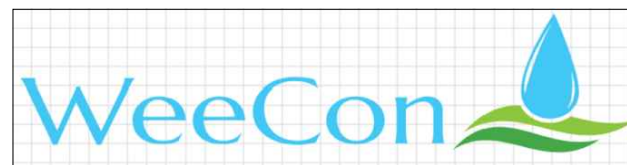




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Consulting Engineer



Client: Municipality of Bir Nabala

Project:
Design Flow Measurement Systems for Trans-Boundary
Wastewater Streams Reference No: RFP-PAL-0000049571
Wadi Suriq Ramallah WWTP

No.	Suffix	Drawing No.	Drawing Title
Drawing Name: Drawing Details For Kafr al-Labad			
1	D	1	General Notes
2	D	2	Sewer Trench Detail
3	D	3	Trench Excavation Detail For Slope >15%
4	D	4	Civil Detail
5	D	5	Sewer Manhole Detail
6	D	6	Cast In Situ Sewer Manhole Detail
7	D	7	Locations Electromagnetic Flow Sensor
8	D	8	Electromagnetic Flow Sensor Plan Detail
9	D	9	Electromagnetic Flow Sensor Section Detail



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Client Municipality of Qalqelya

Project
Design Flow Measurement Systems for Trans-Boundary
Wastewater Streams Reference No: RFP-PAL-0000049571
Wadi Suriq Ramallah WWTP

Drawing name	Date / Signature
List of Drawings	Dec. 2018

Designed by: Ammar kukhun	Drawing No. Index 00
Checked by: Ammar Kukhun	
Drawn by : Yara Dhoon	
Approved by: Ammar kukhun	

GENEARL

1. ALL DIMENSIONS SHOWN ON STANDARD DETAIL DRAWINGS ARE IN MILLIMETRES UNLESS OTHERWISE INDICATED
2. ALL CONCRETE MATERIALS WHICH ARE IN CONTACT WITH SEWER SHALL BE SULFATE RESISTANCE CEMENT.
3. STEEL REINFORCEMENT SHALL BE GRADE 4200 kg/cm² ACCORDING TO ASTM A615 OR EQUIVALENT
4. ALL MANHOLES/CHAMBERS, TANKS, AND ANY SURFACE CONTACTED WITH SEWAGE SHALL BE INTERNALLY TAR-EPOXY COATED AS SPECIFIED (2 COATS 250µm EACH COAT).
5. EXTERNAL CONCRETE SURFACES BELOW GROUND SHALL BE PROTECTED WITH COLD BITUMINOUS ((1000 µm) MINIMUM THICKNESS) WATERPROOF TANKING MEMBRANE AS SPECIFIED.
6. A BACKDROP OR BRANCH SEWER INLET SHALL HAVE LEVEL SOFFITS WITH A LARGER PIPE DIAMETER. THE BACKDROP OR BRANCH SEWERS SHALL HAVE INVERT LEVELS AT MAIN SEWER SPRING LINES ON PIPES OF THE SAME DIAMETER.
7. ALL SEWERAGE MANHOLES AND INSPECTION CHAMBERS SHALL BE FITTED WITH CAST IRON COVER AND FRAMES WITH A CLEAR OPENING OF 600 x 600mm
8. CONCRETE SUPPORT SHALL BE PROVIDED FOR TEH PRESSURE PIPE LINES WHERE EVER PRESSURE LINE IS LAYING ABOVE THE GROUND
9. CONCRETE SURROUND SHALL BE PROVIDED (TO SEWER PIPES WHERE THE COVER IS LESS THAN 0.7 METERS FOR PIPE DIAMETER <150mm AND 0.9 METERS FOR PIPE DIAMETER >150mm) THE PIPELINES LIE WITHIN A STRIP OF 20 METRE EACH SIDE OF THE CENTERLINE OF ROAD CORRIDORS.
10. OVER-EXCAVATION BELOW PIPELINES AT MANHOLE EXCAVATIONS SHALL BE FILLED WITH TYPE 'B150' CONCRETE TO THE PIPE TRENCH FORMATION LEVEL OVER THE TRENCH WIDTH.
11. w\c RATIO MAX (45%)
12. MIN CONCRETE COVER TO REINFORCEMENT IS 50mm



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Client Municipality of Qalqelya

Project
Design Flow Measurement Systems for Trans-Boundary
Wastewater Streams Reference No: RFP-PAL-0000049571
Wadi Suriq Ramallah WWTP

Drawing name	Date / Signature
General Notes	Dec. 2018
Designed by: Ammar kukhun	Drawing No. 001 D
Checked by: Ammar Kukhun	
Drawn by : Yara Dhoon	
Approved by: Ammar kukhun	

