



Water & Civil Division

Water AMI (Advanced Metering Infrastructure) Project

GUIDELINES FOR DOMESTIC WATER METER INSTALLATION IN VILLAS & SHEDS ON WALL

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Dubai Electricity & Water Authority

**GUIDELINES FOR DOMESTIC WATER METER
INSTALLATION IN VILLAS & SHEDS ON WALL**

Rev-4

20.01.2023

GUIDELINES FOR DOMESTIC WATER METER INSTALLATION IN VILLAS & SHEDS ON WALL

For individual consumer premises such as villas, sheds, etc., Domestic water meters shall be installed vertically on the compound wall as shown in standard installation drawing **PEW-STD-AMI-001.Rev4**.

A. DOMESTIC WATER METER INSTALLATION STANDARD

1. Water meter shall be located on the outer side of compound wall of the premises facing towards the road where regular access is permitted.
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. Water meter should not be installed in the basement of building, pump room or in underground meter chambers.
4. No cabinet or protection cover of any type shall be installed that may obstruct communication signals from wireless meters (Refer meter installation drawing PEW-STD-AMI-001.Rev4).
5. Supply line, 32mm dia. LDPE pipe shall be routed through a 75mm dia. protection tube from ground level to the bottom of the Water meter installed on the periphery of the wall.
6. The meter shall be fixed at a standard height of 1200mm for easy reading and maintenance of the meter and fittings. The minimum clearance between the back plate of meter and the wall plane shall be 100mm.
7. Pipes, valves and all other fittings used for the meter connection shall be high quality, heavy duty, non-toxic and non-corrosive material.
8. Pipe size for ½" meter installation shall be ½" to 1" maximum and for 1" meter installation shall be 1" to 2" maximum.
9. ½" meter can deliver up to 5,000 gallons of water in 24 hours and 1" meter can deliver up to 10,000 gallons in 24 hours, approximately.
10. Consumer must have a water storage tank equivalent to 24 hours' consumption for residential premises and storage equivalent to 48 hours' consumption for labor accommodation and other high consumption premise.
11. The storage tank should be located on the ground or underground, without any elevation.
12. The consumer pipe towards the storage tank shall be routed to the other side of the wall and connected to the meter through the wall as shown in the drawing.
13. The supply line from the meter shall be routed directly to the Ground or an Underground tank without any Bib taps or bypass connection.

14. Isolation valves shall be installed upstream and downstream the meter to stop water flow from both directions and a stopcock shall be installed prior to the meter for locking/ disconnection of supply to the meter.
15. A threaded joint/union shall be provided after the meter to make length adjustments for meter connection in accordance with the meter length.
16. Both valves shall be fully open while the meter is in service and no control of flow shall be made by regulating the inlet and outlet valve.
17. The pipework at the meter position should be securely fixed to support the weight of the water meter and to resist any torsion during the installation and removal of the water meter.
18. The Meter shall be protected from the risk of damage from shock or vibration induced by the surroundings.
19. The water meter and its associated fittings/pipes shall not be part of electrical earthing.
20. Detailed shop drawing shall be submitted for DEWA approval before commencement of work.
21. No water pump shall be installed upstream or downstream the meter.
22. Maximum pressure at the meter inlet shall not exceed 2bar, PRVs shall be installed, at least 1mtr. before the meter, to achieve the required pressure.
23. Meter installation guidelines shall strictly be followed while installing the meter.
24. Meter shall be installed in accordance with the arrows shown on the body of the meter and register shall be arranged in the most convenient position for reading.
25. The meter should not be allowed to fall or receive impact damage as this may affect the operation and accuracy of the meter.
26. All connections shall be checked thoroughly for leak after installation of the meter.
27. An Engraved Label with 'Water Meter' and 'Plot Number' shall be affixed to the wall adjacent to the meter.
28. DEWA is responsible for the supply and installation of water meters for new connections. Meters are installed, either by DEWA staff or Contractors acting on behalf of DEWA. Customers and property developers are responsible for the supply and installation of all ancillary fittings and pipework beyond the meter in accordance with relevant DEWA specifications and standard drawings.
29. As-built drawings showing the pipelines to the meter and after meter to the customer pipe connection to their storage tank shall be prepared and submitted to DEWA.

