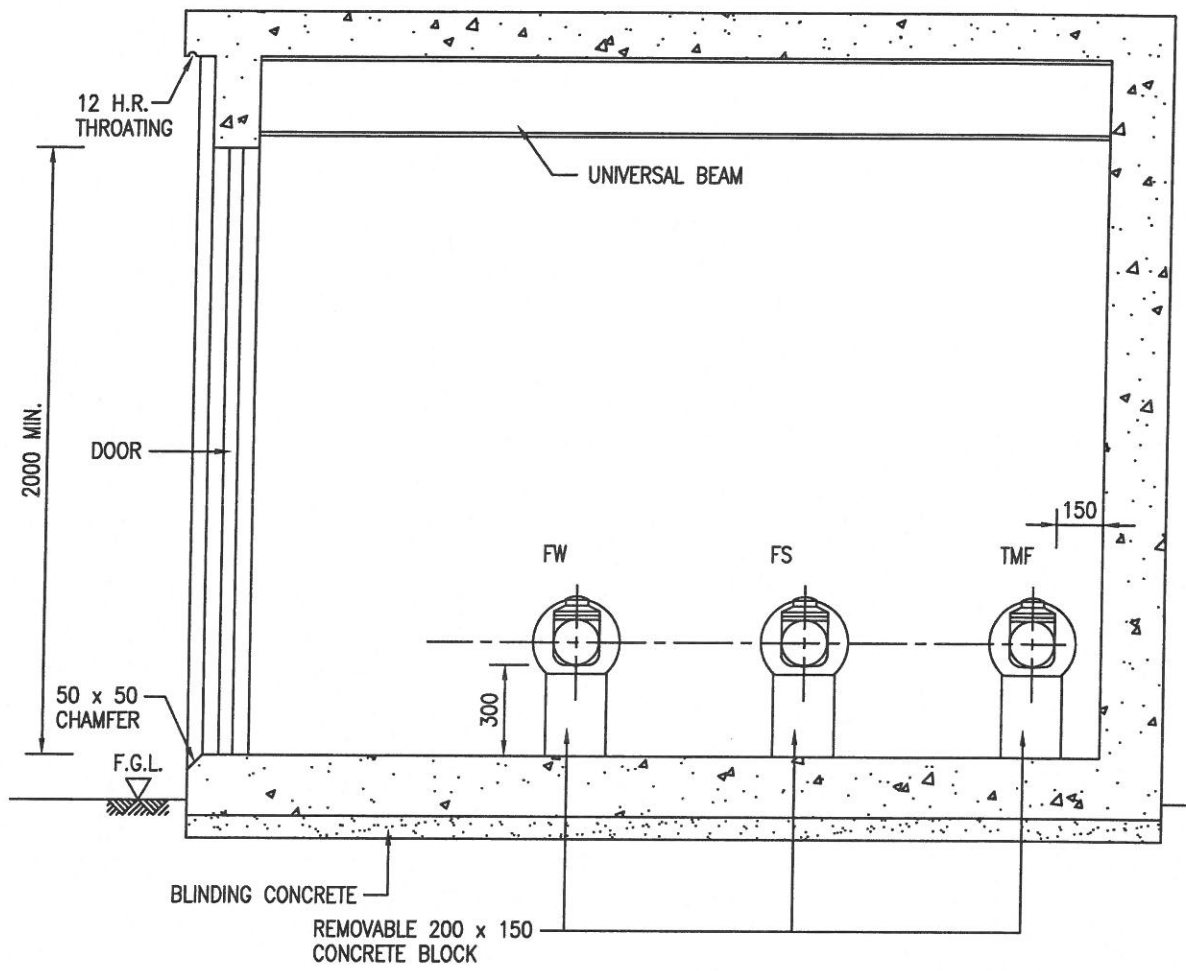
FRONT ELEVATION OF MASTER METER ROOM



SECTIONAL PLAN OF MASTER METER ROOM



SECTION A - A OF MASTER METER ROOM



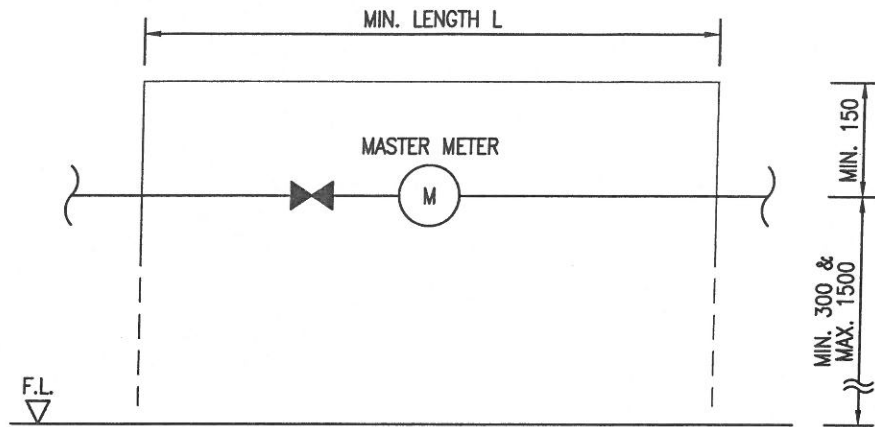
SECTION B - B OF MASTER METER ROOM

MASTER METER OF VARIOUS SIZES

METER TYPE	SIZE (mm)	DIMENSIONS (mm)		STRAIGHT PIPE LENGTH REQUIREMENT	
		A	B	UPSTREAM	DOWNSTREAM
