

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-3

27.04.2022

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.Rev3**.

A. DOMESTIC WATER METER INSTALLATION STANDARD

1. Water meter shall be located on the outside compound wall of the premises facing towards the walkway beside 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.Rev3).
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 10,000 gallons of water in 24 hours and 1" meter can deliver up to 20,000 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 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.
12. 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.

13. A threaded joint/union shall be provided after the meter to make length adjustments for meter connection in accordance with the meter length.
14. 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.
15. 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.
16. The Meter shall be protected from the risk of damage from shock or vibration induced by the surroundings.
17. The water meter and its associated fittings/pipes shall not be part of electrical earthing.
18. Detailed shop drawing shall be submitted for DEWA approval before commencement of work.
19. No water pump shall be installed upstream or downstream the meter.
20. 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.
21. Meter installation guidelines shall strictly be followed while installing the meter.
22. 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.
23. The meter should not be allowed to fall or receive impact damage as this may affect the operation and accuracy of the meter.
24. All connections shall be checked thoroughly for leak after installation of the meter.
25. An Engraved Label with 'Water Meter' and 'Plot Number' shall be affixed to the wall adjacent to the meter.
26. 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.
27. 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.Rev2 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.Rev2 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.

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.Rev3 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. Connection of the conduit to Junction box shall be done with proper couplings/adaptors.
3. Multiple villas/sheds junction boxes on the wall shall be looped together via 25mm PVC conduit and then connected to the Electrical/LV room.
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 LV room.

5. A two-way junction box of appropriate material shall be provided at every 25m length and each corner (direction change) of the conduit with metallic pulling spring for the 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.
6. A GI Junction box of dimension 150X150X50mm and IP 56 rating shall be installed inside the LV/Electrical room on a wall at a suitable position at a height of 1600mm from the finished floor level. The connection between conduit and Junction box shall be through suitable couplings/adaptors.
7. A M-bus cable (2x18AWG, Screened, Polypropylene, FRNC/LSZH Sheath any standard brand) shall be laid from each Water meter JB to adjacent meter JB with sufficient a loop of cable in each JB. All JB shall be looped in a similar way up to Electrical/LV room JB.

C. M-BUS CABLE INSTALLATION STANDARD

For Group of Villas/Sheds with Electric and LV room

1. 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.
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 as shown in the Picture Reference# 1, Section-E.
3. The junction boxes located adjacent to the meter of all the Villas/ sheds shall be looped together using M-bus cable (2x18AWG, Screened, Polypropylene, FRNC/LSZH sheath any standard brand) through the conduits to build a local M-bus communication network. The brand of M-bus cables and Splicing connectors shall be approved by DEWA Engineer prior to installation.
4. The total length of cable should not exceed 800 meters in one loop between the junction boxes. Suitable size of PVC ferrule sleeve labels shall be marked on loop cable. For example, junction box in Villa No. X1 to the junction box in the 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 maximum number of either 245, 120, 60 or 28 Nos. of water meters. 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 split 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 affixed below that already provided on the junction box and conduits as DEWA-W-AMI.

7. Interconnecting communication cables between the junction boxes located in the adjacent Villas/ Sheds and from there 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 room junction box and properly labelled. For example, the cable from a junction box in Villa No-A1 water meter to a junction box in Electrical room shall be marked as JB WMR VA1–JB ELEC.R using a suitable size of ferrule sleeve. Each loop cable extended up to the LV room should be left with minimum 5m of extra cable length and properly coiled for further extension. These cables can be placed on the wall of LV room where there is enough space available 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. Insulation Resistance test to be performed at 100VDC for one minute with a minimum insulation resistance value of $1M\Omega$. Test reports should be submitted for DEWA approval.
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 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. Exact GIS coordinates of the cable route from water Meter Chamber to the Retaining/Boundary wall, risers, 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.