B. M-BUS CABLE CONTAINMENT INSTALLATION STANDARD

B.1 Individual Villa/Shed

1. A PVC Junction box of dimension 100X100X50mm and IP 66 rating shall be installed adjacent to the meter on the compound wall as shown in the drawing PEW-STD-AMI-001.Rev4 and labelled as DEWA-W-AMI.
2. A 25mm PVC conduit shall be concealed in the wall and connected to the Junction box and other end shall be extended up to Electrical meter cabinet. Connection of the conduit to Junction box shall be done with proper couplings/adaptors.
3. A M-bus cable (2x18AWG, Screened, Polypropylene, FRNC/LSZH Sheath any standard brand) shall be laid from Water meter JB to Electrical meter cabinet, keeping sufficient loop of cable on both sides. These works shall be performed by an approved DEWA contractor.

B.2 Group of Villas/Sheds without Electric and LV room

1. A PVC Junction box of dimension 100X100X50mm and IP 66 rating shall be installed adjacent to the meter on the compound wall as shown in the drawing PEW-STD-AMI-001.Rev4 and labelled as DEWA-W-AMI.
2. A 25mm PVC conduit shall be concealed in the wall and connected to the Junction box and other end shall be extended up to Electrical meter cabinet. Connection of the conduit to Junction box shall be done with proper couplings/adaptors.
3. A M-bus cable (2x18AWG, Screened, Polypropylene, FRNC/LSZH Sheath any standard brand) shall be laid from Water meter JB to Electrical meter cabinet, keeping sufficient loop of cable on both sides. These works shall be performed by an approved DEWA contractor.
4. Developers are obligated to allocate a 2MX2M area of land near to each pocket substation in the community for the installation of AMI communication antenna on a high GI pole. Refer the Guidelines for "RDC Installation in Villa Community for Domestic Water Meters".

B.3 Group of Villas/ Sheds with Electric and LV room

1. A PVC Junction box of dimension 100X100X50mm and IP 66 rating shall be installed adjacent to the meter on the compound wall as shown in drawing PEW-STD-AMI-001.Rev4 and labelled as DEWA-W-AMI.
2. A 25mm PVC conduit shall be concealed in the wall and connected to the Junction box with other end extended up to the next junction box of the adjacent villa/shed, and so on, making a loop of entire cluster. Connection of the conduit to Junction box shall be done with proper couplings/adaptors. Suitable length of DIN rail shall be provided inside each Villa/Shed water meter JB.
3. Up to 250 Villas/Sheds junction boxes can be connected in one loop and then connected to the Electrical/LV room via 25mm PVC conduit.
4. 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. While entering the LV room, the conduit shall be changed to GI at a minimum of 2M distance before entering to the LV room through proper coupling.
5. A two-way junction box of appropriate material shall be provided on the wall at every 25M length and each corner (direction change) of the conduit. In case of underground conduit, a concrete pull pit of dimension 300X300X300mm shall be provided at every 25m and/or every direction change. It shall be covered with suitable ductile iron cover (Standard: BS-EN124 C250) marked with DEWA-W-AMI and sealed (water proof) with GRP Sealing plate as shown in the Reference Picture # 1, section D.

6. A GI Junction box of dimension 150X150X100mm and IP56 rating shall be installed inside the LV/Electrical room on a wall at a suitable position at a height of 1400mm from the finished floor level. The incoming conduit from Villas/Sheds loop shall be connected to this box. The connection between conduit and Junction box shall be through suitable couplings/adaptors. In case of multiple loops all GI Junction boxes in LV room shall be interconnected through 25mm GI conduit.
7. A Single phase, 230V AC supply (3CX2.5 Sq.mm power cable) from a normal Power source shall be provided inside a GI JB (150X150X100mm) fitted on the wall, next to the M-bus loop with suitable Terminal connectors. The Power supply shall be provided from the Lighting/ Small power DB with separate section of Single phase 300mA ELCB and Single pole C6 MCB. The above JB should have 2 Nos of 25mm knock-out holes on each side, top, bottom and both sides. JB should be labelled with "DEWA W AMI" and feeding source label. (as shown in the Picture Reference# 3, Section-E.

8.

