

WATER DISTRIBUTION NETWORK STANDARD DETAILS DRAWINGS

PROJECT:

SUPPLY, INSTALLATION AND CONSTRUCTION OF A WATER DISTRIBUTION
NETWORK AND ELEVATED TANK FOR AL-NAHDEEN AREA

SANAA CITY - YEMEN

FUNDED BY:

WORLD BANK GROUP

CONTRACT NO: IUS-AF-UWS-SAN-021

DWG NO.	D R A W I N G T I T L E
	COVER SHEET
STD-00	LIST OF DRAWINGS
STANDARD DETAILS DRAWINGS	
STD-01	STANDARD DETAILS, FIRE HYDRANT CHAMBERS
STD-02	STANDARD DETAILS, AIR RELEASE VALVES CHAMBERS
STD-03	STANDARD DETAILS, VALVE CHAMBERS
STD-04	STANDARD DETAILS, WASHOUT CHAMBERS
STD-05	STANDARD DETAILS, PIPE ANCHORAGE THRUST BLOCKS
STD-06	STANDARD DETAILS, PIPES ENCASEMENT
STD-07	STANDARD DETAILS, TYPICAL TRENCHES FOR PIPES
STD-08	STANDARD DETAILS, FOR SERVICE CONNECTIONS
STD-09	STANDARD DETAILS, CONNECTIONS AND DISCONNECTIONS



REPUBLIC OF YEMEN
MINISTRY OF WATER AND
ENVIRONMENT



Project Name

Water Distribution Network
Pipes, Fittings, and Accessories

Drawing Title

Standard Details
List of Drawings

Designed By:	Eng. Ameen Al-Maweri	Drawing No.	STD-00
Reviewed By:	Eng. Fares Hubaish	Scale	As Shown
Approved By:	Eng. Mohammed Al-Magdani		
Contract No	(IUS-AF-UWS-SAN-021)	Date	2023



Ø 60 cm



LEGEND



Section B-B

Drawing Title

Standard Details

FIRE HYDRANT CHAMBERS

Designed By:	Eng. Ameen Al-Maweri	Drawing No.	STD-1
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Reviewed By:	Eng. Fares Hubaish	Scale
		As Shown

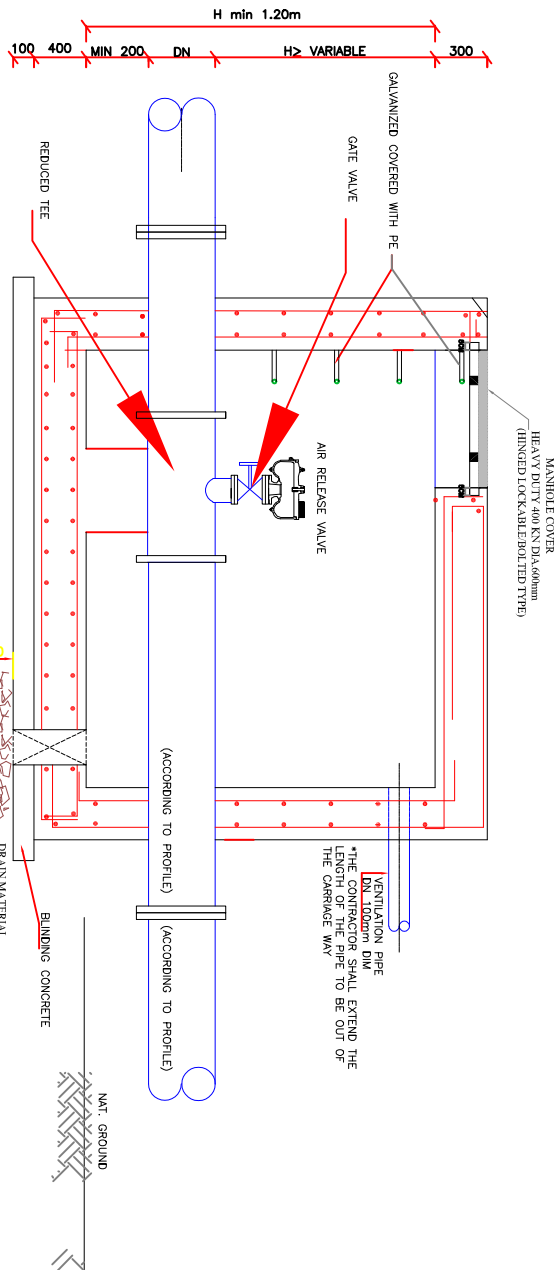
Approved By:	Eng. Mohammed Al-Maqdami
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Contract No	(IUS-AF-UWS-SAN-021)	Date
		2023

Project Name

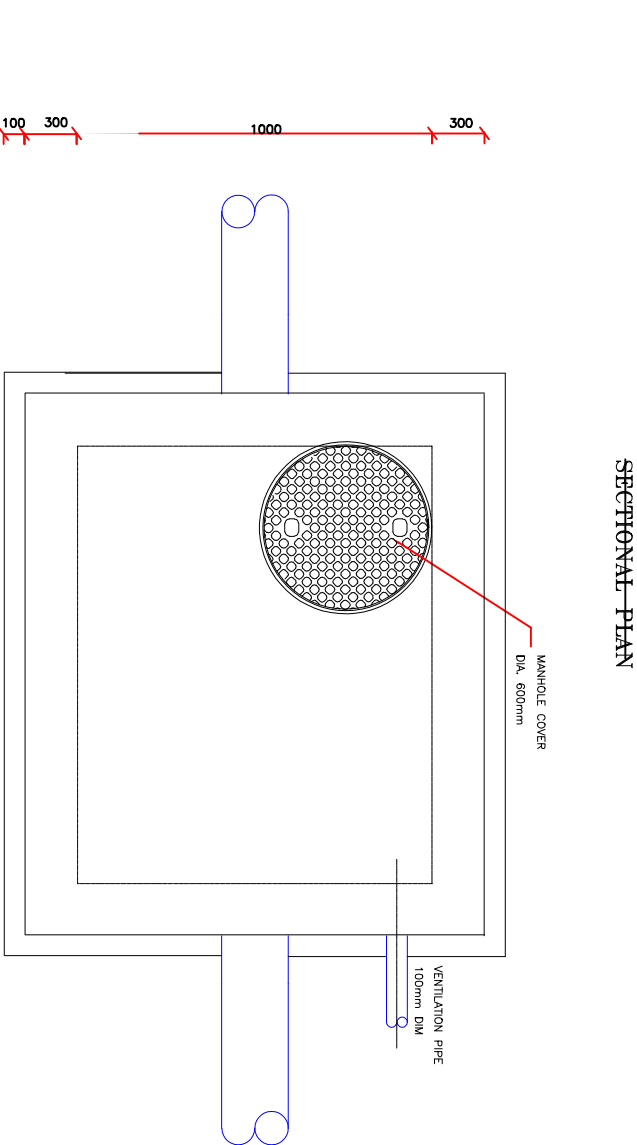
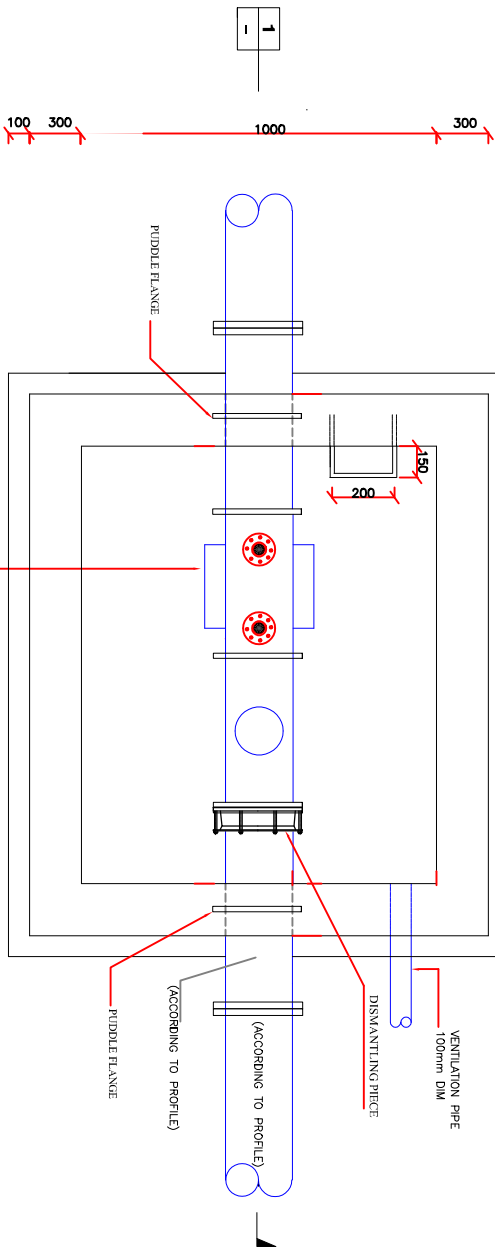
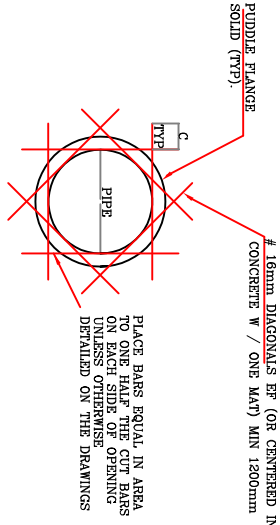
Water Distribution Network Pipes, Fittings, and Accessories



