Water & Civil Division

Water AMI (Advanced Metering Infrastructure) Project

GUIDELINES FOR 50MM DIA. BULK WATER METER INSTALLATION

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GUIDELINES FOR 50MM DIA BULK WATER METER INSTALLATION

Water meters, 50mm dia. shall be installed horizontally inside the meter chamber as shown in standard installation drawing **PEW-STD-AMI-005.Rev1**. These meters shall be installed in concrete waterproof chambers in the same level of mainline or raised to ground level as per the site condition to avoid ground water flooding inside the meter chamber.

A. 50MM DIA. BULK WATER METER INSTALLATION STANDARDS

1. Bulk water meter, 50mm dia. should not be installed in the basement, pump room, meter room, upper floors or roof of the buildings under any circumstances.
2. Water meter location and its access should be free from any obstruction such as signboards, barriers, plants, garden etc., and minimum 2mtr. clearance away from any Electrical services.
3. Meter installation guidelines shall strictly be followed while installation of the meter.
4. Meter should not be allowed to fall or receive impact damage during installation.
5. Meter shall be installed in accordance with the arrows shown on the body of the meter.
6. Meter register shall be arranged to read the meter easily from outside the chamber.
7. Pipes, valves and all other fittings used for meter connection shall be high quality, heavy duty, non-toxic, non-corrosive material.
8. Installation of T joints, bends etc. immediately before or after the meter should be avoided.
9. The meter should always be full of water to avoid air flow through the meter, a 90 deg. bend raised upwards shall be installed after the meter to connect it to customer pipeline, as required.
10. Proper Concrete Support shall be provided for the Valves, Pipes and fittings inside the meter chamber in order to avoid any displacement of meter and associated fittings. Water Meter and flanges or any other part should not be covered by concrete.
11. Flanges, nuts & bolts used for the meter connection shall be stainless steel 316L.
12. Do not step on the meter while installation, reading or maintenance of the meter.
13. All connections shall be checked thoroughly for leak after installation of the meter.
14. Do not attempt to correct problems by hitting the body of the meter.
15. Never try to adjust the meter position after tightening the bolts.
16. Pipeline shall be flushed thoroughly before installation of the meter.
17. Full-bore valves shall be fitted upstream & downstream to isolate the meter for maintenance works.
18. Consumer shall install a separate valve outside the meter chamber on their pipeline to isolate water supply for their maintenance works.

19. A Non-Return Valve (NRV) shall be installed outside the meter chamber on customer pipeline to restrict reverse flow of water from customer storage tank to Dewa water network/meter.

20. NRV shall be high quality, heavy duty and made of non-toxic, non-corrosive material; preferably Stainless steel grade 316L.

21. Size of the pipeline connected after the meter shall be the same size of the meter until it reaches to the Consumer storage tank.

22. Installation of water booster pump upstream or downstream the meter is prohibited, any violations will be penalized as per the applicable laws.

23. Consumers can install water pumps after their storage tank, if required.

24. Ensure the construction/installation of meter chamber including the chamber cover is completed before installation of the meter to avoid damage to the meter.

25. Detailed shop drawing shall be submitted for DEWA approval before commencement of work.

B. GUIDELINES FOR 50MM DIA. BULK WATER METER CHAMBERS

1. The size of water meter chamber for 50mm dia. bulk meters shall be constructed in 1500mm length, 1000mm width and 600mm depth as shown in the drawing No. **PEW-STD-AMI-005.Rev1**. These dimensions shall be strictly followed for the construction of meter chamber to accommodate meter and associated fittings as per typical installation drawing.
2. Meter chamber shall be located away from the electrical cables, overhead lines as well as other magnetic field areas and vibrating heavy machineries.
3. It shall be situated outside the premise boundary wall and 24/7 access shall be provided.
4. The meter shall be installed in a chamber (meter shall not be buried) suitable in size for fitting in, maintenance and removal of the meter.
5. The meter chamber shall be waterproof, clear of obstacles, even, rigid and not slippery. There shall be a sump pit inside the chamber for draining water.
6. Meter chamber shall be protected from getting buried by sand, rainwater, flooding and barricaded to avoid parking vehicles on the chamber.
7. The flange or body of the meter and valve should not be covered by concrete while constructing the chamber.
8. Nut & Bolt shall be positioned in such a way that Nut on wall/concrete block side and Bolt on Meter/Valve side for easy tightening and removal of the same.
9. Meter chamber cover shall be of GRP material so that wireless/radio signals can get through for meter communication.
10. Meter chamber cover shall be clearly and indelibly marked with DEWA logo and the wording 'Water Meter' on the cover in Arabic and English language.

