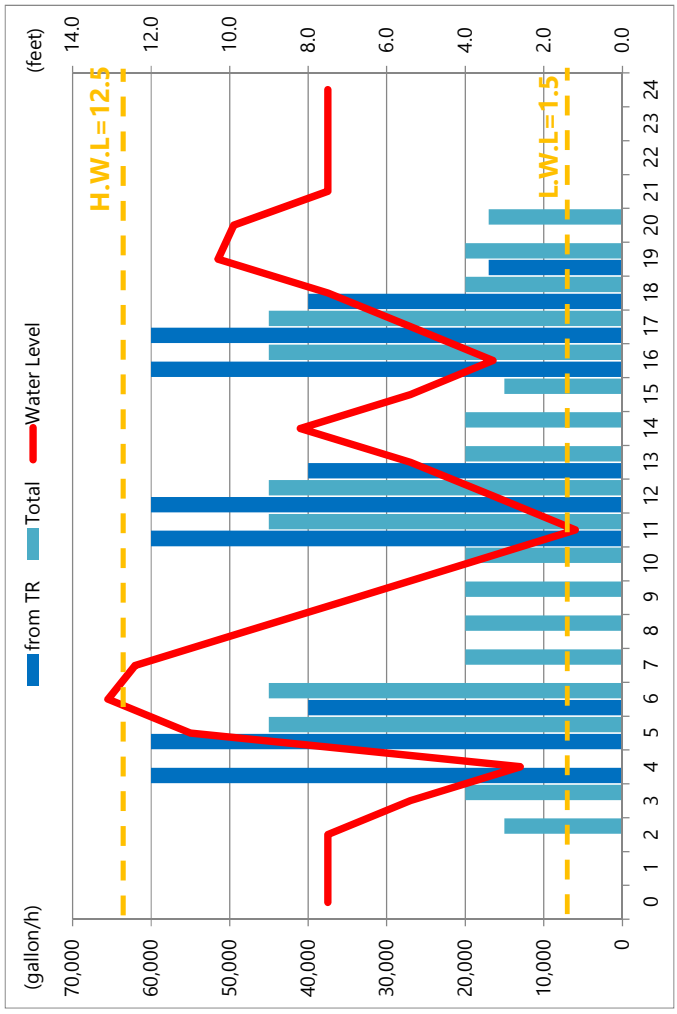
APPENDIX FOR CHAPTER 3 ACTIVITIES IN EACH PILOT AREA

AF3.1 Tank Operation Simulation in Fawara Chowk GST and OHR

Waris Pura GST Simulation

Correction 0



Time	Inflow from TR	Water Level	Outflow Total	To PC No.2	To OHR
	gallon/h	feet	gallon/h	gallon/h	gallon/h
0	0	7.5	0	0	0
1	0	7.5	0	0	0
2	0	7.5	15,000	0	15,000
3	0	5.4	20,000	0	20,000
4	60,000	2.6	0	0	0
5	60,000	11.0	45,000	45,000	0
6	40,000	13.1	45,000	45,000	0
7	0	12.4	20,000	0	20,000
8	0	9.6	20,000	0	20,000
9	0	6.8	20,000	0	20,000
10	0	4.0	20,000	0	20,000
11	60,000	1.2	45,000	45,000	0
12	60,000	3.3	45,000	45,000	0
13	40,000	5.4	20,000	0	20,000
14	0	8.2	20,000	0	20,000
15	0	5.4	15,000	0	15,000
16	60,000	3.3	45,000	45,000	0
17	60,000	5.4	45,000	45,000	0
18	40,000	7.5	20,000	0	20,000
19	17,000	10.3	20,000	0	20,000
20	0	9.9	17,000	0	17,000
21	0	7.5	0	0	0
22	0	7.5	0	0	0
23	0	7.5	0	0	0
24	-	7.5	-	-	-
Total	497,000		497,000	270,000	227,000

Capacity of GST	100,000	gallon
Area of GST	7,143	gallon/feet

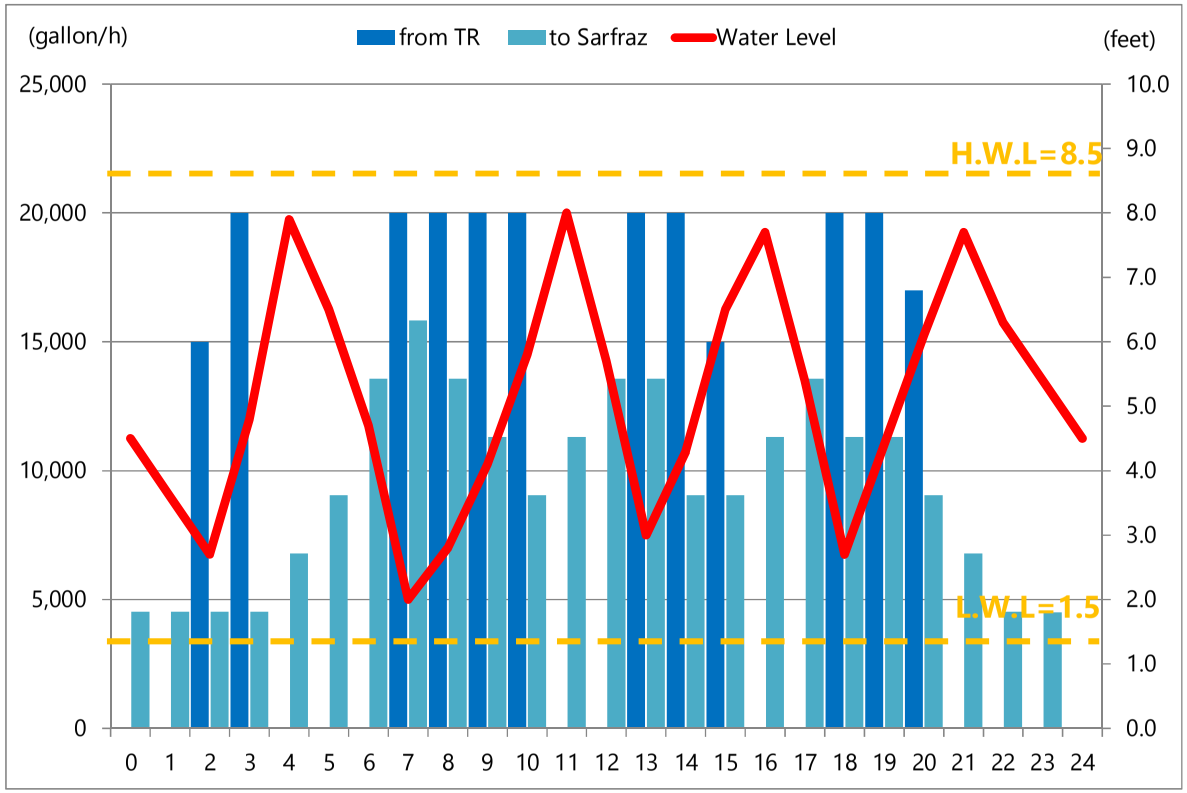
Operational Water Level	H.W.L.	14.00	feet
	L.W.L	0.00	feet

Assumption: 4,000 connections are in Poeples Colony and others, they use 10.6/c/day of water

Waris Pura OHR Simulation

Correction 0

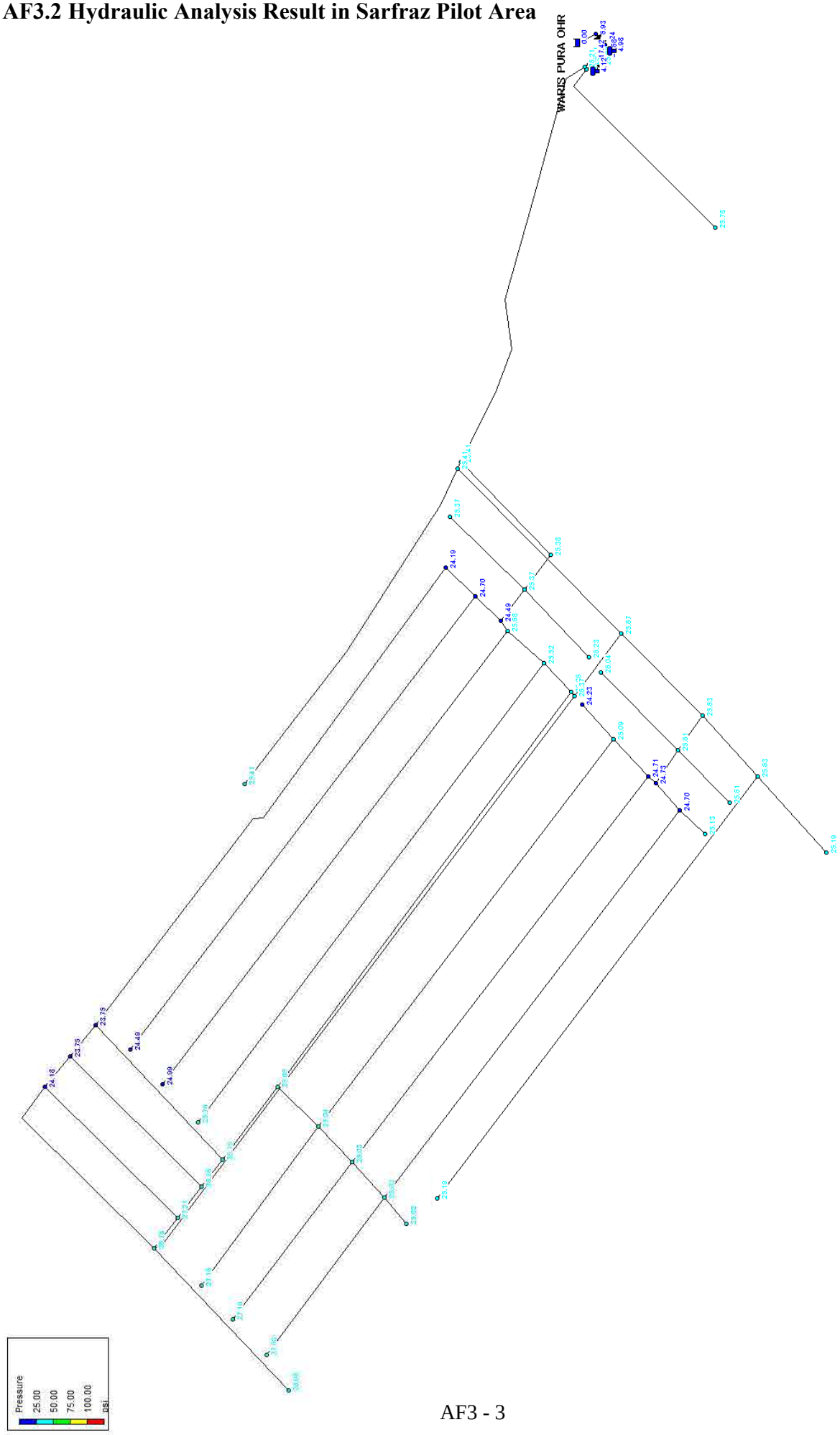
Time	Inflow from TR gallon/h	Water Level feet	Outflow to Sarfraz gallon/h
0	0	4.5	4,525
1	0	3.6	4,525
2	15,000	2.7	4,525
3	20,000	4.8	4,525
4	0	7.9	6,787
5	0	6.5	9,049
6	0	4.7	13,574
7	20,000	2.0	15,836
8	20,000	2.8	13,574
9	20,000	4.1	11,312
10	20,000	5.8	9,049
11	0	8.0	11,312
12	0	5.7	13,574
13	20,000	3.0	13,574
14	20,000	4.3	9,049
15	15,000	6.5	9,049
16	0	7.7	11,312
17	0	5.4	13,574
18	20,000	2.7	11,312
19	20,000	4.4	11,312
20	17,000	6.1	9,049
21	0	7.7	6,787
22	0	6.3	4,525
23	0	5.4	4,509
24	-	4.5	-
Total	227,000		226,219



Capacity of GST	50,000	gallon
Area of GST	5,000	gallon/feet

Operational Water Level	H.W.L.	10.00	feet
	L.W.L	0.00	feet

AF3.2 Hydraulic Analysis Result in Sarfraz Pilot Area



Network Table - Nodes

Node ID	Elevation ft	Base Demand GPM	Pressure psi
Junc J2	609	0	6.93
Junc J3	609	0	0.24
Junc J4	611	0	-0.68
Junc J5	611	0	25.80
Junc J6	610	0	26.21
Junc J7	610	0	17.42
Junc J8	610	0	26.21
Junc J9	610	0	26.21
Junc J10	611	0	25.41
Junc J11	611	16	25.78
Junc J12	611	0.1	25.41
Junc J13	611	0	25.38
Junc J14	610	1.2	25.67
Junc J15	610	1.6	25.63
Junc J16	610	1	25.63
Junc J17	611	1	25.19
Junc J18	611	1.167	25.37
Junc J19	611	0.3472	25.37
Junc J20	613	2.722	24.49
Junc J21	612	8.75	24.70
Junc J22	613	8.361	24.19
Junc J23	610	9.333	25.68
Junc J24	610	7.778	25.52
Junc J25	608	3.11	26.36
Junc J26	608	0	26.37
Junc J27	611	5.389	25.09
Junc J28	613	2.5	24.23
Junc J29	612	5.389	24.71
Junc J30	612	2	24.73
Junc J31	612	3.7	24.70
Junc J32	611	3.11	25.13
Junc J33	610	2.2	25.61
Junc J34	609	2.2	26.04

Node ID	Elevation ft	Base Demand GPM	Pressure psi
Junc J35	610	1	25.61
Junc J36	611	1	25.19
Junc J37	614	1.45	23.75
Junc J38	614	2.9	23.75
Junc J39	613	4	24.18
Junc J40	607	1	26.78
Junc J41	606	4.167	27.21
Junc J42	607	3	26.78
Junc J43	607	1.5	26.78
Junc J44	609	7	25.76
Junc J45	611	8.167	24.99
Junc J46	612	7.583	24.49
Junc J47	611	1	25.05
Junc J48	611	1	25.04
Junc J49	611	1	25.03
Junc J50	606	3.7	27.18
Junc J51	606	8.2	27.10
Junc J52	605	8.4	27.53
Junc J53	611	1	25.02
Junc J54	611	4.6	25.02
Junc J55	604	4	28.08
Junc J56	609	2.2	26.23
Junc J57	611	0	25.41
Resvr R1	625	#N/A	0.00
Tank T1	661	#N/A	4.12
Tank T2	598	#N/A	4.98

Fawara Chowk OHR

Date: 1-10-2017

Signature: شاہد نعیم اختر

Time	Zonal Meter Ch-2	GST			Pump					By Pass	OHR		SC Supply	Remarks
		Inlet Flow	Inlet Valve	Water Level (ft)	No. 1 123	No. 2 122	No. 3	No. 4	Electricity/ Power		PC Valve	Water Level (ft)		
06:00	205	Yes/No	Open/Close	9	On/Off	On/Off	On/Off	On/Off	Yes/No	Yes/No	Open/Close	12	Yes/No	
07:00	208	Yes/No	Open/Close	9	On/Off	On/Off	On/Off	On/Off	Yes/No	Yes/No	Open/Close	12	Yes/No	
08:00	213	Yes/No	Open/Close	8	On/Off	On/Off	On/Off	On/Off	Yes/No	Yes/No	Open/Close	12	Yes/No	
09:00	209	Yes/No	Open/Close	6	On/Off	On/Off	On/Off	On/Off	Yes/No	Yes/No	Open/Close	12	Yes/No	
10:00	199.97	Yes/No	Open/Close	3	On/Off	On/Off	On/Off	On/Off	Yes/No	Yes/No	Open/Close	11	Yes/No	پانی کم آرہا ہے
11:00	208	Yes/No	Open/Close	1	On/Off	On/Off	On/Off	On/Off	Yes/No	Yes/No	Open/Close	10	Yes/No	پانی کم آرہا ہے
12:00	215	Yes/No	Open/Close	9	On/Off	On/Off	On/Off	On/Off	Yes/No	Yes/No	Open/Close	12	Yes/No	TR سے پانی بند 12:45
13:00	203	Yes/No	Open/Close	6	On/Off	On/Off	On/Off	On/Off	Yes/No	Yes/No	Open/Close	12	Yes/No	
14:00	207	Yes/No	Open/Close	2	On/Off	On/Off	On/Off	On/Off	Yes/No	Yes/No	Open/Close	11	Yes/No	پانی کم آرہا ہے
15:00	197	Yes/No	Open/Close	6	On/Off	On/Off	On/Off	On/Off	Yes/No	Yes/No	Open/Close	8	Yes/No	
16:00	205	Yes/No	Open/Close	5	On/Off	On/Off	On/Off	On/Off	Yes/No	Yes/No	Open/Close	10	Yes/No	
17:00	207	Yes/No	Open/Close	9	On/Off	On/Off	On/Off	On/Off	Yes/No	Yes/No	Open/Close	12	Yes/No	
18:00		Yes/No	Open/Close		On/Off	On/Off	On/Off	On/Off	Yes/No	Yes/No	Open/Close	12	Yes/No	
19:00		Yes/No	Open/Close		On/Off	On/Off	On/Off	On/Off	Yes/No	Yes/No	Open/Close		Yes/No	
20:00		Yes/No	Open/Close		On/Off	On/Off	On/Off	On/Off	Yes/No	Yes/No	Open/Close		Yes/No	
21:00		Yes/No	Open/Close		On/Off	On/Off	On/Off	On/Off	Yes/No	Yes/No	Open/Close		Yes/No	
22:00		Yes/No	Open/Close		On/Off	On/Off	On/Off	On/Off	Yes/No	Yes/No	Open/Close		Yes/No	
23:00		Yes/No	Open/Close		On/Off	On/Off	On/Off	On/Off	Yes/No	Yes/No	Open/Close		Yes/No	
00:00		Yes/No	Open/Close		On/Off	On/Off	On/Off	On/Off	Yes/No	Yes/No	Open/Close		Yes/No	
01:00		Yes/No	Open/Close		On/Off	On/Off	On/Off	On/Off	Yes/No	Yes/No	Open/Close		Yes/No	
02:00		Yes/No	Open/Close		On/Off	On/Off	On/Off	On/Off	Yes/No	Yes/No	Open/Close		Yes/No	
03:00		Yes/No	Open/Close		On/Off	On/Off	On/Off	On/Off	Yes/No	Yes/No	Open/Close		Yes/No	
04:00		Yes/No	Open/Close		On/Off	On/Off	On/Off	On/Off	Yes/No	Yes/No	Open/Close		Yes/No	
05:00		Yes/No	Open/Close		On/Off	On/Off	On/Off	On/Off	Yes/No	Yes/No	Open/Close		Yes/No	

Comments:

AF3.4 Construction Record Sheet in Sarfraz Pilot Area

MD	DMD	D	DD	GIS		
			✓			

Survey・Construction sheet

Normal ・ Urgent

Recipt NO

Division of work	WATER (DQM)	recipt	Date	23/08/17	finish	23/08/17
			Time			
WASA-No	番 号				staff	

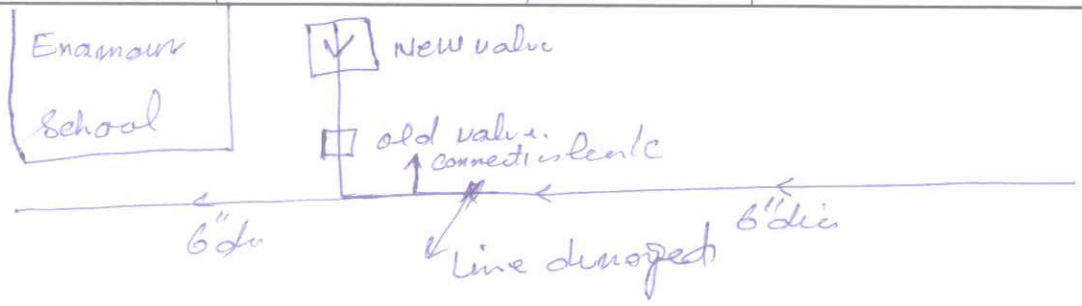
Address or prcel No: P# 635 QA Awan road. Contact info

No.	Material used	Size	Quantity
History/Justification: Repairing of leakage.	Pvc Plug	Ø 1/2"	01
	M/S clamp	6" dia	01

Method/Activities	Manpower	Name	Time
Excavated by excavator exposed 6" dia line damaged also found old leakage domestic connection	Rashid	F.C	8:30 Am
	WARIS	F.C	
	Equipment		
	Excavator	Mini	01

Results	Water quality		
1- Repaired 6" dia AC line	Clolor		
2- Disconnected old jukted connection. Property.	Odour		
	Chlorine		

Additiona Inforamation	Existing system	Certificate from work supervisor
Leakage was not visible at grade however excavation of valve chamber made it visible.	Pipe material: PVC ・ (AC) ・ PE ・ CI ・ DI ・ MS	ATIQ S/E
	Pipeline size: 6" dia	
	Pipe line depth: 5'	
	Pipe line alignment: 6' from P# 635	Date / Signature



MD	DMD	D	DD	GIS		

Survey・Construction sheet

Normal ・ Urgent

Recipt NO

Division of work	Water (D&M)	recipt	Date	22/08/17	finish	22/08/17
			Time	3:30 PM		
WASA-No	番 号				staff	

Address or prcel No

St#01 infront of AL-Fareed General Store

Contact info

No.	Material used	Size	Quantity

History/Justification

Site visited and found 3"dia Cross network.

Method/Activities

During the excavation of Ptcl Lines Cross net ~~work~~ of water found.

Manpower	Name	Time
Equipment		

Results

Water quality		
Clolor	N.A	
Odour	N.A	
Chlorine	N.A.	

Additiona Inforamation

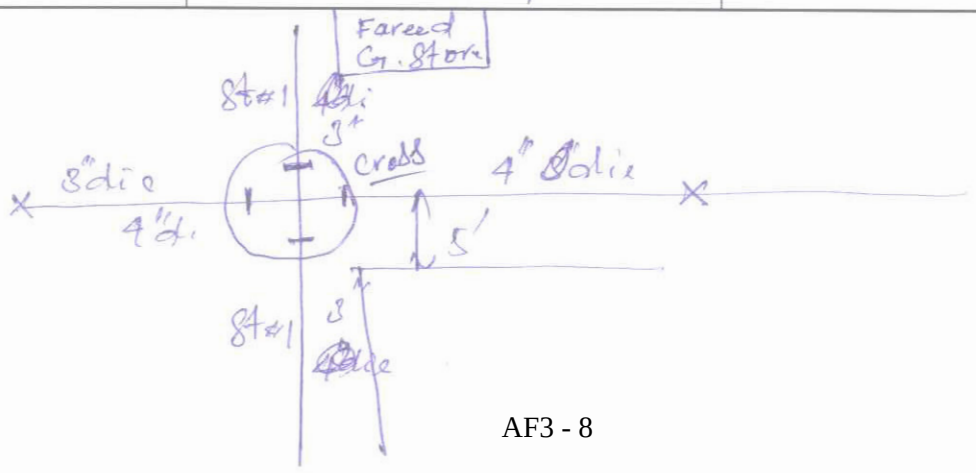
Existing system	
Pipe material	PVC ・ (AC) ・ PE ・ CI ・ DI ・ MS
Pipeline size	3" and 4" dia
Pipe line depth	1-5'
Pipe line alignment	5' from wall

Certificate from work supervisor

ATiQ

S/E

Date Signature



Water supply situation survey

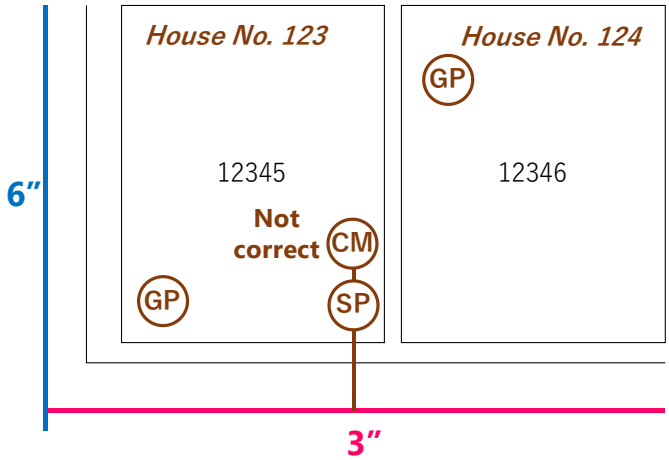
Survey area:

- Entire Madina Pilot Area (it is not the same as “Madina Town X block”)

Survey items:

- Check house No. of resident.
- Does resident have water connection?
- If yes, make a sketch of the location of service pipe on the map.
- If yes, does this resident make water supply contract?
- If no, fill in the sheet of “illegal connection” with “yes”
- Does resident have sewer connection?
- Does resident have water meter?
- If yes, make a sketch of the location of water meter on the map.
- If yes, is meter properly installed?
- Does resident have illegal sucking pump?
- If yes, make a sketch of the location of sucking pump on the map.
- Does resident use groundwater?
- If yes, make a sketch of the location of groundwater pump on the map.
- Take a picture of house and check the sheet.
- Take a picture of bill with customer meter and check the sheet.

Example:



GP: Groundwater pump

SP: Sucking pump

CM: Customer Meter

S/N	Percel ID	House No.	Street	Block	Consumer Name	Account No.	House Size (Marla)	Water Connection	Sewer Connection	Illegal Water Con.	Customer Meter	Sucking Pump	Groundwater Pump	House Picture	Bill & Meter Picture
example	12345	123	1	X	Mr. XX	w12345678	3.5	no	yes	yes	no	no	yes	x	x
1															
2															
3															
4															
5															
6															
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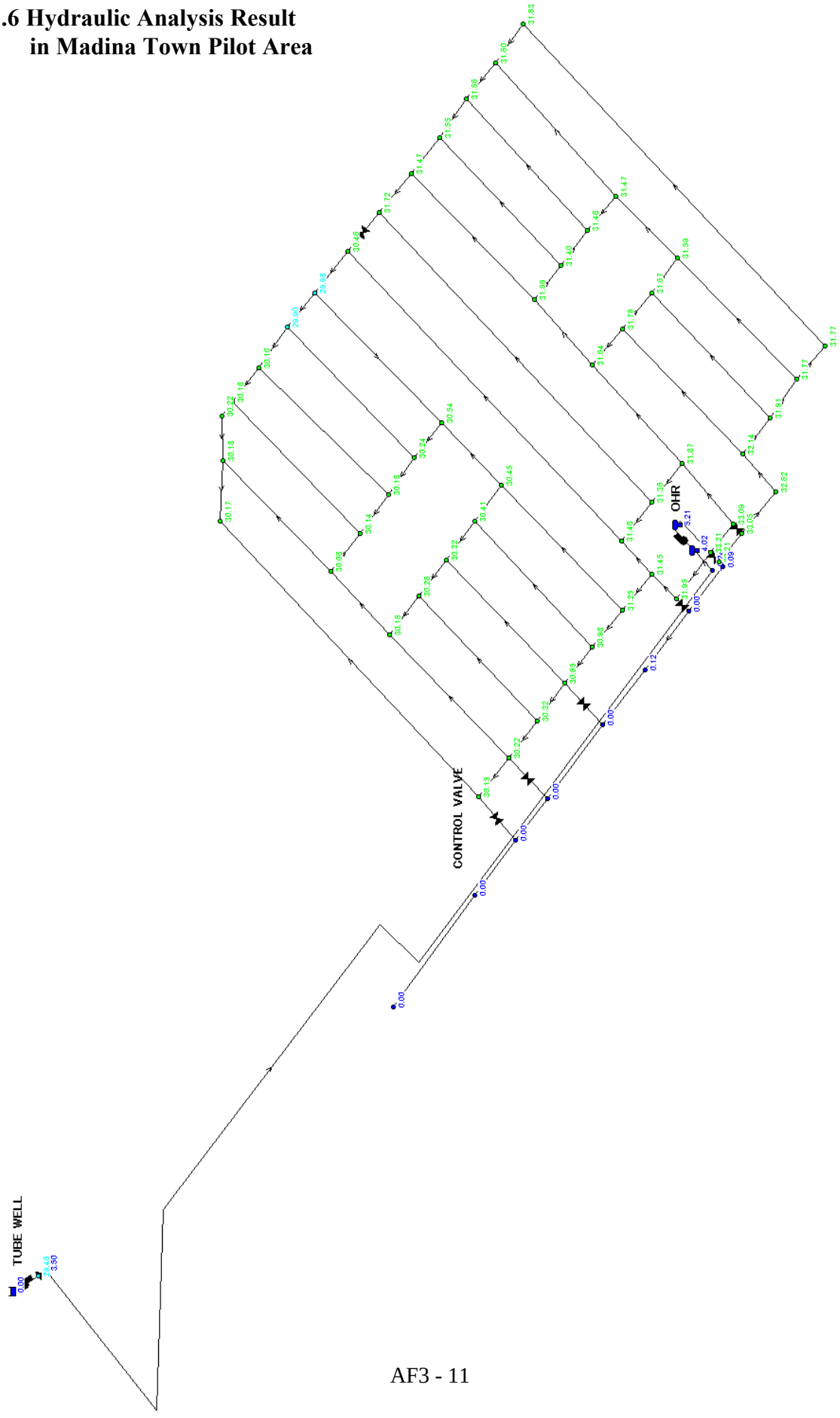
AF3.6 Hydraulic Analysis Result in Madina Town Pilot Area



Network Table - Nodes at 8:00 Hrs

Node ID	Elevation ft	Base Demand CFS	Pressure psi
Junc J1	582.34	0	-0.24
Junc J2	582.34	0	33.21
Junc J4	582.34	0	33.21
Junc J5	582.4	0.0013	0.09
Junc J6	582.6	0.003	0.00
Junc J7	582.32	0.0043	0.12
Junc J8	582.67	0.0043	0.00
Junc J9	582.6	0.0043	0.00
Junc J10	582.6	0	0.00
Junc J11	582.6	0	0.00
Junc J12	582	0	3.50
Junc J14	583	0.0013	31.95
Junc J15	583	0.0017	31.45
Junc J16	582.9	0.0172	31.48
Junc J17	583.56	0.018	31.36
Junc J18	583	0.0172	31.87
Junc J19	582.6	0.0026	33.09
Junc J20	582.1	0.0116	31.25
Junc J21	582	0.0086	30.98
Junc J22	582.36	0.0086	30.65
Junc J23	582.9	0.0094	30.32
Junc J24	583	0.0077	30.22
Junc J25	583.1	0.0094	30.15
Junc J26	582.67	0.0197	30.46
Junc J27	582.78	0.0073	30.45
Junc J28	582.3	0.0094	30.54
Junc J29	583.6	0.0082	29.98
Junc J30	582.88	0.0064	30.41
Junc J31	583	0.0052	30.32
Junc J32	583	0.0056	30.26
Junc J33	583.1	0.0069	30.16
Junc J34	582.9	0.0077	30.24
Junc J35	583	0.0077	30.18
Junc J36	583.1	0.0077	30.14
Junc J37	583.25	0.0086	30.08
Junc J38	583	0.0056	30.18
Junc J39	583	0.0041	30.18
Junc J40	583.2	0.0069	30.10
Junc J41	583.7	0.0086	29.90
Junc J42	583	0.015	30.17