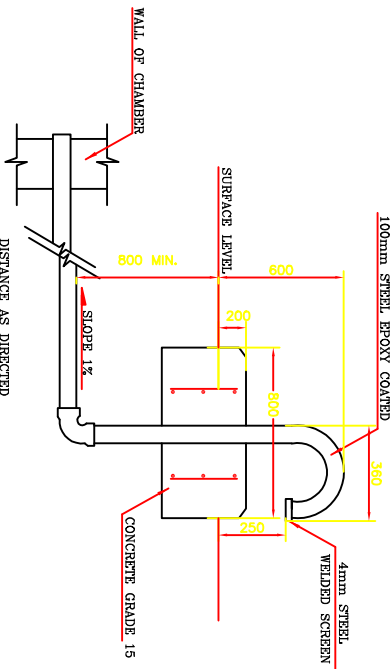
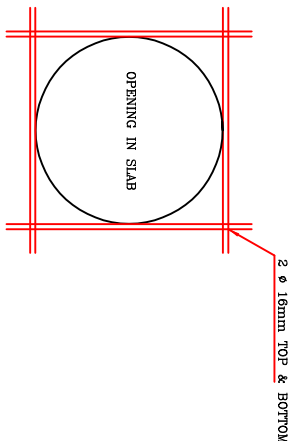


ADDITIONAL REINFORCEMENT WHEN PIPE PENETRATE CHAMBER CONCRETE WALL.

- 1- C = TENSION DEVELOPMENT LENGTH, PROVIDE STD HOOK IF FULL DEVELOPMENT LENGTH IS NOT POSSIBLE.
- 2- REINFORCING STEEL IS TO BE CARRIED ACROSS ALL CONSTRUCTION JOINTS
- 3- DETAIL IS TYP FOR ALL OPENINGS GREATER THAN 250mm IN CONCRETE WALLS AND SLABS UNLESS OTHERWISE NOTED
- 4- EXTRA BARS ARE NOT REQUIRED AT AN OPENING EDGE PARALLEL TO AND WITHIN 150mm OF A WALL OR BEAM



ADDITIONAL REINFORCEMENT AROUND SLAB OPENING



CHAMBER VENT PIPE DETAILS

NTS



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MINISTRY OF WATER AND
ENVIRONMENT



Project Name
Water Distribution Network
Pipe's Fittings & Accessories

Drawing Title
Standard Details
AIR RELEASE VALVES CHAMBERS

Designed By:	Eng. Ameen Al-Maweri	Drawing No.	STD-2
Reviewed By:	Eng. Fares Hubaish	Scale	As Shown
Approved By:	Eng. Mohammed Al-Magdani		
Contract No	(IUS-AF-UWS-SAN-021)	Date	2023



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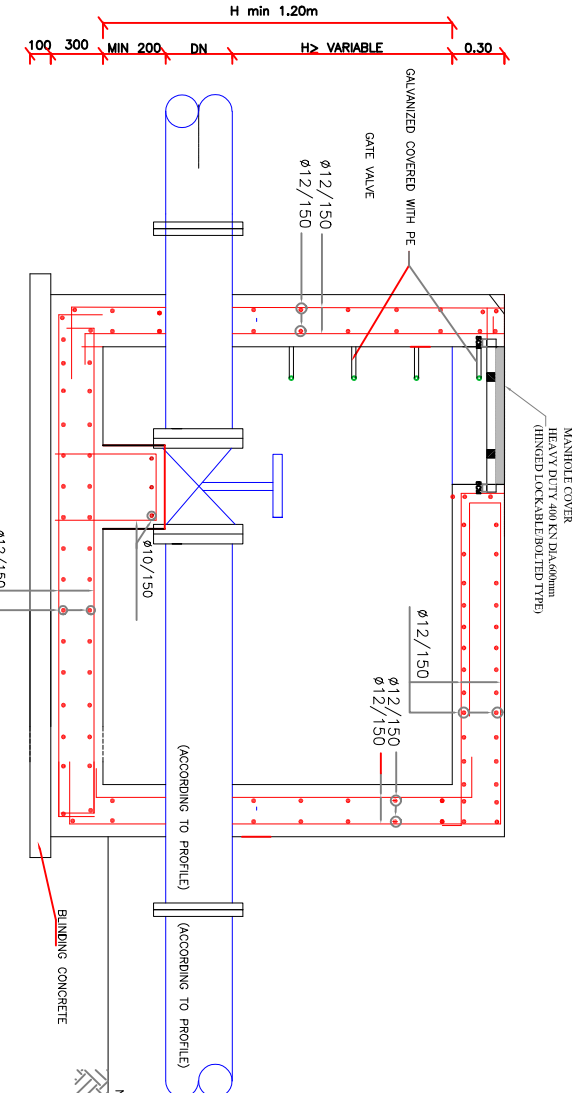
Project Name