11. DEWA Account No. plate shall be affixed inside the meter chamber wall for identification.
12. DEWA is responsible for the supply and installation of water meters and stopcock/valves for new connections. Meters are installed either by DEWA staff or Contractors acting on behalf of DEWA. Customers and property developers are responsible for supply and installation of all ancillary fittings and pipe-work after the meter and connecting the supply from the meter to their pipe connections/storage tank in accordance with relevant DEWA specifications and standard drawings.
13. Meter size, minimum and maximum size of the pipe in accordance with size of the meter required for meter installation, quantity of water the 50mm meter can deliver in 24 hours and capacity of storage tank required for each type of premises are given below:

PIPE SIZE, METER SIZE, METER CAPACITY AND STORAGE TANK REQUIREMENTS

Pipe Size To Install the Meter (mm)	Meter Size (mm)	Meter Capacity/ Quantity of Water the Meter can Deliver in 24 Hours (Imperial Gallons)	Pipe Size to be Connected Between the Meter and Storage Tank. (mm)	Storage Tank Requirement for Standard Residential Premises	Storage Tank Requirement for Labour Accommodation and other High Consumption Premises
LDPE 25mmX 2 pipes or 25mmX 3 pipes	**50**	30,000	**50**	Equivalent to 24Hours Consumption	Equivalent to 48 Hours Consumption

C. M-BUS CABLE CONTAINMENT INSTALLATION STANDARDS

1. A 25mm dia. heavy duty conduit shall be laid between Water Meter Chamber and LV room for Meter communication cable. No Conduit joints shall be used inside the meter chamber except couplings/adaptors to connect the PVC Junction box.
2. The conduit shall be GI if routed along walls/ceilings leading to LV room or CPVC (with wall thickness of 2.8mm) if laid underground in sand or concealed in concrete/block walls. In any case, while entering the LV room, the conduit shall be changed to GI at a minimum of 2m distance before entering LV room.
3. A two way junction box of appropriate material shall be provided at every 15mtr. length and each corner (direction change) of the conduit with metallic pulling spring for cable pulling purpose. In case of underground conduit, a concrete pit of dimension 200X200X150mm shall be provided to accommodate the two-way Junction box. The connection of conduit to Junction box shall be done with proper couplings/adaptors.
4. PVC Junction box of dimension 100X100X50mm and IP 68 rating shall be provided inside Meter Chamber and fitted with a PVC PG-7 gland.
5. A GI Junction box of dimension 150X150X50mm and IP 56 rating shall be installed inside the LV room on wall at a suitable position at a height of 1600mm from finished floor level. The connection between conduit and Junction box shall be through suitable couplings/adaptors.

D. M-BUS CABLE INSTALLATION STANDARDS

1. Water meter communication cable (Prefab M-bus cable) shall be properly routed and secured along with the water pipe line using suitable nylon cable ties to the PVC junction box installed inside the meter chamber.

2. M-bus cable shall be properly glanded to the PVC Junction Box using PVC PG-7 gland and connected to loop cable using standard splicing connectors inside the junction box.

3. Standard M-bus communication cable shall be pulled from main water meter chamber to junction box located in the LV room without any cable joint. This looping cable shall be terminated inside Junction boxes located at both ends. The brand of M-bus cables and Splicing connectors shall be approved by the DEWA Engineer prior to the installation.

4. Sufficient quantity of Terminal connectors, End plates and DIN Rail stoppers shall be fixed inside the PVC junction box to achieve a pair for dual polarity connection. The cables inside the junction boxes and to the terminal connectors should be neatly dressed in such way that all the ferrules are easily visible, Refer Picture Reference # 2, Section-E.

5. Suitable size of PVC ferrule sleeve shall be installed on both ends of the loop cable, inside chamber junction box and LV room junction box. For example, if the LV room is located on ground floor, the label shall be read as **JB Main Meter – JB LVR FG**

6. Loop cable shall be routed through pulling junction boxes (if any) and properly labelled as mentioned above on all the way up to the LV room junction box. Each loop cable extended up to the LV room should be left with minimum 10 meters of extra cable length and properly coiled for further extension. LV room junction box shall be labelled with PVC engraved label as **JB LVR FG** considering it's located on ground floor as shown in the Picture Reference# 3, Section-E.