Node ID	Elevation ft	Base Demand CFS	Pressure psi
Junc J43	582.6	0.0185	31.72
Junc J44	582.9	0.0028	30.22
Junc J45	582.6	0.0009	0.00
Junc J46	582.7	0.002	33.05
Junc J47	582.7	0	32.62
Junc J3	583.2	0.0085	31.47
Junc J48	583.2	0.0073	31.64
Junc J49	583.1	0.0094	31.56
Junc J50	582.9	0.0086	32.14
Junc J51	583	0.0064	31.76
Junc J52	583.2	0.0052	31.67
Junc J53	583	0.0086	31.91
Junc J54	583.1	0.0094	31.77
Junc J55	583.3	0.0056	31.59
Junc J56	583.25	0.0077	31.47
Junc J57	583.2	0.0077	31.48
Junc J58	583.4	0.0077	31.40
Junc J59	583	0.0086	31.55
Junc J60	583	0.0069	31.56
Junc J61	582.9	0.0069	31.60
Junc J62	582.85	0.015	31.63
Junc J64	583	0.0077	31.77
Junc J66	582	0	29.46
Resvr R1	570	#N/A	0.00
Tank T1	647	#N/A	5.21
Tank T2	572.34	#N/A	4.02

Network Table - Links at 8:00 Hrs

Link ID	Length ft	Diameter in	Flow CFS	Velocity fps
Pipe P3	126.47	12	0.76	0.96
Pipe P5	15.11	12	0.00	0.00
Pipe P8	3445.42	12	2.00	2.55
Pipe P9	149.79	12	0.00	0.00
Pipe P10	194.05	12	0.01	0.01
Pipe P12	139.48	12	0.00	0.00
Pipe P13	184.45	12	0.00	0.00
Pipe P14	368.48	12	0.00	0.00
Pipe P15	90.29	4	0.28	3.17
Pipe P16	118.82	4	0.02	0.25
Pipe P18	129.29	4	0.16	1.86
Pipe P19	97.43	4	0.02	0.28
Pipe P20	209.87	4	0.26	2.97
Pipe P21	1046.31	4	0.11	1.29
Pipe P22	1044.54	3	0.01	0.20
Pipe P24	141.16	4	0.08	0.90
Pipe P25	116.90	4	0.06	0.66
Pipe P26	131.69	4	0.04	0.44
Pipe P27	117.01	4	0.02	0.26
Pipe P28	46.49	4	0.02	0.17
Pipe P29	123.41	4	0.25	2.88
Pipe P30	128.22	4	0.18	2.03
Pipe P31	120.27	4	0.13	1.49
Pipe P32	125.08	4	0.10	1.11
Pipe P33	125.08	4	0.07	0.83
Pipe P34	131.43	4	0.04	0.44
Pipe P35	455.33	3	0.05	1.10
Pipe P36	226.77	3	0.04	0.74
Pipe P37	475.06	3	-0.01	0.12
Pipe P38	453.01	3	0.03	0.65
Pipe P39	448.73	3	0.02	0.35
Pipe P40	449.97	3	0.01	0.16
Pipe P41	448.73	4	0.01	0.15
Pipe P42	120.27	3	0.00	0.10
Pipe P43	128.37	3	0.03	0.52
Pipe P44	120.27	3	0.03	0.69
Pipe P45	129.88	3	0.03	0.64
Pipe P46	228.03	4	0.03	0.37
Pipe P48	117.01	3	0.03	0.53
Pipe P49	122.11	3	0.02	0.35

Link ID	Length ft	Diameter in	Flow CFS	Velocity fps
Pipe P50	128.37	3	0.01	0.14
Pipe P51	126.63	3	-0.01	0.12
Pipe P52	476.33	3	0.00	0.10
Pipe P53	474.04	3	0.00	0.07
Pipe P54	481.12	3	0.00	0.01
Pipe P55	991.22	4	0.01	0.16
Pipe P59	98.06	12	0.44	0.56
Pipe P60	142.28	4	0.20	2.25
Pipe P62	185.93	12	0.00	0.00
Pipe P63	245.42	12	0.00	0.00
Pipe P17	131.43	4	0.12	1.38
Pipe P58	405.54	4	0.01	0.13
Pipe P1	153.56	4	0.29	3.37
Pipe P2	349.93	4	0.07	0.76
Pipe P4	229.40	4	0.08	0.89
Pipe P7	461.93	4	0.03	0.39
Pipe P11	132.46	4	0.02	0.26
Pipe P23	134.56	4	0.20	2.25
Pipe P47	453.53	3	0.04	0.88
Pipe P56	125.04	3	0.02	0.48
Pipe P57	120.27	4	0.14	1.58
Pipe P64	126.90	4	0.09	1.08
Pipe P65	115.42	4	0.06	0.65
Pipe P67	449.97	3	0.03	0.57
Pipe P68	444.56	3	0.02	0.43
Pipe P69	113.98	3	0.03	0.56
Pipe P70	123.41	3	0.01	0.17
Pipe P71	228.57	3	0.04	0.79
Pipe P72	118.60	3	0.02	0.31
Pipe P73	117.01	3	-0.01	0.11
Pipe P74	115.47	3	-0.03	0.56
Pipe P75	461.35	3	0.01	0.17
Pipe P76	121.82	4	0.00	0.04
Pipe P77	470.49	3	0.01	0.15
Pipe P78	126.90	4	-0.01	0.12
Pipe P79	471.83	3	0.01	0.20
Pipe P80	123.41	4	-0.01	0.17
Pipe P81	1158.56	4	0.04	0.50
Pipe P82	126.90	4	-0.02	0.19
Pipe P6	70.77	12	2.00	2.55
Pipe P61	140	4	-0.01	0.14

Link ID	Length ft	Diameter in	Flow CFS	Velocity fps
Pipe P66	140	4	-0.01	0.12
Pump PU2	#N/A	#N/A	1.19	0.00
Pump PU3	#N/A	#N/A	2.00	0.00
Valve V4	#N/A	4	0.00	0.00
Valve V1	#N/A	12	0.44	0.56
Valve V2	#N/A	4	-0.24	2.74
Valve V3	#N/A	4	0.02	0.17
Valve V5	#N/A	4	0.00	0.02
Valve V6	#N/A	4	0.01	0.09
Valve V7	#N/A	4	0.01	0.09
Valve V8	#N/A	12	2.00	2.55

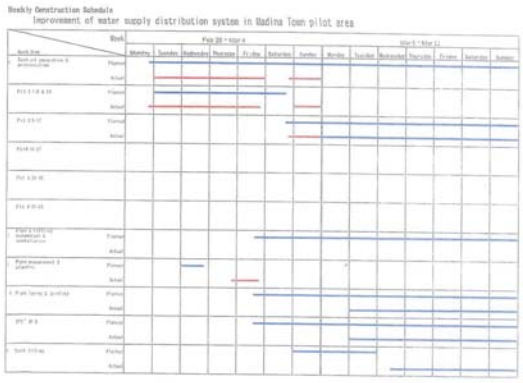
Network Table - Links at 8:00 Hrs

Link ID	Unit Headloss ft/Kft	Friction Factor
Pipe P3	0.40	0.028
Pipe P5	0.00	0.000
Pipe P8	2.41	0.024
Pipe P9	0.00	0.000
Pipe P10	0.00	0.000
Pipe P12	0.00	0.000
Pipe P13	0.00	0.000
Pipe P14	0.00	0.000
Pipe P15	13.01	0.028
Pipe P16	0.12	0.040
Pipe P18	4.85	0.030
Pipe P19	0.15	0.040
Pipe P20	11.51	0.028
Pipe P21	2.47	0.032
Pipe P22	0.11	0.044
Pipe P24	1.26	0.034
Pipe P25	0.72	0.035
Pipe P26	0.33	0.037
Pipe P27	0.13	0.040
Pipe P28	0.06	0.043
Pipe P29	10.92	0.028
Pipe P30	5.71	0.030
Pipe P31	3.23	0.031
Pipe P32	1.85	0.032
Pipe P33	1.09	0.034
Pipe P34	0.34	0.037
Pipe P35	2.57	0.034
Pipe P36	1.23	0.036
Pipe P37	0.04	0.047
Pipe P38	0.97	0.037
Pipe P39	0.30	0.040
Pipe P40	0.07	0.045
Pipe P41	0.04	0.044
Pipe P42	0.03	0.049
Pipe P43	0.65	0.038
Pipe P44	1.07	0.037
Pipe P45	0.95	0.037
Pipe P46	0.25	0.038
Pipe P48	0.66	0.038
Pipe P49	0.31	0.040

Link ID	Unit Headloss ft/Kft	Friction Factor
Pipe P50	0.06	0.046
Pipe P51	0.05	0.047
Pipe P52	0.03	0.049
Pipe P53	0.02	0.051
Pipe P54	0.00	0.122
Pipe P55	0.05	0.043
Pipe P59	0.15	0.030
Pipe P60	6.87	0.029
Pipe P62	0.00	0.000
Pipe P63	0.00	0.000
Pipe P17	2.81	0.031
Pipe P58	0.04	0.045
Pipe P1	14.56	0.028
Pipe P2	0.93	0.034
Pipe P4	1.23	0.034
Pipe P7	0.26	0.038
Pipe P11	0.12	0.040
Pipe P23	6.87	0.029
Pipe P47	1.69	0.035
Pipe P56	0.56	0.039
Pipe P57	3.58	0.031
Pipe P64	1.78	0.033
Pipe P65	0.69	0.035
Pipe P67	0.77	0.038
Pipe P68	0.46	0.039
Pipe P69	0.73	0.038
Pipe P70	0.08	0.045
Pipe P71	1.39	0.036
Pipe P72	0.25	0.041
Pipe P73	0.04	0.048
Pipe P74	0.72	0.038
Pipe P75	0.08	0.045
Pipe P76	0.00	0.053
Pipe P77	0.06	0.046
Pipe P78	0.03	0.046
Pipe P79	0.11	0.044
Pipe P80	0.06	0.043
Pipe P81	0.42	0.037
Pipe P82	0.07	0.042
Pipe P6	2.41	0.024
Pipe P61	0.05	0.062

Link ID	Unit Headloss ft/Kft	Friction Factor
Pipe P66	0.04	0.064
Pump PU2	-77.41	0.000
Pump PU3	-80.00	0.000
Valve V4	0.00	0.000
Valve V1	0.00	0.000
Valve V2	0.00	0.000
Valve V3	74.15	0.000
Valve V5	70.50	0.000
Valve V6	70.07	0.000
Valve V7	70.09	0.000
Valve V8	59.92	0.000

AF3.7 Construction Completion Books


Weekly Construction Schedule
Improvement of water supply distribution system in Madina Town pilot area

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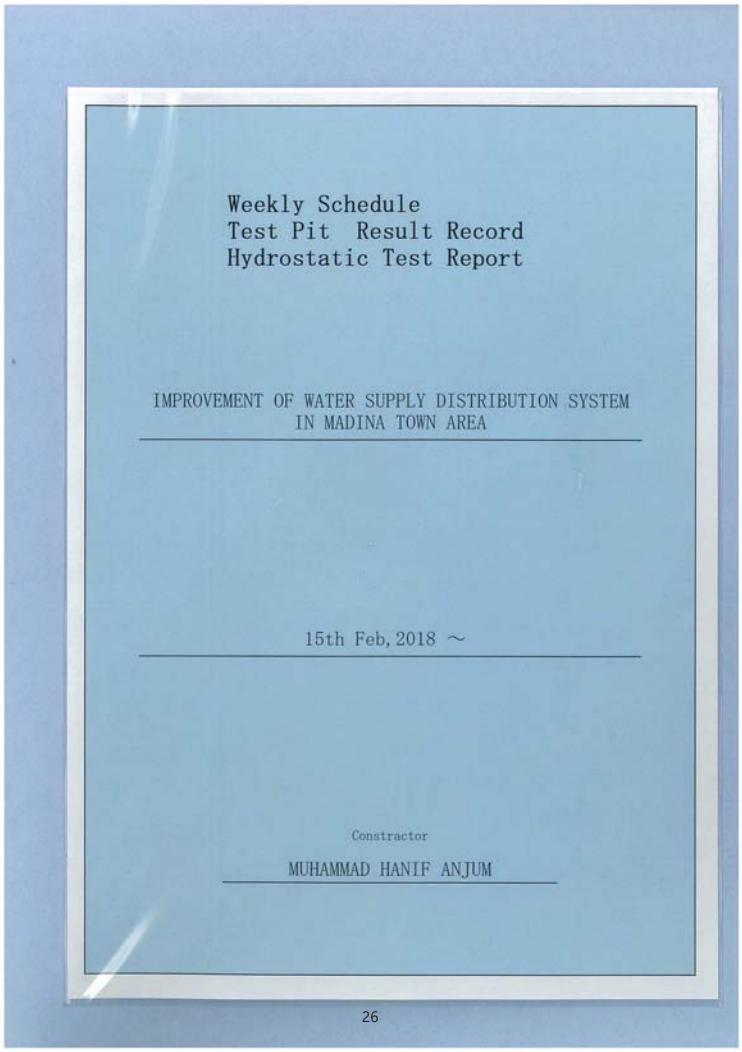
Weekly Schedule
Test Pit Result Record
Hydrostatic Test Report

IMPROVEMENT OF WATER SUPPLY DISTRIBUTION SYSTEM
IN MADINA TOWN AREA

15th Feb, 2018 ～

Constractor

MUHAMMAD HANIF ANJUM

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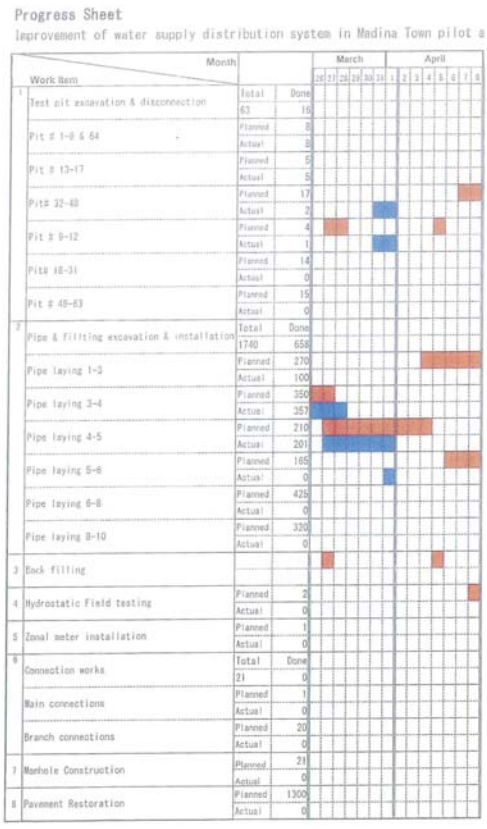
Progress Sheet
Improvement of water supply distribution system in Madina Town pilot a

	Work Item		Total	Done
1	Test pit excavation & disconnection		63	15
	Pit # 1-8 & 64	Planned	8	
		Actual	8	
	Pit # 13-17	Planned	5	
		Actual	5	
	Pit# 32-48	Planned	17	
		Actual	2	
	Pit # 9-12	Planned	4	
		Actual	1	
	Pit# 18-31	Planned	14	
		Actual	0	
	Pit # 49-63	Planned	15	
		Actual	0	
2	Pipe & Filling excavation & installation	Total	1740	Done 658
	Pipe laying 1-3	Planned	270	
		Actual	100	
	Pipe laying 3-4	Planned	350	
		Actual	357	
	Pipe laying 4-5	Planned	210	
		Actual	201	
	Pipe laying 5-6	Planned	165	
		Actual	0	
	Pipe laying 6-8	Planned	425	
		Actual	0	
	Pipe laying 8-10	Planned	320	
		Actual	0	
3	Back filling			
4	Hydrostatic Field testing	Planned	2	
		Actual	0	
5	Zonal meter installation	Planned	1	
		Actual	0	
6	Connection works	Total	21	Done 0
	Main connections	Planned	1	
		Actual	0	
	Branch connections	Planned	20	
		Actual	0	
7	Manhole Construction	Planned	21	
		Actual	0	
8	Pavement Restoration	Planned	1300	
		Actual	0	

9

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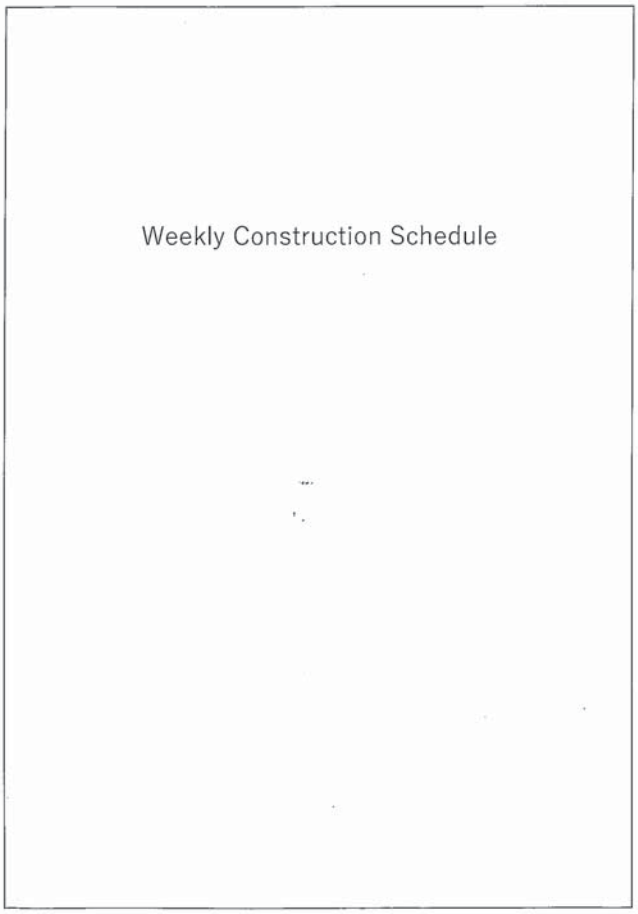
Weekly Construction Schedule

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Progress Sheet & Schedule

Improvement of water supply distribution system in Madina

	Work Item		Total	Done
1	Test pit excavation & disconnection		64	21
	Pit # 1-8 & 64	Planned		8
		Actual		8
	Pit # 13-17	Planned		5
		Actual		5
	Pit# 32-48	Planned		18
		Actual		5
	Pit # 9-12	Planned		4
		Actual		1
	Pit# 18-31	Planned		14
		Actual		0
	Pit # 49-63	Planned		15
		Actual		2
2	Pipe excavation & installation		1824	1507
	Pipe laying 1-3	Planned		270
		Actual		214
	Pipe laying 3-4	Planned		350
		Actual		357
	Pipe laying 4-5	Planned		210
		Actual		219
	Pipe laying 5-6	Planned		189
		Actual		191
	Pipe laying 6-8	Planned		425
		Actual		421
	Pipe laying 8-10	Planned		320
		Actual		87
	Boring for road crossing	Planned		2
		Actual		0
	Connection pipe	Planned		60
		Actual		18
3	Back filling			
4	Hydrostatic Field testing	Planned		2
		Actual		0
5	Zonal meter installation	Planned		1
		Actual		0
6	Connection works		21	6
	Main connections	Planned		1
		Actual		0
	Branch connections	Planned		20
		Actual		6
7	Manhole Construction	Planned		26
		Actual		0
8	Pavement Restoration	Planned		1300
		Actual		0

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Progress Sheet

Improvement of water supply distribution system in Madina Town pilot

	Work Item		Total	Done
1	Test pit excavation & disconnection		64	18
	Pit # 1-8 & 64	Planned		8
		Actual		8
	Pit # 13-17	Planned		5
		Actual		5
	Pit# 32-48	Planned		17
		Actual		4
	Pit # 9-12	Planned		4
		Actual		1
	Pit# 18-31	Planned		14
		Actual		0
	Pit # 49-63	Planned		15
		Actual		0
2	Pipe & Filling excavation & installation		1740	910
	Pipe laying 1-3	Planned		270
		Actual		150
	Pipe laying 3-4	Planned		350
		Actual		357
	Pipe laying 4-5	Planned		210
		Actual		218
	Pipe laying 5-6	Planned		165
		Actual		89
	Pipe laying 6-8	Planned		425
		Actual		96
	Pipe laying 8-10	Planned		320
		Actual		0
3	Back filling			
4	Hydrostatic Field testing	Planned		2
		Actual		0
5	Zonal meter installation	Planned		1
		Actual		0
6	Connection works	Total	21	Done 0
	Main connections	Planned		1
		Actual		0
	Branch connections	Planned		20
		Actual		0
7	Manhole Construction	Planned		21
		Actual		0
8	Pavement Restoration	Planned		1300
		Actual		0

Work Done Last week (2-8 April)
1- Test pits = 2
2- Pipe laying = 252 m
3- Removal of surplus materials = 725 =

This week :- (9-15)
1. Pipe laying = 240 m
2- Removal of earth = 300 m
3- Connection pit
4- Boring pit

NOC from TMA

ments:
Need NOC from TMA for working in the area IP1-IP3, IP6a-IP10
Need formal approval of route revision

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Progress Sheet & Schedule

Improvement of water supply distribution system in Madina Town pilot area

	Work Item		Total	Done
1	Test pit excavation & disconnection		64	25
	Pit # 1-8 & 64	Planned		8
		Actual		8
	Pit # 13-17	Planned		5
		Actual		5
	Pit# 32-48	Planned		18
		Actual		5
	Pit # 9-12	Planned		4
		Actual		1
	Pit# 18-31	Planned		14
		Actual		4
	Pit # 49-63	Planned		15
		Actual		2
2	Pipe excavation & installation		1824	1656
	Pipe laying 1-3	Planned		270
		Actual		214
	Pipe laying 3-4	Planned		350
		Actual		357
	Pipe laying 4-5	Planned		210
		Actual		219
	Pipe laying 5-6	Planned		189
		Actual		191
	Pipe laying 6-8	Planned		425
		Actual		421
	Pipe laying 8-10	Planned		320
		Actual		233
	Boring for road crossing	Planned		2
		Actual		0
	Connection pipe	Planned		60
		Actual		21
3	Back filling			
4	Hydrostatic Field testing	Planned		2
		Actual		1
5	Zonal meter installation	Planned		1
		Actual		0
6	Connection works	Total	21	Done 10
	Main connections	Planned		1
		Actual		1
	Branch connections	Planned		20
		Actual		9
7	Manhole Construction	Planned		26
		Actual		0
8	Pavement Restoration	Planned		1300
		Actual		0

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Progress Sheet & Schedule

Improvement of water supply distribution system in Madina

	Work Item		Total	Done
1	Test pit excavation & disconnection		64	21
	Pit # 1-8 & 64	Planned		8
		Actual		8
	Pit # 13-17	Planned		5
		Actual		5
	Pit# 32-48	Planned		18
		Actual		5
	Pit # 9-12	Planned		4
		Actual		1
	Pit# 18-31	Planned		14
		Actual		0
	Pit # 49-63	Planned		15
		Actual		2
2	Pipe excavation & installation		1764	1405
	Pipe laying 1-3	Planned		270
		Actual		190
	Pipe laying 3-4	Planned		350
		Actual		357
	Pipe laying 4-5	Planned		210
		Actual		219
	Pipe laying 5-6	Planned		189
		Actual		191
	Pipe laying 6-8	Planned		425
		Actual		421
	Pipe laying 8-10	Planned		320
		Actual		27
	Boring for road crossing	Planned		2
		Actual		1
3	Back filling			
4	Hydrostatic Field testing	Planned		2
		Actual		0
5	Zonal meter installation	Planned		1
		Actual		0
6	Connection works	Total	21	Done 0
	Main connections	Planned		1
		Actual		0
	Branch connections	Planned		20
		Actual		0
7	Manhole Construction	Planned		26
		Actual		0
8	Pavement Restoration	Planned		1300
		Actual		0

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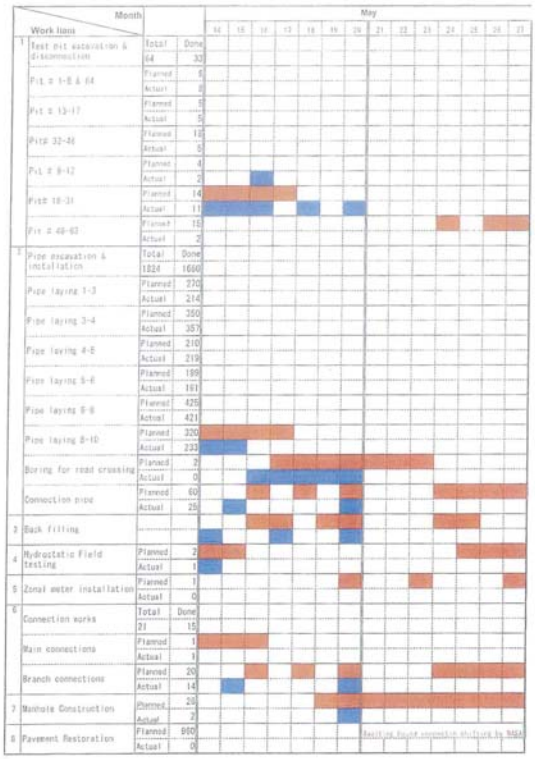
Progress Sheet & Schedule

Improvement of water supply distribution system in Madina Town pilot area



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Test pit Result record

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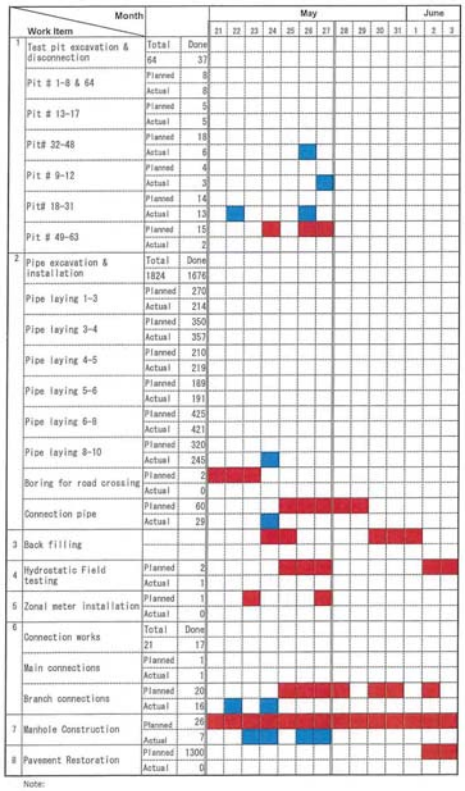
Progress Sheet & Schedule

Improvement of water supply distribution system in Madina Town pilot ar



Note:

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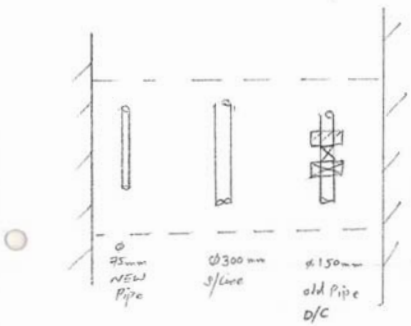
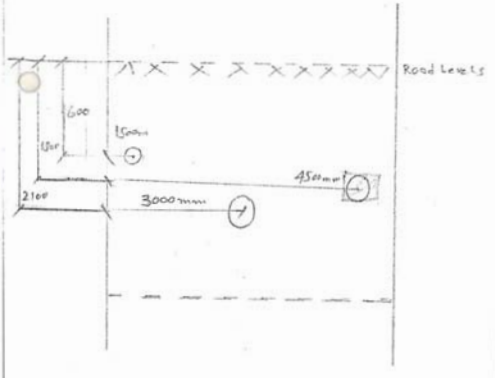
2/3/2018/ 1

plan view map



No.	1
L	6000
W	900
H	2.4m
site condition	
free memo	Ø1000mm Hard Stata Road Agg Stone Ø1400mm Normal Earth Work (Soil)