LEGEND

ALL DIMENSION IN mm UNLESS OTHERWISE INDICATED

DN = NOMINAL DIAMETER OF PIPES

T = PIPE'S WALL THICKNESS

BC = EXTERNAL DIAMETER OF PIPES

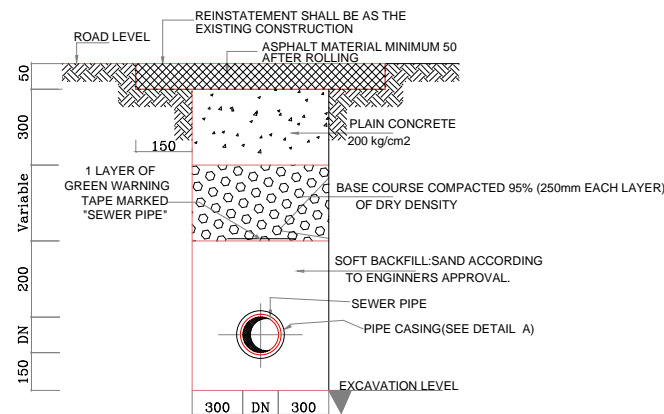
N.G. = NATURAL GROUND

uPVC = UNPLASTICIZED POLYVINYL CHLORIDE

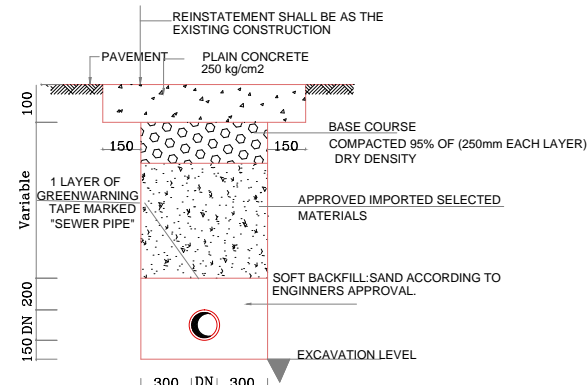
HDPE = HIGH DENSITY POLYETHYLENE PIPE

CP = CONCRETE PIPE

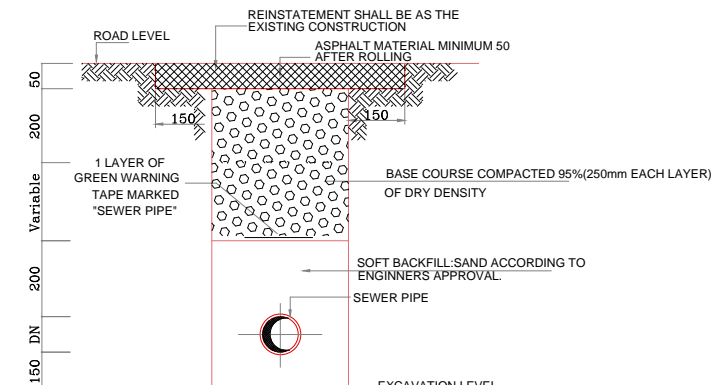
RCE = REINFORCED CONCRETE ENCASEMENT



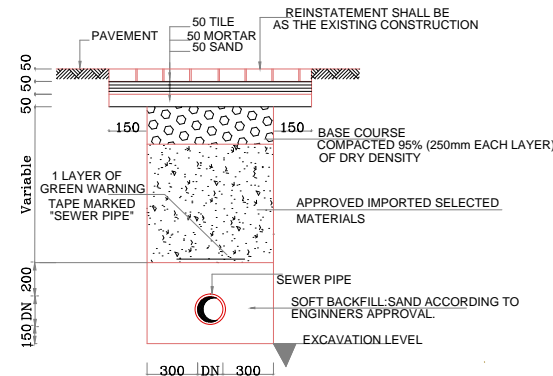
FOR PIPES CROSSING STREETS
AT SKEW OR RIGHT ANGLE
REFER TO DETAIL A
SCALE: NTS



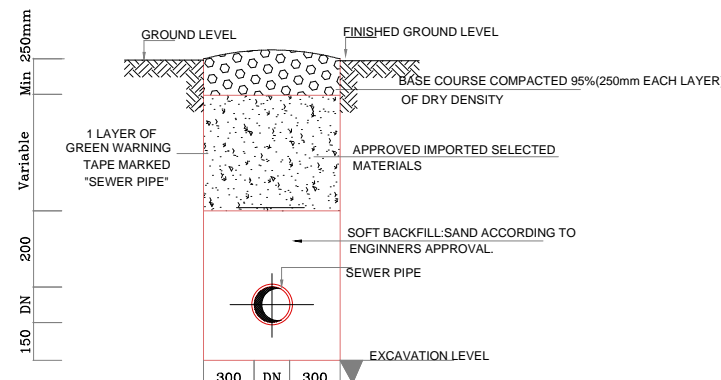
TYPICAL PIPE TRENCH IN CONCRETE TILES
SCALE: NTS



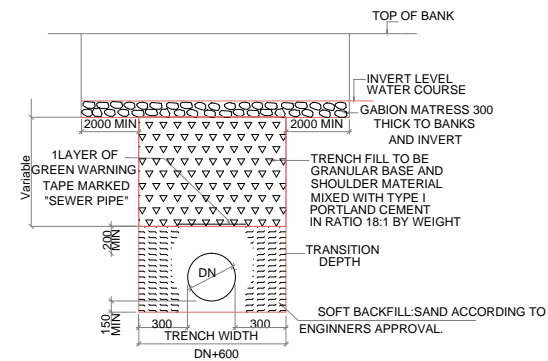
TYPICAL PIPE TRENCH
ALONG STREET (IN OR ADJACENT TO ASPHALTED
(BACKFILLING) OR BASECOARSE AND DIRT STREETS)
SCALE: NTS



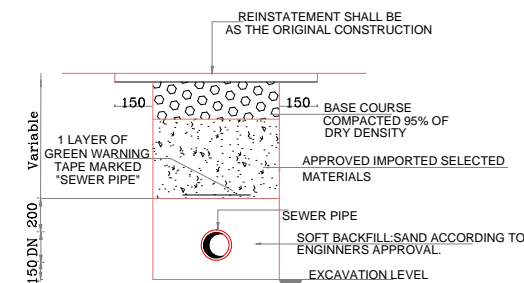
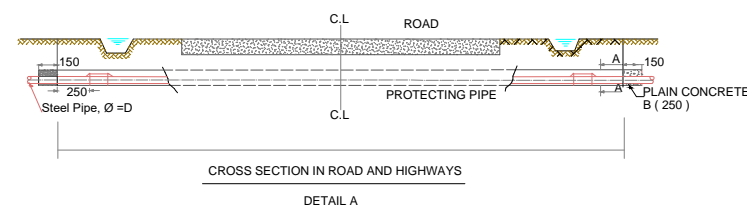
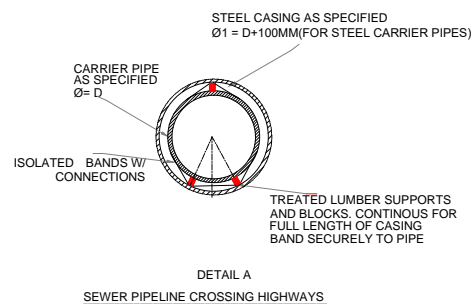
TYPICAL PIPE TRENCH IN SIDEWALKS
SCALE: NTS



TYPICAL PIPE TRENCH
ALONG NATURAL GROUND
SCALE: NTS



TYPICAL PIPE
TRENCH DETAIL FOR WADI CROSSING AND
WITHIN WADI BED
SCALE: NTS

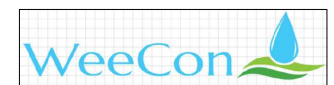


HOUSE CONNECTION TYPICAL PIPE TRENCH
SCALE: NTS



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Client Municipality of Qalqelya