Water Distribution Network
Pipe's Fittings & Accessories

Drawing Title

Water Distribution Network
VALVE CHAMBERS

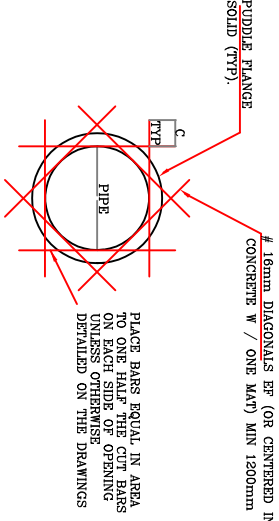
Designed By:	Eng. Ameen Al-Maweri	Drawing No.	STD-3
Reviewed By:	Eng. Fares Hubaish	Scale	As Shown
Approved By:	Eng. Mohammed Al-Magdani		
Contract No	(IUS-AF-UWS-SAN-021)	Date	2023



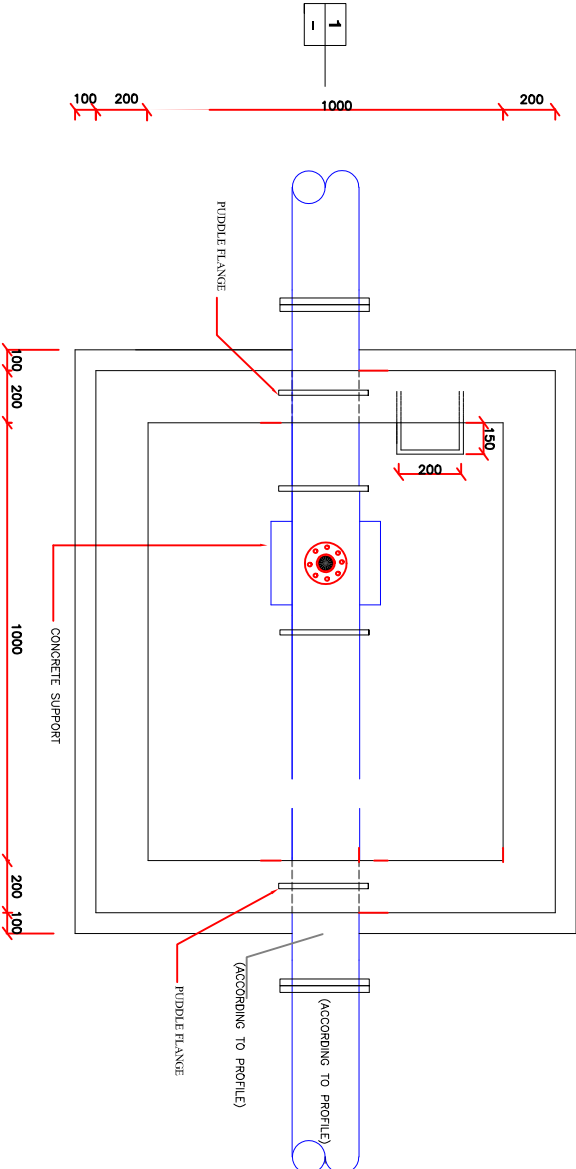
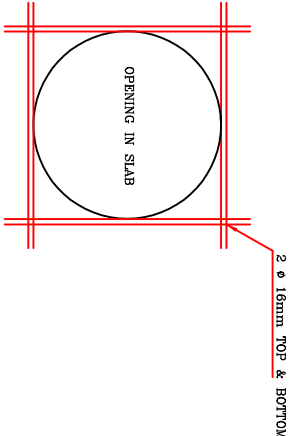
SECTION 1-1

ADDITIONAL REINFORCEMENT WHEN PIPE
PENETRATE CHAMBER CONCRETE WALL.

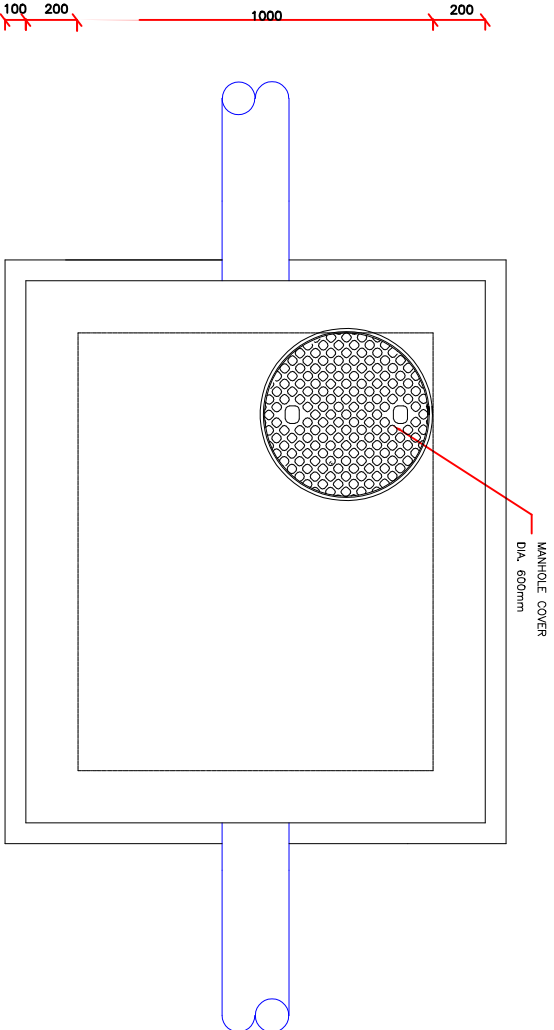
- 1- C = TENSION DEVELOPMENT LENGTH. PROVIDE STD HOOK IF FULL DEVELOPMENT LENGTH IS NOT POSSIBLE.
- 2- REINFORCING STEEL IS TO BE CARRIED ACROSS ALL CONSTRUCTION JOINTS
- 3- DETAIL IS TYP FOR ALL OPENINGS GREATER THAN 250mm IN CONCRETE WALLS AND SLABS UNLESS OTHERWISE NOTED
- 4- EXTRA BARS ARE NOT REQUIRED AT AN OPENING EDGE PARALLEL TO AND WITHIN 150mm OF A WALL OR BEAM



