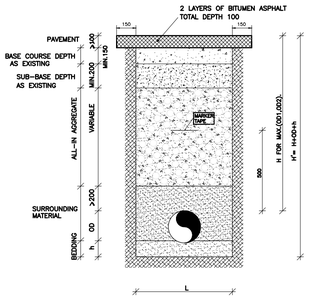
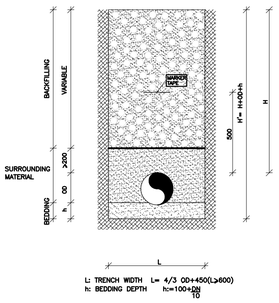
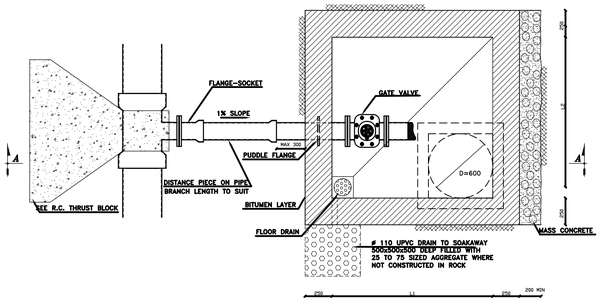
TRENCH IN ROAD FOR ONE PIPE
NOT TO SCALE



TRENCH OFF ROAD FOR ONE PIPE
NOT TO SCALE

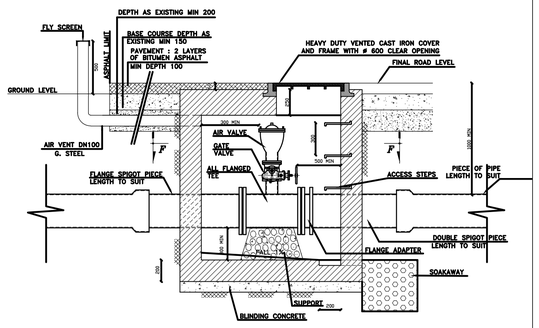


TYPICAL WASHOUT CHAMBER DETAIL

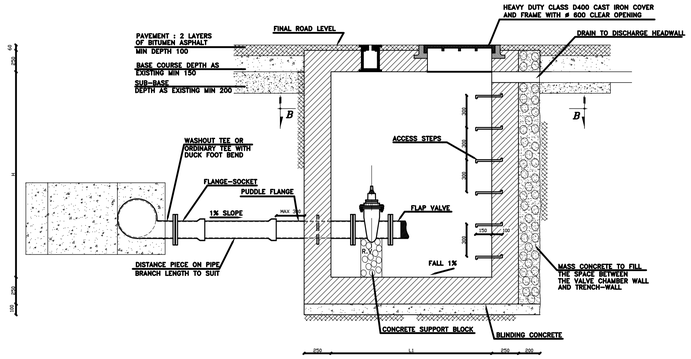


SECTION B-B

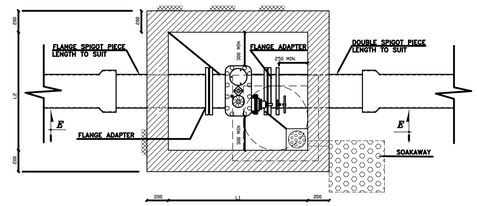
TYPICAL AIR VALVE CHAMBER DETAIL
NOT TO SCALE