C. M-BUS CABLE INSTALLATION STANDARD

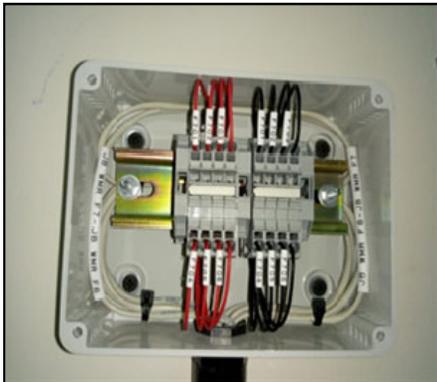
For Group of Villas/Sheds with Electric and LV room

1. M-Bus Cable installation should be done through DEWA approved contractor.
2. Water meter communication cable (M-bus cable) shall be properly routed, secured along with the water pipeline using suitable nylon cable ties, to the PVC junction box installed next to the water meter.
3. M-bus cable shall be properly glanded to the PVC Junction Box using PVC PG-7 gland and connected to loop cable using standard terminal connectors inside the junction box as shown in the Picture Reference# 1, Section-E.
9. The junction boxes located adjacent to the meter of all the Villas/ Sheds shall be looped to adjacent Villas using M-bus cable (2x18AWG, Screened, Polypropylene, FRNC/LSZH sheath any standard brand) through the conduits to build a local M-bus communication network. All JB shall be looped in similar way up to the Electrical/LV room JB. All materials shall be approved by DEWA Engineer prior to the installation.
4. The total length of cable should not exceed 1000 meters for one loop between the junction boxes. Suitable size of PVC ferrule sleeve labels shall be marked on loop cable. For example, cable from JB of Villa No. X1 to the JB of Villa No. X2 water meter room shall be marked as JB WMR X1 – JB WMR X2.
5. In case of multiple Villas/Sheds, Water meters in the entire area shall be grouped in such a way that a loop contain a standard number of water meters set of 245, 120, 55 or 25 with +/-5. For example, if the total number of meters are 245-250, then all the meters shall be grouped in one loop. Likewise, if the total number of meters are 300, then first loop will contain 240-245 Nos. of meters and second loop will contain 55-60 Nos. of meters. Moreover, if there are 490 Nos. of meters, then it will be divided into two groups of 245 Nos. connected together to maintain two loops.
6. Junction boxes shall be properly closed to maintain its water proofing capability and labelled with a PVC engraved label. For Example, the Label for junction box on the Villa No-A1 shall be marked as JB WMR VA1 and so on. This label shall be fixed below the other label already provided on the junction box DEWA-W-AMI.
7. Interconnecting communication cables between the junction boxes located in the adjacent Villas/ Sheds and to LV rooms shall be properly labelled with origin and destination names at both ends. The ferrule label for the cables shall be in similar fashion as mentioned earlier.

8. In case of multiple loops, all loop cables shall be routed together through containment up to the LV/Electric room GI JB and properly labelled. For example, the cable from a JB in Villa No-A1 water meter to a JB in LV/Electrical room shall be marked as JB WMR VA1–JB LV ROOM using a suitable size of ferrule sleeve. Each loop cable extended up to the LV room should be left with minimum 3M of extra cable length and properly coiled for further extension. There should be enough space available on the wall to install DEWA communication devices as shown in the Picture Reference# 2, Section-E.
9. Continuity, Insulation resistance test shall be conducted on each loop cable before terminating to water meters and other devices.
10. All the materials used for above works shall be approved by DEWA Engineer prior to installation. Preferred M-bus Cable: 2x18AWG, Screened, Polypropylene, FRNC/LSZH Sheath (any standard brand) and Terminal Blocks/ Splicing connectors: Brand Wago or similar standard subject to the DEWA approval. These works shall be performed by an approved DEWA contractor.
11. As-built schematic drawing of the entire cabling and termination, specifying the physical 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. As-built Containment drawing shall be prepared with exact GIS coordinates of the cable route from the Main Meter Chamber to the Retaining/Boundary wall, risers, any horizontal movement of containment for sub meters and main meter, other than typical risers 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.