ADDITIONAL REINFORCEMENT AROUND
SLAB OPENING



SECTIONAL PLAN



MANHOLE COVER DIA. 600mm



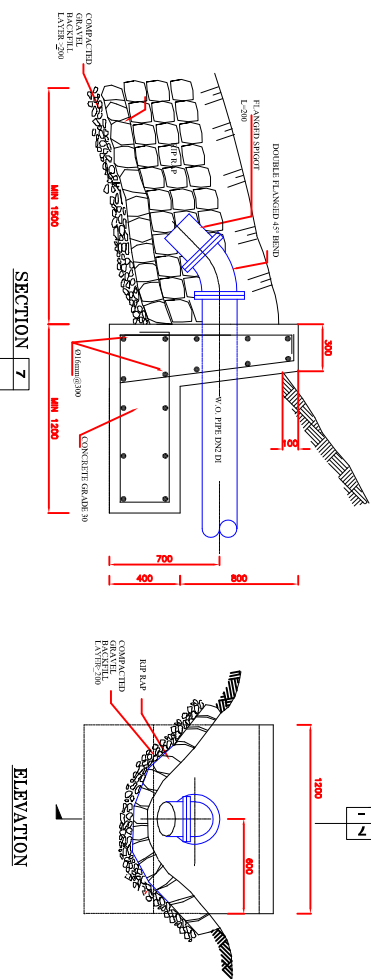
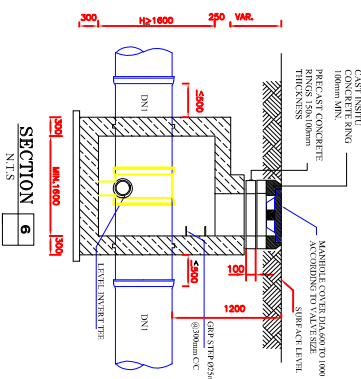
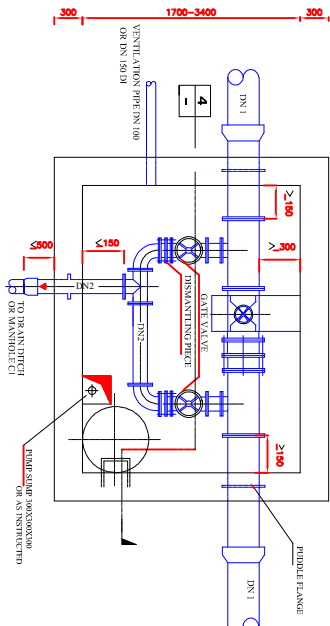
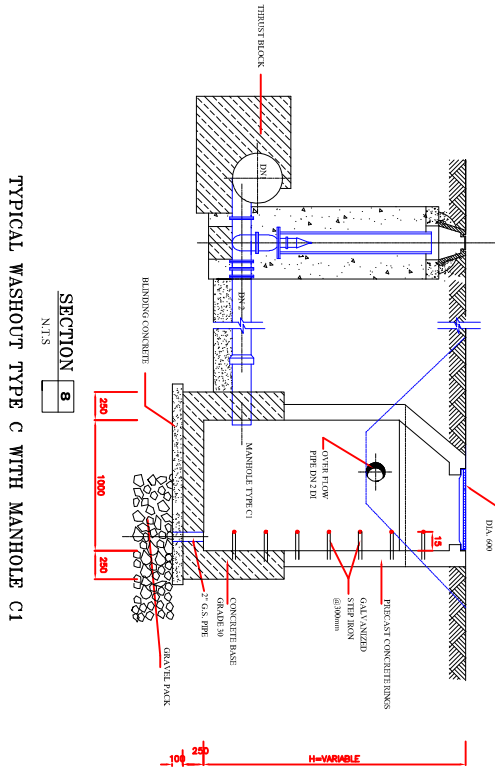
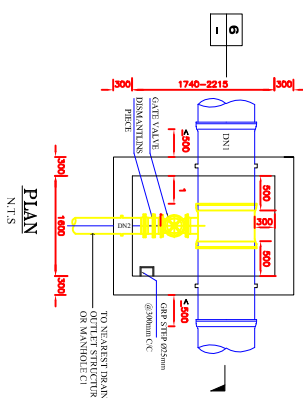
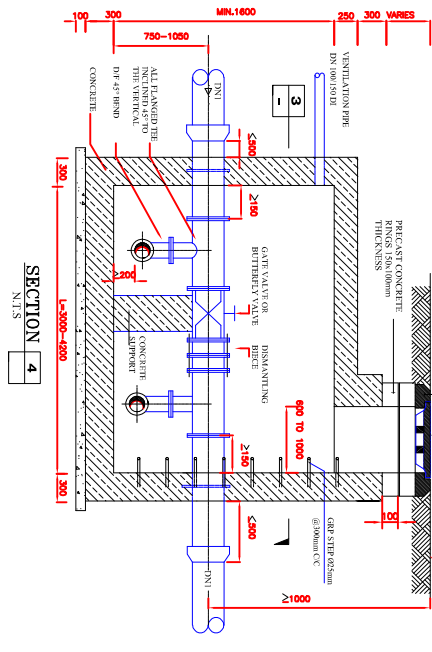
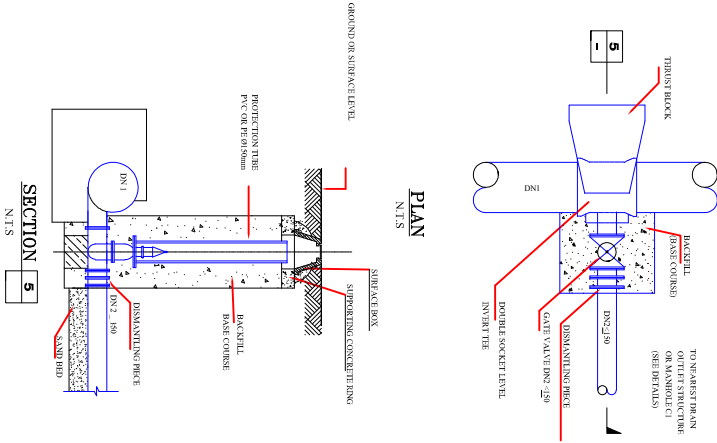
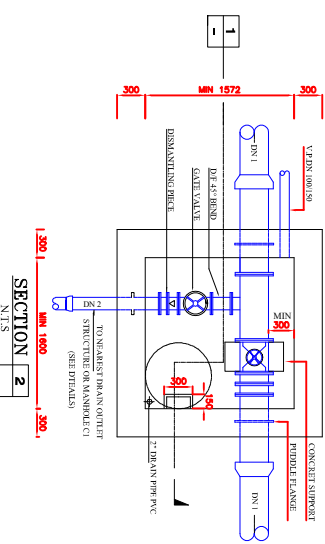
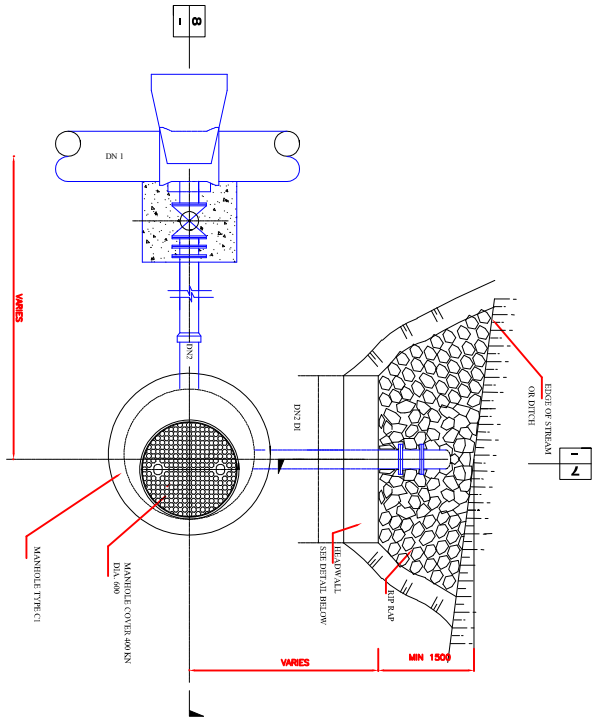
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MINISTRY OF WATER AND
ENVIRONMENT