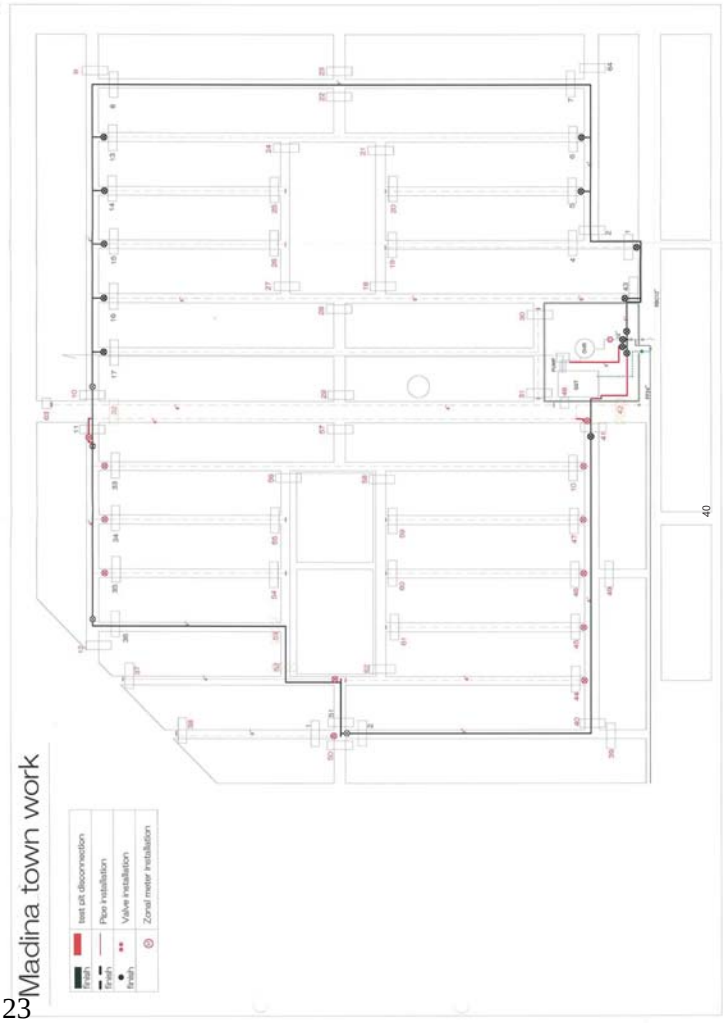
cross-section view



掘削 2/3
埋戻 6/3

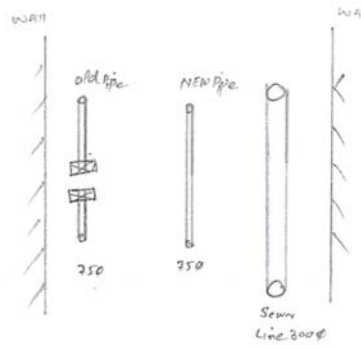
42

40



28/2/2018/1

plan view map



No,	5
L	6000
W	900
H	2400

site condition

free memo

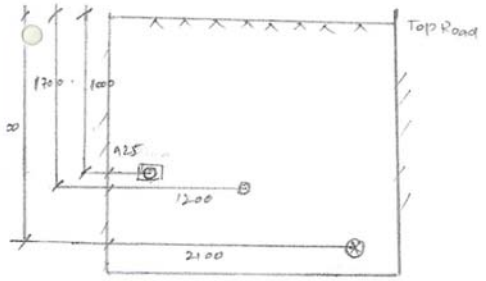
1000 Hard Stata

1400 Normal Soil

撮影 28/2

撮尿 2/3

cross-section view



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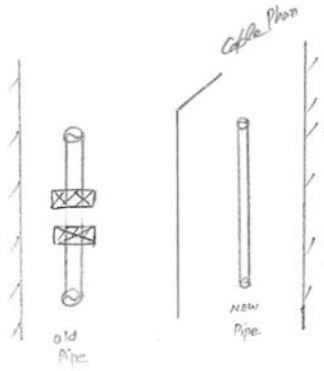
2/3/2018/1

plan view map



No,	2
L	6000
W	900
H	2400

site condition

free memo

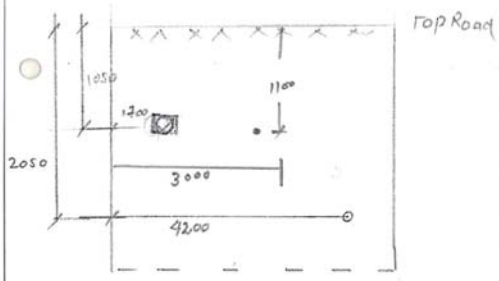
1000 Hard Stata

1400 Normal Soil

撮影 2/3

撮尿 3/3

cross-section view



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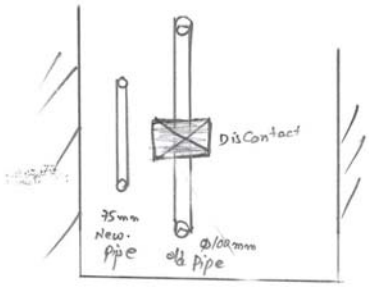
2018/1

plan view map



No,	6
L	6000
W	1000
H	2500

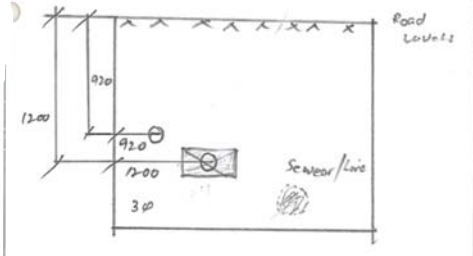
site condition

free memo

★ Hard Soil 1000 mm

★ Normal Soil 1500 mm

cross-section view



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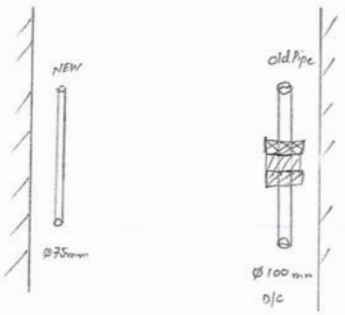
27/2/2018/1

plan view map



No,	4
L	6000
W	900
H	2400

site condition

free memo

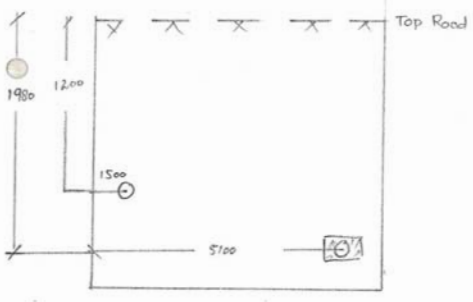
1000 Hard Stata

1400 Normal Soil

撮影 27/2

撮尿 2/3

cross-section view



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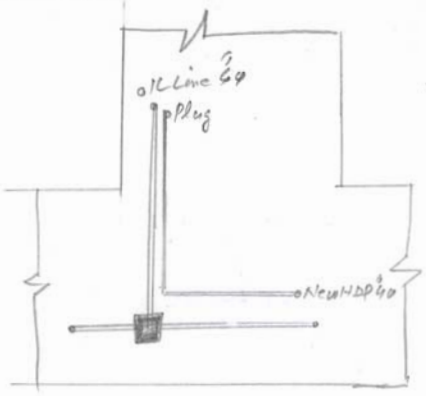
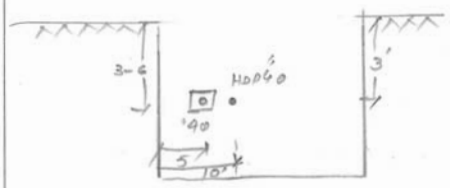
2018/ /

plan view map



No.	9
L	5000
W	1000
H	2000
site condition	
free memo	* Hard Stat P.C.C Agg Base Sub Base total Mix Agg Soil 2000 mm

cross-section view



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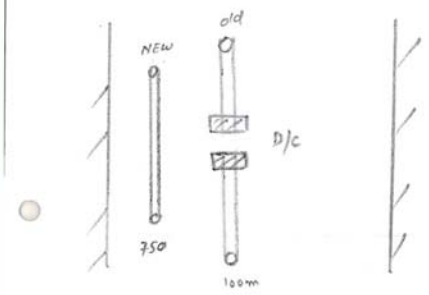
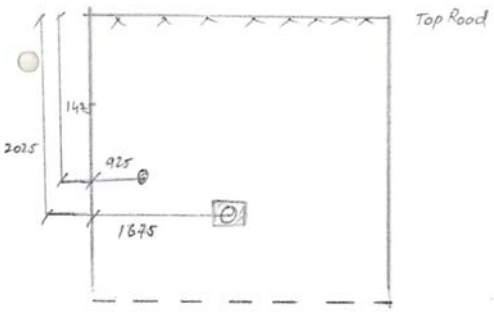
2 / 3 /2018/ /

plan view map



No.	7
L	6000
W	900
H	2400
site condition	
free memo	Hard Strata 1000 Normal 1400 掘削 2/3 埋戻 3/3

cross-section view



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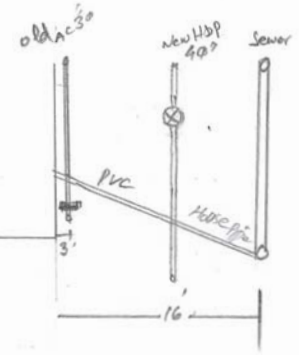
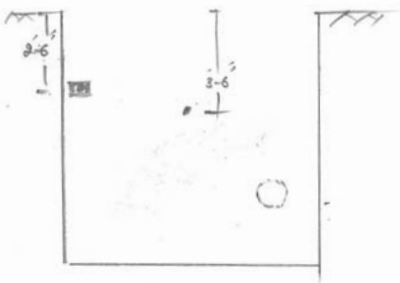
2018/ /

plan view map



No.	10
L	5000
W	900
H	2500
site condition	
free memo	Soil Strata 1500 Hard Strat Sub Base Eq P.C.C Agg Base 1000 mm Normal Soil

cross-section view



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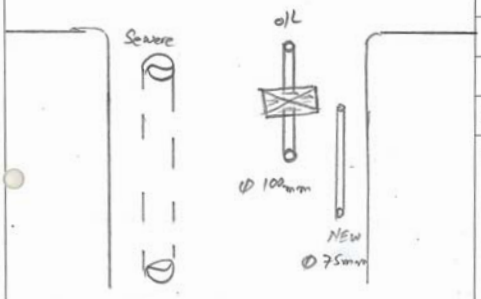
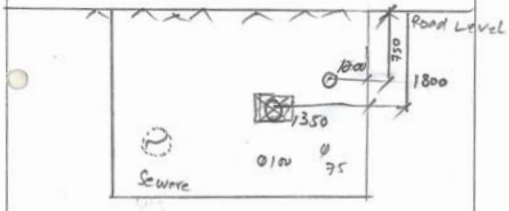
2018/ /

plan view map



No.	⑧
L	6000
W	1000
H	2500
site condition	
free memo	Hard Strata Agg Stone 2500

cross-section view



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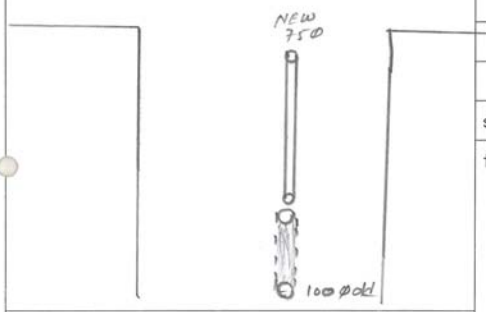
2018/ /

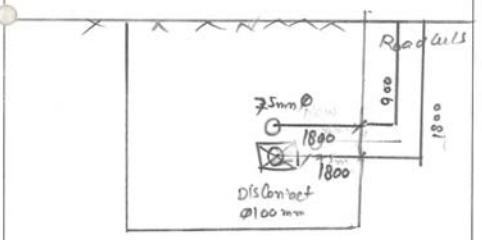
plan view map

T- Shap c Hook



No.	13
L	6000
W	1000
H	2500
site condition	
free memo	Hard Soil Slata 1000 Normal Soil 1500

cross-section view



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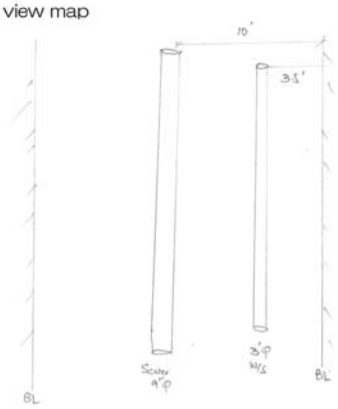
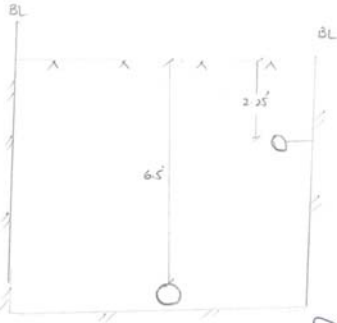
2018/ /

plan view map



No.	11
L	16'
W	3'
H	6.5'
site condition	
free memo	

cross-section view



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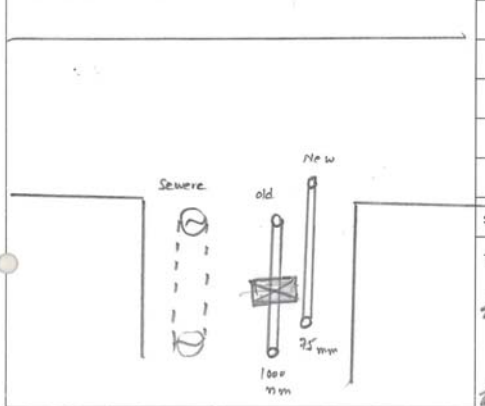
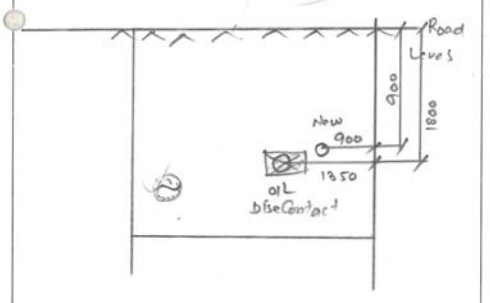
plan view map



No.	14
L	6000
W	1000
H	25000
site condition	
free memo	* Hard Soil 1000 * Normal Soil 1500

cross-section view



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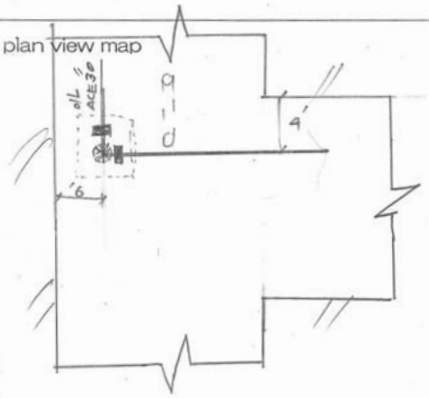
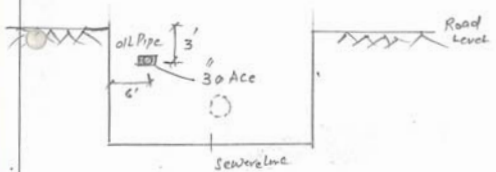
2018/ /

plan view map



No.	12
L	3000
W	900
H	2000
site condition	
free memo	* 1000 mm Hard Slata Agg Base + Sub Base Mix in Soil * 1000 mm Normal Soil

cross-section view



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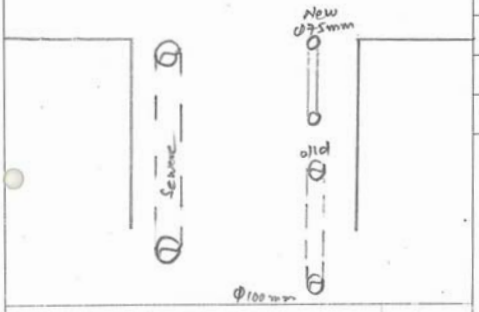
plan view map

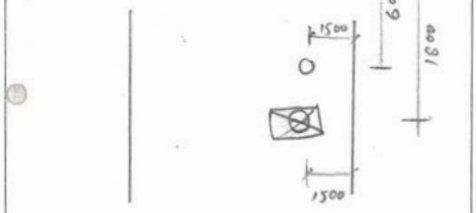


No.	17
L	6000
W	1000
H	2500
site condition	

free memo

Hard stand
Agg Stone
Mix 2500

cross-section view



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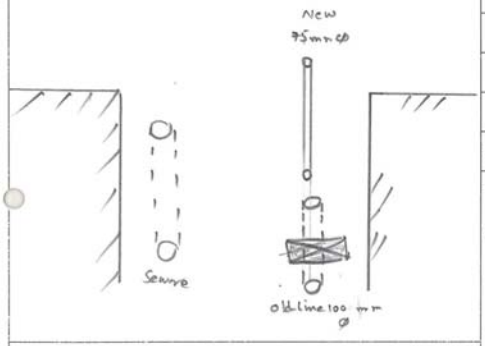
2018/ /

plan view map



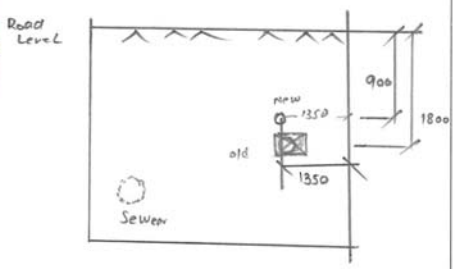
No.	15
L	6000
W	1000
H	2500
site condition	

free memo

* Head Soil
1000

* Normal Soil
1500

cross-section view



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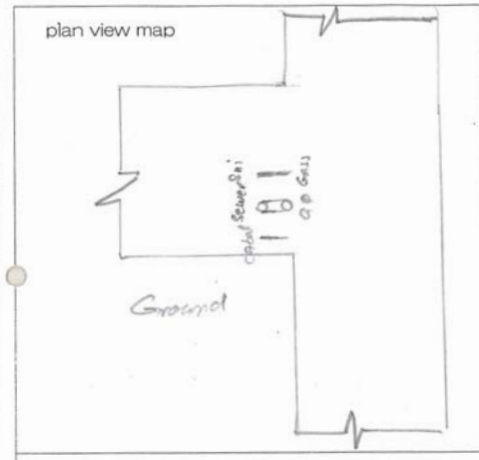
2018/ /

plan view map

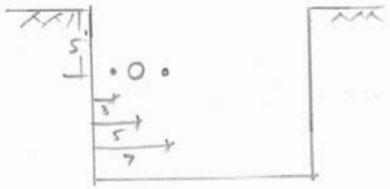


No.	18
L	6000
W	1000
H	2500
site condition	

free memo

Topsoil Agg
Mix Sub Base
+Base + P.C.C
Soil Min Depth
1500mm &
Normal Soil
1001 mm

cross-section view



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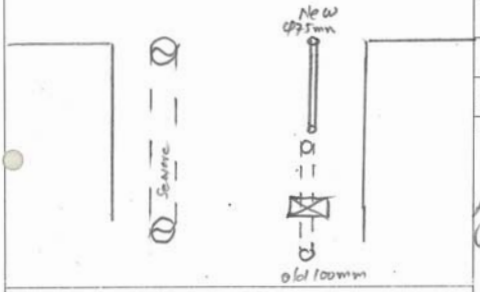
2018/ /

plan view map

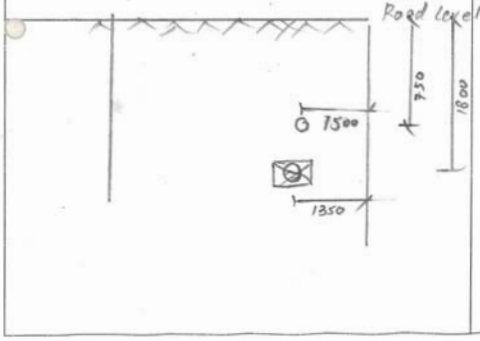


No.	16
L	6000
W	1000
H	2500
site condition	

free memo

Hard Stand
Agg Stone
2500 mm

cross-section view



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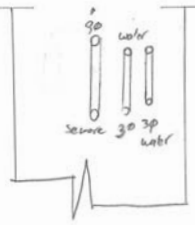
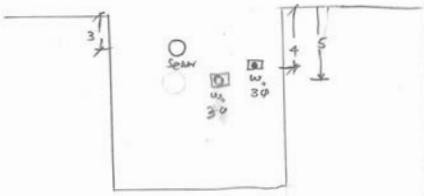
plan view map



cross-section view



No.	20
L	5000
W	1000
H	2500

site condition

free memo

#Hard Stat
Bind Agg Stone
Mix + P.C.C Topping
2500 mm

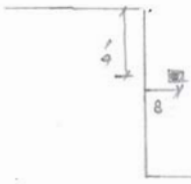
Road Level

61

2018/ /

plan view map

cross-section view



No.	Additional (18A)
	Near 18
L	5000+1500
W	1000
H	2500

site condition

free memo

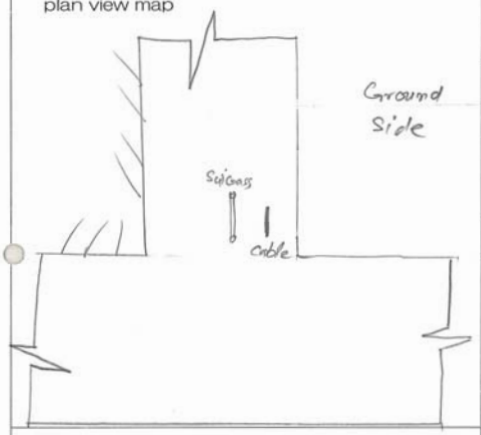
Hard Stat
Agg Base + Sub Base P.C.C 1500 mm and Normal Soil 1000 mm

Road Level

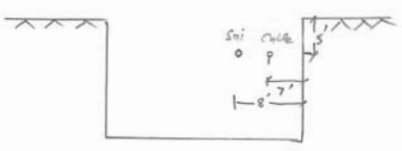
59

2018/ /

plan view map



cross-section view



No.	21
L	8000
W	1000
H	2500

site condition

free memo

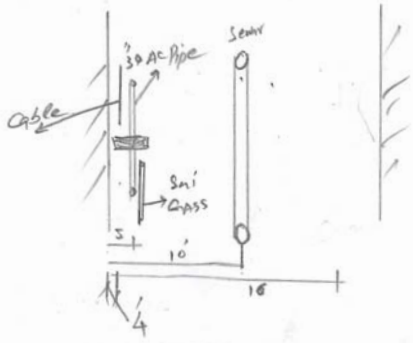
2000 mm Hard
Stone Agg Base
Sub Base + P.C.C
Mix Soil
500 Normal
Soil

Road Level

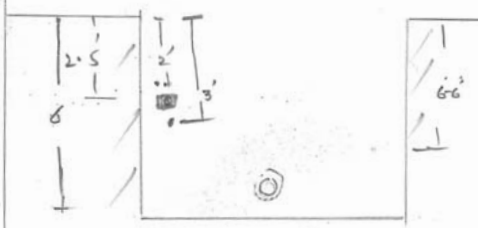
62

2018/ /

plan view map



cross-section view



No.	19
L	5000
W	900
H	2000

site condition

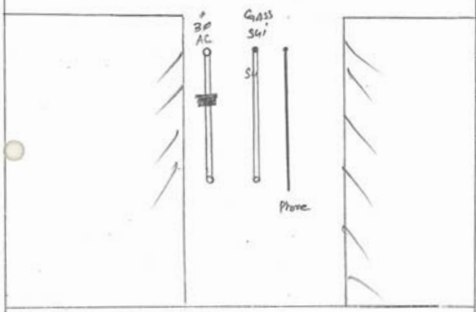
free memo

Glass Soil
1000 mm Agg
Base & P.C.C
Sub Base
1000 mm Normal
Soil

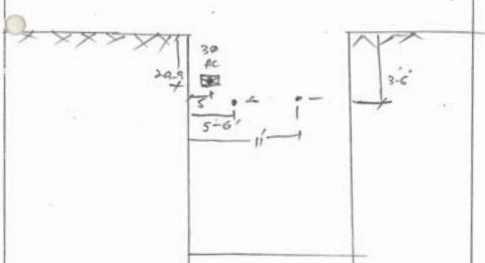
60

2018/ /

plan view map



cross-section view



No.	25
L	5000
W	1000
H	2500

site condition

free memo

Street No 16

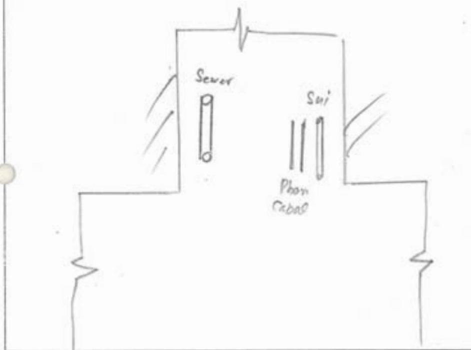
Hard Slata Agg Base + Sub Base + P.c.c 2000 & Normal Slata Soil 500

Road Level

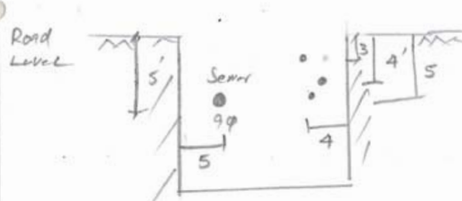
65

2018/ /

plan view map



cross-section view



No.	23
L	5000
W	1000
H	2500

site condition

free memo

* Hard Slat Agg Base Mix Soil + P.c.c Toping 2000 mm Normal Soil 500 mm

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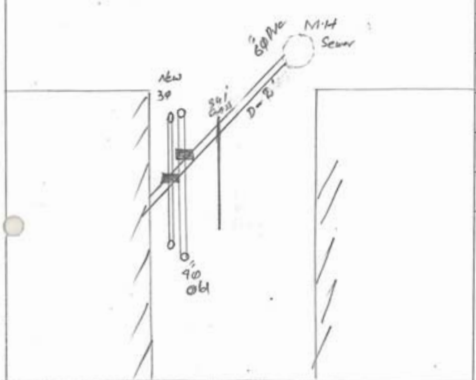
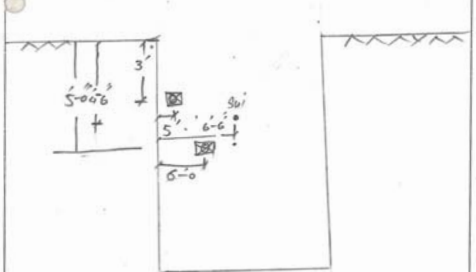
2018/ /

plan view map



cross-section view



No.	26
L	5000
W	1000
H	2500

site condition

free memo

Street No 14

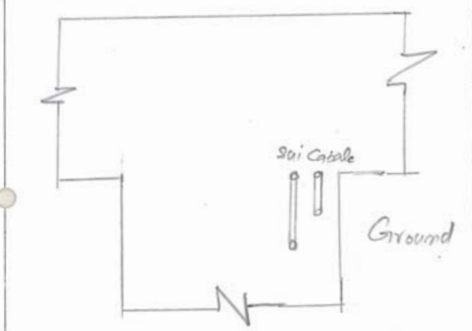
* Hard Slata Mix with Road Crost + P.c.c & Asphalt Depth 2000 Normal Soil 500

Road Level

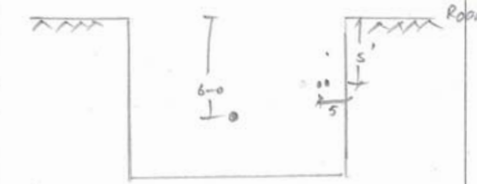
66

2018/ /

plan view map



cross-section view



No.	24
L	6000
W	1000
H	2500

site condition

free memo

* Agg Mix Base Sub Base + P.cc & old 2nd Road Exist at 1500 Total Agg Mix Soil 1000 mm Normal Soil 250 mm

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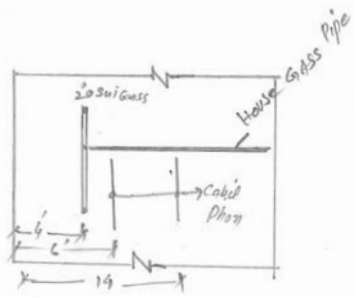
2018/ /

plan view map



No.	29
L	5000
W	900
H	2300

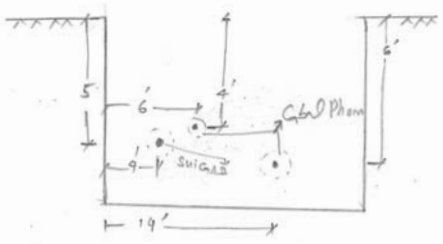
site condition

free memo

Soil Slata
1200 mm pcc
Agg Base, Sub Base
Soil
1000 mm Normal
Soil

Road Level

cross-section view



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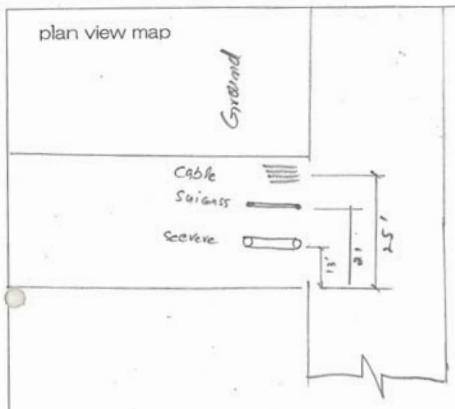
plan view map



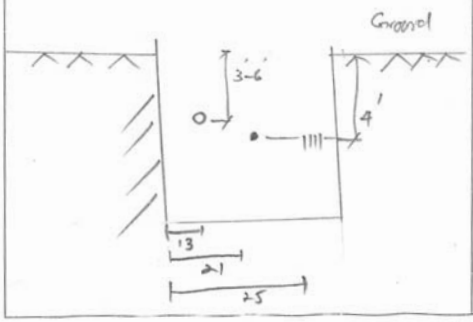
No.	27
L	8000
W	1000
H	2500

site condition

free memo

2000 Hard Slat
Road Cast & Agg
Base + p.c.c
500 Normal
Soil

cross-section view



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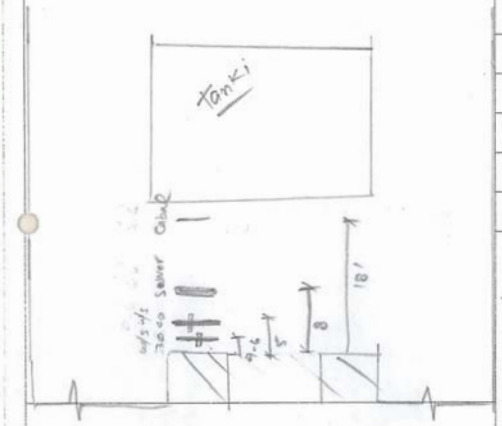
2018/ /

plan view map



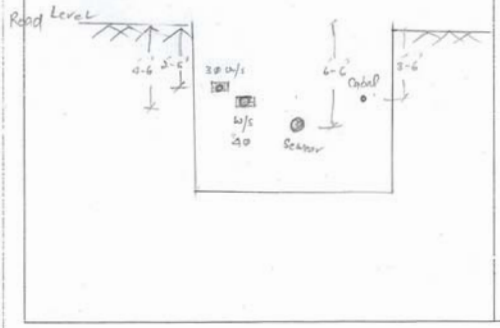
No.	30
L	5000
W	1000
H	2500

site condition

free memo

Hard Slat
Agg Base +
Sub Base P.C.C
1000 mm
& Normal
Slat Soil
1500

cross-section view



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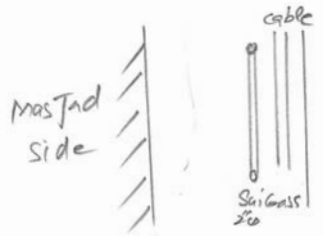
plan view map



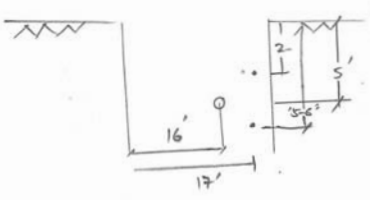
No.	28
L	6000
W	1000
H	2500

site condition

free memo

Hard Slata
P.C.C Agg Base
+ Agg Sub Base
Mix Soil 1000
& 150 on Normal
Soil

cross-section view



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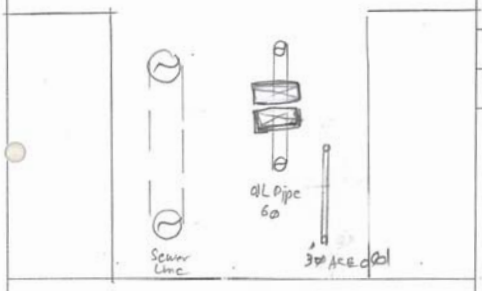
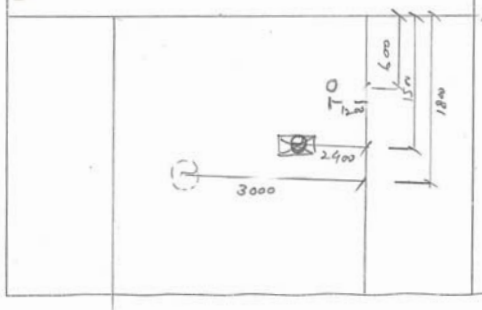
plan view map