SINGLE JET	50	300	450	5D	2D
	80	350	720		
	100	350	730		
ULTRASONIC	50	200	450	3D	2D
TURBINE / WOLTMANN	50	310	450	5D	2D
	80	413	720		
	100	483	730		
	150	500	900		
	200	520	980		
	250	450	900		
	300	500	1000		
ELECTROMAGNETIC	50	200	450	3D	2D
	80	200	720		
	100	250	730		
	150	300	1000		
	200	350	1000		
	250	450	1000		
	300	500	1000		

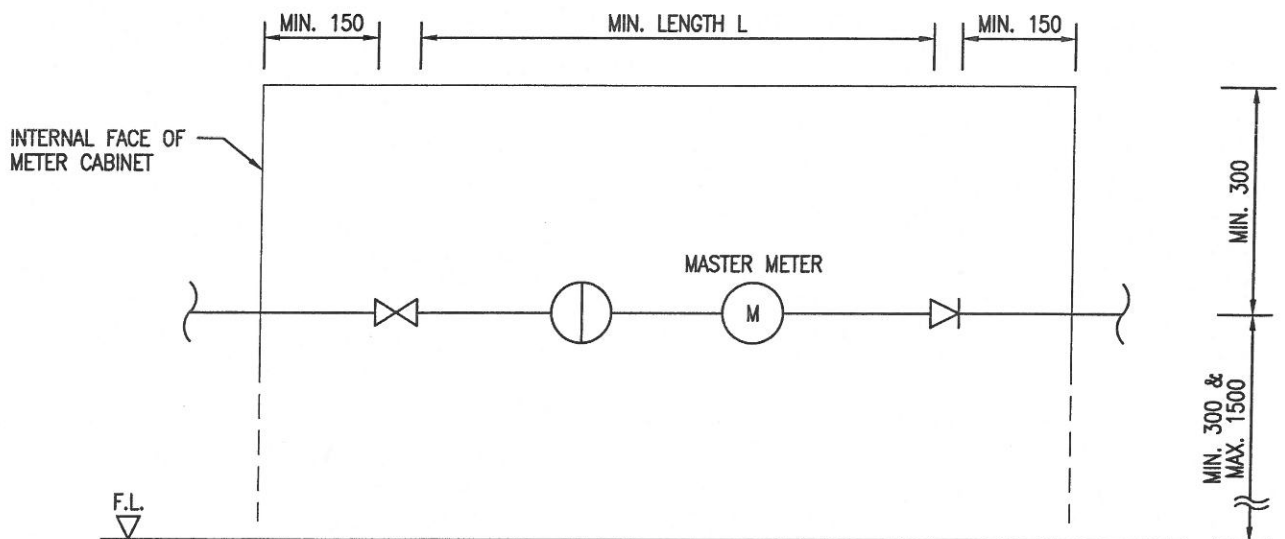
NOTES :