NOTES:

1. ALL DIMENSIONS ARE IN mm
2. LENGTH AND ALIGNMENT OF WASHOUT PIPE AND USE OF OUTLET TYPE OF MANHOLE CI OR CHANNEL OUTLET SHALL BE DECIDED ON SITE

WASHOUT DIAMETER SCHEDULE:

MAIN LINE	WASHOUT
DN 1	DN 2
DN ≤ 200	100
200 < DN < 400	150
400 < DN < 800	200



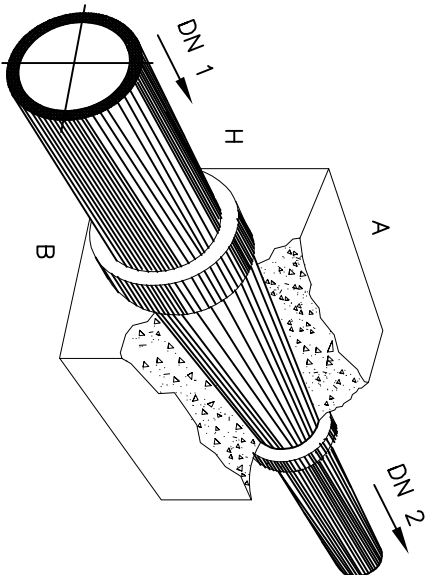
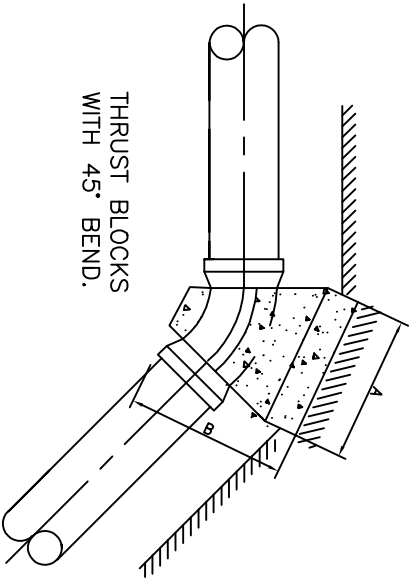
Drawing Title

Water Distribution Network
WASHOUT CHAMBERS

Designed By:	Eng. Ameen Al-Maweri	Drawing No.	STD-4
Reviewed By:	Eng. Fares Hubaish	Scale	As Shown
Approved By:	Eng. Mohammed Al-Magdani		
Contract No	(IUS-AF-UWS-SAN-021)	Date	2023

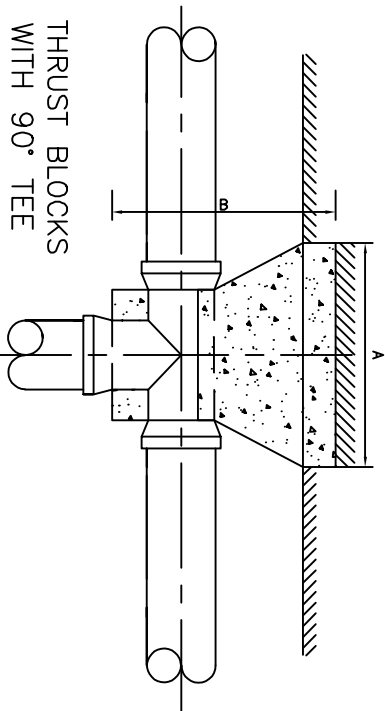
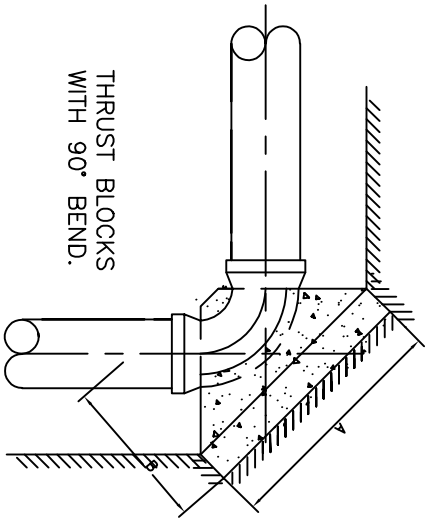
DIMENSIONS OF THRUST BLOCKS FOR PIPE BENDS & TEES BASED ON PIPELINES SPECIFIED PRESSURE AND SOIL BEARING CAPACITY												
PIPE DIAMETER (mm)	90° BENDS & TEES			45° BENDS			22 1/2° BENDS			11 1/4° BENDS		
	A (cm)	B (cm)	H (cm)	A (cm)	B (cm)	H (cm)	A (cm)	B (cm)	H (cm)	A (cm)	B (cm)	H (cm)
100	50	70	45	35	70	40	20	70	25	20	70	25
150	75	75	65	50	75	52	28	75	35	22	75	30
200	96	85	85	65	85	70	45	85	50	28	85	40
300	141	90	125	96	90	100	65	90	75	40	90	60
400	185	100	165	130	100	130	85	100	100	50	100	80
600	220	150	310	150	150	240	100	150	195	75	140	125

DIMENSIONS OF THRUST BLOCKS FOR REDUCERS BASED ON PIPELINES SPECIFIED PRESSURE AND SOIL BEARING CAPACITY					
DN1	DN2	A	B	H	
600	400	100	170	150	
400	300	80	100	100	
300	250	40	90	60	
300	200	80	100	70	
300	150	70	90	100	
250	200	40	65	65	
200	150	40	60	60	
150	100	40	55	50	



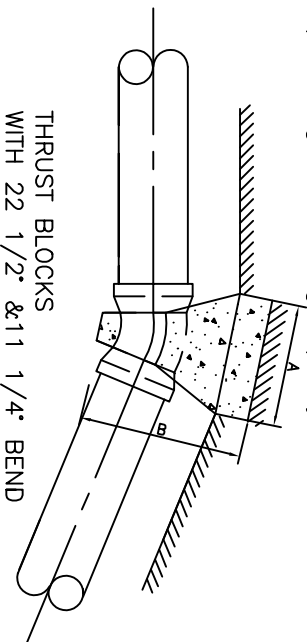
NOTE:

GENERALLY THRUST BLOCK SHALL ENCASE THE REDUCER FITTING.
IN CASE THE LENGTH OF REDUCER IS TOO SHORT, THE THRUST BLOCK
MUST BE PLACED ON THE PIPELINE WITH REDUCED DIAMETER.