SECTION E-E



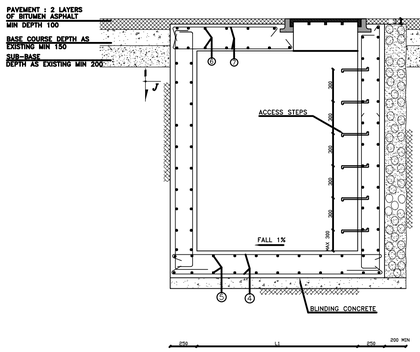
SECTION A-A



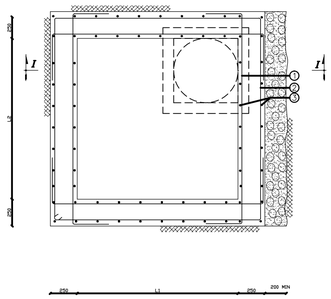
SECTION F-F

NOMINAL PIPE DIAMETER DN mm	PIPELINE COVER H mm	
	DISTRIBUTION	TRANSMISSION
80-150	800	1000

TYPICAL REINFORCEMENT DETAIL FOR WASHOUT CHAMBER
NOT TO SCALE

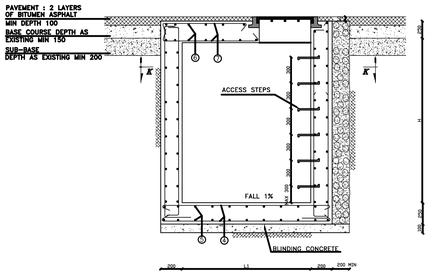


SECTION I-I

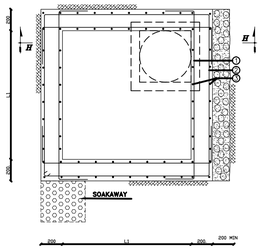


SECTION J-J

TYPICAL REINFORCEMENT DETAIL FOR AIR VALVE CHAMBER
NOT TO SCALE



SECTION H-H



SECTION K-K

TYPICAL WASHOUT CHAMBER FOR TRANSMISSION PIPELINES-DIMENSIONS

MAIN PIPE DIAMETER	WASHOUT DIAMETER	DIMENSIONS		
		L1	L2	H
mm	mm	mm	mm	mm
80-150	**80**	**1500**	**1500**	**1500**

TYPICAL WASHOUT CHAMBER FOR TRANSMISSION PIPELINES-REINFORCEMENT

PIPE DIAMETER	REINFORCEMENT						
D	1	2	3	4	5	6	7
mm	mm	mm	mm	mm	mm	mm	mm
80-150	**T12 @200**	**T12 @200**	**T12 @200**	**T12 @200**	**T12 @200**	**T14 @200**	**T14 @200**

TYPICAL WASHOUT CHAMBER DETAIL FOR DISTRIBUTION PIPELINES
DIMENSIONS TABLE

MAIN PIPE DIAMETER	WASHOUT DIAMETER	DIMENSIONS		
		L1	L2	H
mm	mm	mm	mm	mm
80-125	**60**	**1500**	**1500**	**1500**

REINFORCEMENT STEEL TABLE

PIPE DIAMETER	REINFORCEMENT						
D	1	2	3	4	5	6	7
mm	mm	mm	mm	mm	mm	mm	mm
80-125	**T12 @200**	**T12 @200**	**T10 @200**	**T12 @200**	**T12 @200**	**T14 @200**	**T14 @200**

TYPICAL DOUBLE AIR VALVE CHAMBER
DIMENSIONS TABLE

MAIN LINE DIAMETER	AIR VALVE DIAMETER	L2	L1	H
ø mm	ø mm	mm	mm	mm
80-150	**60**	**1000**	**1250**	**1200**

TYPICAL SINGLE OR DOUBLE AIR VALVE CHAMBER
REINFORCEMENT STEEL TABLE

PIPE DIAMETER	REINFORCEMENT						
D	1	2	3	4	5	6	7
mm	mm	mm	mm	mm	mm	mm	mm
80-150	**T12 @200**	**T12 @200**	**T12 @200**	**T12 @200**	**T12 @200**	**T14 @200**	**T14 @200**

NOTES:

REINFORCED CONCRETE:
NORMAL PORTLAND CEMENT, GRADE C45.
DOSING 350 Kg/m3

BLINDING AND MASS CONCRETE:
NORMAL PORTLAND CEMENT, GRADE C45.
DOSING 250 kg/m3.

REINFORCEMENT:
DEFORMED HIGH STRENGTH STEEL BARS: SYMBOL T YIELD STRESS: Fy=400 MPa. MILD STEEL BARS : SYMBOL ø YIELD STRESS: Fy=215 MPa.