No.	53
L	6000
W	900
H	2400
site condition	
free memo	2400 mm P.c.c & Road Agg Stone Mix Soil Brick Ballast Soil Slata

cross-section view



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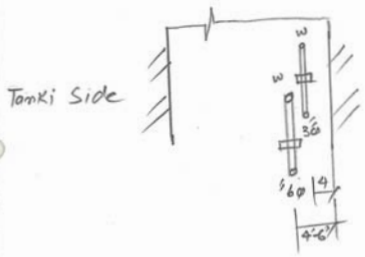
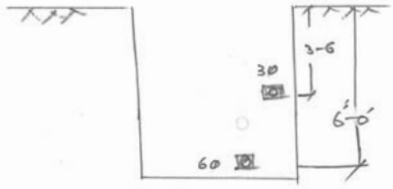
2018/

plan view map



No.	Addational Pit 30A Near Tanki
L	5000
W	1000
H	2500
site condition	
free memo	Agg Base+P.c.c Sub Base Brick Blasted 1000 mm & Normal Soil 1500

cross-section view



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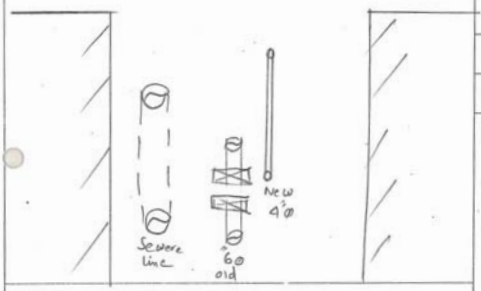
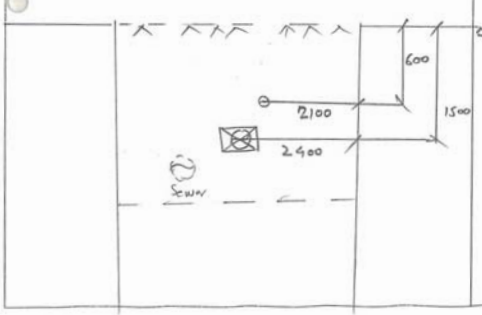
plan view map



No.	34
L	6000
W	900
H	2400
site condition	
free memo	2400 mm Hard Slata Road Agg Stone P.c.c Mix Soil

cross-section view



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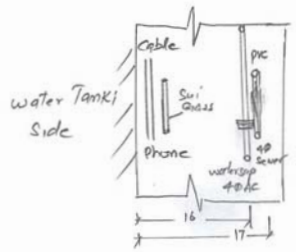
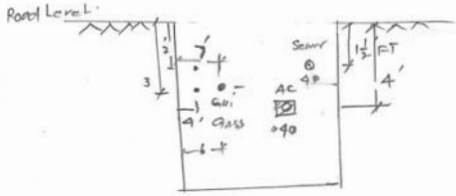
plan view map



No.	31
L	6000
W	1000
H	2500
site condition	
free memo	Hard Slat Agg Base Mix Sub Base+P.c.c 1000 & 1500 Normal Soil

cross-section view



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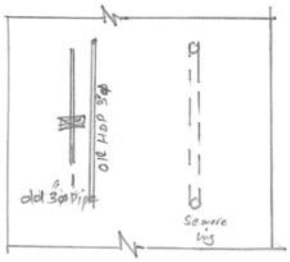
2018/ /

No,	37
L	4700
W	900
H	2200

plan view map

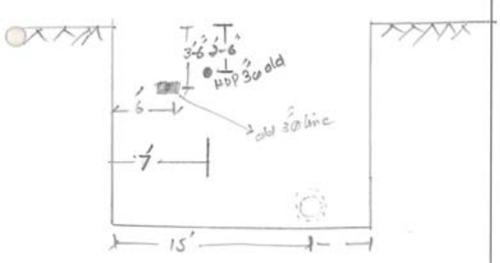


site condition

free memo

1000 mm Hard Stata & P.C.C Base WBM + Agg Sub Base Soil 1200 mm Normal Soil

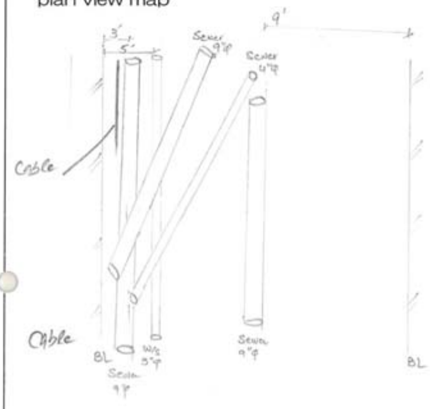
cross-section view



2018/ /

No,	35
L	15'
W	3.5'
H	6.5'

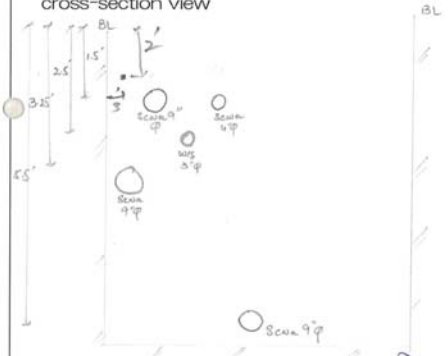
plan view map



site condition

free memo

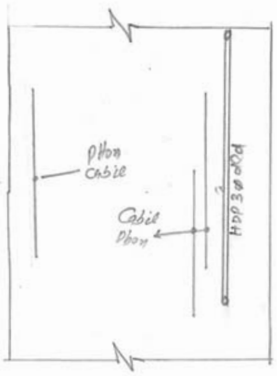
cross-section view



2018/ /

No,	38
L	5000
W	900
H	2100

plan view map

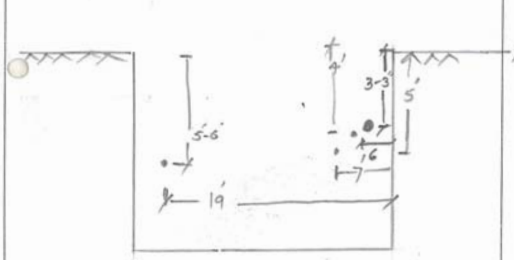


site condition

free memo

1100 mm Hard Stat P.C.C Agg Base & Agg Sub Base Mix Soil & 1000 mm Normal Soil

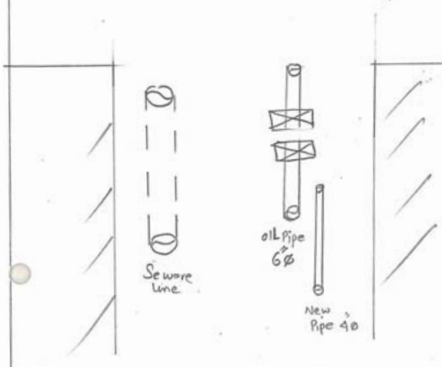
cross-section view



2018/ 4/3

No,	36
L	6000
W	900
H	2400

plan view map

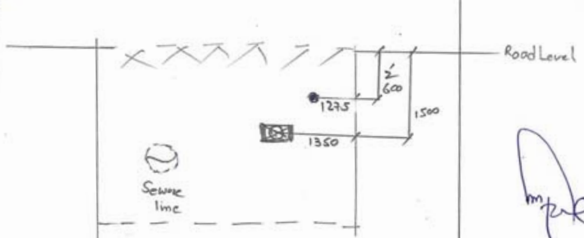


site condition

free memo

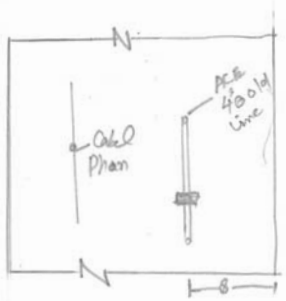
2400mm Hard Stata Road Agg Stone Mix Soil

cross-section view



2018/ /

plan view map



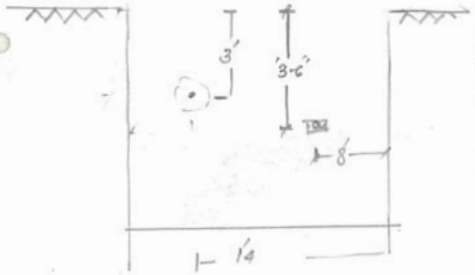
No.	40
L	5500
W	900
H	2200
site condition	

free memo

1000mm Stata P.C.C Agg Base + Sab Base Mix Soil & 1200mm Soil is normal Soil

Road Level

cross-section view



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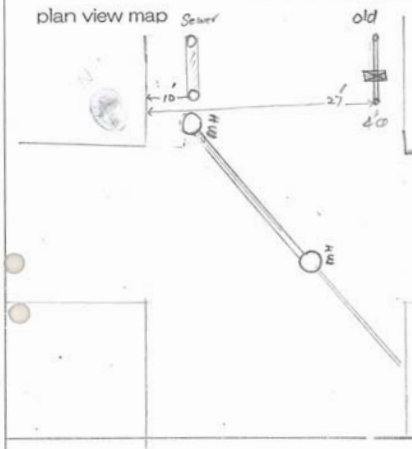
plan view map



No.	38A
L	6000
W	900
H	2500
site condition	

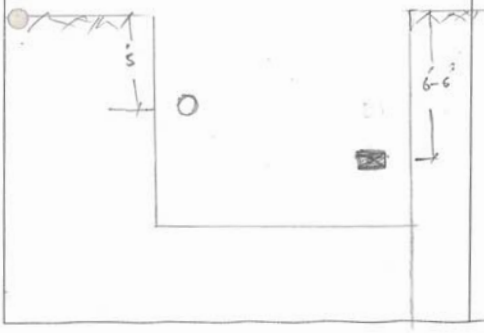
free memo

Hard Stata Agg Base Mix & Pcc & Road Crust P.C.C 1500

Normal Soil 1000

Road Level

cross-section view



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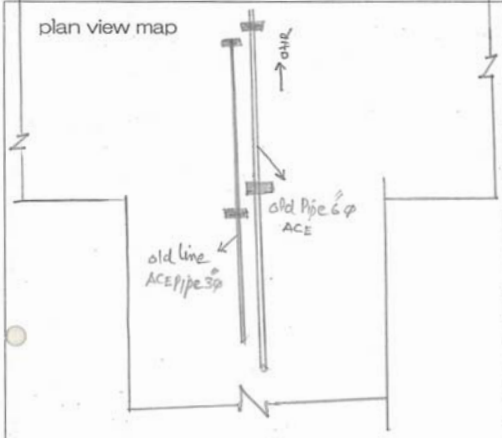
2018/ /

plan view map

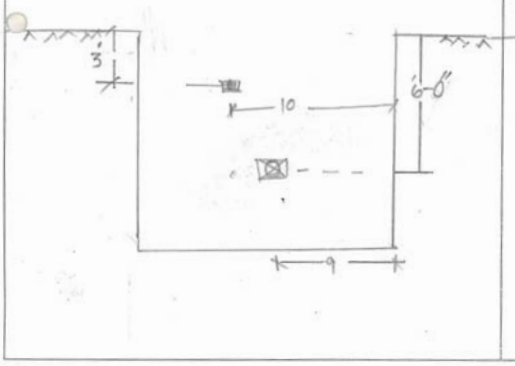


No.	41
L	5000
W	900
H	2200
site condition	

free memo

Soil Stata 1200mm P.C.C & Agg Base WBM + Sub Base total Road Crust 1000mm Normal Soil

cross-section view



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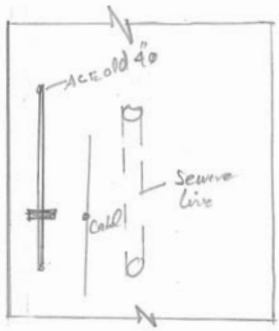
2018/ /

plan view map

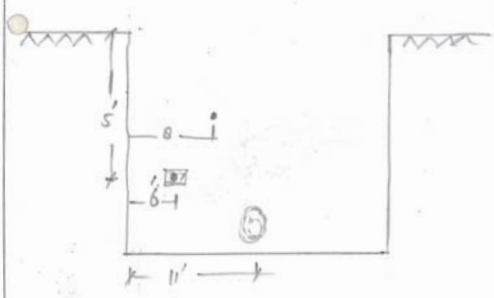


No.	39
L	4500
W	900
H	2200
site condition	

free memo

Soil Stata 1000mm Agg Base P.C.C Sub Base Mix Soil 1200 Normal Soil

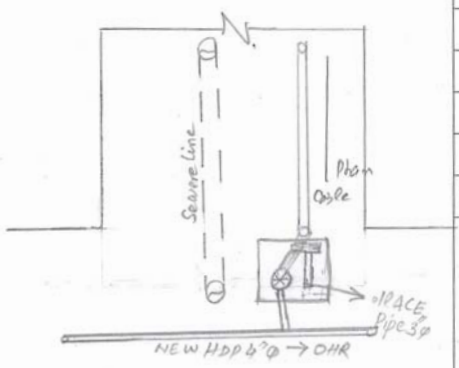
cross-section view



80

2018/ /

plan view map

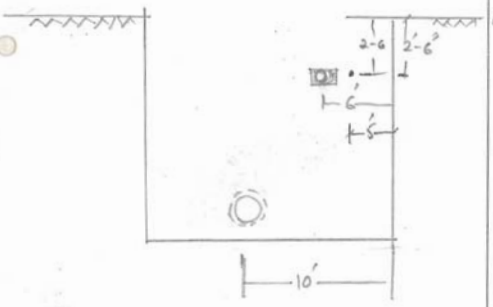


No.	46
L	4000
W	900
H	2000
site condition	

free memo

Soil Stab
1000 mm Soil
PCC + Agg Base
WBM & Agg Sub-Base Soil Mix
1000 mm is Normal
Soil Stab

cross-section view



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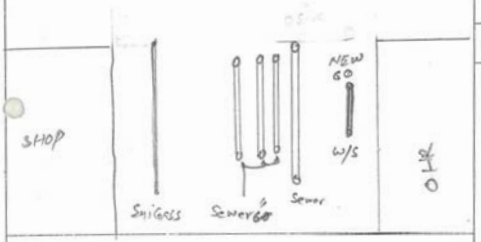
2018/ /

plan view map

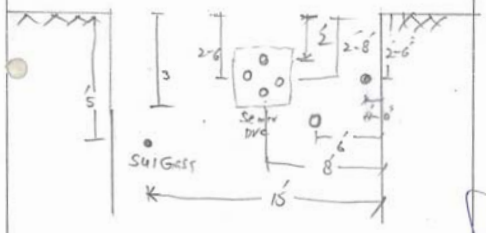


No.	43
L	7000
W	7000
H	2500
site condition	

free memo

Hard Stab
Mix Agg Base & P.C.C Road Cust Mix
Soil 250 m

cross-section view



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OHR

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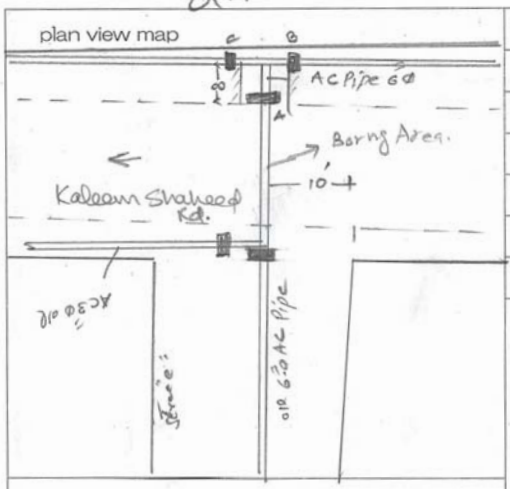
plan view map

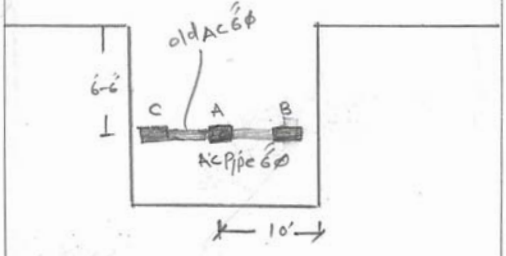


No.	48
L	4000
W	900
H	2500
site condition	

free memo

Hard Stab
1500 mm Base
P.C.C & Agg Sub Base
Normal Soil
1000 mm

cross-section view



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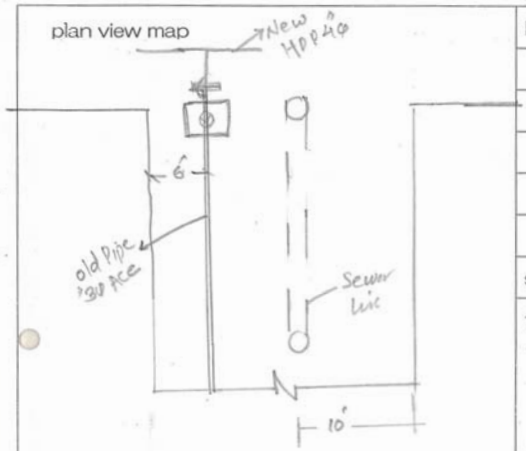
plan view map



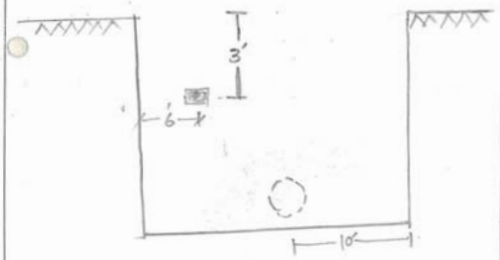
No.	44
L	4500
W	900
H	2000
site condition	

free memo

Soil Stab
1000 mm Soil
P.C.C Agg Base & Sub Base Mix
1000 mm Soil
Normal

Road Level

cross-section view



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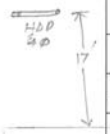
plan view map



No.	51
L	6000
W	900
H	2500
site condition	
free memo	

Agg Base + PCC & Road Crust Mix Metal 1000 Normal Soil 1500

cross-section view

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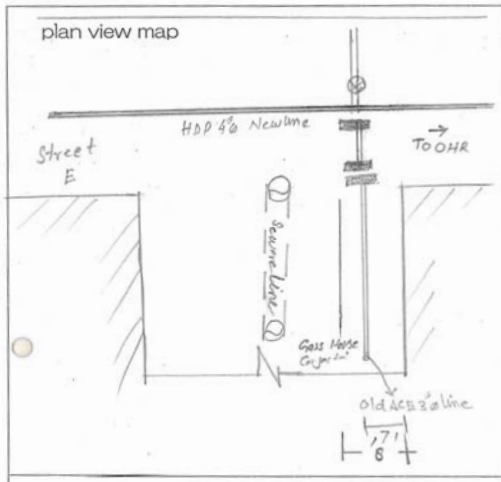
2018/ /

plan view map

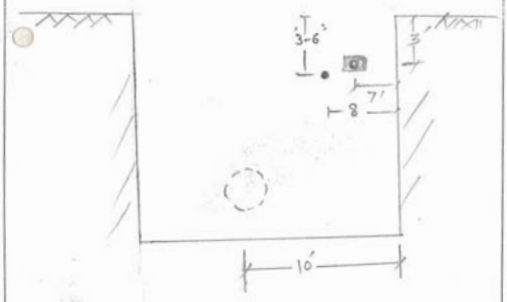


No.	49
L	5000
W	900
H	2800
site condition	
free memo	

1100mm Soil Slate is PCC & Agg Base WBM + Sub Base & Old Road Crust Soil. 1100mm Normal Soil

Road Levels

cross-section view



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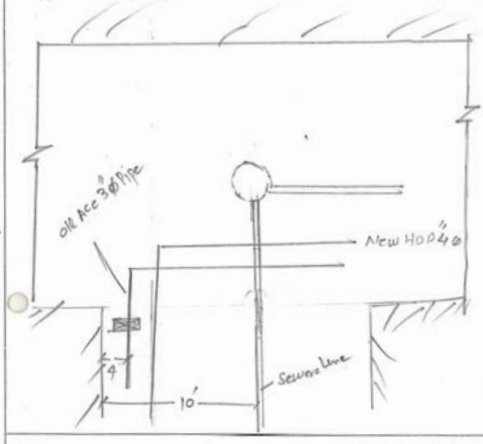
plan view map

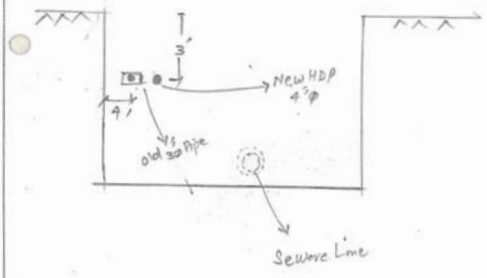


No.	52
L	3000
W	900
H	2000
site condition	
free memo	

100mm Slate Hand D.C.C + Base WBM & Sub Base Soil 1100mm Slate Normal Soil

Road Level

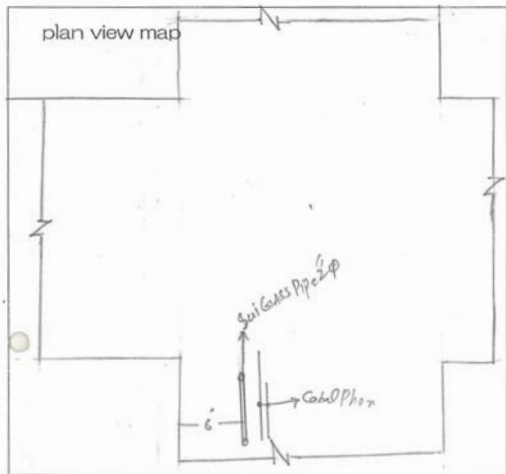
cross-section view



90

2018/ /

plan view map

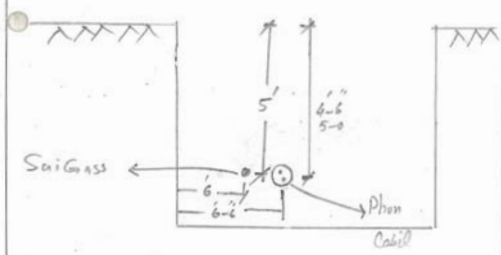


No.	50
L	5000
W	900
H	2400
site condition	
free memo	

Slate Hard 1200mm Slate PCC Agg Base & Sub Base Mix Soil 1700mm Normal Soil

Road Level

cross-section view



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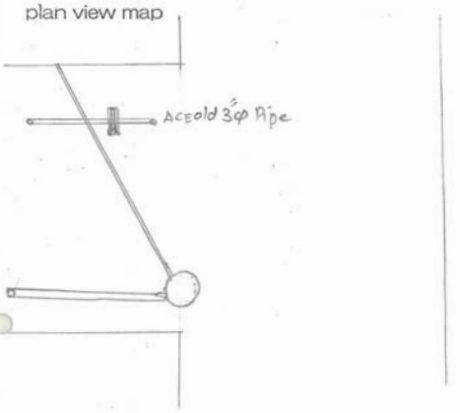
plan view map

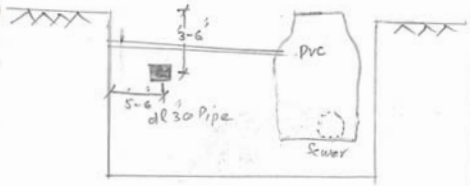


No.	55
L	5000
W	900
H	2400
site condition	

free memo

1000 P.C.C + Base
Agg WBM + Agg Sub
Base Soil &
1400 Normal
Soil

cross-section view



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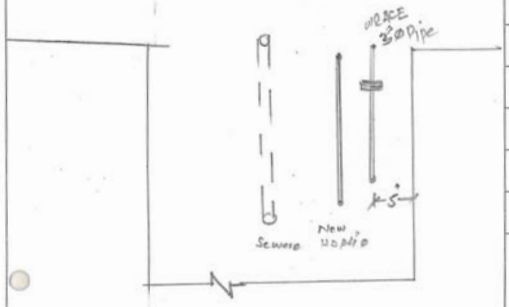
2018/ /

plan view map

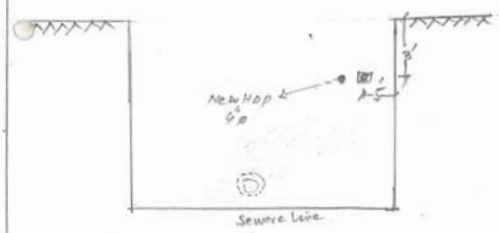


No.	53
L	4500
W	900
H	2500
site condition	

free memo

1000 mm Slata
Hand P.C.C + Base
WBM + Sub Base
Road Crust Soil
1500 mm Normal
Soil

cross-section view



Road Level

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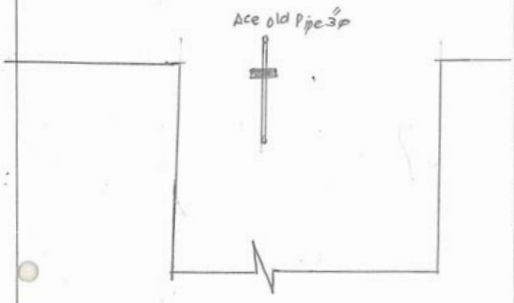
2018/ /

plan view map

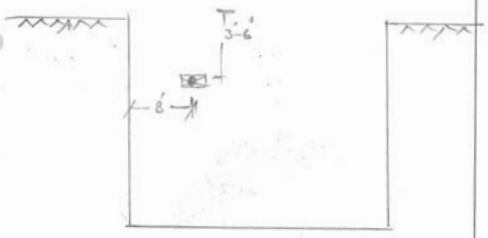


No.	56
L	4500
W	900
H	2000
site condition	

free memo

1000 mm
Pcc + Agg Base
WBM + Sub Base
oil Road Crust
1000 mm Normal
Soil Slata

cross-section view



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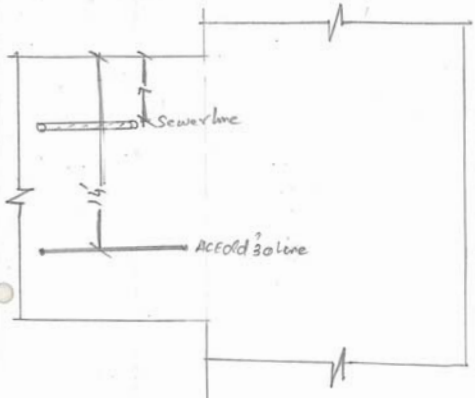
2018/ /

plan view map

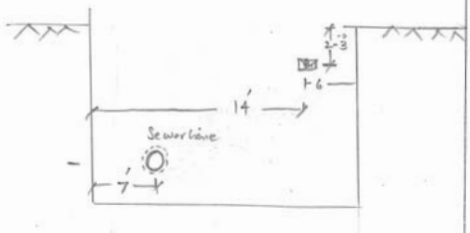


No.	54
L	4000
W	900
H	2200
site condition	

free memo

1000 mm Slata
P.C.C + Agg Stone
Crushed + WBM +
Sub Base Soil
1200 mm Normal
Soil

cross-section view



Road Level

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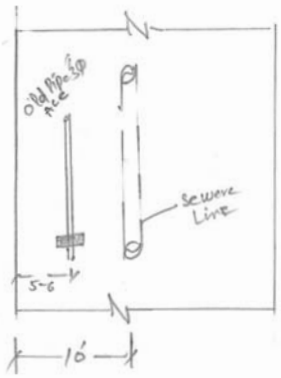
plan view map



No.	59
L	3500
W	900
H	2000

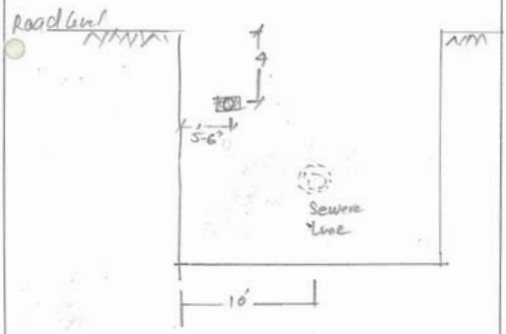
site condition

free memo

Soil Stata

1000mm P.c.c Agg Base WBM & Sub Base Mix Soil 1000mm Normal Soil

cross-section view



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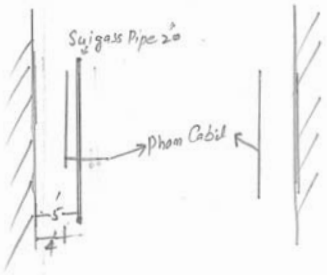
2018/ /

plan view map



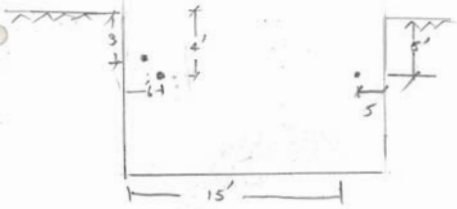
No.	57
L	6000
W	900
H	2500

site condition

free memo

1000 Hard Agg Base + Sub Base + pcc 1500 Normal Soil

cross-section view



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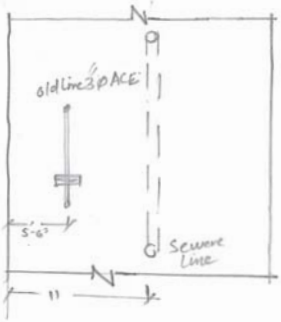
2018/ /

plan view map



No.	60
L	3000
W	900
H	2000

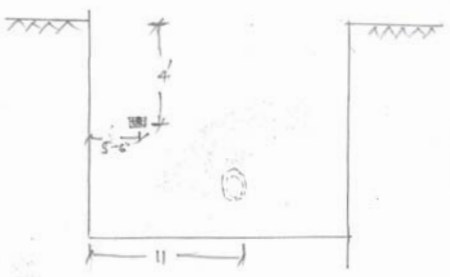
site condition

free memo

Soil Stat

1000mm Agg Base & P.C.C Sub Base Mix Soil 1000mm Normal Soil

cross-section view



Road Level

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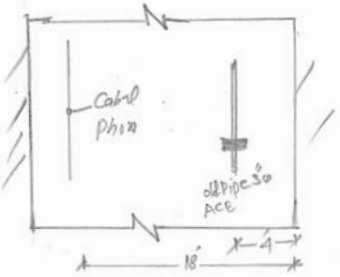
2018/ /

plan view map



No.	58
L	6000
W	900
H	2400

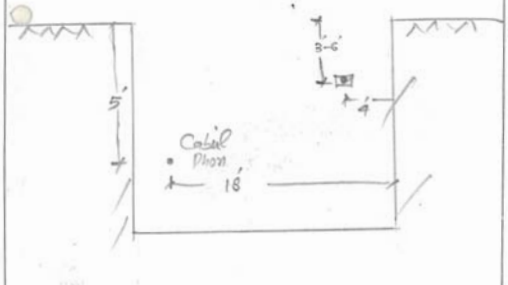
site condition

free memo

Soil Stata

1200mm Agg Base & P.C.C Sub Base Mix Soil 1200mm Normal Soil

cross-section view



Road Level

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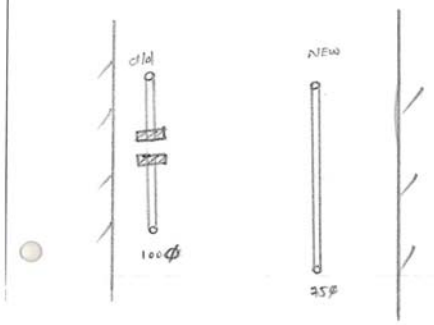
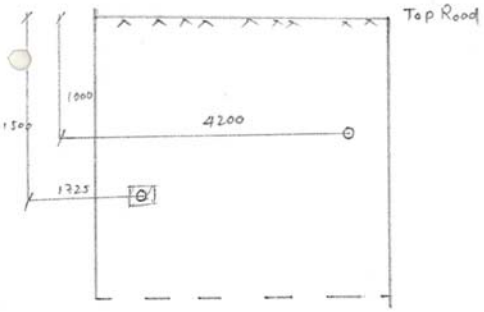
plan view map