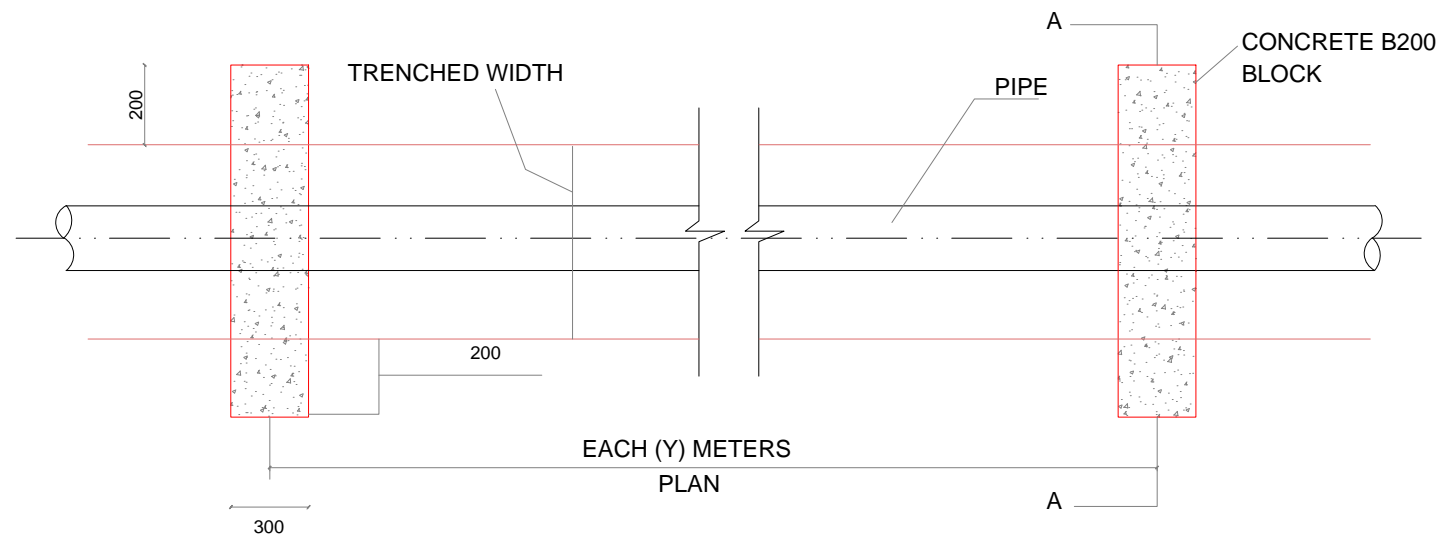
Project
Design Flow Measurement Systems for Trans-Boundary
Wastewater Streams Reference No: RFP-PAL-0000049571
Wadi Suriq Ramallah WWTP

Drawing name
Sewer Collection System
Sewer Trench Detail

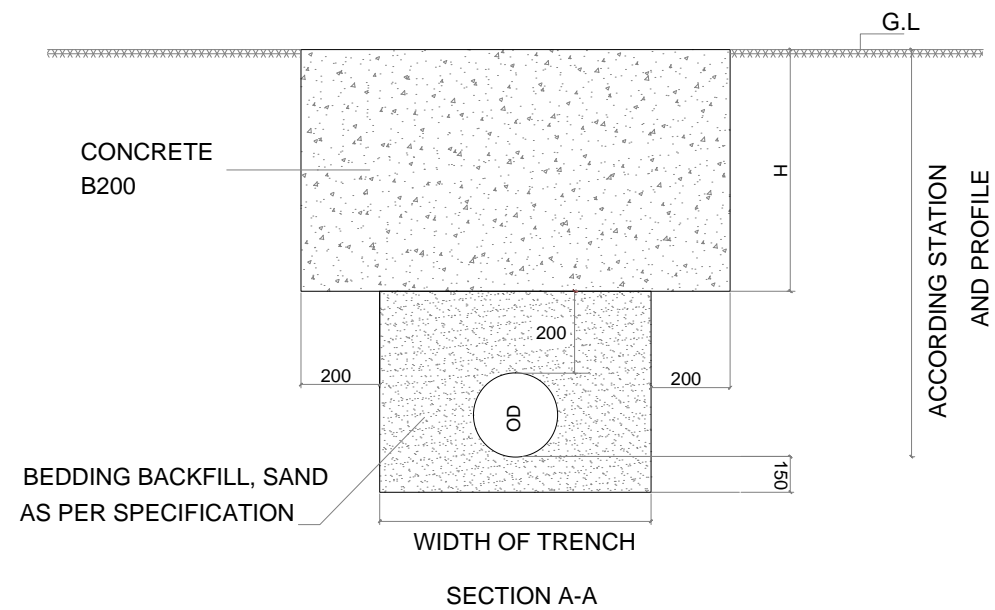
Date / Signature
Dec. 2018

Designed by: Ammar kukhun
Checked by: Ammar Kukhun
Drawn by : Yara Dhoon
Approved by: Ammar kukhun

Drawing No.
002 D



Y: CONCRETE BLOCK EACH 10M CENTER TO CENTER ON GRADES GREATER THAN 15% TO 20%
Y: CONCRETE BLOCK EACH 12M CENTER TO CENTER ON GRADES GREATER THAN 21% TO 34%
Y: CONCRETE BLOCK EACH 8M CENTER TO CENTER ON GRADES GREATER THAN 35% TO 49%
Y: CONCRETE BLOCK EACH 5.3M CENTER TO CENTER ON GRADES GREATER THAN 50% AND OVER



NOTES:

- 1- DISTANCE H, TO BE NOT LESS THAN 500mm FOR PIPE DIAMETER LESS 150mm
AND NOT LESS THAN 700mm FOR PIPE DIAMETER OR GREATER THAN 150mm
- 2- FOR PIPES PASSING THROUGH ROADS, THE FINAL LAYER TO BE ASPHALT WITH A MIN THICKNESS ACCORDING TO THE TRENCHES DRAWINGS AND SPECS.

