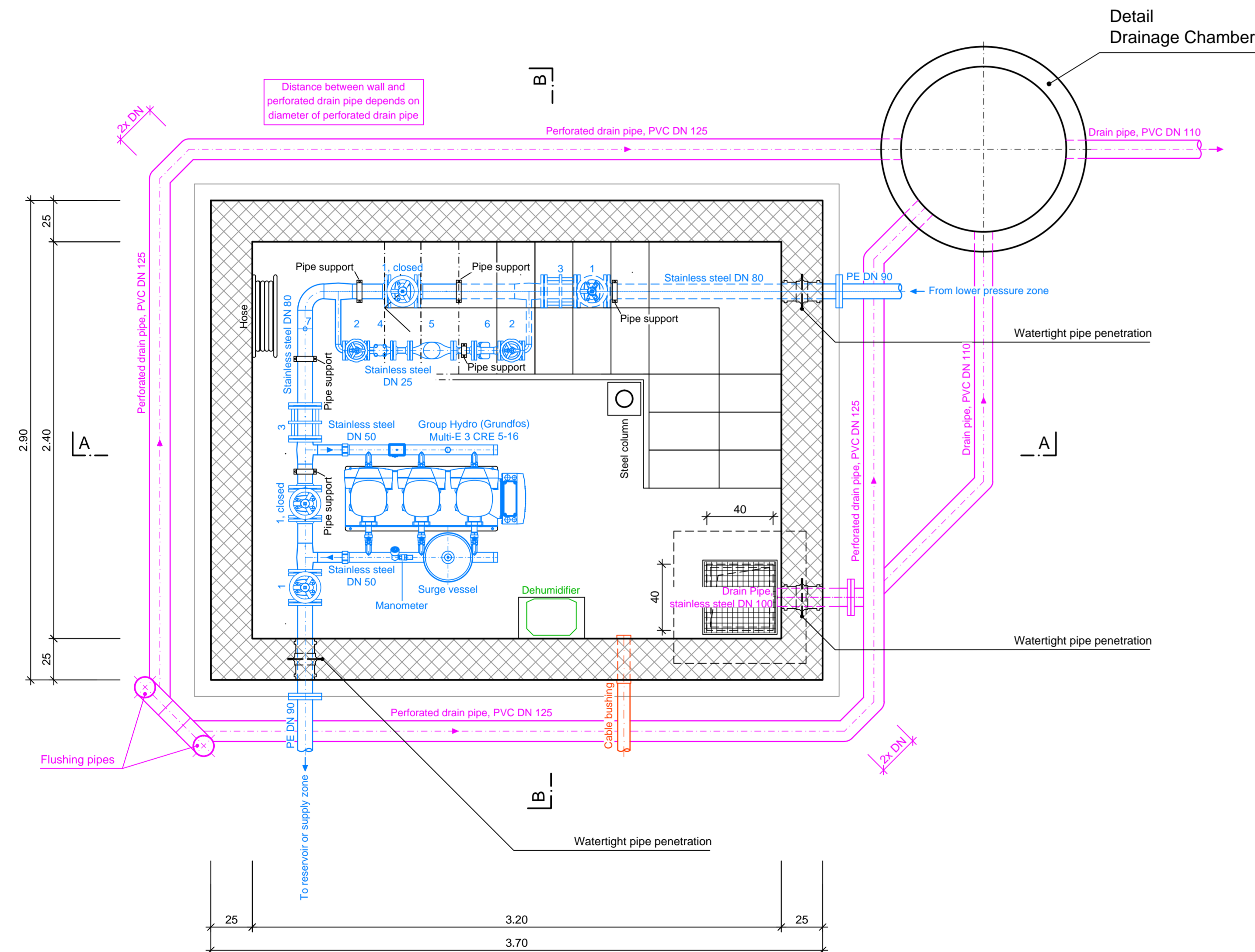