NOTE:

Contractor to recalculate values considering
prevailing soil bearing capacity



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Project Name

Water Distribution Network
Pipe's Fittings & Accessories

Drawing Title

Standard Details
Pipes Anchorage Thrust Blocks

Designed By:	Eng. Ameen Al-Maweri	Drawing No.	STD-5
Reviewed By:	Eng. Fares Hubaish	Scale	As Shown
Approved By:	Eng. Mohammed Al-Magdami		
Contract No	(IUS-AF-UWS-SAN-021)	Date	2023



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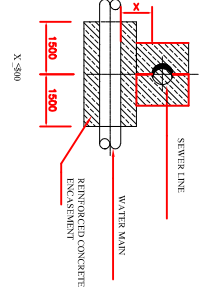
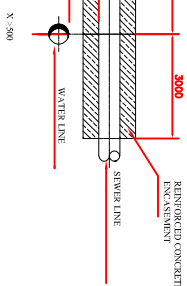
(IN GROUND WATER)

DRAINAGE OF CONCRETE CHAMBERS

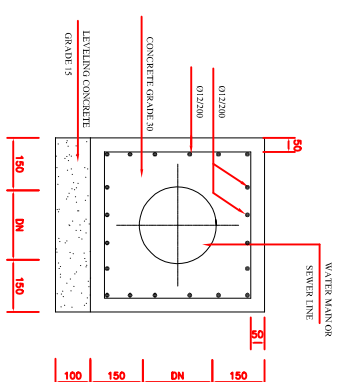
TYPE OF DRAINAGE TO BE DECIDED ON SITE



DETAIL OF VENTILATION PIPE OFF CONCRETE CHAMBER



PIPE ENCASEMENT AND PROTECTION DETAIL
FOR WADI CROSSING
SCALE 1:20



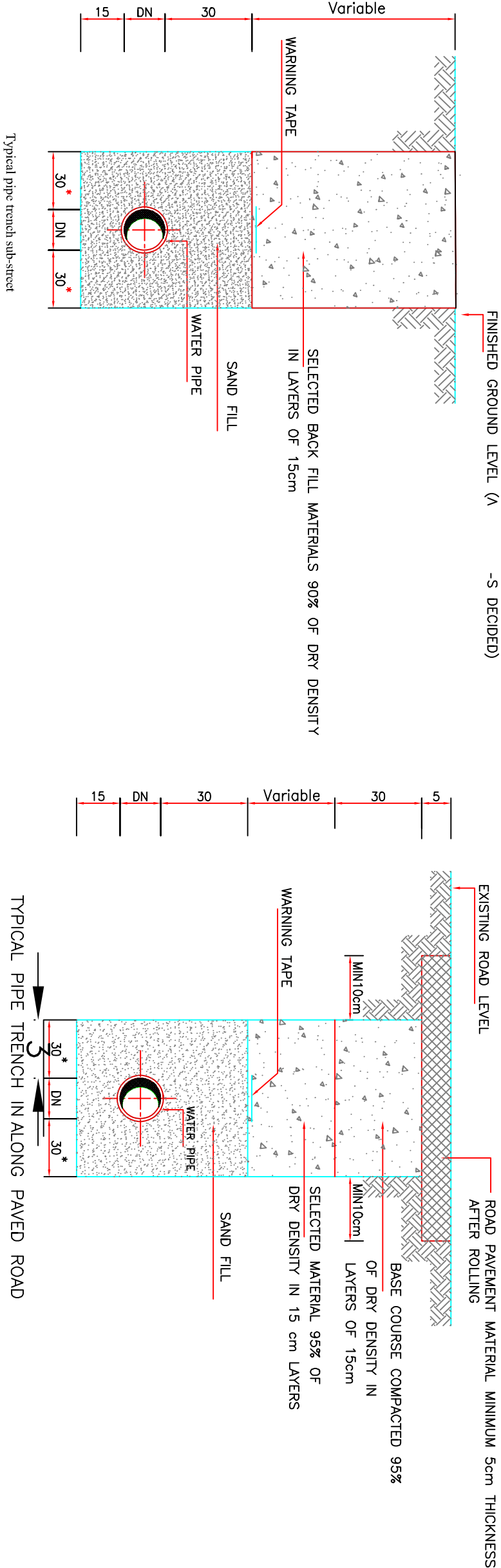
WATER LINE CROSSING BELOW SEWERS

PARALLEL WATER AND SEWER LINES

WATER LINE CROSSING OVER SEWERS

REINFORCED CONCRETE PIPE ENCASEMENT DETAILS FOR SEWER LINES OR WATER MAINS

Drawing Title	
Standard Details	
Pipes Encasement	
Designed By:	Eng. Ameen Al-Maweri
Reviewed By:	Eng. Fares Hubaish
Approved By:	Eng. Mohammed Al-Magdani
Contract No	(U.S.-AF-UWS-SAN-021)
Date	2023



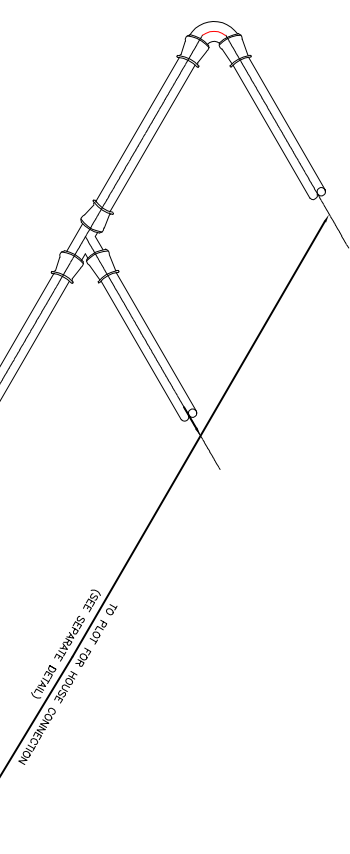
REPUBLIC OF YEMEN
MINISTRY OF WATER AND
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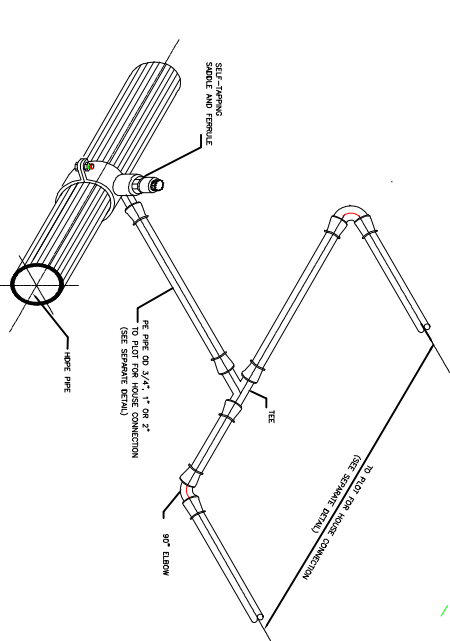
Project Name
Water Distribution Network
Pipe's Fittings & Accessories