LEGEND

ALL DIMENSION IN mm UNLESS OTHERWISE INDICATED

OD OUTER DIAMETER



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Client Municipality of Qalqelya

Project

Design Flow Measurement Systems for Trans-Boundary
Wastewater Streams Reference No: RFP-PAL-0000049571
Wadi Suriq Ramallah WWTP

Drawing name
Trench Excavation Detail For Slope > 15%

Date / Signature
Dec. 2018

Designed by: Ammar kukhun

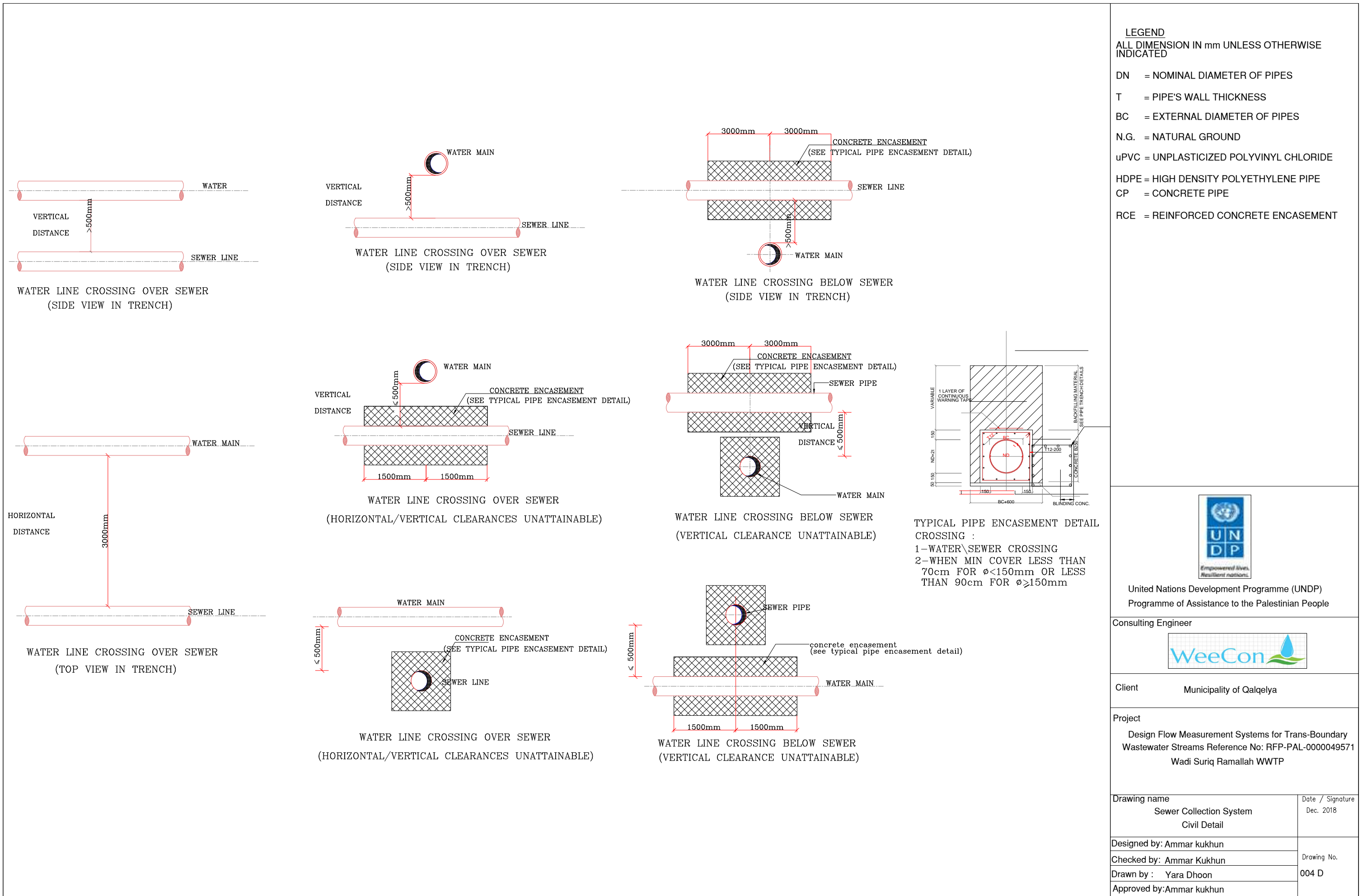
Checked by: Ammar Kukhun

Drawn by : Yara Dhoon

Approved by: Ammar kukhun

Drawing No.

003 D



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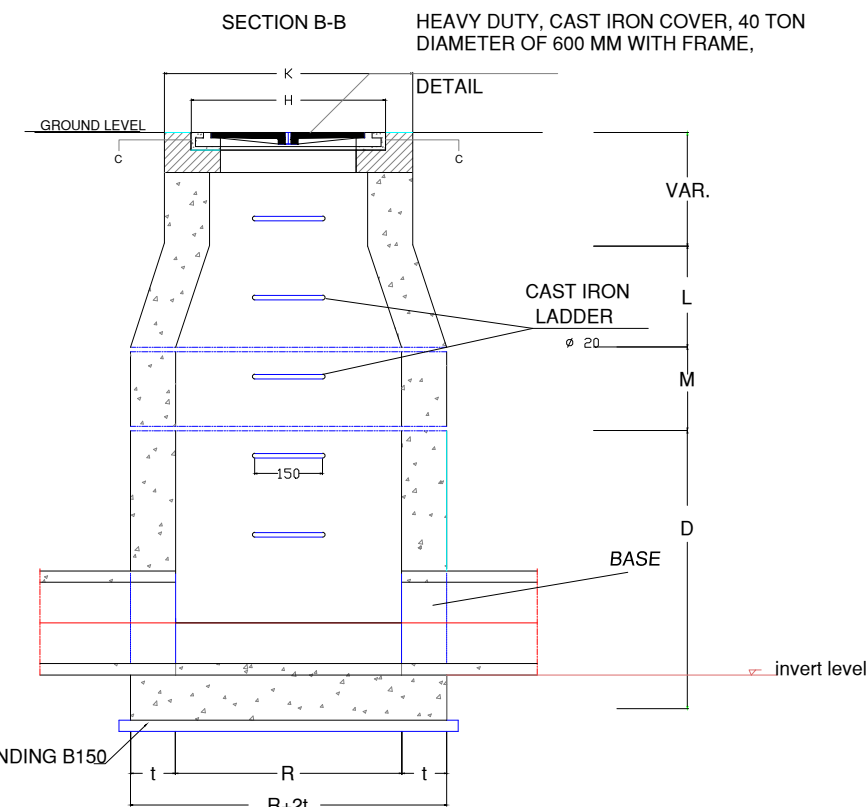
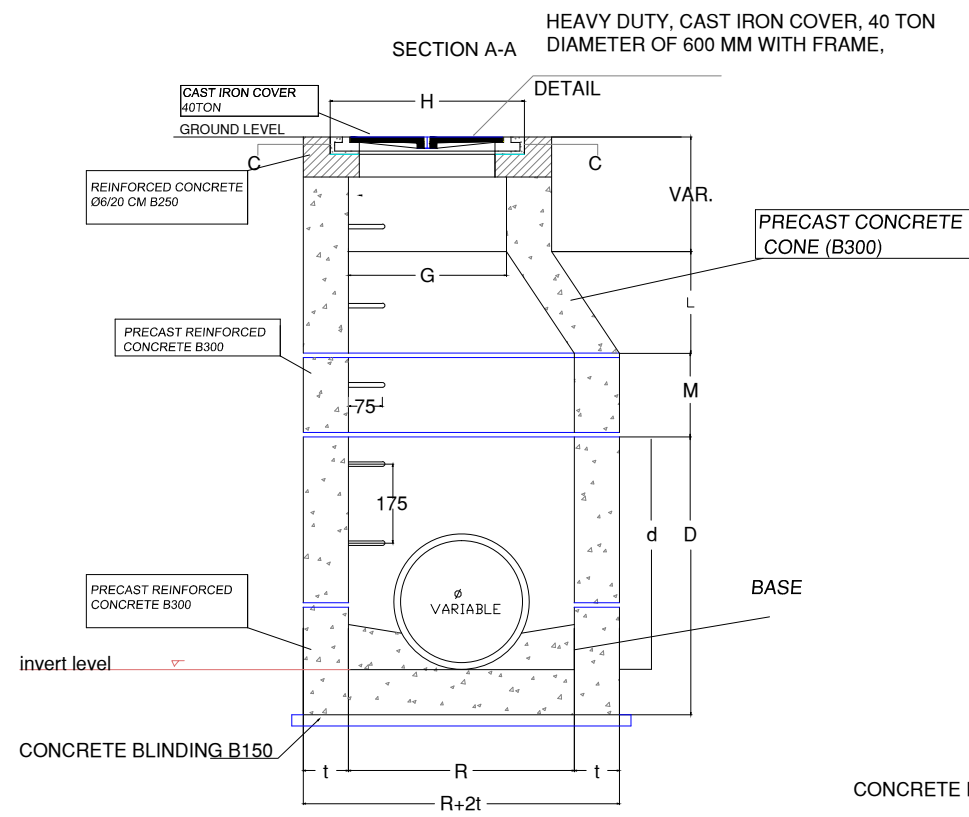
Consulting Engineer