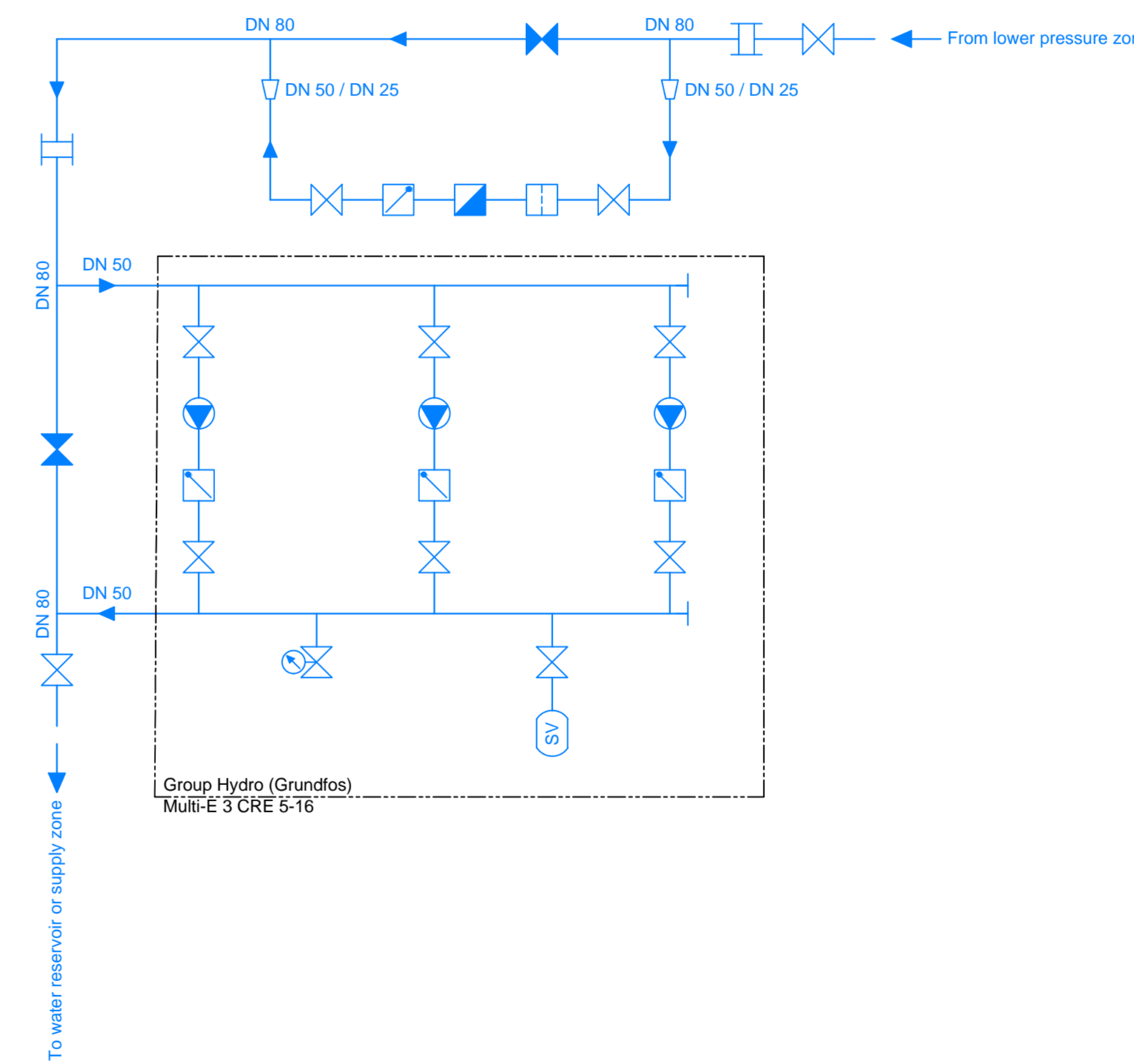