7. Junction box inside the chamber shall be properly closed to maintain its water proofing capability and to be labelled with PVC engraved label as **JB Main Meter Chamber**.

8. Continuity and insulation resistance test shall be conducted on each loop cable before terminating to water meters and other devices. Insulation Resistance test to be performed at 100VDC for one minute with a minimum insulation resistance value of 1MΩ as acceptable.

9. Test reports of cable continuity and insulation resistance should be submitted to DEWA Engineer for approval.

10. All the materials used for above works shall be approved by DEWA Engineer prior to installation. Preferred make for M-bus Cable: Belden or similar standards and Terminal Blocks/ Splicing connectors: Wago or similar standards subject to DEWA approval.

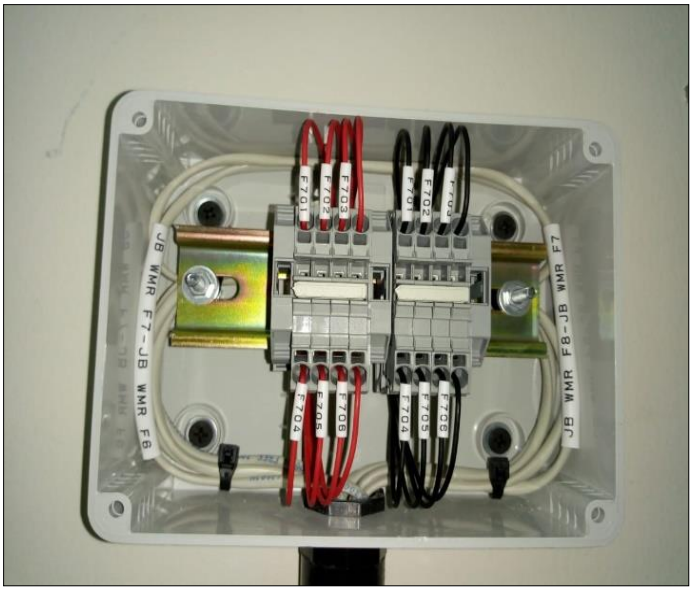
11. As-built drawing of the entire cabling and termination, specifying the physical route (Eg. Parking slot No., Building Entry /Exit route) and locations shall be prepared and submitted for final acceptance. Sample form of As-built schematic drawing is shown in the Section-F, M-Bus Cable Schematic Sample Drawings.

12. Exact GIS coordinates of the cable route from Water Meter Chamber to the Retaining/Boundary wall shall be mentioned in As-built drawing for DEWA Geographic Information System (GIS) update.

All the above requirements should be strictly complied by the Developers /Contractors before submitting application for the new connection.