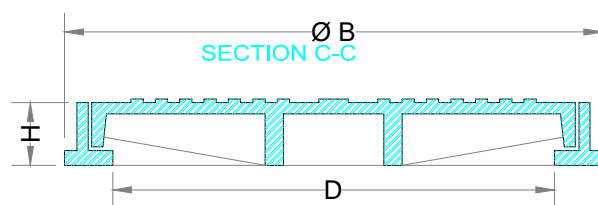
Client Municipality of Qalqelya

Project
Design Flow Measurement Systems for Trans-Boundary
Wastewater Streams Reference No: RFP-PAL-0000049571
Wadi Suriq Ramallah WWTP

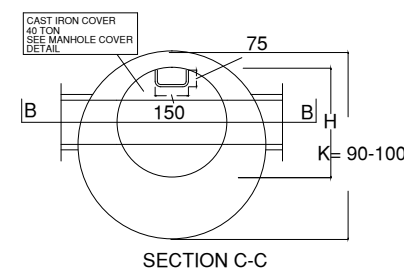
Drawing name Sewer Collection System Civil Detail	Date / Signature Dec. 2018
Designed by: Ammar kukhun	Drawing No. 004 D
Checked by: Ammar Kukhun	
Drawn by : Yara Dhoon	
Approved by: Ammar kukhun	



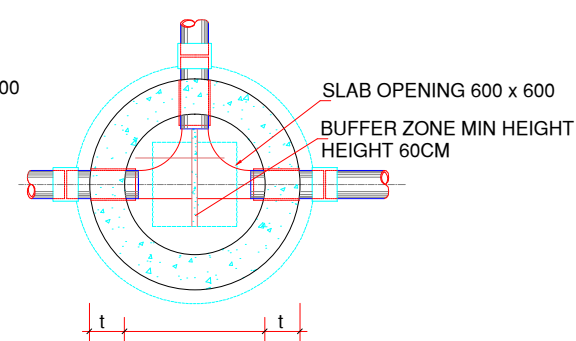
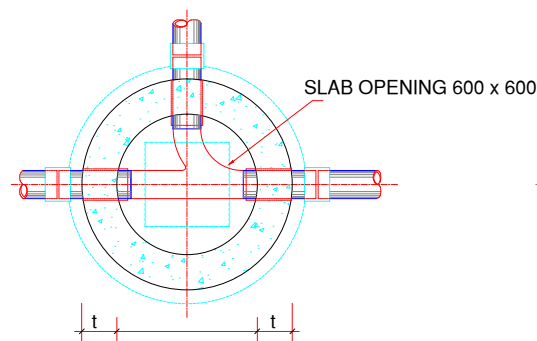
TYPICAL PRECAST MANHOLE FOR $0 < H < 3.5\text{m}$



SAMPLE MANHOLE COVER DETAIL



TYPE PLAN FOR MORE
THAN TWO SEWER PIPE IN ONE MANHOLE



SPECIAL PLAN FOR MORE
THAN TWO SEWER PIPE IN ONE MANHOLE

DIM. H	cm	WALL WIDTH t	cm	HIGHT L	cm	HIGHT M	cm	WIDTH G	cm	HIGHT D	cm	HIGHT d	cm	DIM. R	cm	SYMBOL
Minimum thickness for Base Concrete shall be not less than 20cm Minimum thickness for Wall and Cone shall be not less than 20cm All other Elevations for Manhole as Per Detail D-009																

MANHOLE TABLE

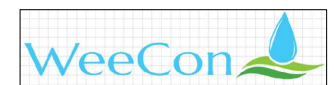
LEGEND
ALL DIMENSION IN mm UNLESS OTHERWISE INDICATED