No.	64
L	6000
W	900
H	2400
site condition	
free memo	1000 Hard Starta 1600 Normal Soil

cross-section view



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撮後 2/3

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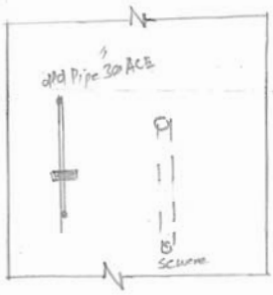
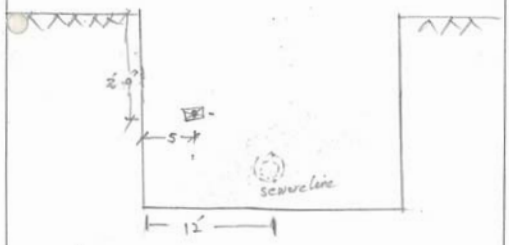
2018/ 1

plan view map



No.	61
L	3800
W	900
H	2000
site condition	
free memo	Soil Stata 100mm Agg Base P.C.C & Sub Base Mix Soil 1000mm Normal Soil Road Levels

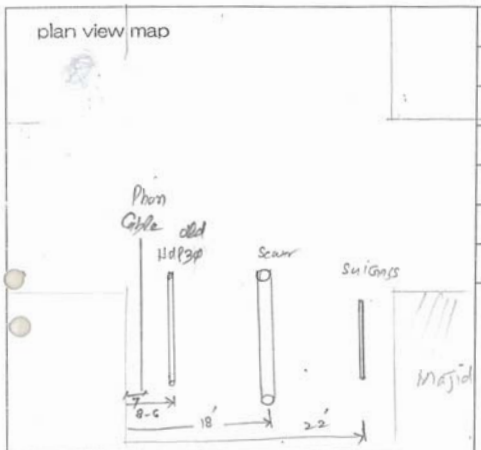
cross-section view



99

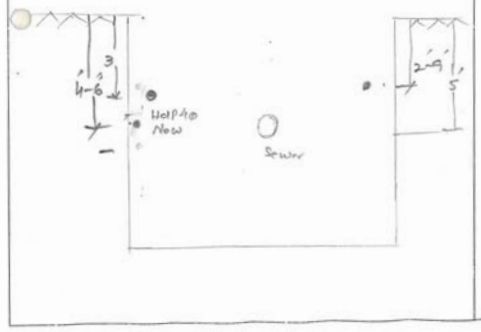
2018/ 1

plan view map



No.	66
L	6000
W	900
H	2500
site condition	
free memo	Xing Pit for Excavation linement Pit Street No 2

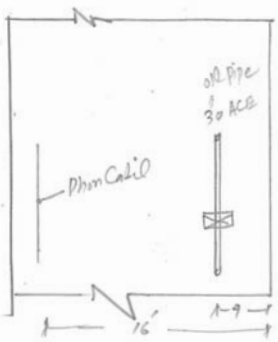
cross-section view



102

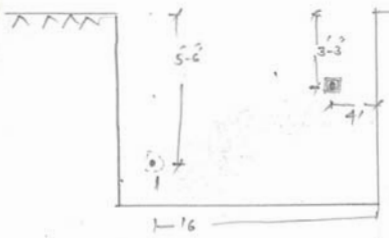
2018/ 1

plan view map



No.	62
L	5000
W	900
H	2200
site condition	
free memo	Soil Stata Agg Sub Base Mix Soil 1000 mm Normal Soil

cross-section view



100

Improvement of water supply distribution system in Madina Town pilot area

Date 9-Mar-18
Location Pit #8

Date 9-Mar-18
Location Pit #8

Improvement of water supply distribution system in Madina Town pilot area

Date 5-Mar-18
Location Pit #1

Date 9-Mar-18
Location Pit #1

Date 5-Mar-18
Location Pit #2

Improvement of water supply distribution system in Madina Town pilot area

Date 9-Mar-18
Location Pit #13

Improvement of water supply distribution system in Madina Town pilot area

Date 5-Mar-18
Location Pit #4

Date 9-Mar-18
Location Pit #5

Improvement of water supply distribution system in Madina Town pilot area

Date 9-Mar-18
Location Pit #14

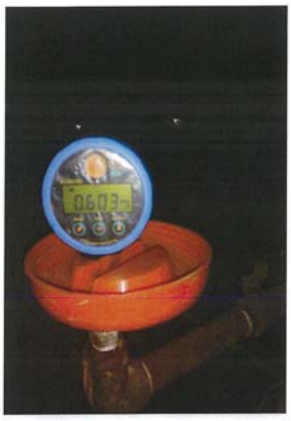
Date 9-Mar-18
Location Pit #15

Date 5-Mar-18
Location Pit #16

Improvement of water supply distribution system in Madina Town pilot area

Date 9-Mar-18
Location Pit #64

Hydrostatic Test Report



Test Phase
Time 19:35 hrs
Pressure 6.03 bar

Test Phase
Time 19:55 hrs
Pressure 5.95 bar

113

Hydrostatic Test Report

Name of Work	Imrprovement of water supply distribution network in Pilot Area Madina Town		
Date of Testing	14-May-18		
Test segment	CP-1 ~ IP-5	Tested Length	2800'
No.of Joints	121	Special/fittings	11 No valves
Pipe material	HDPE	Special/fittings	Bends, Tee, Red
Pipe Diameter		Special/fittings	
Working pressure actual	1.82 bar		
Working pressure max	3.7 bar		
Test Pressure	5.55	Standard	ASTM F-2164

Initial Expansion Phase

Start Time	17:10	Dial Reading	6.18 bar
30 min lap		Dial Reading	bar
60 min lap	18:20	Dial Reading	5.47 bar
90 min lap	18:55	Dial Reading	5.38 bar
120 min lap	19:10	Dial Reading	5.36 bar
150 min lap		Dial Reading	bar
180 min lap		Dial Reading	bar
240 min lap		Dial Reading	bar

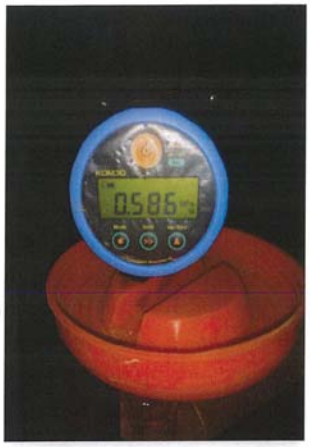
Test Phase

Start Time	19:35	Dial Reading	6.03 bar
10 min lap	19:45	Dial Reading	5.99 bar
20 min lap	19:55	Dial Reading	5.95 bar
30 min lap	20:05	Dial Reading	5.91 bar
40 min lap	20:15	Dial Reading	5.88 bar
50 min lap	20:25	Dial Reading	5.86 bar
60 min lap	20:35	Dial Reading	5.84 bar

Remarks

Due to time restraints initial expansion phase reduced to 2 hrs
Total pressure loss during test phase is 0.19 bar against the allowable pressure drop of 0.3 bar.

111



Test Phase
Time 20:25 hrs
Pressure 5.86 bar

Test Phase
Time 20:35 hrs
Pressure 5.84 bar

114

Initial Expansion Phase
Time 17:10 hrs
Pressure 6.18 bar

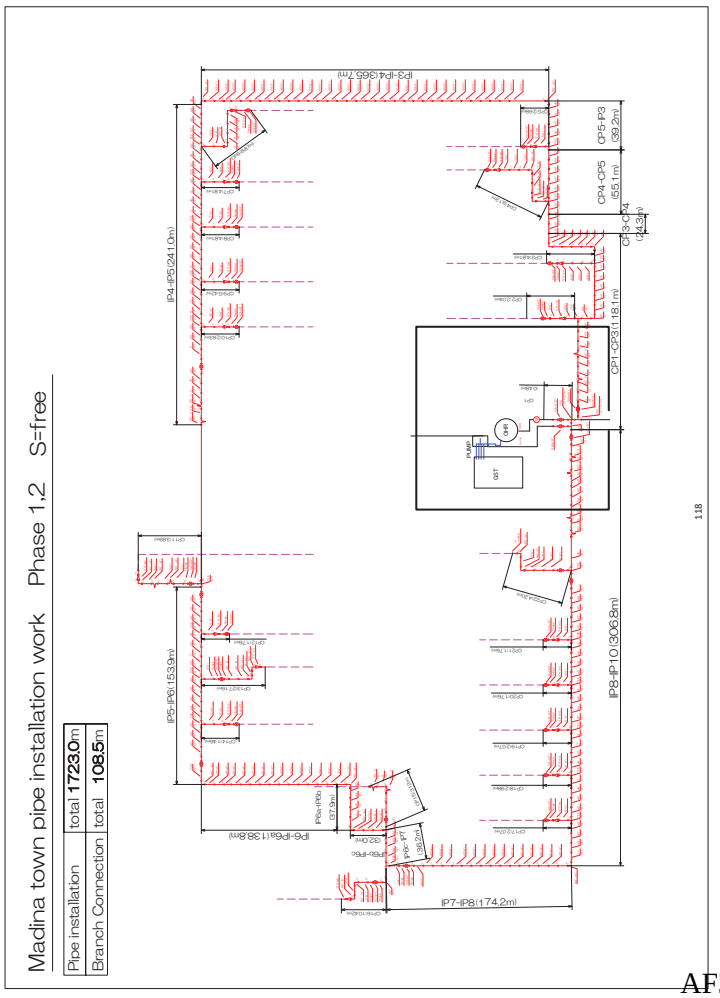
Initial Expansion Phase
Time 18:20 hrs
Pressure 5.47 bar

112

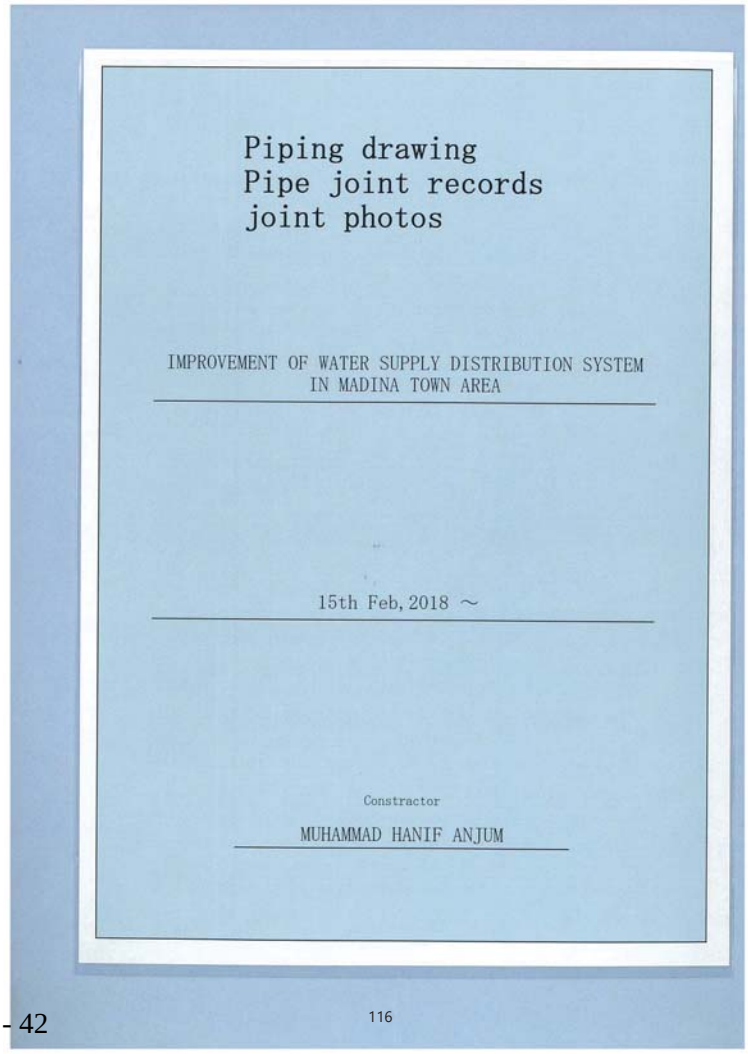
Pressure releasing

115

117



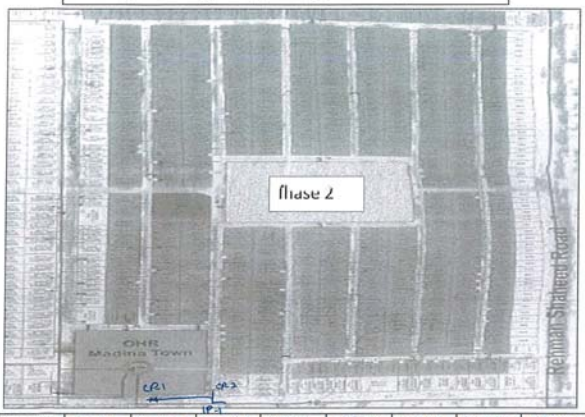
118



116

pipe joint records management

mark: valve ⋈ | tee pipe ⊥ | connectipn point ‖ | corner pipe 90° ⌟ 45° ⌟ 22° ⌟ | reducer ◀



day/month	6/5/18	6/5/18	6/5/18	6/5/18	6/5/18	6/5/18	6/5/18	6/5/18
mark (No)	CP-1 X1 331	330	V.Bend 335 334	V-Pipe 336	V.Bend 338 337	339	325	CP-2 321 320 319
pipe depth	7'	7'	6.5'	6.5'	4.5'	4.5'	3.5'	3.25'
offset R/L	17'	17'	16'	16'	16'	14'	13'	12'
joint condition visual (verygood 5 4 3 2 1 verybad)		5	3	4	4	4	4	4
touch		4	4	3	3	5	5	3
status before back filling								
section distance	3'	1'	1'	1'	6'	40'	40'	
notes								

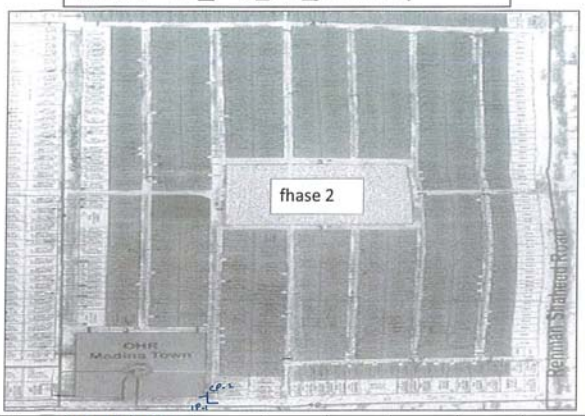
confirmation person sign ature	Project Maneger	Site Engineer	Site Supervisor

121

119

pipe joint records management

mark: valve ⋈ | tee pipe ⊥ | connectipn point ‖ | corner pipe 90° ⌟ 45° ⌟ 22° ⌟ | reducer ◀



day/month	6/5/18	28/4/18						
mark (No)	CP-2 321 319 320	316 IP-1 317						
pipe depth	3.25	3.75						
offset R/L	4'	4.5						
joint condition visual (verygood 5 4 3 2 1 verybad)		4						
touch		4						
status before back filling								
section distance	18'							
notes								

confirmation person sign ature	Project Maneger	Site Engineer	Site Supervisor

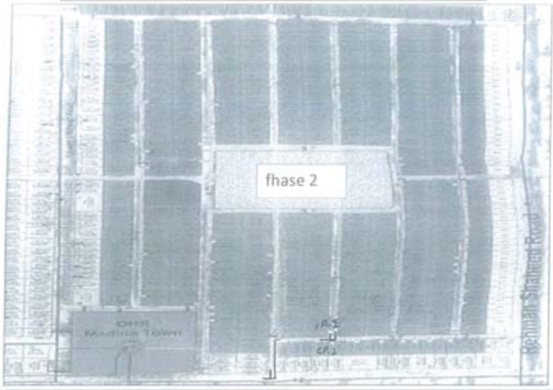
122

CP1 ~ CP3

120

pipe joint records management

mark			
valve	tee pipe	connection point	
corner pipe 90° 45° 22°	reducer		



day/month	6/4/18	6/4/18						
mark (No)	IP-1 306 307	CP-2 309 308 310						
pipe depth	3	3						
offset R/L	4	4.5						
joint condition — visual		4						
touch		3						
status before back filling								
section distance	5'	14'						
notes								

confirmation person signature	Project Maneger	Site Engineer	Site Supervisor
		[signature]	

125

pipe joint records management

mark			
valve	tee pipe	connection point	
corner pipe 90° 45° 22°	reducer		

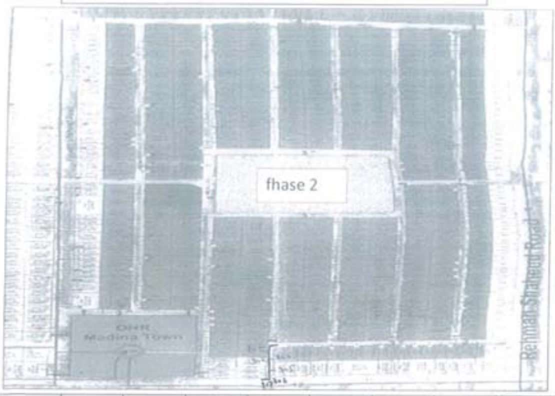
day/month	15/4/18	28/4/18	28/4/18					
mark (No)	314	315	IP1 316 317					
pipe depth		2.75'	2'75					
offset R/L	4.5'	4.5'	4.5'					
joint condition — visual		3	4					
touch		4	4					
status before back filling		Water leakage Bcwk	Non					
section distance	20'	15'						
notes			New 6"Ø HDPE Line					

confirmation person signature	Project Maneger	Site Engineer	Site Supervisor
			[signature]

123

pipe joint records management

mark			
valve	tee pipe	connection point	
corner pipe 90° 45° 22°	reducer		



day/month	4/4/18	4/4/18	4/4/18	4/4/18	6/4/18			
mark (No)	IP 2 302 301	303	304	305	IP-1 306 307			
pipe depth	3.1	3.25	3.2	3	3			
offset R/L	3.5	3	3	3.25				
joint condition — visual		4	3	4	4			
touch		4	4	3	4			
status before back filling								
section distance	40	5	40	40				
notes				Existing w/s leakage				

confirmation person signature	Project Maneger	Site Engineer	Site Supervisor
		[signature]	

126

pipe joint records management

mark			
valve	tee pipe	connection point	
corner pipe 90° 45° 22°	reducer		

day/month	6/4/18	15/4/18	15/4/18	15/4/18				
mark (No)	CP-2 309 308 310	312	313	314				
pipe depth	3	3	3	3				
offset R/L	4.5	5	5	5				
joint condition — visual		4	3	4				
touch		4	4	5				
status before back filling								
section distance	14'	40'	40'					
notes								

confirmation person signature	Project Maneger	Site Engineer	Site Supervisor

124

Joint # 303

Location IP2-40

Straight

Date 4-Apr

Joint # 304

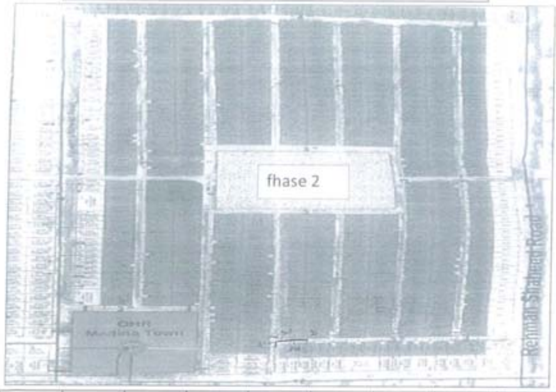
Location IP2-45

Straight

Date 4-Apr

pipe joint records management

mark: valve, tee pipe, connection point, corner pipe 90° 45° 22°, reducer



day/month		5/3/18	4/4/18	4/4/18					
mark (ft)		21	300	IP2 30 3.1					
pipe depth		31	3	31					
offset R/L		3	3	3					
joint condition	visual		4	3					
	touch		4	4					
	status before back filling								
section distance		40'	40'	16.5 ✓					
notes									

confirmation person signature	Project Maneger	Site Engineer	Site Supervisor
		[signature]	

Joint # 305

Location IP2-85'

Straight

Date 4-Apr

Joint # 306, 307

Location IP2-125'

IP1

Bend

Date 6-Apr

Improvement of water supply distribution system in Madina Town pilot area

HDPE Pipe Joints

Joint # 300

Location IP2+16.5'

Straight

Date 4-Apr

Joint # 301, 302

Location IP2

Bend

Date 4-Apr

Joint # 315
Location CP3-144'
Straight
Date 28-Apr

Joint # 315
Location CP3-162'
IP1
Bend
Date 28-Apr

133

Joint # 308, 309,310
Location IP1-5'
CP-3
Tee
Date 6-Apr

309 Pipe piece of 3'

Joint # 312
Location CP3-14'
Straight
Date 15-Apr

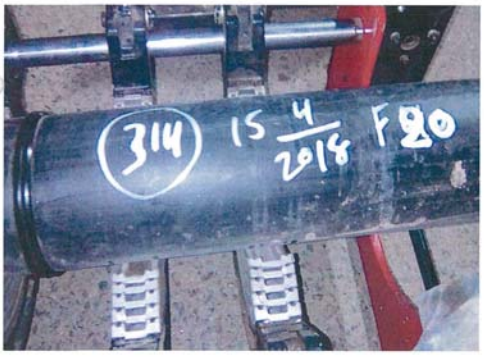
131

Joint # 319
Location CP3-180'
Straight
Date 6-May

Joint # 320, 321
Location CP3-182'
CP2
Straight
Date 6-May

134

Joint # 313
Location CP3-64'
Straight
Date 15-Apr



Joint # 314
Location CP3-104'
Straight
Date 15-Apr

132

Joint # 336, 335
332,334
Location CP2-86'
V-Bend
Date 6-May

Joint # 331
Location CP2-90'
Stub end
Date 6-May

137

CP3 ~ CP4

138

Joint # 325
Location CP2-40'
Straight
Date 6-May

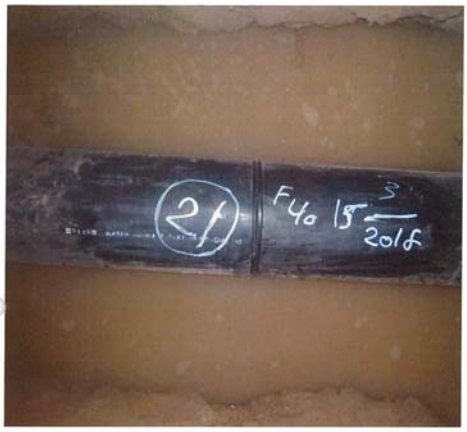
Joint # 339
Location CP2-80'
Straight
Date 6-May

135

Joint # 338
Location CP2-86'
V-Bend
Date 6-May

Joint # 337
Location CP2-86'
V-Bend
Date 6-May

136



Joints # 21

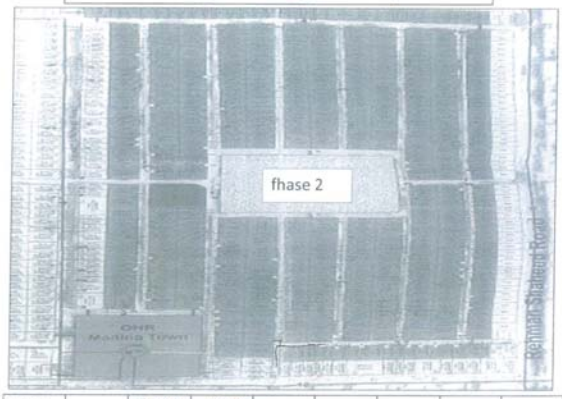
Location CP3-48.5'
Straight

Date 15-Mar

141

pipe joint records management

mark: valve, tee pipe, connectipn point, corner pipe, 90°, 45°, 22°, reducer



day/month		15/3/18	15/3/18						
mark (No)	3 / 2 1	20	21						
pipe depth		3	3.1						
offset R/L		3.25	3						
joint condition	visual	4	3						
	touch	4	4						
	status before back filling	Sand Fill	Sand Fill + water						
section distance	40'	40							
notes	CP4								

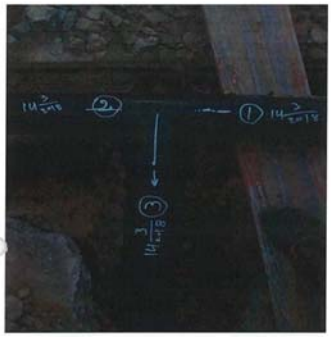
confirmation person signature	Project Manager	Site Engineer	Site Supervisor

139

CP4 ~ CP5

142

Improvement of water supply distribution system in Madina Town pilot area
HDPE Pipe Joints



Joints # 1, 2, 3

Location CP4
Tee

Date 14-Mar

Joints # 20

Location CP3-8.5'
Straight

Date 15-Mar

140

Joints # 11

Location CP4+59'
Straight

Date 14-Mar

Joints # 12

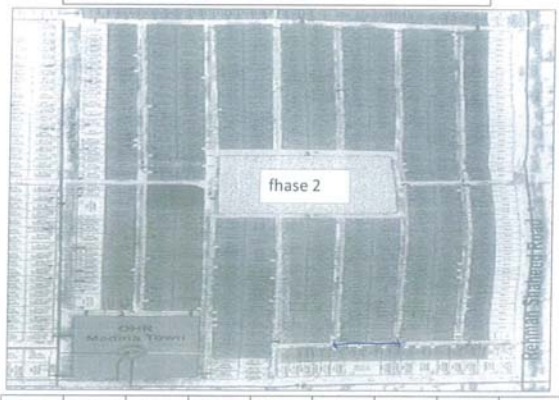
Location CP4+99'
Straight

Date 14-Mar

145

pipe joint records management

mark: valve, tee pipe, connection point; corner pipe, 90°, 45°, 22°, reducer



day/month	14 Mar-18	14 Mar	14 Mar	14 Mar	14 Mar	14 Mar	14 Mar
mark (tee)	1 2	10	11	12	13	CP-5 14 15	19
pipe depth	2.75	2.75	2.9	3	2.8	2.7	2.8
offset (+/-)	4	4	3.9	3.9	3.9	3.7	3.8
joint condition visual	4	4	5	4	4	4	4
joint condition touch	4	5	4	5	3	4	5
joint condition other notes face fitting							
section distance	Tee 19'	40'	40'	39'	2'	40	
notes	CP-4	CP4+19	CP4+59	CP4+99	CP4+138	CP4+140	CP5+40

Pipe is crossing above sewer pipes at CP-4 & CP-5

confirmation person sign at site	Project Manager	Site Engineer	Site Supervisor

143

Joints # 13, 14, 15

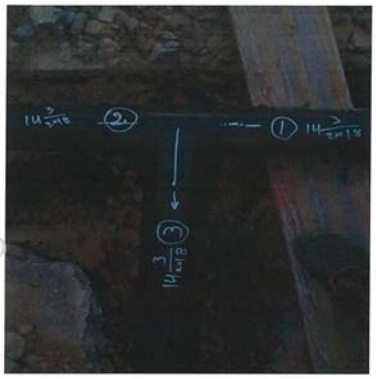
Location CP5
Straight +
Tee

Date 14-Mar

146

Improvement of water supply distribution system in Madina Town pilot area

HDPE Pipe Joints



Joints # 1, 2, 3

Location CP4
Tee

Date 14-Mar

Joints # 10

Location CP4+19'
Straight

Date 14-Mar

144

Improvement of water supply distribution system in Madina Town pilot area

HDPE Pipe Joints

Joints # 14, 15
Location CP5

Tee

Date 14-Mar

Joints # 19
Location CP5+40'
Straight

Date 15-Mar

CP5 ~ IP3

Improvement of water supply distribution system in Madina Town pilot area

HDPE Pipe Joints

Joint # 22

Location IP3 - 48'
(CP5+80')
Straight

Date 16-Mar

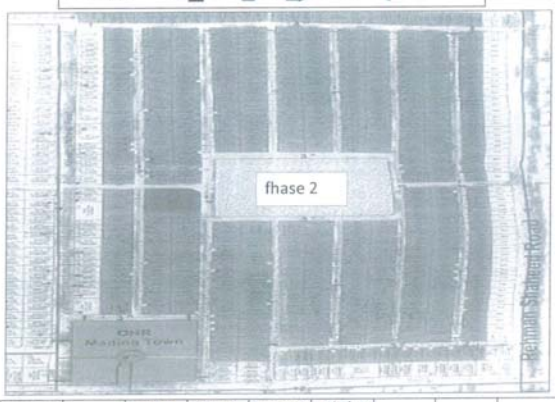
Joint # 23

Location IP3 - 40'
(CP5+88')
Straight

Date 16-Mar

pipe joint records management

mark: valve, tee pipe, connectipn point, corner pipe, 90°, 45°, 22°, reducer



day/month		15/3/18	16/3/18	16/3/18	17/3/18
mark (tick)	14 15	A	22	23	24 25
pipe depth	2.75	2.8	3	2.75	2.9
offset R/L	2.8	2.8	3	3	—
joint condition: visual		4	3	4	3
joint condition: touch		3	4	4	4
notes: below back-filling		Sand	Under Sewer pipe	Sand	Near Leakage point of existing WS Line through valve chamber
section distance		40'	40'	8'	40'
notes	CP5		Sewer pipes 2Nos		IP3 Inside valve chamber

confirmation person sign at ure

Project Manager	Site Engineer	Site Supervisor

pipe joint records management

mark			
valve ⋈	tee pipe ┻	connection point ╪	
corner pipe	90° ┛ 45° 22°	reducer ◀	

day/month		18/3/18	18/3/18	18/3/18	21/3/18	21/3/18	22/3/18	22/3/18
mark (No)	IP3 24 25	26	27	28	29	30	31	32
pipe depth		3'	3'	3'	1.75	2.25	2.75'	3'
offset R/L		4'	4.2'	4.5'	5	5	6	6
joint condition	visual	4	3	5	4	4	4	5
	touch	4	4	4	3	4	4	4
	status before back filling						Sewer leakage	
section distance		40'	40'	40'	40'	40'	40'	40'
notes		Under 1 Sewer pipe	Under 1 Sewer pipe	Above 4No Sewer pipes pipe end (28) is at 2' depth				

confirmation person signature	Project Maneger	Site Engineer	Site Supervisor
		[signature]	