1. ALL DIMENSIONS ARE IN MILLIMETRES.
2. THIS SET OF DRAWINGS SHALL BE READ IN CONJUNCTION WITH THE HONG KONG WATERWORKS STANDARD REQUIREMENT FOR PLUMBING INSTALLATION IN BUILDING. IN PARTICULAR, THE REQUIREMENT RELATED TO INSTALLATION OF METER AS SPECIFIED IN CHAPTER 1.
3. UNIVERSAL BEAM(S) SHALL BE ABLE TO LIFT UP 2.5 TIMES THE WEIGHT OF THE METER AS ADVISED BY WATER AUTHORITY.
4. THE CENTRE-LINE OF THE PIPEWORK MUST BE HORIZONTAL.
5. ALL NEWLY LAID WATER MAINS MUST BE CLEANED AND STERILIZED BEFORE THE INSTALLATION OF SPECIFIED METER OR PRODUCT HAVING EQUIVALENT FUNCTIONS OR PERFORMANCE INSIDE THE ROOM.
6. DRAIN PIPE FOR METER ROOM SHALL BE PROVIDED.
7. DIMENSION 'A' AND 'B' SHOWN IN THE TABLES ARE FOR INDICATION ONLY, EXACT DIMENSION TO BE DETERMINED ON SITE.
8. WHERE TMF SUPPLY IS GIVEN, A COMMUNAL TMF METER SHALL BE PROVIDED TO EACH INDIVIDUAL BLOCK OF BUILDING.



ELEVATION FOR TYPICAL MASTER METER BOX
FOR PIPE DIAMETER 40mm OR BELOW

PIPE DIAMETER (mm)	MIN. LENGTH OF METER BOX (mm)
15	700
25	800
40	900



ELEVATION FOR TYPICAL MASTER METER CABINET
FOR PIPE DIAMETER 50mm TO 100mm

PIPE DIAMETER (mm)	MIN. LENGTH BETWEEN GATE VALVE AND NON-RETURN VALVE (mm)
50	670
80	1000
100	1040

LEGEND :