DN = NOMINAL DIAMETER OF PIPES
T = PIPE'S WALL THICKNESS
BC = EXTERNAL DIAMETER OF PIPES
N.G. = NATURAL GROUND
uPVC = UNPLASTICIZED POLYVINYL CHLORIDE
HDPE = HIGH DENSITY POLYETHYLENE PIPE
CP = CONCRETE PIPE
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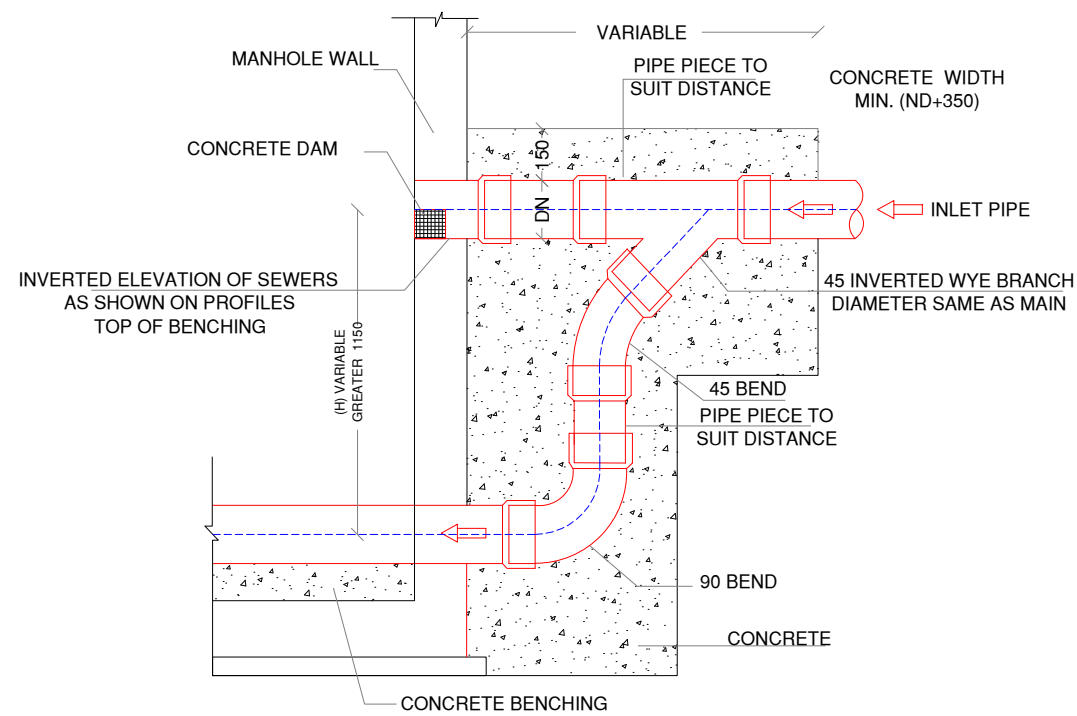


Client Municipality of Qalqelya

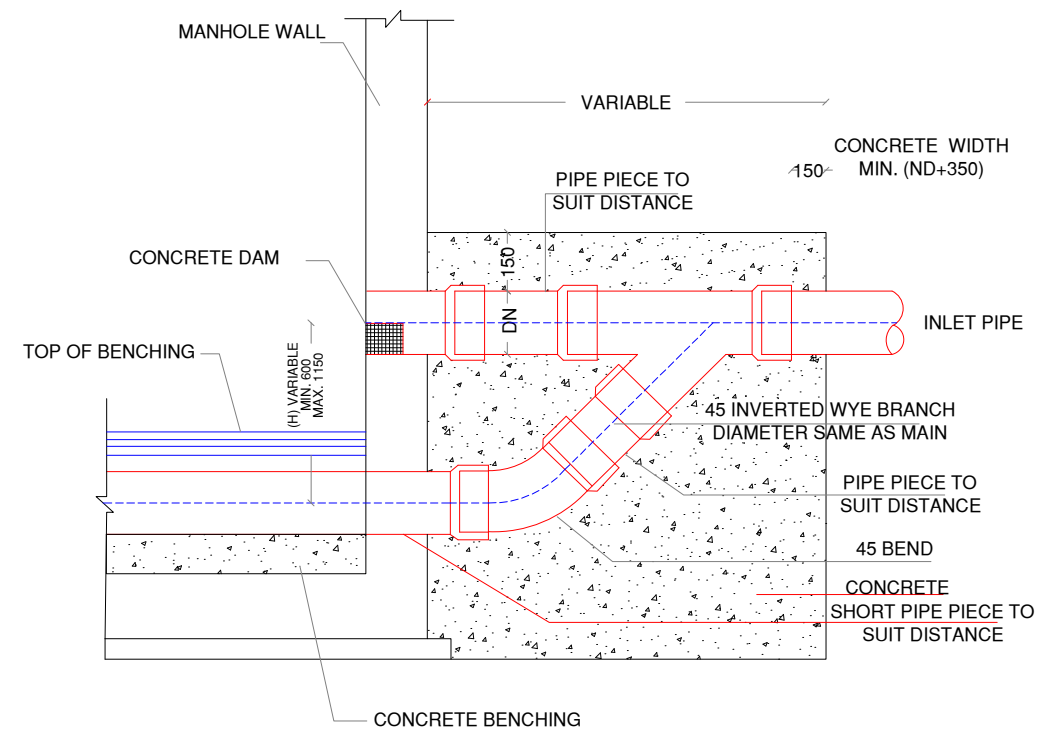
Project
Design Flow Measurement Systems for Trans-Boundary
Wastewater Streams Reference No: RFP-PAL-0000049571
Wadi Suriq Ramallah WWTP

Drawing name
Sewer Collection System
Sewer Manhole Detail
Date / Signature
Dec. 2018

Designed by: Ammar kukhun
Checked by: Ammar Kukhun
Drawn by : Yara Dhoon
Approved by: Ammar kukhun
Drawing No.
005 D



TYPICAL DROP INLET DETAIL
(TYPE 2) FOR $H > 1150$



TYPICAL DROP INLET DETAIL
(TYPE 1) FOR $600 \leq H \leq 1150$

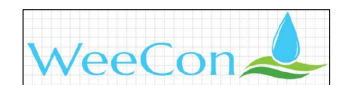
- LEGEND**
ALL DIMENSION IN mm UNLESS OTHERWISE INDICATED
- DN = NOMINAL DIAMETER OF PIPES
T = PIPE'S WALL THICKNESS
BC = EXTERNAL DIAMETER OF PIPES
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uPVC = UNPLASTICIZED POLYVINYL CHLORIDE
HDPE = HIGH DENSITY POLYETHYLENE PIPE
CP = CONCRETE PIPE
RCE = REINFORCED CONCRETE ENCASEMENT

NOTE:
DROP MANHOLES ALSO USED WHEN SLOPE $> 15\%$



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Client Municipality of Qalqelya

Project
Design Flow Measurement Systems for Trans-Boundary
Wastewater Streams Reference No: RFP-PAL-0000049571
Wadi Suriq Ramallah WWTP