TYPICAL PICTURE REFERENCES



Reference #1

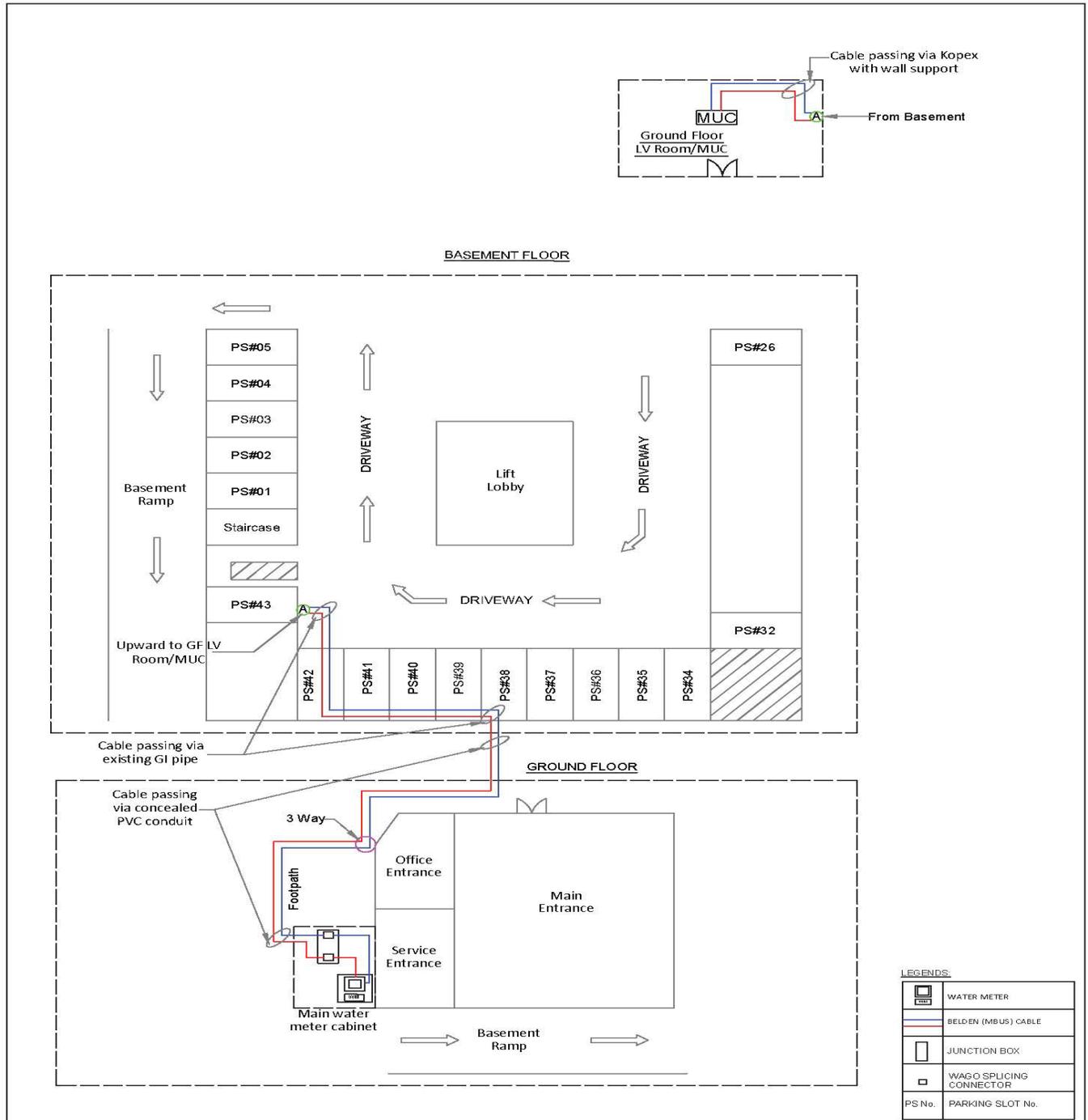


Reference #2



Reference #3

D. TYPICAL M-BUS CABLE SCHEMATIC DRAWING



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-WAMI
AREA/ SITE: xxxx-Area Latitude: 25.xxxxxx Longitude: 55.xxxxxxx	CABLE END IN MAIN WATER METER CHAMBER JUNCTION BOX	MAIN WATER METER-LVROOM MUC1
BUILDING NAME: A	CABLE END IN LVROOM MUC	LVROOM MUC1-MAIN WATER METER
MAIN WATER METER NO.:	PVC COATED GI FLEXIBLE	DEWA-WAMI
DRAWING TITLE: Schematic Drawing	PVC PIPE	DEWA-WAMI

Reference Drawing: PEW-STD-AMI-001.Rev4