Plan View Basement

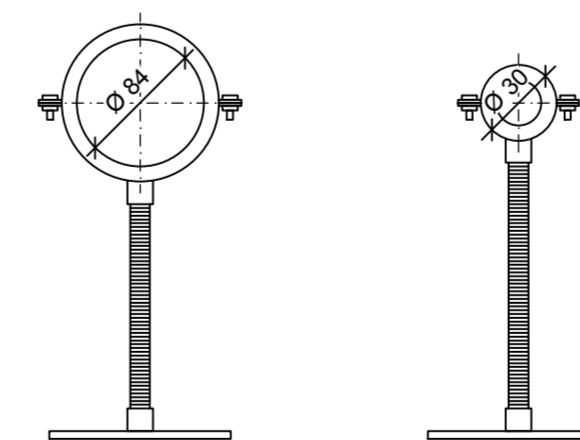


P&ID not to scale



Detail pipe support 1:5

Final dimension of pipe support depend on pipe diameter and distance between floor and pipe



Legend

Legend		Symbols P&ID	
	Water pipe		Gate valve open
	Drain pipe		Gate valve closed
	Power supply and lighting		Check valve
	Ventilation		Y-type strainer
	Bituminous coating		Flow meter
	Construction joint		Dismantling piece
	Reinforced concrete		Pump
	Wood		Manometer
	Lean concrete		Diameter reduction
	Crushed stone 2 / 5 mm		Flow direction
	Top soil		Surge vessel
	Backfill		
	Sand		
	Gravel 16 / 32 mm		Indication of dimensions in cm
	Natural soil (excavation)		Indication of dimensions in m
	Concrete manhole rings		All diameters in mm

No.	Valves and Accessories	DN / PN	Stk.
1	Gate valve with EPDM closing, epoxy painted	80 / 10	4
2	Gate valve with EPDM closing, epoxy painted	25 / 10	2
3	Dismantling piece	80 / 10	2
4	Check valve with ball, flanged	25 / 10	1
5	MULTICAL 62 ultrasonic flow sensor, flanged	25 / 10	1
6	Y-type strainer, ductile iron, epoxy painted, flanged	25 / 10	1
7	Ball valve with nipple (for water sampling and hose connection)	80 / 10	1

Remarks

- Reference design consists of 6 different drawings. "Legend", list of "valves and accessories" and "remarks" apply to the entire set of drawings.
- Building type, materials and final dimensions of the entire building or parts of it, depend on the specific application and its static requirements.
- Structural analysis has to be carried out in each specific case.
- Backfill and layer of top soil must be compacted in layers of 30 - 50 cm depending on local soil conditions.
- Drain pipe must be directed into a stream or discharge channel. The pipe end must be protected from small animals with grating.
- Pipe installations inside the building can be carried out in stainless steel or polyethylene.
- All pipe penetrations in floors and walls must be water tight.
- If a different pumping system than a pressure boosting system with integrated membrane vessel shall be used, a surge vessel has to be dimensioned according to the specific hydraulic conditions.
- Roof construction is indicative only and has to be designed to the specific requirements.
- Gate valves that are closed during normal operation must be opened in reasonable intervals to avoid stagnating water.
- Depending on local climate conditions a thermal insulation by XPS-panels (underground) and EPS-panels (over ground) is recommended.
- Instead of reinforced concrete, brickwork can be used for ground floor walls.

ApaSan - Swiss Water and Sanitation Project Moldova

Reference Designs for Rural Water Supply Systems

Project Plan

Pumping Station
Plan View Basement + P&ID

CSDENGINEERS+

CH-1701 Fribourg
1 026 460 74 74
f 026 460 74 79
e fribourg@csd.ch
www.csd.ch

DRAFT

skat

Scale	1:20		
Drawn	DNA_APR01.04.2015		
Checked	APS_MKO01.04.2015		
Revision No.	-		
Format [cm]	45X84		
Project No.	Phase	Plan - No.	Index
EX00118	02	04	3/6
File: EX00118_04_02_Pumping_Station.dwg			