153

Improvement of water supply distribution system in Madina Town pilot area

HDPE Pipe Joints

Joint # 24, 25

Location IP3

Straight

Date 17-Mar

151

pipe joint records management

mark			
valve ⋈	tee pipe ┻	connection point ╪	
corner pipe	90° ┛ 45° 22°	reducer ◀	

day/month		22/3/18	22/3/18	25/3/18	25/3/18	25/3/18	25/3/18	25/3/18	25/3/18
mark (No)		32	33	34	35	36	37	38	39
pipe depth		3'	3'	2.75	2.75	2.5	2.5	2.75	2.75
offset R/L		6'	5.75	6'	6'	6.25	6'	6.25	6.25
joint condition	visual		4	5	4	5	4	4	4
	touch		4	4	4	4	5	3	3
	status before back filling		Debris removed	w/s leakage water	w/s leakage water	w/s leakage water	w/s leakage water	w/s leakage water	leakage water
section distance		40'	40'	40'	40'	28'	4'	12'	40
notes			Sewer pipe leakage		Underground existing pipe leakage	Existing w/s pipe in excavation	Existing water supply pipe in trench	Existing w/s pipe in trench	

confirmation person signature	Project Maneger	Site Engineer	Site Supervisor
		[signature]	

154

IP3 ~ IP4

152

pipe joint records management

mark: valve ⋈ | tee pipe ┴ | connection point ╫
corner pipe 90° | 45° | 22° | reducer ◀

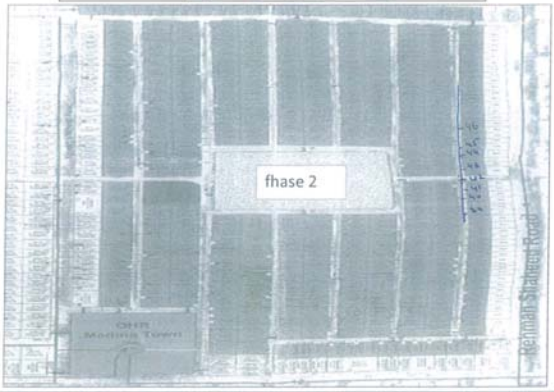
day/month	27/3/18	28/3/18	28/3/18	28/3/18	28/3/18	28/3/18		
mark (No)	53	54	55	56	57	IP4 58		
pipe depth	2.5	2.75	2.5	2.75	2.75	2.5		
offset R/L	6.5	7	7	6.5	6.75	–		
joint condition: visual		4	5	4	3	5		
joint condition: touch		3	4	4	4	4		
status before back filing						Sewer leakage		
section distance	40'	40'	40'	20'	40'			
notes	Above sewer w/s pipe		Above sewer & w/s pipe					

confirmation person signature	Project Maneger	Site Engineer	Site Supervisor
		[signature]	

157

pipe joint records management

mark: valve ⋈ | tee pipe ┴ | connection point ╫
corner pipe 90° | 45° | 22° | reducer ◀



day/month	25/3/18	25/3/18	26/3/18	26/3/18	26/3/18	26/3/18	26/3/18	27/3/18
mark (No)	39	40	41	42	43	44	45	46
pipe depth	2.75	3'	2.8	3'	2.5	2.75	2.75	2.5
offset R/L	6.25	6'	6.25	6	6.25	6.5	6.5	7
joint condition: visual		4	3	4	3	4	4	4
joint condition: touch		5	4	4	4	5	4	4
status before back filing								
section distance	40'	40'	40'	40'	40'	40'	40'	40
notes				w/s pipe is below	Above sewer pipe & w/s pipe	Above sewer & w/s pipes	Above w/s & sewer pipes	Above w/s pipe

confirmation person signature	Project Maneger	Site Engineer	Site Supervisor
		[signature]	

155

Improvement of water supply distribution system in Madina Town pilot area

HDPE Pipe Joints

Joint # 24, 25

Location IP3

Straight

Date 17-Mar

Joint # 26

Location IP3 +40'

Straight

Date 18-Mar

158

pipe joint records management

mark: valve ⋈ | tee pipe ┴ | connection point ╫
corner pipe 90° | 45° | 22° | reducer ◀

day/month	27/3/18	27/3/18	27/3/18	27/3/18	27/3/18	27/3/18	27/3/18	27/3/18
mark (No)	46	47	48	49	50	51	52	53
pipe depth	2.5	2.5	2.75	2.9	3'	2.75	2.5	2.5
offset R/L	7	6.75	7	7	6.5	6.5	6.5	6.5
joint condition: visual		5	5	4	4	5	3	4
joint condition: touch		5	4	4	5	5	4	5
status before back filing				Sewerage leakage	Sewerage leakage			
section distance	40'	37	40'	40'	40'	20'	40'	
notes	Above w/s pipe & sewer	Above w/s & sewer pipe	Above w/s & sewer pipe	Above w/s pipe	Above w/s pipe	Above w/s pipe &	Above w/s & sewer pipe	

confirmation person signature	Project Maneger	Site Engineer	Site Supervisor
		[signature]	

156

Joint # 31

Location IP3 +240'

Straight

Date 22-Mar

Joint # 27

Location IP3 +80'

Straight

Date 18-Mar

Joint # 32

Location IP3 +280'

Straight

Date 22-Mar

Joint # 28

Location IP3 +120'

Straight

Date 18-Mar

161

159

Joint # 33

Location IP3 +320'

Straight

Date 22-Mar

Joint # 29

Location IP3 +160'

Straight

Date 21-Mar

Joint # 34

Location IP3 +356'

Straight

Date 25-Mar

Joint # 30

Location IP3 +200'

Straight

Date 21-Mar

162

160

Joint # 39
Location IP3 +480'
Straight
Date 25-Mar

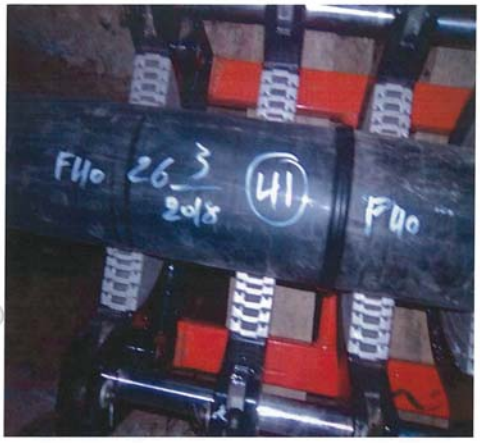
Joint # 40
Location IP3 +520'
Straight
Date 25-Mar

165

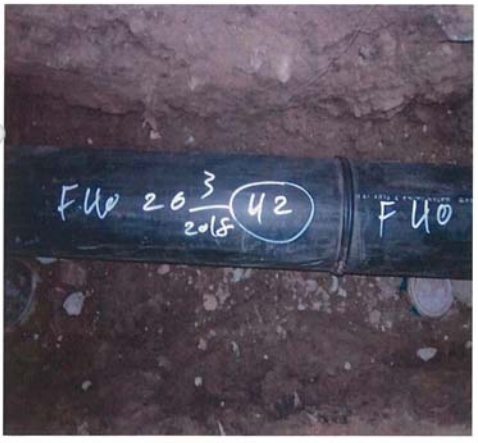
Joint # 35
Location IP3 +396'
Straight
Date 25-Mar

Joint # 36
Location IP3 +436'
Straight
Date 25-Mar

163

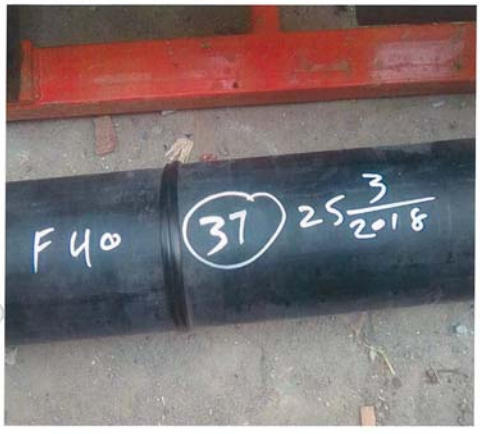


Joint # 41
Location IP3 +560'
Straight
Date 26-Mar

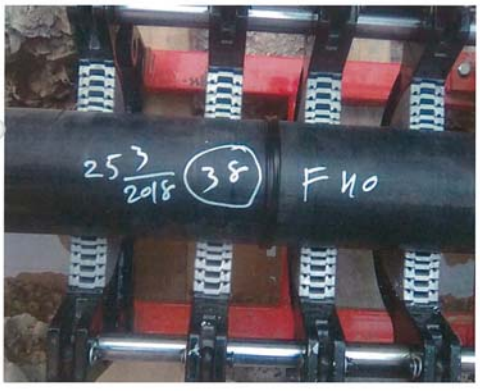


Joint # 42
Location IP3 +600'
Straight
Date 26-Mar

166



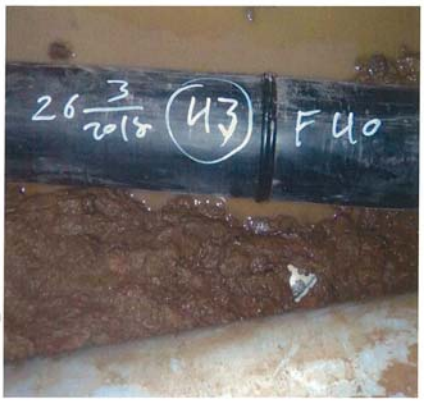
Joint # 37
Location IP3 +464'
Straight
Date 25-Mar



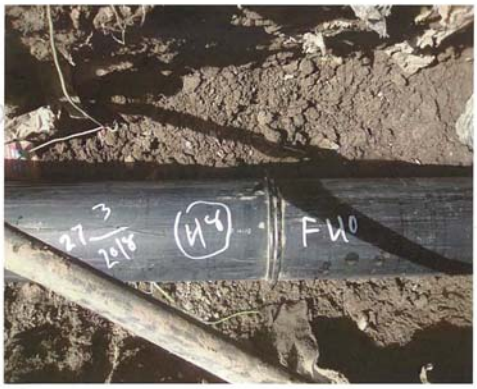
Joint # 38
Location IP3 +468'
Straight
Date 25-Mar

164

Joint # 47
Location IP3 +800'
Straight
Date 27-Mar



Joint # 43
Location IP3 +640'
Straight
Date 26-Mar



Joint # 48
Location IP3 +837'
Straight
Date 27-Mar

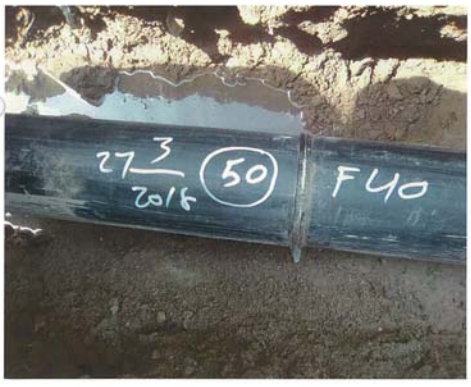
Joint # 44
Location IP3 +680'
Straight
Date 26-Mar

169

167

Joint # 49
Location IP3 +877'
Straight
Date 27-Mar

Joint # 45
Location IP3 +720'
Straight
Date 26-Mar



Joint # 50
Location IP3 +917'
Straight
Date 27-Mar

Joint # 46
Location IP3 +760'
Straight
Date 27-Mar

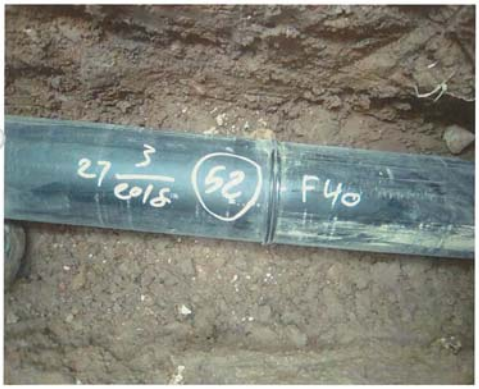
170

168

Joint # 55
Location IP3 +1097'
Straight
Date 28-Mar

Joint # 56
Location IP3 +1137'
Straight
Date 28-Mar

Joint # 51
Location IP3 +957'
Straight
Date 27-Mar



Joint # 52
Location IP3 +977'
Straight
Date 27-Mar

Joint # 57
Location IP3 +1157'
Straight
Date 28-Mar

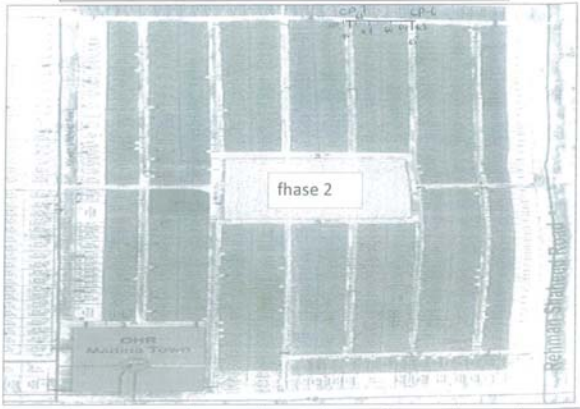
Joint # 58
Location IP3 +1195'
IP-4
Bend
Date 28-Mar

Joint # 53
Location IP3 +1017'
Straight
Date 27-Mar

Joint # 54
Location IP3 +1057'
Straight
Date 28-Mar

pipe joint records management

mark	valve	tee pipe	connectipn point
	corner pipe 90° 45° 22°	reducer	



day/month	29/3/18	29/3/18	30/3/18	30/3/18				
mark (No)	CP6 65 / 63 64	66	67	CP7 69 / 68 70				
pipe depth	2.75	2.25	2.75	3'				
offset R/L	9.5	9'	10	10				
joint condition – visual		4	4	4				
joint condition – touch		3	4	5				
status before back filling		[illegible]						
section distance		40	40	32				
notes		[illegible]		[illegible]				

confirmation person signature	Project Maneger	Site Engineer	Site Supervisor
		[signature]	

177

IP4 ~ IP5

175

pipe joint records management

mark	valve	tee pipe	connectipn point
	corner pipe 90° 45° 22°	reducer	

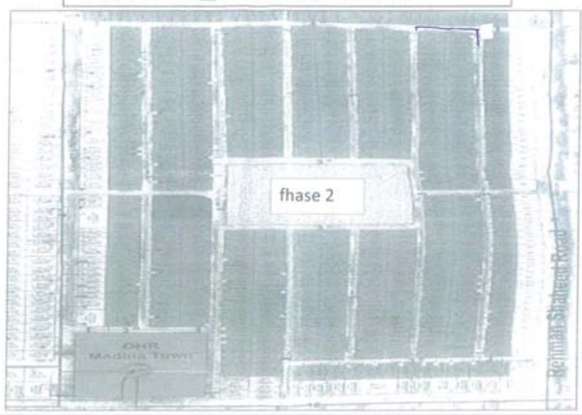
day/month	30/3/18	31/3/18	31/3/18	31/3/18	31/3/18			
mark (No)	CP7 70 / 68 69	71	72	73	CP8 75 / 74 76			
pipe depth	3'	2.75	2.75	3	2.75			
offset R/L	10	9.5	9.5	9.5	9.5			
joint condition – visual		3	4	4	5			
joint condition – touch		4	4	3	4			
status before back filling								
section distance		40	4	40	2			
notes					[illegible]			

confirmation person signature	Project Maneger	Site Engineer	Site Supervisor
		[signature]	

178

pipe joint records management

mark	valve	tee pipe	connectipn point
	corner pipe 90° 45° 22°	reducer	



day/month	28/3/18	29/3/18	29/3/18	29/3/18	29/3/18			
mark (No)	58 / 59	60	61	62	CP6 65 / 63 64			
pipe depth	2.5	3'	2.5'	3'	2.75'			
offset R/L	10	9.5	9	9.5	9.5			
joint condition – visual		4	3	4	5			
joint condition – touch		5	4	4	4			
status before back filling					[illegible] (CP6) condition			
section distance		40	40	40	37			
notes			Three [illegible] pipe [illegible] aligned					

confirmation person signature	Project Maneger	Site Engineer	Site Supervisor
		[signature]	

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pipe joint records management

mark: valve ⋈ | tee pipe ┴ | connectipn point ╫ | corner pipe 90° 45° 22° | reducer ◀

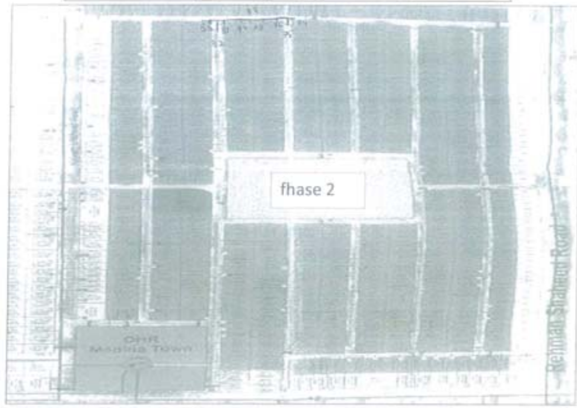
day/month	1/4/18	1/4/18	1/4/18	24/4/18	24/4/18	24/4/18	24/4/18	22/4/18
mark (No)	CP10 87, 88, 89	90	91	158A	159A	160	161	J-Bend 154, 153
pipe depth	2.75'	3'	3.25'	3.25'	3.25'	3	3	3.25
offset R/L	9	9.5	10'	10'	10'	10'	10.5	10
joint condition visual		4	3	4	4	5	3	4
touch		4	4	5	4	4	4	5
status before back filling								
section distance	40'	40'	2'		40'	37	2'	
notes						Existing w/s leakage	Existing w/s leakage	Sewer w/s leakage

confirmation person signature	Project Maneger	Site Engineer	Site Supervisor
			[signature]

181

pipe joint records management

mark: valve ⋈ | tee pipe ┴ | connectipn point ╫ | corner pipe 90° 45° 22° | reducer ◀



day/month	30/3/18	30/3/18	1/4/18	1/4/18	1/4/18	1/4/18		
mark (No)	CP8 74, 75, 76	77	78	79	80	CP9 81, 82, 83		
pipe depth	2.75	3	2.75	2.9	2.5	2.5		
offset R/L	9.5	9.5	10	10	9.5	9.5		
joint condition visual		4	5	4	4	4		
touch		4	4	3	4	3		
status before back filling						Sewer leakage		
section distance	40'	40'	40	40	3'			
notes	Above w/s & Sewer PP					Above w/s pipe 4"		

confirmation person signature	Project Maneger	Site Engineer	Site Supervisor
		[signature]	

179

pipe joint records management

mark: valve ⋈ | tee pipe ┴ | connectipn point ╫ | corner pipe 90° 45° 22° | reducer ◀

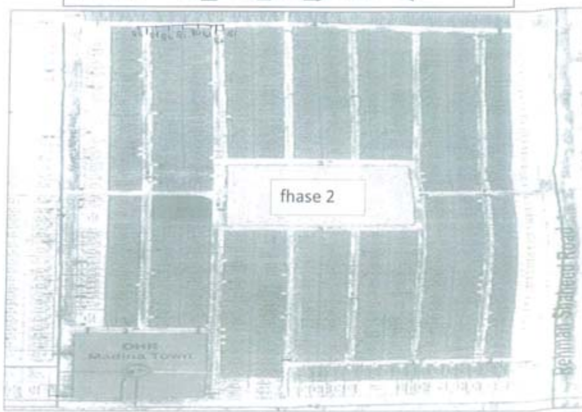
day/month	22/4/18	22/4/18						
mark (No)	J-Bend 153	J-Bend 151						
pipe depth	3.5'	7.5'						
offset R/L	10'	10'						
joint condition visual		4						
touch		3						
status before back filling								
section distance	4'							
notes		Manhole leakage						

confirmation person signature	Project Maneger	Site Engineer	Site Supervisor
			[signature]

182

pipe joint records management

mark: valve ⋈ | tee pipe ┴ | connectipn point ╫ | corner pipe 90° 45° 22° | reducer ◀



day/month	1/4/18	1/4/18	1/4/18	2/4/18	1/4/18			
mark (No)	CP9 81, 82, 83	84	85	86	CP10 87, 88, 89			
pipe depth	2.5	2.75	2.9	3	2.75			
offset R/L	9.5	9	9.5	9.5	9			
joint condition visual		4	4	4	3			
touch		3	3	4	4			
status before back filling			Sewer leakage					
section distance	40'	40'	13	9'				
notes			Under sewer pipe					

confirmation person signature	Project Maneger	Site Engineer	Site Supervisor
		[signature]	

180

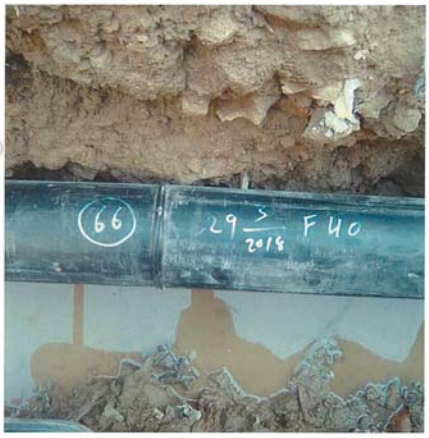
Improvement of water supply distribution system in Madina Town pilot area

HDPE Pipe Joints

Joint # 63, 64 & 65

Location IP4+157'
CP-6
Tee

Date 29-Mar



Joint # 66

Location IP4+197'

Tee

Date 29-Mar

Improvement of water supply distribution system in Madina Town pilot area

HDPE Pipe Joints

Joint # 59

Location IP4

Bend

Date 28-Mar

Joint # 60

Location IP4+40'

Straight

Date 29-Mar

Improvement of water supply distribution system in Madina Town pilot area

HDPE Pipe Joints

Joint # 67

Location IP4+237'

Straight

Date 30-Mar

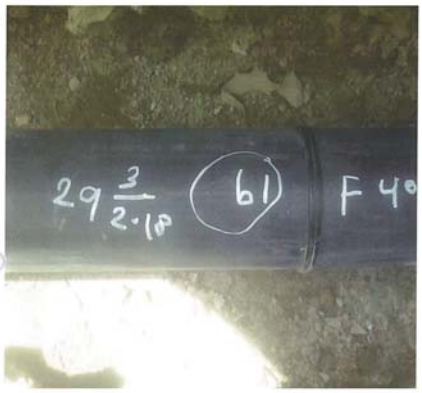
Joint # 68, 69, 70

Location IP4+270'
CP-7
Tee

Date 30-Mar

Improvement of water supply distribution system in Madina Town pilot area

HDPE Pipe Joints



Joint # 61

Location IP4+80'

Straight

Date 29-Mar

Joint # 62

Location IP4+120'

Straight

Date 29-Mar

Improvement of water supply distribution system in Madina Town pilot area

HDPE Pipe Joints

Joint # 77

Location IP4+397'

Straight

Date 30-Mar

Joint # 78

Location IP4+403'

Straight

Date 1-Apr

Improvement of water supply distribution system in Madina Town pilot area

HDPE Pipe Joints

Joint # 71

Location IP4+310'

Straight

Date 30-Mar

Joint # 72

Location IP4+314'

Straight

Date 30-Mar

Improvement of water supply distribution system in Madina Town pilot area

HDPE Pipe Joints

Joint # 79

Location IP4+443'

Straight

Date 1-Apr

Joint # 80, 81, 82, 83

Location IP4+487

Straight

Tee

CP-9

Date 1-Apr

Improvement of water supply distribution system in Madina Town pilot area

HDPE Pipe Joints

Joint # 73

Location IP4+354'

Straight

Date 30-Mar

Joint # 74, 75, 76

Location IP4+357'

CP-8

Tee

Date 30-Mar

Improvement of water supply distribution system in Madina Town pilot area

HDPE Pipe Joints

Joint # 90

Location IP4+645'
Straight

Date 1-Apr

Joint # 91

Location IP4+658'
Straight

Date 1-Apr

193

Improvement of water supply distribution system in Madina Town pilot area

HDPE Pipe Joints

Joint # 84

Location IP4+527'
Straight

Date 1-Apr

Joint # 85

Location IP4+567'
Straight

Date 1-Apr

191

Improvement of water supply distribution system in Madina Town pilot area

HDPE Pipe Joints

Joint # 158

Location IP4+660'
Valve

Date 24-Apr

Joint # 159

Location IP4+660'
Valve

Date 24-Apr

194

Improvement of water supply distribution system in Madina Town pilot area

HDPE Pipe Joints

Joint # 86

Location IP4+595'
Straight

Date 2-Apr

Joint # 87, 88, 89

Location IP4+605'
Tee
CP-10

Date 1-Apr
2-Apr

192

Improvement of water supply distribution system in Madina Town pilot area

HDPE Pipe Joints

Joint # 150

Location IP4+737' Bore (IP5) V-Bend

Date 22-Apr

Improvement of water supply distribution system in Madina Town pilot area

HDPE Pipe Joints

Joint # 160

Location IP4+700' Straight

Date 24-Apr

Joint # 161

Location IP4+735' V-Bend

Date 24-Apr

IP5 ~ IP6

Improvement of water supply distribution system in Madina Town pilot area

HDPE Pipe Joints

Joint # 152, 153

Location IP4+737' Bore (IP5) V-Bend

Date 22-Apr

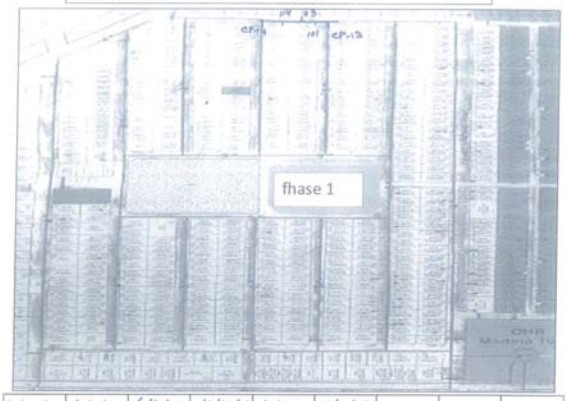
Joint # 151

Location IP4+737' Bore (IP5) V-Bend

Date 22-Apr

pipe joint records management

mark: valve ⋈ tee pipe ⊥ connectipn point ⊣⊢ corner pipe 90° ⌟ 45° ⌟ 22° ⌟



day/month	6/4/18	6/4/18	11/4/18	11/4/18	11/4/18			
mark (No)	CP.13 99				CP.14 117			
	98 100	101	113	114	115 116			
pipe depth	3.25	3'	3.25	3'	2.'			
offset R/L	4.5'	4.5'	4'	4.5	4'			
joint condition visual		4	3	4	3			
joint condition touch		5	4	4	4			
status before back filling				Sewer leakage	Sewer leakage			
section distance	40'	40'	40'	40'				
notes					Above sewer pipe			

confirmation	Project Maneger	Site Engineer	Site Supervisor
p e r s o n			
sl gn at u r e			

201

pipe joint records management

mark: valve ⋈ tee pipe ⊥ connectipn point ⊣⊢ corner pipe 90° ⌟ 45° ⌟ 22° ⌟

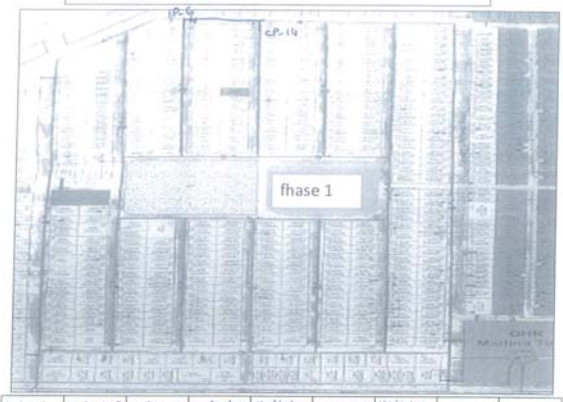
day/month	22/4/18	23/4/18	23/4/18	23/4/18	23/4/18	3/4/18		
mark (No)	V-1 151	IPS CP.11						
	152	154	155	156	157	92		
pipe depth	7.5'	4'	4'	3.25'	3'			
offset R/L		5'	5'	4.5'	4.5'			
joint condition visual		4	4	3	4			
joint condition touch		4	5	4	3			
status before back filling								
section distance	40'	1'	40'	15'	40'			
notes		w/s leakage	w/s leakage	w/s leakage				

confirmation	Project Maneger	Site Engineer	Site Supervisor
p e r s o n			
sl gn at u r e			