E. TYPICAL PICTURE REFERENCES

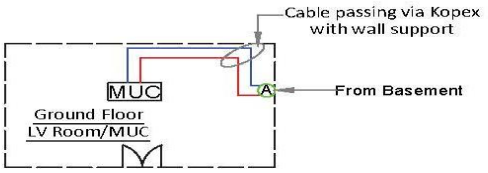
Reference # 1

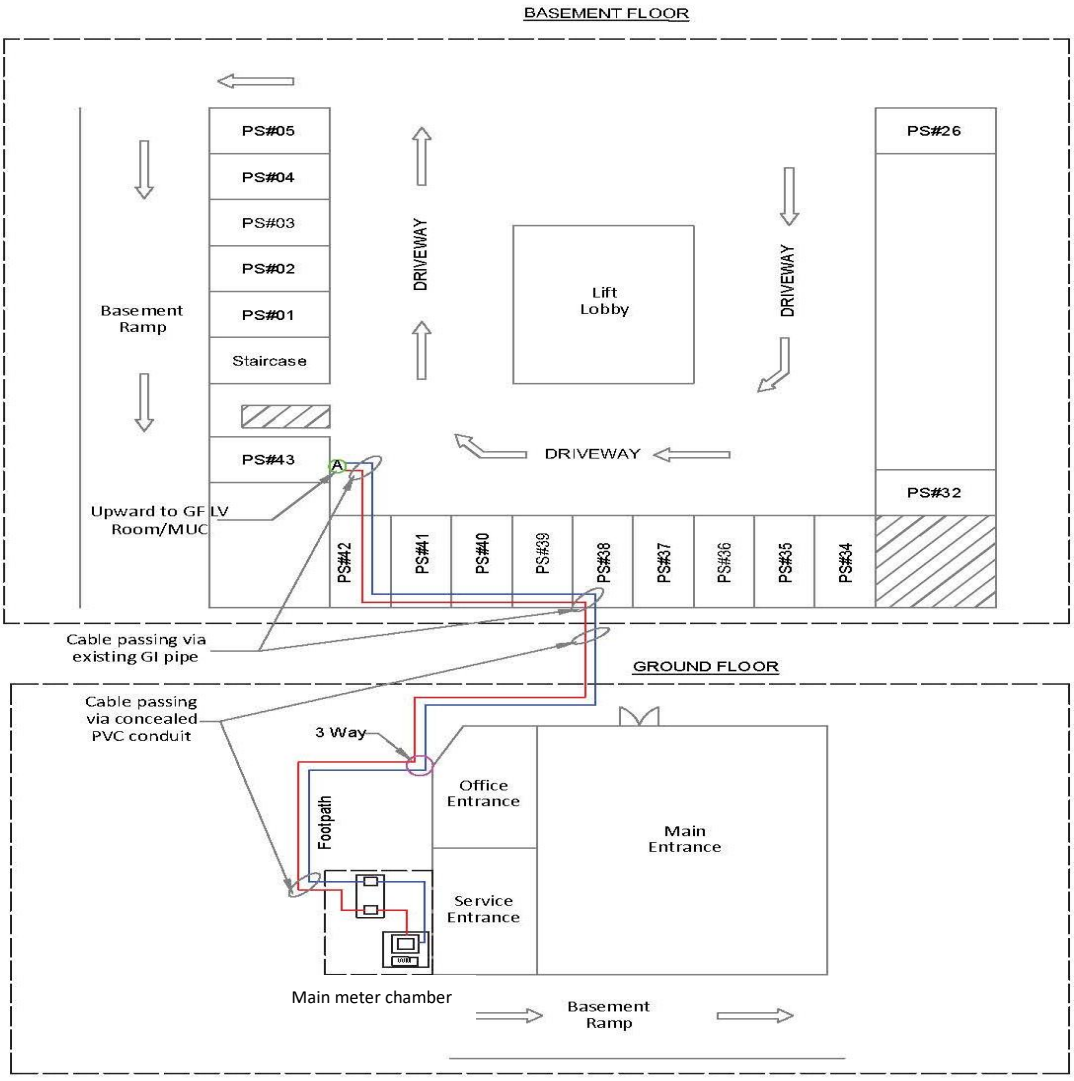


Reference # 2

Reference # 3

F. TYPICAL M-BUS CABLE SCHEMATIC DRAWING





LEGENDS:

	WATER METER
	BELDEN (MBUS) CABLE
	JUNCTION BOX
	WAGO SPLICING CONNECTOR
PS No.	PARKING SLOT No.

CUSTOMER: Dubai Electricity & Water Authority (DEWA)	**DRAWING REFERENCE NO:** FW/DEWA/BM/ 1069	**SHEET No. : 1/1**
PROJECT:	**FERRULING/TAGGING PHILOSOPHY**	
CONTRACTOR NAME:	**ITEMS TO BE LABELLED**	**FERRULE/TAG**
SUBSTATION NO: SS015027	MAIN WATER METER CHAMBER JUNCTION BOX	DEWA-W.AMI
AREA/ SITE: xxxx-Area Latitude: 25.xxxxxx Longitude: 55.xxxxxx	CABLE END IN MAIN WATER METER CHAMBER JUNCTION BOX	MAIN WATER METER-LVROOM MUC1
BUILDING NAME: A		
MAIN WATER METER NO:	CABLE END IN LVROOM MUC	LVROOM MUC1-MAIN WATER METER
DRAWING TITLE: Schematic Drawing	PVC COATED GI FLEXIBLE	DEWA-W.AMI
	PVC PIPE	DEWA-W.AMI

Reference Drawing: PEW-STD-AMI-005.Rev1

Date: 01/07/2020

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