Drawing Title
Standard Details
TYPICAL TRENCHES FOR PIPES

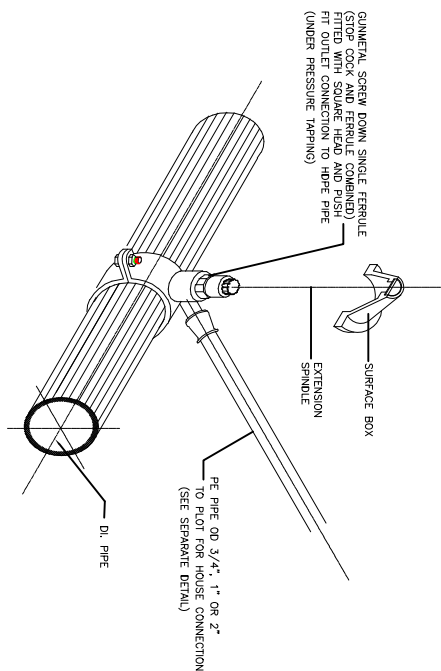
Designed By:	Eng. Ameen Al-Maweri	Drawing No.	STD-7
Reviewed By:	Eng. Fares Hubaish	Scale	As Shown
Approved By:	Eng. Mohammed Al-Magdani		
Contract No	(IUS-AF-UWS-SAN-021)	Date	2023



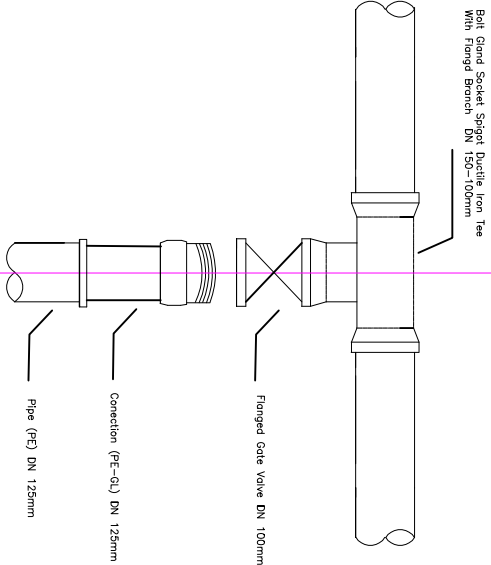
SINGLE FERRULE OUTLET
CONNECTING HDPE PIPES TO HDPE PIPES (DN < 150)



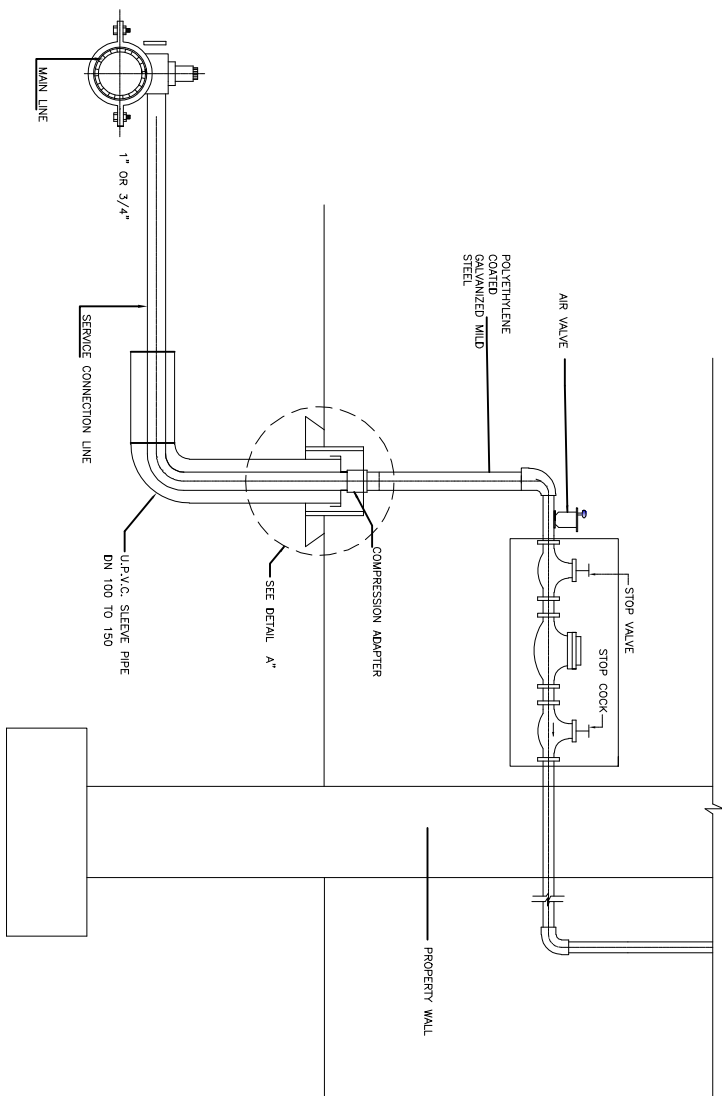
SINGLE FERRULE OUTLET
CONNECTING HDPE PIPES TO HDPE PIPES (DN ≤ 150)



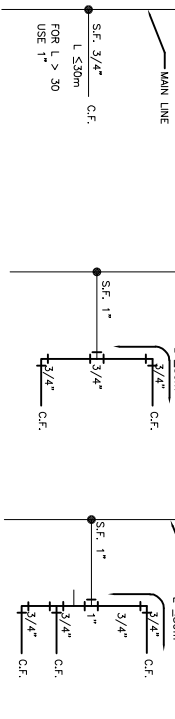
SELF TAPPING
CONNECTING HDPE PIPES TO DI PIPES (DN ≤ 150)



TYPICAL DETAIL FOR CONNECTION OF
HDPE AND DUCTILE PIPES



TYPICAL DETAIL OF SERVICE CONNECTION
SERVICE CONNECTION START FROM MAIN LINE

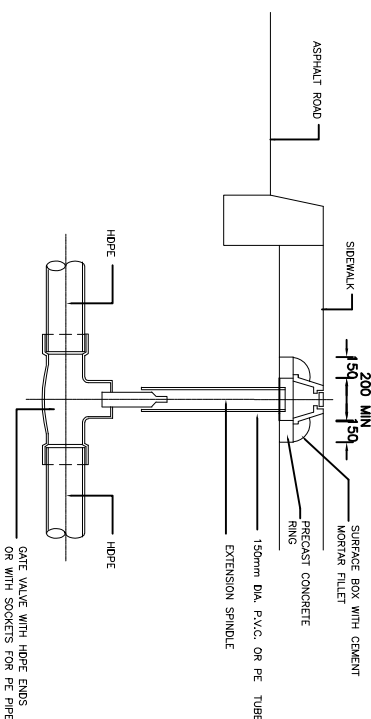


FOR 1 PLOT
1 No. S.F. WITH OD 3/4" OUTLET
1 No. C.F.