LOOSE JUMPER STOPCOCK



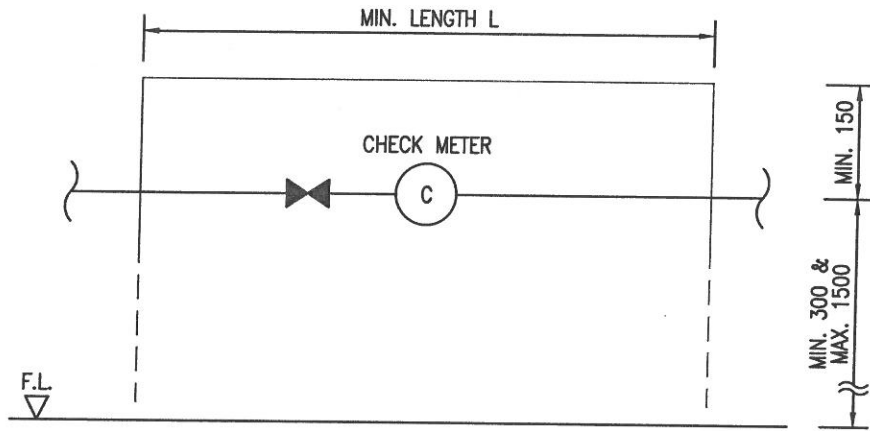
GATE VALVE



NON-RETURN VALVE

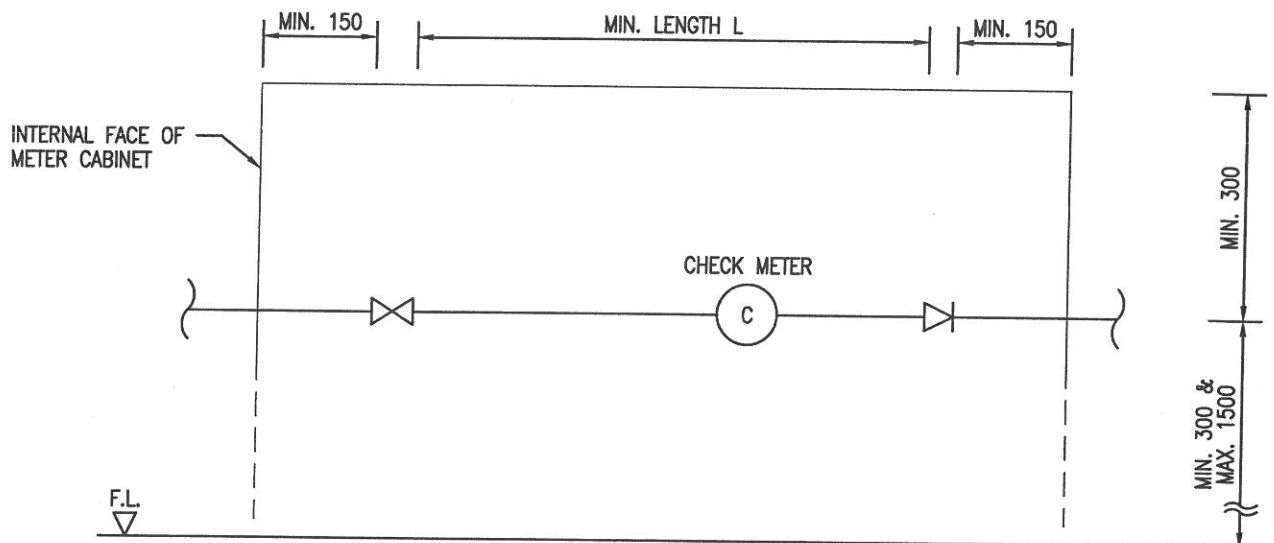


STRAINER



ELEVATION FOR TYPICAL SUB-METER BOX
FOR PIPE DIAMETER 40mm OR BELOW




PIPE DIAMETER (mm)	MIN. LENGTH OF METER BOX (mm)
15	700
25	800
40	900



ELEVATION FOR TYPICAL SUB-METER CABINET
FOR PIPE DIAMETER 50mm TO 150mm

PIPE DIAMETER (mm)	MIN. LENGTH BETWEEN GATE VALVE AND NON-RETURN VALVE (mm)
50	450
80	770
100	855
150	1235

LEGEND :

-  LOOSE JUMPER STOPCOCK
-  GATE VALVE
-  NON-RETURN VALVE

Workflow for replacing master meter on Fire Service by WSD

Step	Description	Responsible Party	Time required								
1	When the master meter for Fire Service is identified defective and need to be dismantled for replacement, replacement schedule should be arranged.	WSD/CS (Works Team)	--								
2	Liaise with the concerned management office/ occupier / residents / incorporated owners on the planned suspension ¹ with a copy of Suspension Notice (see attached form) to FSD.	WSD/CS	At least 4 working days in advance								
3	Arrives on site for arranging supply suspension on FS with management office staff	WSD/CS or WSD's contractor									
4	Operate valves for pipe isolation, dismantle pipe fitting and the master meter, drain water out, re-installing new meter and fittings, and resume supply.	WSD's contractor	<table border="1"> <thead> <tr> <th>Size of meter (mm)</th> <th>Estimated time required for supply suspension (hr)</th> </tr> </thead> <tbody> <tr> <td>50 or below</td> <td>2</td> </tr> <tr> <td>80 – 100</td> <td>3</td> </tr> <tr> <td>150 or above</td> <td>4</td> </tr> </tbody> </table>	Size of meter (mm)	Estimated time required for supply suspension (hr)	50 or below	2	80 – 100	3	150 or above	4
Size of meter (mm)	Estimated time required for supply suspension (hr)										
50 or below	2										
80 – 100	3										
150 or above	4										
5	Verify the meter (without interrupting the supply)	WSD/CS Staff or supplier	1 hr								
6	Hand over back the site to management office	WSD/CS Staff or WSD's contractor									

¹ Departmental Instruction No. 803 and CE/CS Instruction No. 5/2011 refer.

With a copy to FSCC, FSD 消防處 消防通訊中心 (Fax: 2311 0066)

(Extracted from CE/CS Instruction No. 5/2011)

**更換水錶工程
暫停食水／臨時沖廁淡水*供應通告**

Meter Replacement Works

TEMPORARY SUSPENSION OF

FRESH WATER SUPPLY / TEMPORARY MAINS WATER FOR FLUSHING

受影響 地區 / 樓宇 AFFECTED AREAS / BUILDINGS :

日期 : DATE :	時間 : TIME :	至 To	日期 : DATE :	時間 : TIME :
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水務署將於上述期間暫停供應食水／臨時沖廁淡水*予上述地區／樓宇，以便進行更換水錶工程。因暫停供水而引致不便之處，謹此致歉。

本署將可能提前恢復供水或因緊急情況而取消是次暫停供水，而恕不另行通告。如有任何查詢，請致電_____與本署職員_____或致電 **2824 5000** 與本署客戶電話諮詢中心聯絡。

In order to allow meter replacement work to be carried out, the fresh water supply/temporary mains water for flushing to the above areas/buildings will be temporarily suspended on the above-mentioned date and time. We apologize for any inconvenience caused.

Please note that without further notice the supply may be restored earlier than scheduled or the suspension of supply may have to be cancelled in case of unforeseen circumstances or emergencies.

Please call our staff _____ at Tel. No. _____ or our Customer Telephone Enquiry Centre at Tel. No. **2824 5000** if you require further information.

for Water Authority : (_____)

水務監督 : (_____ 代行)



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E-Mail 電子郵件 : wsdinfo@wsd.gov.hk

日期 : _____
Date : _____