STRESSES:
SEVERE CONTROL.
CONCRETE COMPRESSIVE STRENGTH AT 28 DAYS: f'c =25 MPa.
CONCRETE TENSILE STRENGTH AT 28 DAYS: f't =2.1 MPa.

CONCRETE COVER:
CLEARANCE BETWEEN THE EXTERNAL GENERATRIX OF BARS AND THE FACINGS SHALL BE 30 mm

OVERLAPPING:
LAPS SHALL NOT BE LESS THAN FIFTY TIMES THE BAR DIAMETER. WHERE SPLICE BARS ARE USED, THEIR LENGTH SHALL NOT BE LESS THAN 2x50ø. (ø= NOMINAL DIAMETER OF BAR). LAPS SHALL BE STAGGERED FROM ONE HOOP TO THE OTHER AND/OR ONE BAR TO THE OTHER IN ORDER TO REDUCE THE NUMBER OF LAPS IN THE SAME SECTION. STIRRUPS ø8 SHALL BE USED ON EACH LAP.

BENDING:
ø > 12mm MECHANICAL.
ø ≤ 12mm MANUAL (POSSIBLY).
STRAIGHTENING OF BENDED BARS IS NOT ALLOWED.

FORMWORK:
ALL EXECUTED CONCRETE SHALL BE FAIR FACE CONCRETE (METALLIC OR PLYWOOD FORMWORK).

WATERPROOFING:
BITUMEN LAYER ON EXTERNAL SURFACES OF VALVE CHAMBER WALLS EXCEPT WHERE THERE IS MASS CONCRETE

REMARKS:
* HOLES MADE BY THE TIE-RODS SHALL BE FILLED WITH A NON SHRINK GROUT BY MEANS OF SPECIAL INJECTION METHODS.
* ALL DIMENSIONS ARE IN MILLIMETERS.
* SCALING FROM THESE DRAWINGS IS NOT ALLOWED.
* SOIL FRICTION ANGLE SHALL BE 25°
* GROUND/ MANHOLE FRICTION COEFFICIENT SHALL BE 2/3 tg ø
* THE PASSIVE EARTH PRESSURE SHALL BE TAKEN INTO ACCOUNT FOR MANHOLE STABILITY BY FILLING THE VOID BETWEEN THE MANHOLE AND THE TRENCH WALL WITH MASS CONCRETE OF A MINIMUM THICKNESS "200".

SOAKAWAY
TO BE USED ONLY IF THE INSTALLATION OF AN ADEQUATE GRAVITY DRAIN PIPE TO A FREE OUTLET IS DETERMINED BY THE SUPERVISOR NOT TO BE POSSIBLE.

WASHOUT CHAMBER DIMENSIONS :
IN THE CASES WHERE THE WASHOUT CHAMBER IS TO HOUSE, AT THE SAME TIME, THE WASHOUT GATE VALVE AND THE MAIN PIPE, THE CHAMBER DIMENSIONS MAY VARY FROM THOSE INDICATED ON THIS DRAWING. CONSEQUETLY, THE EXACT DIMENSIONS ARE TO BE TAKEN FROM THE RELEVANT SPECIFICATIONS AND/OR DRAWINGS IN THE TENDER DOCUMENTS OR AS DIRECTED BY THE SUPERVISOR.

* T.P. =TEST PRESSURE

* WASHOUT CHAMBER TYPE II SHALL BE USED NORMALLY.IF DETERMINED BY THE SUPERVISOR NOT TO BE APPLICABLE , TYPE I WILL BE USED.

REV.	DATE	DRAWN BY	CHECKED BY	APPROVED BY	MODIFICATION	STATUTS

UNITED NATIONS DEVELOPMENT PROGRAMME
LEBANON

NORTH LEBANON WATER SUPPLY
CONSTRUCTION OF WADI KHALED 2 WATER SUPPLY SYSTEM

WASHOUT AND AIR VALVE CHAMBER
LAYOUT & DETAILS

SCALE : -
DATE : SEPTEMBER 2014
DRAWING N° : WS-WK-250-A.dwg

LIBANCONSULT AGM
Consulting Engineers

N° : WSWK250
REV. A

A1