199

pipe joint records management

mark: valve ⋈ tee pipe ⊥ connectipn point ⊣⊢ corner pipe 90° ⌟ 45° ⌟ 22° ⌟



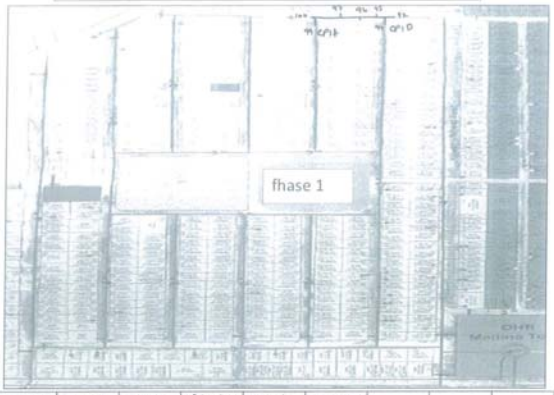
day/month	11/4/18	11/4/18	11/4/18	14/4/18	14/4/18	14/4/18		
mark (No)	CP.12 117					IP.6 123		
	115 116	118	119	120	121	122		
pipe depth	2.'	3	3.25'	2.75	2.75	2.5		
offset R/L	4'	4.5'	4.5'	4.5	4.5	4.5		
joint condition visual		4	4	4	3	4		
joint condition touch		4	5	4	4	5		
status before back filling		Sewer leakage						
section distance	30'	40'	34'	1'	7.25'			
notes						w/s & sewer pipes leakage		

confirmation	Project Maneger	Site Engineer	Site Supervisor
p e r s o n			
sl gn at u r e			

202

pipe joint records management

mark: valve ⋈ tee pipe ⊥ connectipn point ⊣⊢ corner pipe 90° ⌟ 45° ⌟ 22° ⌟



day/month	3/4/18	3/4/18	6/4/18	6/4/18	6/4/18			
mark (No)	CP.8 94				CP.9 99			
	92 93	95	96	97	98 100			
pipe depth	3.25	3.25'	3	3.25	3.25			
offset R/L	4.5	4.5	4.5	4.5	4.5			
joint condition visual		4	4	4	4			
joint condition touch		4	3	5	4			
status before back filling								
section distance	40'	40'	7'	40'				
notes								

confirmation	Project Maneger	Site Engineer	Site Supervisor
p e r s o n			
sl gn at u r e			

200

Improvement of water supply distribution system in Madina Town pilot area

HDPE Pipe Joints

Joint # 92

Location IP5+95'
CP-12
Tee

Date 3-Apr

Joint # 93

Location CP-12+1'
CP-12
Tee

Date 3-Apr

IP5+96'

Improvement of water supply distribution system in Madina Town pilot area

HDPE Pipe Joints

Joint # 155

Location IP4+777
IP-5
CP11
MV

Date 23-Apr

Joint # 155

Location IP5
CP11
MV

Date 23-Apr

Improvement of water supply distribution system in Madina Town pilot area

HDPE Pipe Joints

Joint # 94

Location CP12

Tee

Date 3-Apr

Joint # 95

Location CP12+40'

Straight

Date 3-Apr

IP5+136'

Improvement of water supply distribution system in Madina Town pilot area

HDPE Pipe Joints

Joint # 156

Location IP5+40'

Straight

Date 23-Apr

Joint # 157

Location IP5+55'

Straight

Date 23-Apr

Improvement of water supply distribution system in Madina Town pilot area

HDPE Pipe Joints

Joint # 113

Location CP13+80'

Straight

Date 11-Apr

IP5+303'

Joint # 114

Location CP13+120'

Straight

Date 11-Apr

IP5+343'

Improvement of water supply distribution system in Madina Town pilot area

HDPE Pipe Joints

Joint # 96

Location CP12+80

Straight

Date 6-Apr

IP5+176'

Joint # 97

Location CP12+87'

Date 6-Apr

IP5+183'

Improvement of water supply distribution system in Madina Town pilot area

HDPE Pipe Joints

Joint # 115, 116, 117

Location CP13+131'
CP14
Tee

Date 11-Apr

IP5+354'

Joint # 118

Location CP14+30

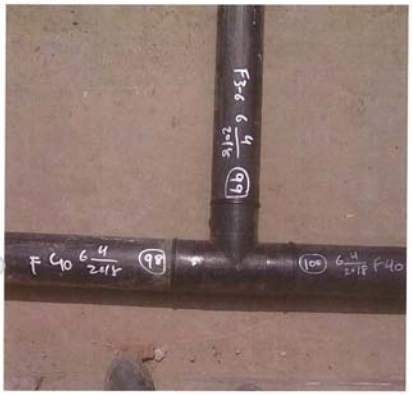
Straight

Date 11-Apr

IP5+384'

Improvement of water supply distribution system in Madina Town pilot area

HDPE Pipe Joints



Joint # 98, 99, 100

Location CP12+127'
CP13
Tee

Date 6-Apr

IP5+223'

Joint # 101

Location CP13+40'

Straight

Date 6-Apr

IP5+263'

IP6 ~ IP6a

213

Improvement of water supply distribution system in Madina Town pilot area

HDPE Pipe Joints

Joint # 119

Location CP14+70

Straight

Date 11-Apr

IP5+424'

Joint # 120

Location CP14+104

Valve

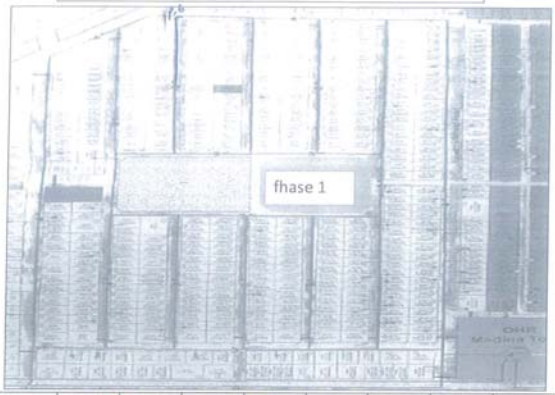
Date 14-Apr

IP5+458

211

pipe joint records management

mark: valve, tee pipe, connection point; corner pipe 90°, 45°, 22°



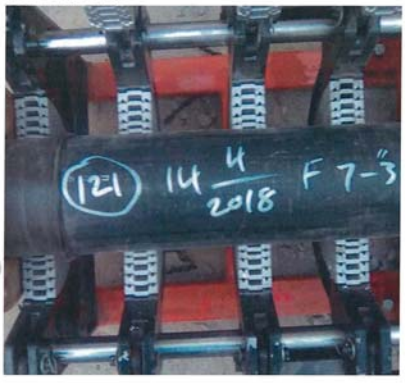
day/month	14/4/18	14/4/18	7/4/18	7/4/18	7/4/18	7/4/18	8/4/18	8/4/18
mark (No)	IP-6 122 123	124	102	103	104	105	106	107
pipe depth	2.5	3	3	3	2.75	3	3.25	3.25
offset R/L	5.5	6	6	6.5	6	6	6	6.5
joint condition: visual		4	3	4	4	3	4	3
joint condition: touch		5	4	5	4	3	4	4
joint condition: status before back filling								
section distance	23'	40'	40'	40'	40'	40'	40'	40'
notes			Existing MS leakage	Sewer Leakage				

confirmation person signature	Project Maneger	Site Engineer	Site Supervisor

214

Improvement of water supply distribution system in Madina Town pilot area

HDPE Pipe Joints



Valve

Date 14-Apr

IP5+459'

Joint # 122

Location CP-14+113

Bend

IP-6

Date 14-Apr

IP5+467'

212

Improvement of water supply distribution system in Madina Town pilot area

HDPE Pipe Joints

Joint # 123

Location IP6

Date 14-Apr

Joint # 124

Location IP6+23'

Date 14-Apr

pipe joint records management

mark: valve, tee pipe, connection point, corner pipe 90° 45° 22°

day/month	8/4/18	8/4/18	9/4/18	9/4/18	9/4/18	9/4/18		
mark (No)	107	108	109	110	111	112		
pipe depth	3.25	3'	3.25	3	3.25	3.25		
offset R/L	6	6	6.5	7	7	7'		
joint condition — visual		4	5	4	3	4		
joint condition — touch		5	4	4	4	5		
status before back filling								
section distance	40	40'	40'	40'	9'			
notes								

confirmation person signature	Project Maneger	Site Engineer	Site Supervisor
		[signature]	

Improvement of water supply distribution system in Madina Town pilot area

HDPE Pipe Joints

Joint # 102

Location IP6+63'

Date 7-Apr

Joint # 103

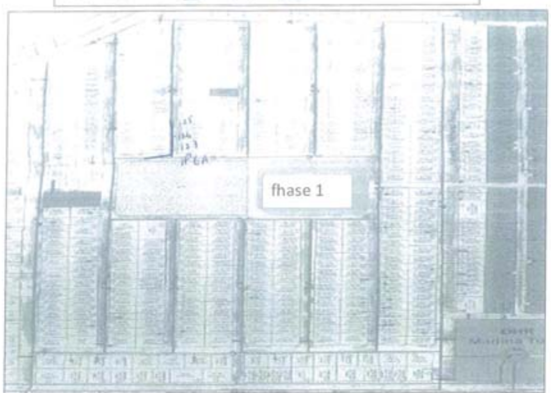
Location IP6+103'

Straight

Date 7-Apr

pipe joint records management

mark: valve, tee pipe, connection point, corner pipe 90° 45° 22°

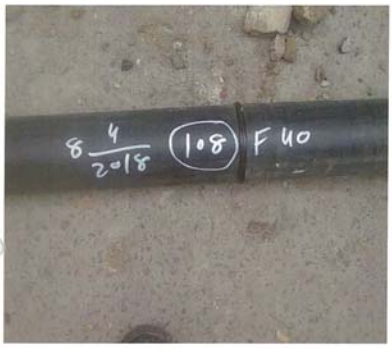


day/month	9/4/18	15/4/18	15/4/18	15/4/18				
mark (No)	112	125	126	IP6A 127 128				
pipe depth	3	3.25'	3	2.75				
offset R/L	6.5	6.25'	6.5	6.5				
joint condition — visual		5	4	4				
joint condition — touch		3	3	4				
status before back filling								
section distance	9'	3'	11'					
notes			Existing WB leakage	Existing WB leakage				

confirmation person signature	Project Maneger	Site Engineer	Site Supervisor
			[signature]

Improvement of water supply distribution system in Madina Town pilot area

HDPE Pipe Joints



Joint # 108

Location IP6+303'

Straight

Date 8-Apr

Joint # 109

Location IP6+343'

Straight

Date 9-Apr

Improvement of water supply distribution system in Madina Town pilot area

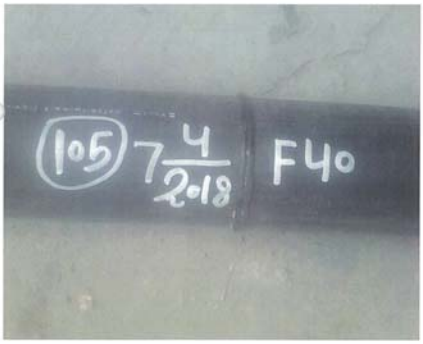
HDPE Pipe Joints

Joint # 104

Location IP6+143'

Straight

Date 7-Apr



Joint # 105

Location IP6+183'

Straight

Date 7-Apr

Improvement of water supply distribution system in Madina Town pilot area

HDPE Pipe Joints

Straight

Date 9-Apr

Joint # 111

Location IP6+423'

Straight

Date 9-Apr

Improvement of water supply distribution system in Madina Town pilot area

HDPE Pipe Joints

Joint # 106

Location IP6+223'

Straight

Date 8-Apr

Joint # 107

Location IP6+263'

Date 8-Apr

IP6a ~ IP6b

225

Improvement of water supply distribution system in Madina Town pilot area

HDPE Pipe Joints

Joint # 112

Location IP6+432'

Straight

Date 9-Apr

Joint # 125

Location IP6+441'

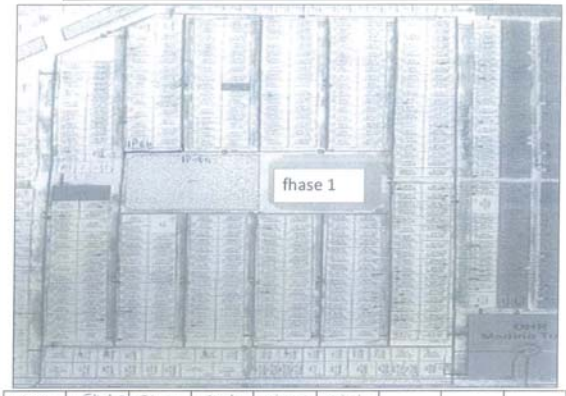
Straight

Date 15-Apr

223

pipe joint records management

mark: valve, tee pipe, connectipn point, corner pipe, 90°, 45°, 22°



day/month	15/4/18	15/4/18	15/4/18	15/4/18	15/4/18			
mark (No)	IP6a 127 128	129	130	131	132 IP6b 133			
pipe depth	3.5'	3'	3'	2.75	2.5			
offset R/L	7.50	7.5	7.25	8.50	8.50			
joint condition: visual		3	4	4	1			
joint condition: touch		4	5	5	4			
joint condition: status before back filling								
section distance		40'	40'	40'	4'			
notes								

confirmation person signature	Project Maneger	Site Engineer	Site Supervisor

226

Improvement of water supply distribution system in Madina Town pilot area

HDPE Pipe Joints

Joint # 126

Location IP6+444

Straight

Date 15-Apr

Joint # 127, 128

Location IP6+456'

IP6a

Bend

Date 15-Apr

224

Improvement of water supply distribution system in Madina Town pilot area

HDPE Pipe Joints

Joint # 132, 133

Location IP6a+124' IP6b

Date 18-Apr

Improvement of water supply distribution system in Madina Town pilot area

HDPE Pipe Joints

Joint # 127, 128

Location IP6a

Date 15-Apr

Joint # 129

Location IP6a+40'

Date 15-Apr

IP6b ~ IP6c

Improvement of water supply distribution system in Madina Town pilot area

HDPE Pipe Joints

Joint # 130

Location IP6a+80'

Date 15-Apr

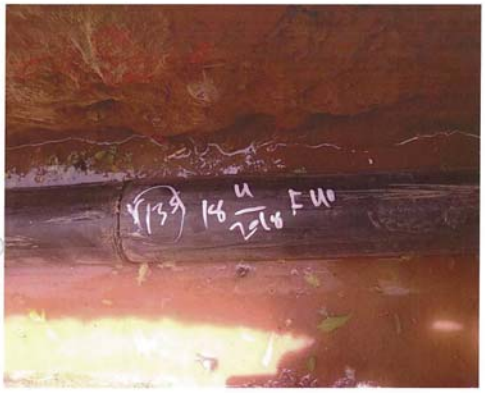
Joint # 131

Location IP6a+120'

Date 18-Apr

Improvement of water supply distribution system in Madina Town pilot area

HDPE Pipe Joints



Joint # 135

Location IP6b+64'

Date 18-Apr

Joint # 136, 137

Location IP6b+104'
IP6c
CP15

Date 18-Apr

pipe joint records management

mark: valve, tee pipe, connectipn point, corner pipe, 90°, 45°, 22°

day/month	18/4/18	18/4/18	18/4/18	18/4/18				
mark (No)	IP6b 132 135	134	135	134 IP6c 135				
pipe depth	2.5	3	3	3				
offset R/L	10'	7.5	7.5	6.5				
joint condition: visual		3	4	3				
joint condition: touch		4	5	3				
joint condition: weight, status, bedding, back filling								
section distance		24'	40'	40'				
notes								

confirmation person sign ature	Project Maneger	Site Engineer	Site Supervisor

IP6c ~ IP7

Improvement of water supply distribution system in Madina Town pilot area

HDPE Pipe Joints

Joint # 132, 133

Location IP6b

Date 18-Apr

Joint # 134

Location IP6b+24'

Date 18-Apr

Improvement of water supply distribution system in Madina Town pilot area

HDPE Pipe Joints

Joint # 139

Location IP6c+80'

Photo missing

Date 18-Apr

Joint # 140, 141, 142

Location IP6c+118'
IP7
CP16

Date 18-Apr

pipe joint records management

mark: valve, tee pipe, connectipn point, corner pipe, 90°, 45°, 22°

day/month	15/4/15	13/4/15	15/4/15	15/4/15				
mark (No)	IP6c 139	138	139	IP7 140 141				
pipe depth	3'	3.25'	3.25'	3'				
offset R/L		23'	23.5'	24'				
joint condition visual		5	3	4				
joint condition touch		3	4	4				
status before back filling								
section distance	40'	2'	38'					
notes								

confirmation person signature	Project Maneger	Site Engineer	Site Supervisor

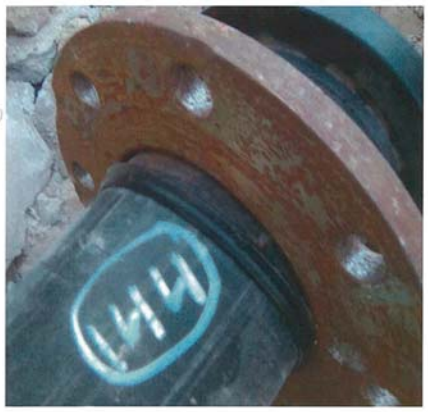
Improvement of water supply distribution system in Madina Town pilot area

HDPE Pipe Joints

Joint # 143

Location IP7 +(1)
MV

Date 18-Apr



Joint # 144

Location IP7 +(1)
MV

Date 18-Apr

Improvement of water supply distribution system in Madina Town pilot area

HDPE Pipe Joints

Joint # 136, 137

Location IP6c
CP16

Date 18-Apr

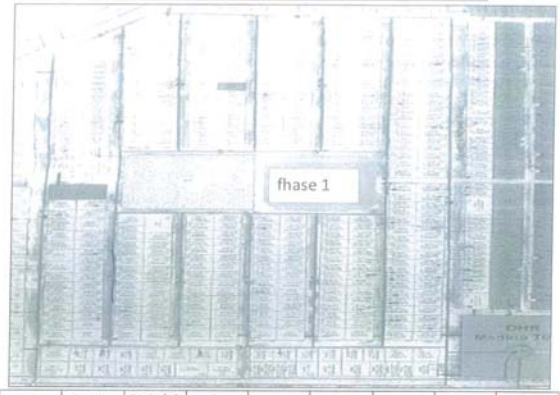
Joint # 138

Location IP6c+40

Date 18-Apr

pipe joint records management

mark: valve ⋈ tee pipe ⊥ connectipn point ⊣⊢
corner pipe 90° ⌟ 45° ⌟ 22° ⌟



day/month	19/4/18	24/4/18	24/4/18	24/4/18	24/4/18	24/4/18	24/4/18	24/4/18
mark (No)	149	150	151	152	153	157	158	159
pipe depth	3'	3'	3'	2.75'	3'	3.25	3.25	3'
offset R/L	9'	9'	9.5	9'	9'	8.75'	8.5'	9'
joint condition visual		4	3	4	5	4	5	4
joint condition touch		4	4	4	4	4	5	3
joint condition status before back filling								
section distance		40'	40'	40'	40'	40'	40'	40'
notes				Above Sewer pipe				

confirmation	Project Maneger	Site Engineer	Site Supervisor
p e r son sl gn at u r e			

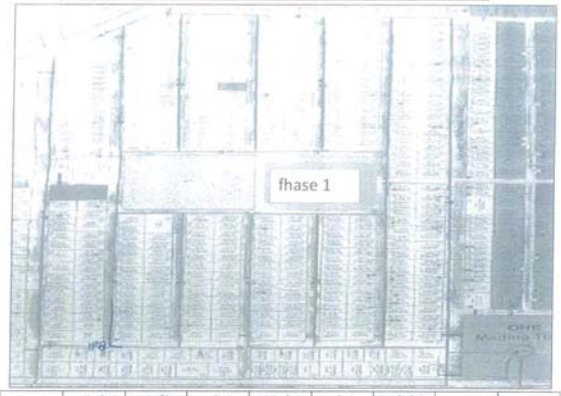
241

IP7 ~ IP8

239

pipe joint records management

mark: valve ⋈ tee pipe ⊥ connectipn point ⊣⊢
corner pipe 90° ⌟ 45° ⌟ 22° ⌟



day/month	24/4/18	24/4/18	24/4/18	26/4/18	26/4/18	26/4/18
mark (No)	159	160	161	162	163	164 165
pipe depth	3'	3.25	2.75	2.75	3'	3'
offset R/L	9	8.5	9'	9.5	8.75	8.75'
joint condition visual		4	3	4	5	3
joint condition touch		5	4	3	4	4
joint condition status before back filling						
section distance		40'	40'	40'	40'	9'
notes				Sewer pipe Leakage		

confirmation	Project Maneger	Site Engineer	Site Supervisor
p e r son sl gn at u r e			

242

pipe joint records management

mark: valve ⋈ tee pipe ⊥ connectipn point ⊣⊢
corner pipe 90° ⌟ 45° ⌟ 22° ⌟

day/month	18/4/18	18/4/18	19/4/18	19/4/18	19/4/18	19/4/18	19/4/18
mark (No)	141 142	143	146	145	147	148	149
pipe depth	3'	3'	3'	3'	2.75'	3'	3'
offset R/L		8'	8'	8.5'	8.5'	8.75'	9'
joint condition visual		4	5	4	4	5	3
joint condition touch		3	4	3	4	4	4
joint condition status before back filling							
section distance		1'	1'	40'	40'	40'	40'
notes					Sewer pipe		

confirmation	Project Maneger	Site Engineer	Site Supervisor
p e r son sl gn at u r e			

240

Improvement of water supply distribution system in Madina Town pilot area

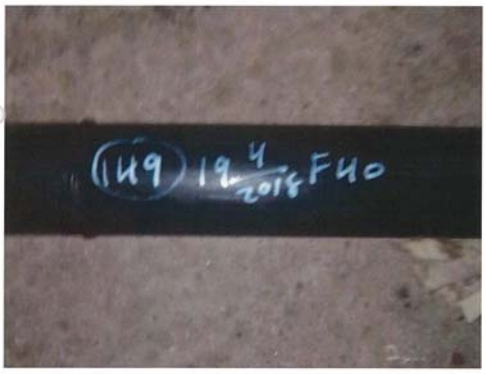
HDPE Pipe Joints

Joint # 148

Location IP7+122'

Straight

Date 19-Apr



Joint # 149

Location IP7+162'

Straight

Date 19-Apr

245

Improvement of water supply distribution system in Madina Town pilot area

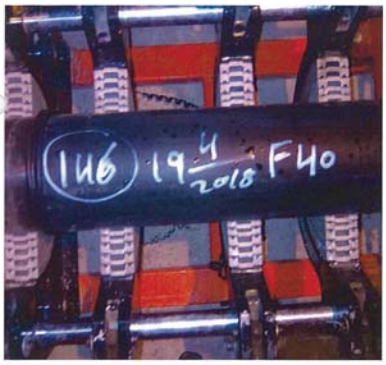
HDPE Pipe Joints

Joint # 140, 141, 142

Location IP7

CP-17

Date 18-Apr



Joint # 146

Location IP7+2'

Valve

Date 19-Apr

243

Improvement of water supply distribution system in Madina Town pilot area

HDPE Pipe Joints

Joint # 150

Location IP7+192'

Straight

Date 24-Apr

Joint # 151

Location IP7+232'

Straight

Date 24-Apr

246

Improvement of water supply distribution system in Madina Town pilot area

HDPE Pipe Joints

Joint # 145

Location IP7+42'

Straight

Date 19-Apr

Joint # 147

Location IP7+82'

Straight

Date 19-Apr

244

Improvement of water supply distribution system in Madina Town pilot area

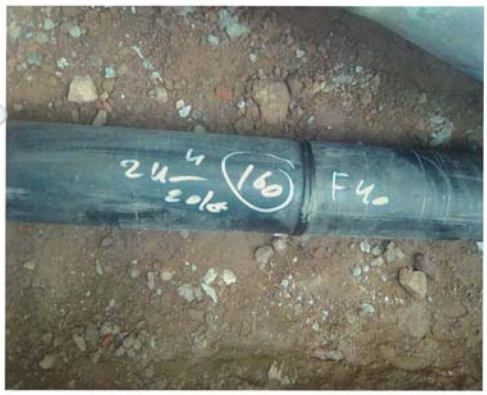
HDPE Pipe Joints

Joint # 159

Location IP7+432'

Straight

Date 24-Apr



Joint # 160

Location IP7+472'

Straight

Date 24-Apr

Improvement of water supply distribution system in Madina Town pilot area

HDPE Pipe Joints

Joint # 152

Location IP7+272'

Straight

Date 24-Apr

Joint # 153

Location IP7+312'

Straight

Date 24-Apr

Improvement of water supply distribution system in Madina Town pilot area

HDPE Pipe Joints

Joint # 161

Location IP7+512'

Straight

Date 24-Apr

Joint # 162

Location IP7+552'

Straight

Date 26-Apr

Improvement of water supply distribution system in Madina Town pilot area

HDPE Pipe Joints

Joint # 157

Location IP7+352'

Straight

Date 24-Apr

Joint # 158

Location IP7+392'

Straight

Date 24-Apr

pipe joint records management

mark: valve, tee pipe, connection point; corner pipe: 90°, 45°, 22°

day/month	26/4/18	26/4/18	29/4/18					
mark (No)	IP8 164 165	166	167					
pipe depth	3'	3'	3'					
offset R/L		9'	9.5'					
joint condition visual		4	3					
joint condition touch		4	3					
joint condition status (5 very bad … 1 very good) before back filling								
section distance		11	40'					
notes								

confirmation person signature	Project Maneger	Site Engineer	Site Supervisor

253

Improvement of water supply distribution system in Madina Town pilot area

HDPE Pipe Joints

Joint # 163

Location IP7+592'

Straight

Date 26-Apr

Joint # 164, 165

Location IP7+602'

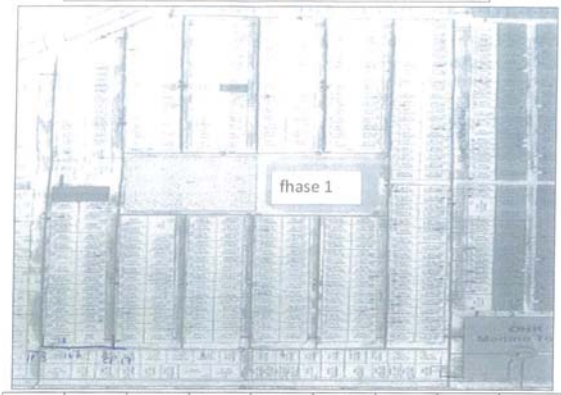
IP8

Date 26-Apr

251

pipe joint records management

mark: valve, tee pipe, connection point; corner pipe: 90°, 45°, 22°



day/month	26/4/18	26/4/18	29/4/18	1/5/18	01/5/18			
mark (No)	IP8 164 165	166	167	168	IP7+31 169 170			
pipe depth	3'	3'	3'	3.25'	2.75'			
offset R/L		9'	9'	9.5'	9'			
joint condition visual		4	3	4	4			
joint condition touch		4	3	3	4			
joint condition status (5 very bad … 1 very good) before back filling								
section distance		11	40'	40'	40'			
notes					Existing water PVC leakage			

confirmation person signature	Project Maneger	Site Engineer	Site Supervisor

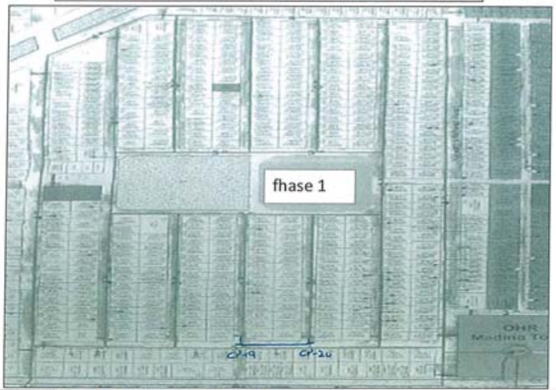
254

IP8 ~ IP10

252

pipe joint records management

mark: valve ⧓ | tee pipe ┴ | connectipn point ╫
corner pipe: 90° 45° 22°

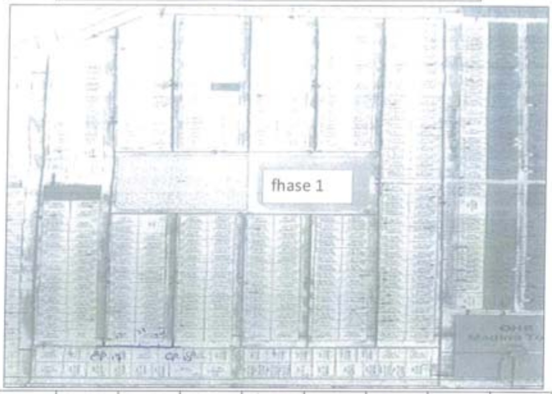


day/month		10/05/18	10/5/18	10/5/18	15/5/18	15/5/18			
mark (No)		CP-19 181 182 183	186	187	188	CP-20 189 190 193			
pipe depth		2.25'	2.75'	3'	3'	2.5'			
offset R/L		10'	9.5	9.5	9'	8.75'			
joint condition	visual		4	3	4	4			
verygood 5 4 3 2 1 veryhad	touch		3	3	5	4			
	status before back filling								
section distance		37'	40'	40'	9'				
notes		Existing w/s leakage & replaced		Sewer leakage		Existing w/s leakage			

confirmation person signature	Project Maneger	Site Engineer	Site Supervisor
			[signature]

pipe joint records management

mark: valve ⧓ | tee pipe ┴ | connectipn point ╫
corner pipe: 90° 45° 22°

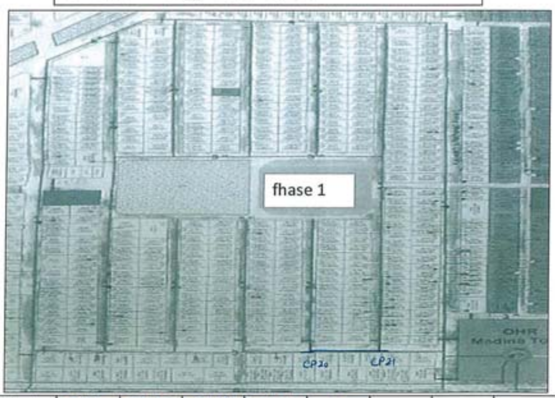


day/month		01/5/18	01/05/18	01/05/18	01/05/18	01/05/18			
mark (No)		CP-17 171 169 170	172	173	174	CP-18 176 175 177			
pipe depth		2.75	3'	3.25	3'	2.5'			
offset R/L		9	9.5	9.5	9.5	10			
joint condition	visual		4	4	4	3			
verygood 5 4 3 2 1 veryhad	touch		3	4	5	4			
	status before back filling								
section distance		40'	40	40	2'				
notes						Below cavity in PPC & sewer pipe			

confirmation person signature	Project Maneger	Site Engineer	Site Supervisor
			[signature]

pipe joint records management

mark: valve ⧓ | tee pipe ┴ | connectipn point ╫
corner pipe: 90° 45° 22°

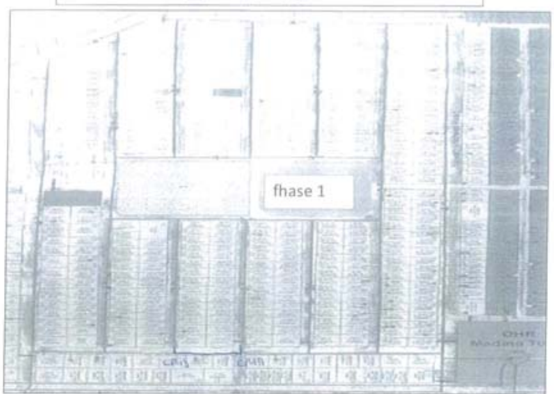


day/month		15/5/18	15/5/18	15/5/18	15/5/18	16/5/18			
mark (No)		CP-20 189 190 193	194	195	196	CP-21 200 204 201			
pipe depth		2.5	3'	3'	3'	2.5'			
offset R/L		8.75	9'	9.5'	9.5	10'			
joint condition	visual		4	3	5	4			
verygood 5 4 3 2 1 veryhad	touch		4	4	4	5			
	status before back filling								
section distance		40'	40'	40'	12'				
notes		Ac pa branch line				Sewer leakage			

confirmation person signature	Project Maneger	Site Engineer	Site Supervisor
			[signature]

pipe joint records management

mark: valve ⧓ | tee pipe ┴ | connectipn point ╫
corner pipe: 90° 45° 22°



day/month		13/5/18	16/05/18	16/05/18	16/05/18	10/05/18			
mark (No)		CP-15 175 177 176	178	179	180	CP-19 181 184 183			
pipe depth		2.5'	2.75'	3	2.75	2.25			
offset R/L		9'	9.5'	9'	10'	10'			
joint condition	visual		4	3	4	4			
verygood 5 4 3 2 1 veryhad	touch		5	4	4	3			
	status before back filling								
section distance		40'	40	7'	8'				
notes						Existing w/s leakage & replaced			

confirmation person signature	Project Maneger	Site Engineer	Site Supervisor
			[signature]