TYPICAL PICTURE REFERENCES

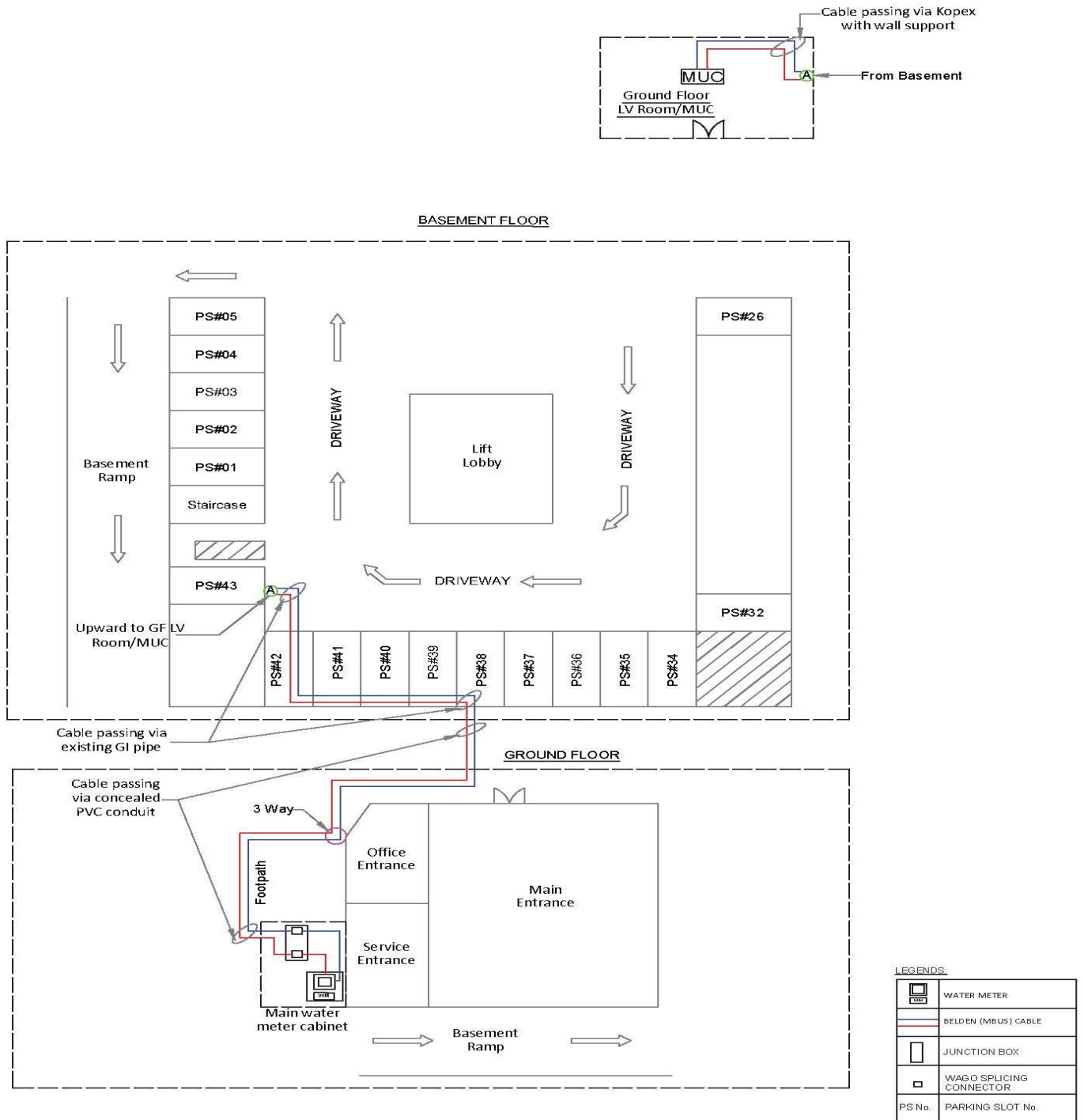


Reference # 1



Reference # 2

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 LABELED	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	CABLE END IN LVROOM MUC	LVROOM MUC1-MAIN WATER METER
MAIN WATER METER NO:	PVC COATED GI FLEXIBLE	DEWA-W.AMI
DRAWING TITLE: Schematic Drawing	PVC PIPE	DEWA-W.AMI

Reference Drawing: PEW-STD-AMI-001.Rev3