Drawing name Sewer Collection System Sewer Drop Manhole Detail	Date / Signature Dec. 2018
Designed by: Ammar kukhun	Drawing No. 006 D
Checked by: Ammar Kukhun	
Drawn by : Yara Dhoon	
Approved by: Ammar kukhun	



Location for the proposed flow measurement at Outlet of Ramallah WWTP

- NOTE:**
- 1-All dimensions in mm unless otherwise indicated
 - 2-Electromagnetic flow Sensor shall be installed according to the manufacture recombination sheet
 - 3-incase section detail presented herein is un comply with the submitted electromagnetic flow sensor by contractor its contractor responsibility to present a detailed drawing on his own cost and shall be approved by the supervising engineer.
 - 4-All concrete mixed shall be B300



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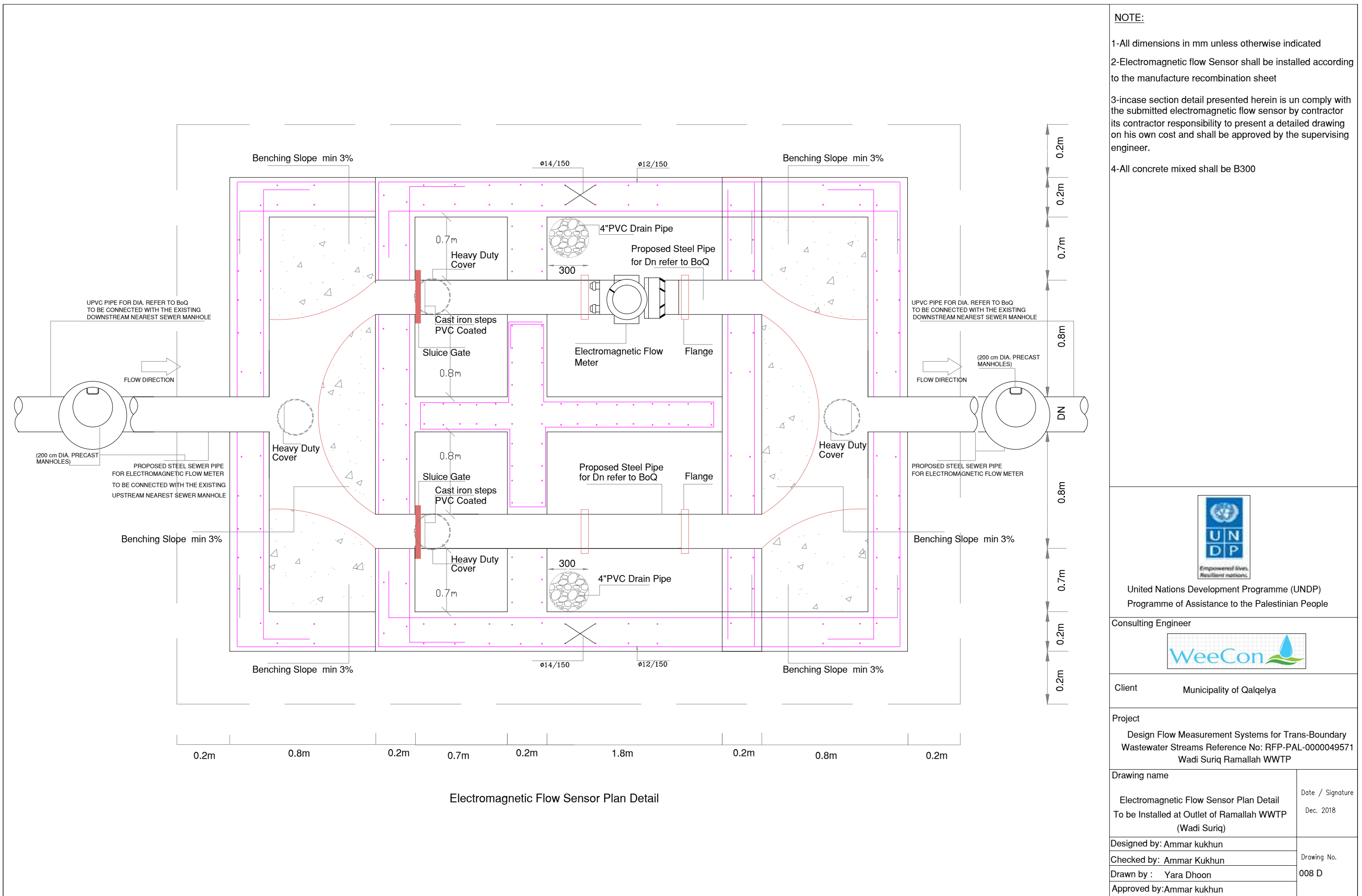
Consulting Engineer



Client Municipality of Qalqelya

Project
Design Flow Measurement Systems for Trans-Boundary
Wastewater Streams Reference No: RFP-PAL-0000049571
Wadi Suriq Ramallah WWTP

Drawing name	Date / Signature
Location for Electromagnetic Flow Sensor To be Installed at Outlet of Ramallah WWTP (Wadi Suriq)	Dec. 2018
Designed by: Ammar kukhun	Drawing No. 007 D
Checked by: Ammar Kukhun	
Drawn by : Yara Dhoon	
Approved by: Ammar kukhun	