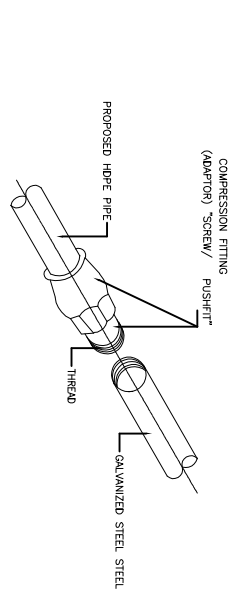
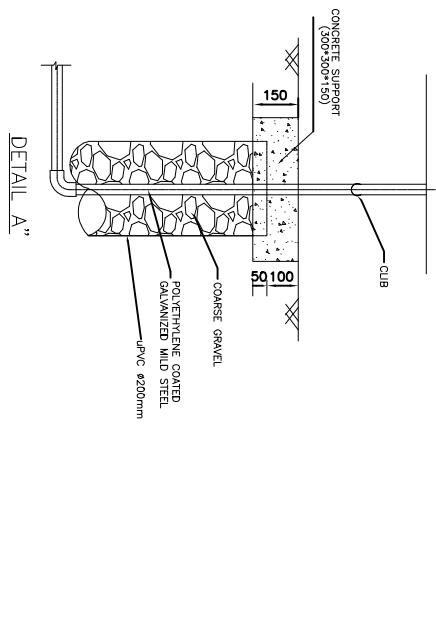
FOR 2 PLOTS
1 No. S.F. WITH 1"mm OUTLET
1 No. 3/4" ELBOW TEE
2 No. C.F.
1 No. REDUCERS 1" 3/4"

FOR 3 PLOTS
1 No. S.F. WITH 1"mm OUTLET
1 No. 3/4" ELBOW TEE
1 No. 1" 3/4" BRANCH TEE
2 No. ELBOWS
3 No. C.F.
2 No. REDUCERS 1" 3/4"

SCHEMATIC LAYOUT FOR TYPICAL SERVICE CONNECTIONS
WITH SINGLE FERRULE



GATE VALVE FOR DN ≤ 63mm HDPE PIPE

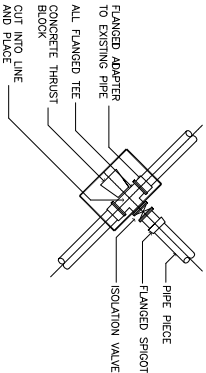


TYPICAL DETAIL FOR CONNECTION OF PROPOSED
HDPE OR NEW Ø 1/2" GALVANIZED STEEL PIPES

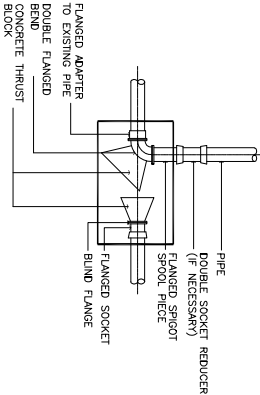
Project Name			
Water Distribution Network Pipe's Fittings & Accessories			
Drawing Title			
Standard Details For Service Connections			
Designed By:	Eng. Ameen Al-Maweri	Drawing No.	STD-8
Reviewed By:	Eng. Fares Hubaish	Scale	As Shown
Approved By:	Eng. Mohammed Al-Magdani		
Contract No	(IUS-AF-UWS-SAN-021)	Date	2023



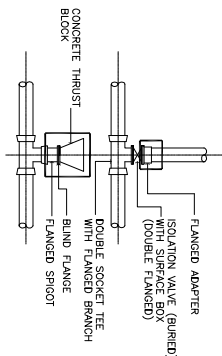
REPUBLIC OF YEMEN
MINISTRY OF WATER AND
ENVIRONMENT



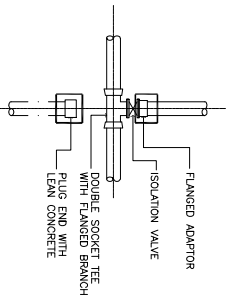
CONNECTION TYPE 1



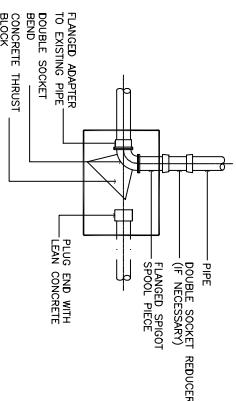
CONNECTION TYPE 3



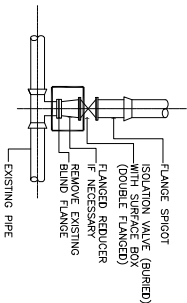
CONNECTION TYPE 5



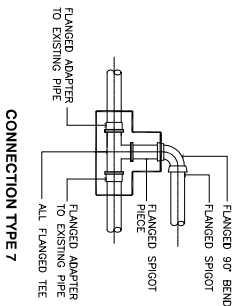
CONNECTION TYPE 2



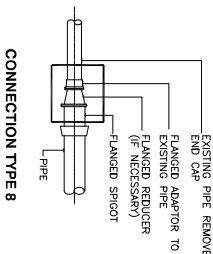
CONNECTION TYPE 4



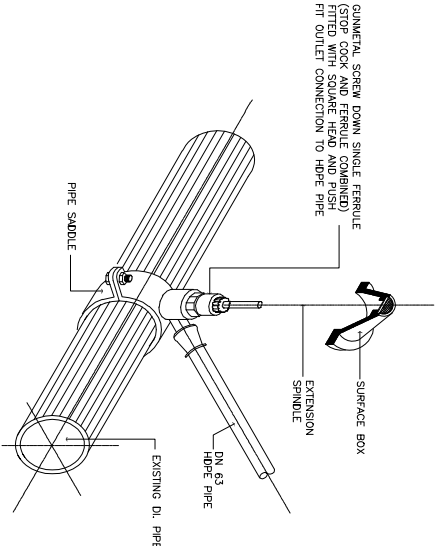
CONNECTION TYPE 6



CONNECTION TYPE 7

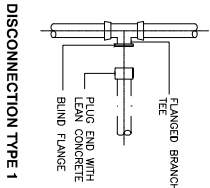


CONNECTION TYPE 8

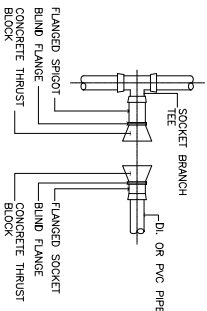


CONNECTION TYPE 9

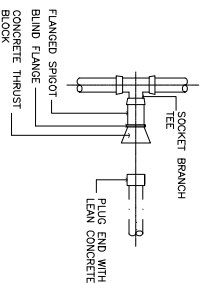
TYPICAL PIPE CONNECTION DETAILS



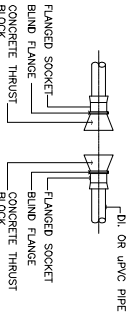
DISCONNECTION TYPE 1



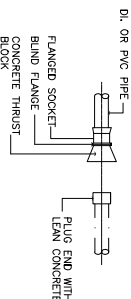
DISCONNECTION TYPE 2



DISCONNECTION TYPE 3



DISCONNECTION TYPE 4



DISCONNECTION TYPE 5

TYPICAL PIPE DISCONNECTION DETAILS

Project Name Water Distribution Network Pipe's Fittings & Accessories	
Drawing Title Standard Details	
Connections & Disconnections	
Designed By:	Eng. Ameen Al-Maweri
Reviewed By:	Eng. Fares Hubaish
Approved By:	Eng. Mohammed Al-Magdami
Contract No	(IUS-AF-UWS-SAN-021)
	Date 2023
Drawing No. STD-9	
Scale As Shown	