United Nations Development Programme (UNDP)
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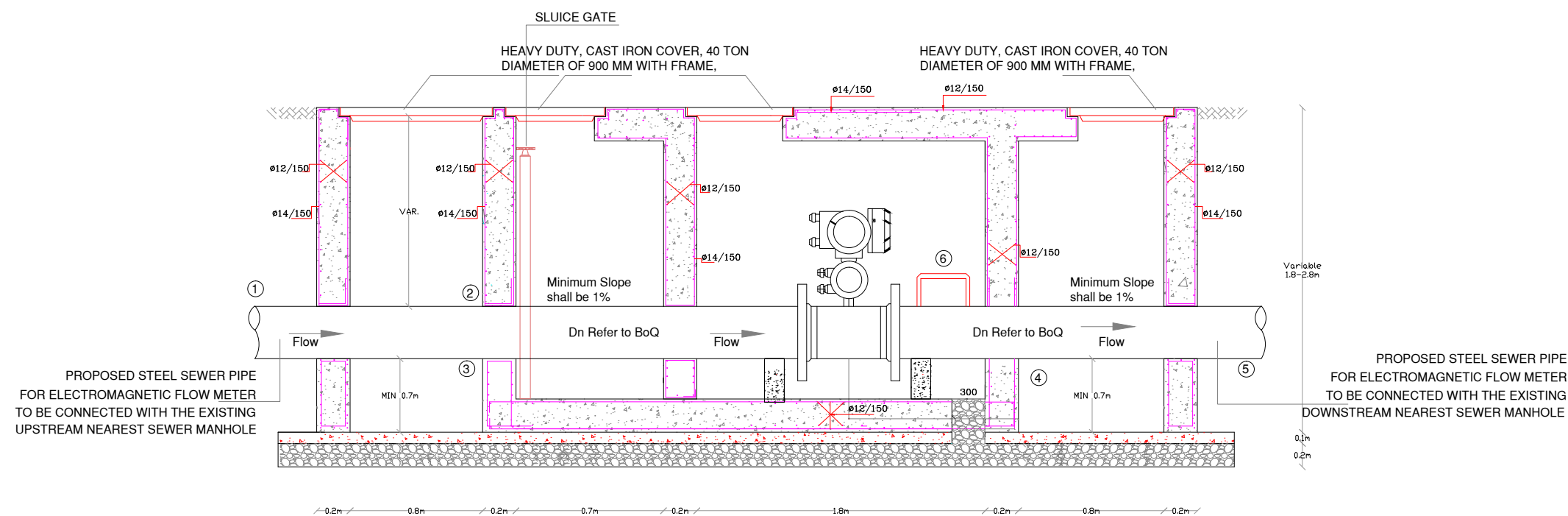
Consulting Engineer



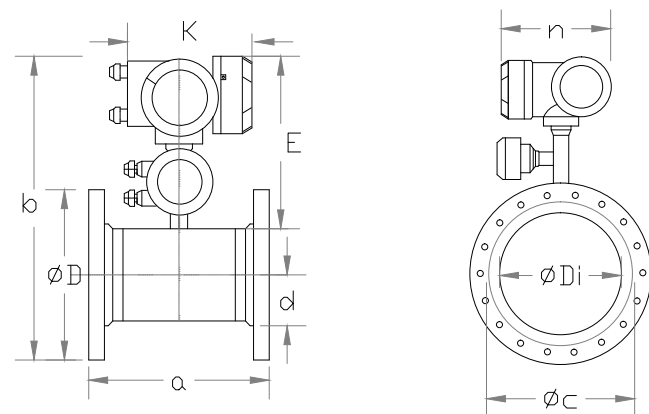
Client Municipality of Qalqelya

Project
Design Flow Measurement Systems for Trans-Boundary
Wastewater Streams Reference No: RFP-PAL-0000049571
Wadi Suriq Ramallah WWTP

Drawing name	Date / Signature
Electromagnetic Flow Sensor Plan Detail To be Installed at Outlet of Ramallah WWTP (Wadi Suriq)	Dec. 2018
Designed by: Ammar kukhun	Drawing No. 008 D
Checked by: Ammar Kukhun	
Drawn by : Yara Dhoon	
Approved by: Ammar kukhun	



Electromagnetic Flow Sensor Section Detail



Nominal size		Dimensions [mm]						Approx. weight [kg]
DN	PN	a	b	Øc	d	ØD	ØDi	
200	10	350	582	291	146	340	189	40
250	10	400	630	331	166	395	231	54
300	10	500	680	381	191	445	281	66
350	10	500	733	428	214	505	316	95
400	10	600	791	483	242	565	365	115
500	10	600	894	585	293	670	467	145
600	10	600	1003	694	347	780	567	180
700	10	700	1120	812	406	895	666	265
800	10	800	1235	922	461	1015	768	350
900	10	900	1356	1064	532	1115	863	425
1000	10	1000	1447	1132	566	1230	965	520
1200	6	1200	1639	1340	670	1405	1169	659
1400	6	1400	1842	1521	761	1630	1367	835
1600	6	1600	2042	1721	861	1830	1549	1659

Electromagnetic Flow Sensor 2D

Important Note

- Cleaning of flow sensor The flow sensor is highly resistant against dirt and the measurement will rarely be influenced by anything. However, it is advisable to create a possibility for cleaning just in front or behind the sensor
- Regular routine maintenance shall be carried out for the two manholes to prevent from sedimentation

Instructions for Installation

- ① sewer manholes with different inlet out let levels
- ② if the inlet pipe has a slope > 1%. Make sure that the outlet level of this pipe is below the inlet of the Flowmeter
- Slope for ② and ③ shall be 2% minimum
- ③ Inlet Section of Dn refer to BoQ
- ④ Outlet Section of Dn Refer To BoQ
- ⑤ Always free pipe shall be used to prevent back inflow sensor and to keep velocity at the maximum flow at least 1m/s
- ⑥ Opening for cleaning
- The crown of the sewer pipe in 1 shall be always higher than 2 at least 45 cm
- All concrete materials which are in contact with sewer shall be sulfate resistance cement.
- Dimensions that are shown for the Electromagnetic Flow Sensor is not a must Contractor can submit different dimensions that are shown in the table but all shall be approved before the Submission
- Location/s for the Electromagnetic flow meter in drawings D-007 are tentative and subjected to change according to the engineer Instructions, No Extra Costs will be paid for the contractor in case change for location is required by engineer
- Contractor Shall keep the existing Sewer Pipeline in operation during the Construction work, Contractor shall use temporary submersible pump and suction truck whenever its required to prevent over flood of sewer during the construction
- Pipe for Electromagnetic Flow Sensor shall be constructed parallel to the sewer existing Pipe, the existing sewer pipe shall be kept as emergency pipe.

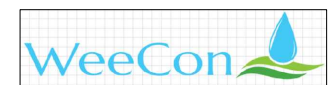
NOTE:

- 1-All dimensions in mm unless otherwise indicated
- 2-Electromagnetic flow Sensor shall be installed according to the manufacture recombination sheet
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Client Municipality of Qalqelya

Project
Design Flow Measurement Systems for Trans-Boundary
Wastewater Streams Reference No: RFP-PAL-0000049571
Wadi Suriq Ramallah WWTP

Drawing name	Date / Signature
Electromagnetic Flow Sensor Detail To be Installed at Outlet of Ramallah WWTP (Wadi Suriq)	Dec. 2018
Designed by: Ammar kukhun	Drawing No. 009 D
Checked by: Ammar Kukhun	
Drawn by : Yara Dhoon	
Approved by: Ammar kukhun	