Improvement of water supply distribution system in Madina Town pilot area

HDPE Pipe Joints

Joint # 164, 165

Location IP8

Date 26-Apr

Joint # 166

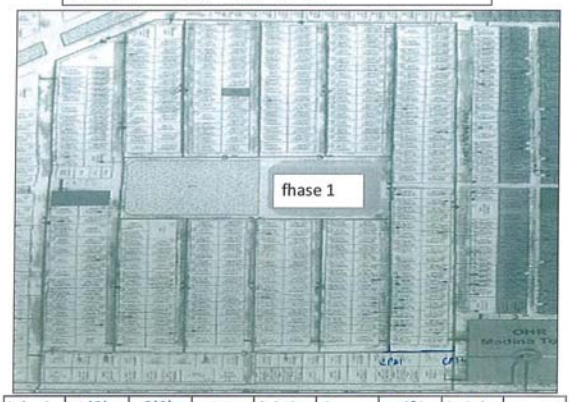
Location IP8+11'

Straight

Date 26-Apr

pipe joint records management

mark: valve ⋈ tee pipe ⊥ connectipn point ╫
corner pipe 90° ⌟ 45° ⌟ 22° ⌟



day/month	16/5/18	16/5/18	16/5/18	16/5/18	22/5/18	22/5/18	22/5/18
mark (No)	CP-21						CP-22
pipe depth	2.5	3'	3'	3.25'	.5'	.7'	7'
offset R/L	10'	10'	10'	10'	95	95	95
joint condition: visual		4	4	5	4	3	3
joint condition: touch (very good 5 4 3 2 1 very bad)		5	4	3	3	3	3
status before back filling							
section distance		40'	40'	40'	40'	1'	
notes							

confirmation person signature	Project Manager	Site Engineer	Site Supervisor

Improvement of water supply distribution system in Madina Town pilot area

HDPE Pipe Joints

Joint # 167

Location IP8+51'

Photo missing

Straight

Date 29-Apr

IP8+51 onwards
5 No pipe +1'
Two tees
Photo missing

Photo missing

Joint # 168

Location IP8+91

Straight

Date 1-May

Photo missing

Joint # 169,170,171

Location IP8+132
CP-17
Tee

Date 1-May

Photo missing

Joint # 172

Location IP8+172

Straight

Date 1-May

pipe joint records management

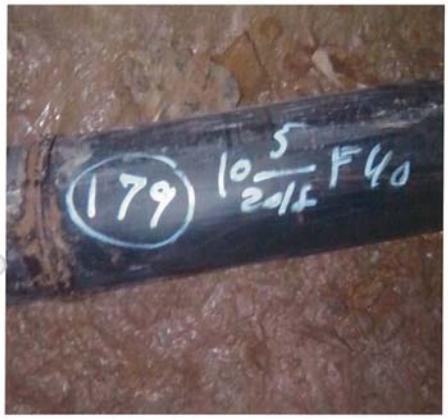
mark: valve ⋈ tee pipe ⊥ connectipn point ╫
corner pipe 90° ⌟ 45° ⌟ 22° ⌟

day/month	23/5/18	23/5/18	23/5/18	23/5/18	12/5/18	12/5/18	14/5/18	14/5/18
mark (No)	CP-23	V.Band		V.Band			V.Band	V.Band
pipe depth	7'	8'	5.5'	3.5	3.5	3.5'	3.5'	8'
offset R/L	95	Boundary	65'	—	—	35'	35'	35'
joint condition: visual		4	4	5	4	3	5	4
joint condition: touch (very good 5 4 3 2 1 very bad)		3	4	4	4	4	4	3
status before back filling								
section distance		40'	3'	30'	40'	40'	35'	3'
notes								

confirmation person signature	Project Manager	Site Engineer	Site Supervisor

Improvement of water supply distribution system in Madina Town pilot area

HDPE Pipe Joints



Joint # 179

Location IP8+334'

Straight

Date 10-May

Joint # 180

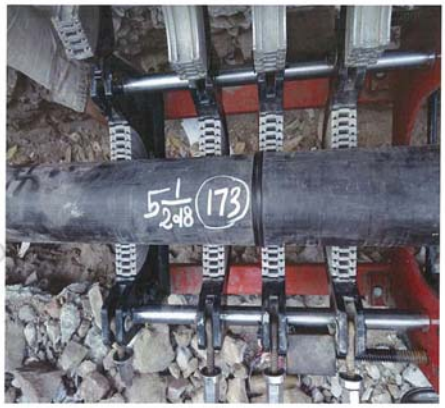
Location IP8+374'

Straight

Date 10-May

Improvement of water supply distribution system in Madina Town pilot area

HDPE Pipe Joints



Joint # 173

Location IP8+212

Straight

Date 1-May

Joint # 174

Location IP8+252

Straight

Date 1-May

Improvement of water supply distribution system in Madina Town pilot area

HDPE Pipe Joints

Joint # 181

Location IP8+381'
CP-19
Tee

Date 10-May

Joint # 182

Location IP8+382
CP-19
Tee

Date 10-May

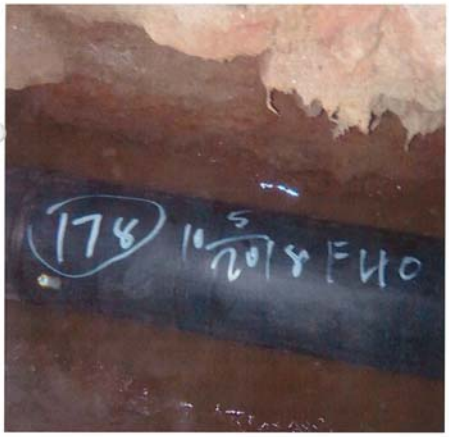
Improvement of water supply distribution system in Madina Town pilot area

HDPE Pipe Joints

Joint # 175, 176, 177

Location IP8+254
CP-18
Tee

Date 1-May



Joint # 178

Location IP8+294

Straight

Date 10-May

Improvement of water supply distribution system in Madina Town pilot area

HDPE Pipe Joints

Joint # 194

Location IP8+548'

Straight

Date 15-May

Joint # 195

Location IP8+588'

Straight

Date 15-May

Improvement of water supply distribution system in Madina Town pilot area

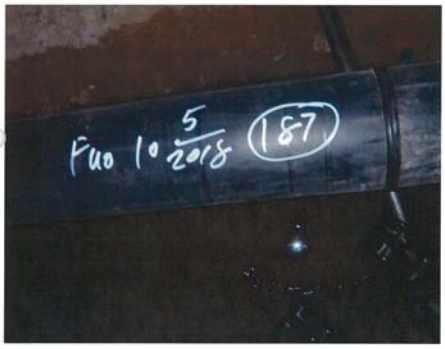
HDPE Pipe Joints

Joint # 186

Location IP8+419'

Straight

Date 10-May



Joint # 187

Location IP8+459'

Straight

Date 10-May

Improvement of water supply distribution system in Madina Town pilot area

HDPE Pipe Joints

Joint # 196

Location IP8+628'

Straight

Date 15-May

Joint # 200

Location IP8+640'
CP-21
Tee

Date 16-May

Improvement of water supply distribution system in Madina Town pilot area

HDPE Pipe Joints

Joint # 188

Location IP8+499

Straight

Date 15-May

Joint # 189, 190

Location IP8+508'
CP-20
Tee

Date 15-May

Improvement of water supply distribution system in Madina Town pilot area

HDPE Pipe Joints

Joint # 216

Location IP8+788'

Straight

Date 23-May

Joint # 216

Location IP8+804'

Stub end

Valve

Date 23-May

Improvement of water supply distribution system in Madina Town pilot area

HDPE Pipe Joints

Photo missing

Joint # 204

Location IP8+640'

Straight

Date 16-May

Joint # 197

Location IP8+668'

Straight

Date 15-May

Improvement of water supply distribution system in Madina Town pilot area

HDPE Pipe Joints

Joint # 219, 221, 220

Location IP8+805'

Stub end

Tee

CP-22

Date 23-May

Joint # 222

Location IP8+845'

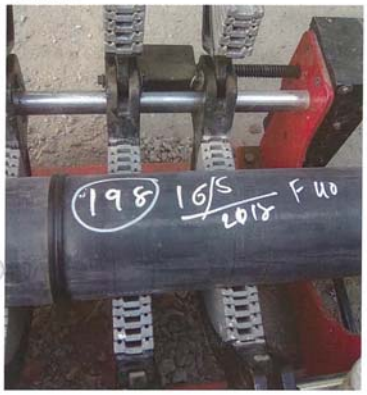
Bore

V-Bend

Date 23-May

Improvement of water supply distribution system in Madina Town pilot area

HDPE Pipe Joints

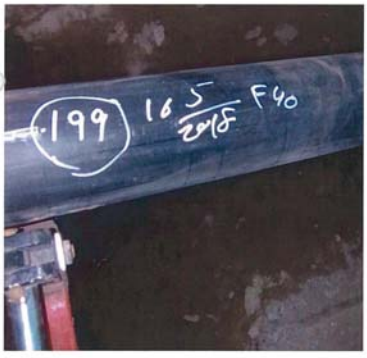


Joint # 198

Location IP8+708'

Straight

Date 16-May



Joint # 199

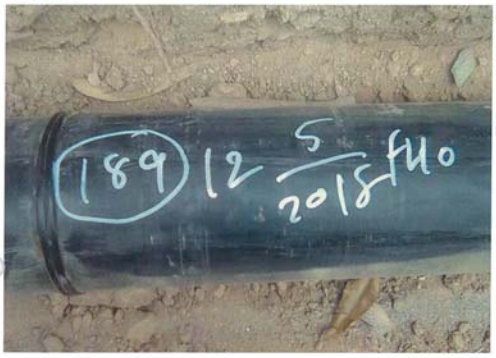
Location IP8+748'

Straight

Date 16-May

Improvement of water supply distribution system in Madina Town pilot area

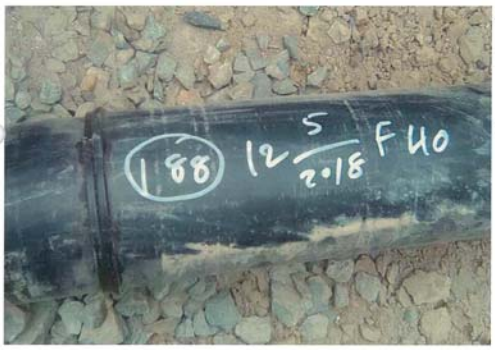
HDPE Pipe Joints



Joint # 189

Location IP10+70

Date 12-May



Joint # 188

Location IP10+110

Date 12-May

277

Improvement of water supply distribution system in Madina Town pilot area

HDPE Pipe Joints

Joint # 223

Location IP8+845'
Bore area
IP-10
V-bend

Date 23-May

Joint # 224

Location IP8+845'
IP-10
V-Bend

Date 23-May

275

Improvement of water supply distribution system in Madina Town pilot area

HDPE Pipe Joints

Joint # 344, 343

Location IP10+145

V-Bend

Date 14-May

Joint # 342

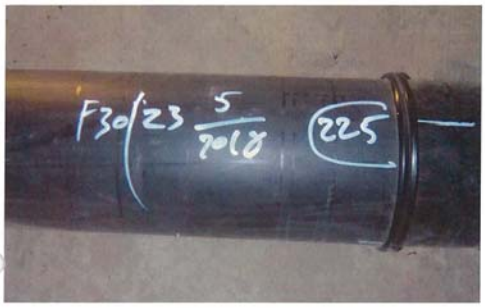
Location IP10+145
V-pipe 3'
V-Bend

Date 14-May

278

Improvement of water supply distribution system in Madina Town pilot area

HDPE Pipe Joints



Joint # 225

Location IP-10
V-Bend

Date 23-May

Joint # 226

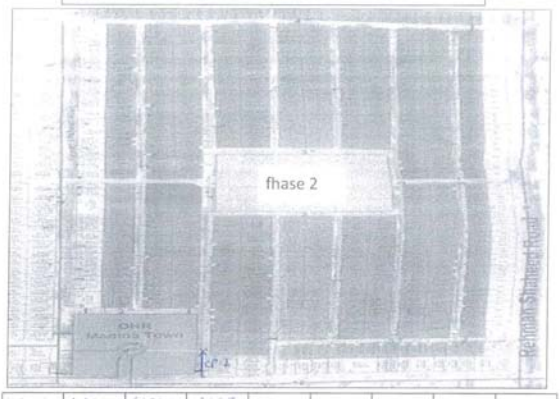
Location IP10+30

Date 23-May

276

pipe joint records management

mark | valve | tee pipe | connectipn point | corner pipe | 90° | 45° | 22° | reducer



day/month	6/5/18	6/5/18	6/5/18					
mark (No)	CP2							
pipe depth		2.5'	2.5'					
offset R/L		2'	2'					
joint condition — visual		4	4					
joint condition — touch		4	3					
joint condition — status before back filling								
section distance	2'	3'						
notes								

confirmation person signature	Project Maneger	Site Engineer	Site Supervisor

281

Improvement of water supply distribution system in Madina Town pilot area

HDPE Pipe Joints

Joint # 341
Location IP10+145
V-Bend
Date 14-May

Joint # 340
Location IP10+149
Stub end
Valve
Date 14-May

279

Improvement of water supply distribution system in Madina Town pilot area

HDPE Pipe Joints

Joints # 321
Location CP2
Tee
Date 6-May

Photo missing

Joints # 322A,
Location CP2+3
Stub end
Date 6-May

Joints # 323, 324
Location CP2+7
Stub end
Enlarger
Date 6-May

282

CP2

280

Improvement of water supply distribution system in Madina Town pilot area

HDPE Pipe Joints

Joints # 309

Location CP3
Tee

Date 6-Apr

285

Joints # 326

Location CP3+3

Straight

Date 8-May

CP3

283

Joints # 327

Location CP3+8

Straight

Date 8-May

Joints # 328, 329

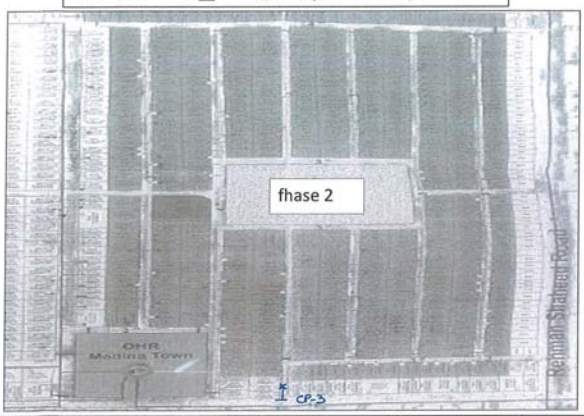
Location CP3+17'
Reducer
Stub end

Date 8-May

286

pipe joint records management

mark: valve, tee pipe, connectipn point, corner pipe, 90°, 45°, 22°, reducer



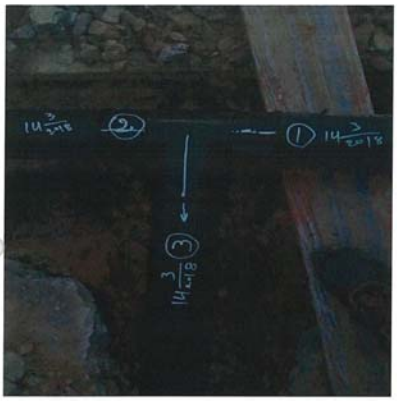
day/month	6/4/18	8/5/18	8/5/18	8/15/18					
mark (No)	CP3 308 309 310	326	327	328 329					
pipe depth	3'	2.75	2.5'	2.5'					
offset R/L	4.5'	4'	4'	4'					
joint condition visual		4	4	3					
joint condition touch (verygood 5 4 3 2 1 verybad)		4	3	3					
status before back filling									
section distance	5'-5"	5'	8'						
notes		Existing 4½ leakage	Existing 4½ leakage	Existing pipe leakage					

confirmation person sign ature	Project Maneger	Site Engineer	Site Supervisor

284

Improvement of water supply distribution system in Madina Town pilot area

HDPE Pipe Joints



Joints # 1, 2, 3

Location CP4
Tee

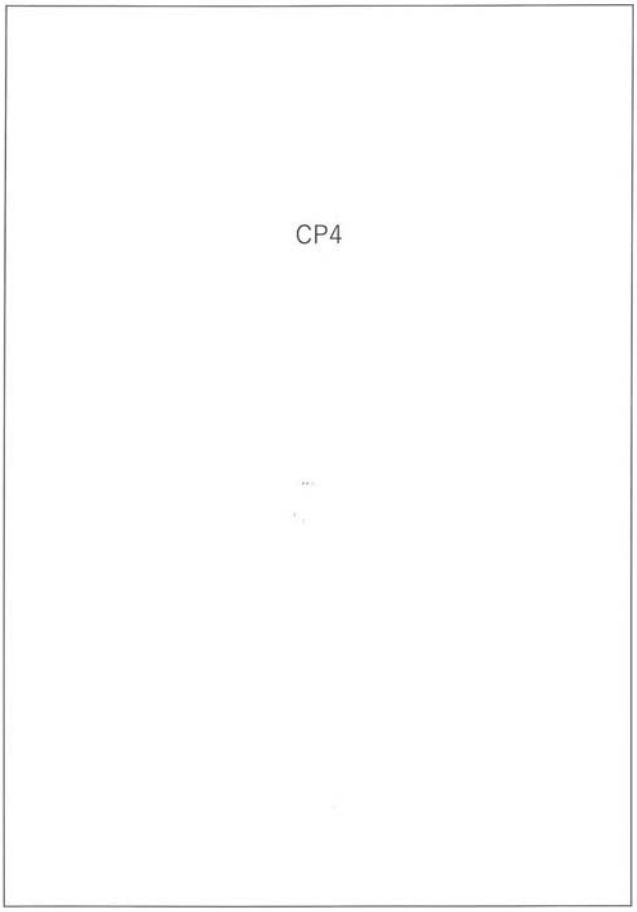
Date 14-Mar

Joints # 4,5

Location CP4
Bend

Date 14-Mar

289



287

Joints # 6, 7

Location CP4
Bend

Date 14-Mar

Joints # 8, 9

Location CP4
Reducer
+ Valve

Date 14-Mar

290

pipe joint records management

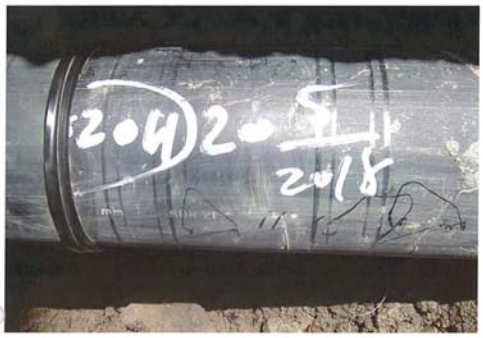
mark: valve, tee pipe, connectipn point, corner pipe, 90°, 45°, 22°, reducer

day/month	14/3/18	14/3/18	20/5/18	20/05/18	14/3/18	20/5/18	20/5/18	14/3/18
mark (No)	CP4 1 2 3	4 5	204	205	6 7	206	207	8 9
pipe depth	2.75	2.75	2.75	2.75	2.75	2.75	2.75	2.75
offset R/L	9.5	9.5	—	—	3'	3'	3'	3'
joint condition (verygood 5 4 3 2 1 verybad) visual	4	4	3	3	4	3	3	
touch	5	5	4	5	5	4	5	
status before back filling								
section distance	4'	9'	1'	1'	1'	3'	1'	
notes								

confirmation person sign ature	Project Maneger	Site Engineer	Site Supervisor

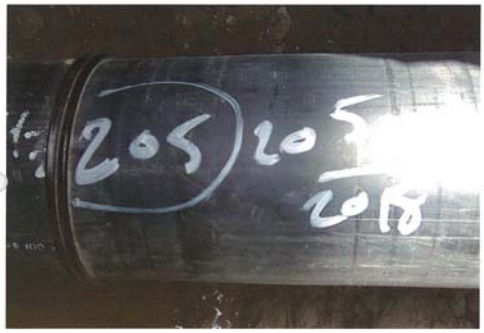
288

293



Joints # 204
Location CP4

Straight
Date 20-May



Joints # 205
Location CP4

Straight
Date 20-May

291

CP5

CP5

Joints # 206
Location CP4

Straight
Date 20-May

Joints # 207
Location CP4

Straight
Date 20-May

294

292

297

pipe joint records management

mark: valve, tee pipe, connectipn point; corner pipe, 90°, 45°, 22°½, reducer

day/month	14 Mar	14 Mar	14 Mar						
mark (No)	16								
	14 15	16 17	17 18	18					
pipe depth	2.75'	2.75'	2.75'	2.75'					
offset R.L		3.5'	3.5'	3.5'					
joint condition visual	4	4	4	5					
touch	4	3	4	4					
section distance	7'								
notes	Tee	Straight	Reducer	Flange+P Valve					

Branch Connection CP-5

confirmation person signature	Project Manager	Site Engineer	Site Supervisor

295

CP6

298

Improvement of water supply distribution system in Madina Town pilot area

HDPE Pipe Joints

Joints # 14, 15, 16
Location CP5
Tee
Date 14-Mar

Joints # 17, 18
Location CP5
Reducer
+ valve
Date 14-Mar

296

Improvement of water supply distribution system in Madina Town pilot area

HDPE Pipe Joints

Joint # 174, 175

Location CP10+17'
Bend

Date 3-May

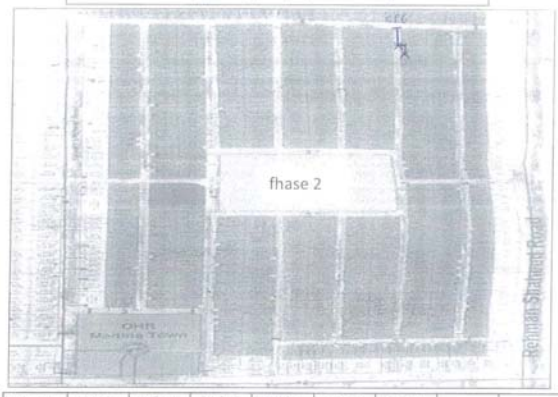
Joint # 176

Location CP6+20'
Straight

Date 3-May

pipe joint records management

mark: valve, tee pipe, connection point; corner pipe, 90°, 45°, 22°, reducer



day/month	2/5/18	3/5/18	3/5/18	3/5/18	3/5/18	3/5/18		
mark (No)	F3-3	173	174	176	177	175		
pipe depth		2.75'	2.75'	2.75'	2.75'	2.75'		
offset R/L		4'	4'	-	-	3.5'		
joint condition visual		3	4	5	3	4		
joint condition touch		4	4	4	4	4		
section distance		13'	4'	3'	2'	5'		
notes					leakage from 178	leakage from 173		

confirmation person signature	Project Manager	Site Engineer	Site Supervisor

Improvement of water supply distribution system in Madina Town pilot area

HDPE Pipe Joints

Joint # 177

Location CP6+22'
Straight

Date 3-May

Joint # 178, 179
180

Location CP6+27'
Bend
Reducer
Stub end

Date 3-May

Improvement of water supply distribution system in Madina Town pilot area

HDPE Pipe Joints

Joint # 63, 64 & 65

Location IP4+157'
CP-6
Tee

Date 29-Mar

Joint # 173

Location CP6+13'
Straight

Date 3-May

Improvement of water supply distribution system in Madina Town pilot area

HDPE Pipe Joints

Joint # 68, 69, 70

Location IP4+270'
CP-7
Tee

Date 30-Mar

Joint # 162

Location CP7+6'

Straight

Date 30-Apr

CP7

Improvement of water supply distribution system in Madina Town pilot area

HDPE Pipe Joints

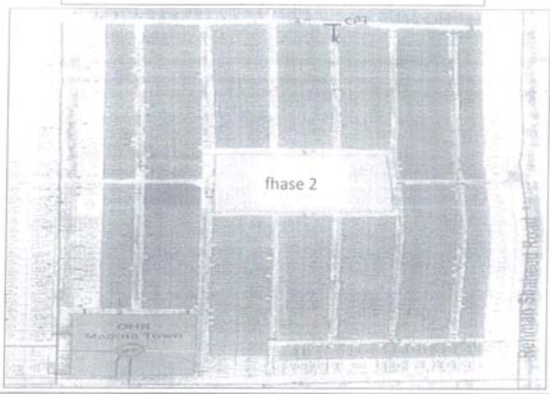
Joint # 163, 164

Location CP7+14'
Reducer
Stub end

Date 30-Apr

pipe joint records management

mark						
valve		tee pipe		connection point		
corner pipe	90°	45°	22°	reducer		



day/month		30/3/18	30/4/18	30/4/18					
mark (fig)		CP7 69 70 68	162	163 164					
pipe depth			2.5'	2.5'					
offset fill			5'	5'					
joint condition	visual		4	4					
	touch		3	4					
	status before back filling								
section distance			6'	8'					
notes									

confirmation person signature	Project Maneger	Site Engineer	Site Supervisor

Improvement of water supply distribution system in Madina Town pilot area

HDPE Pipe Joints

Joint # 74, 75, 76

Location IP4+357'
CP-8
Tee

Date 30-Mar

Joint # 165

Location CP8+7'

Straight

Date 30-Apr

309

CP8

307

Improvement of water supply distribution system in Madina Town pilot area

HDPE Pipe Joints

Joint # 166, 167

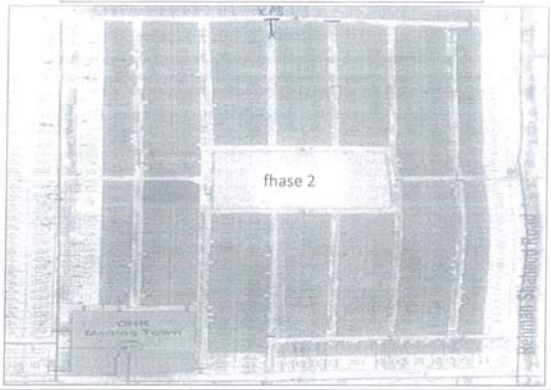
Location CP8+14'
Reducer
Stub end

Date 30-Apr

310

pipe joint records management

mark: valve, tee pipe, connection point; corner pipe 90°, 45°, 22°, reducer



day/month		3/4/18	3/4/18	3/4/18					
mark (tool)			165	166 167					
pipe depth			3'						
offset R/L			45	45					
joint condition	visual		4	4					
	touch		3	4					
	status before back filling								
section distance		6'	7'						
notes									

confirmation	Project Manager	Site Engineer	Site Supervisor
person signature			

308

Improvement of water supply distribution system in Madina Town pilot area

HDPE Pipe Joints

Joint # 80, 81, 82, 83
Location IP4+487
Straight
Tee
CP-9
Date 1-Apr

Joint # 168
Location CP9+8'
Straight
Date 3-May

313

CP9

311

Improvement of water supply distribution system in Madina Town pilot area

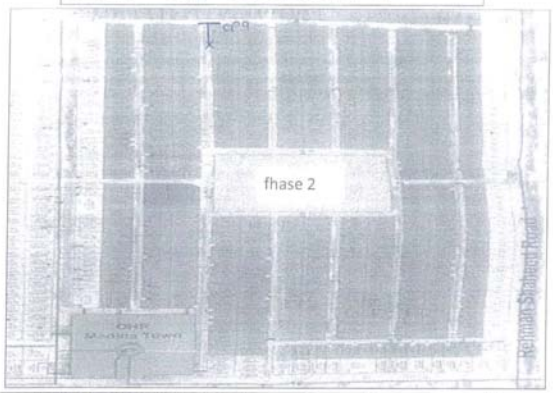
HDPE Pipe Joints

Joint # 169, 170
Location CP9+21'
Reducer
Stub end
Date 3-May

314

pipe joint records management

mark: valve, tee pipe, connection point; corner pipe, 90°, 45°, 22°, reducer



day/month	4/4/18	3/5/18	3/5/18					
mark (No)	CP9 S1 S5 S2	168	169 170					
pipe depth		2.75'	2.75					
offset R/L		5'	5'					
joint condition visual		3	4					
joint condition touch		3	3					
joint condition status before back filling								
section distance	3'	13'						
notes								

confirmation person signature	Project Maneger	Site Engineer	Site Supervisor

312

Improvement of water supply distribution system in Madina Town pilot area

HDPE Pipe Joints

Joint # 87, 88, 89

Location IP4+605'
Tee
CP-10

Date 1-Apr
2-Apr

Joint # 171

Location CP10+5'

Straight

Date 3-May

317

CP10

315

Improvement of water supply distribution system in Madina Town pilot area

HDPE Pipe Joints

Joint # 172, 173

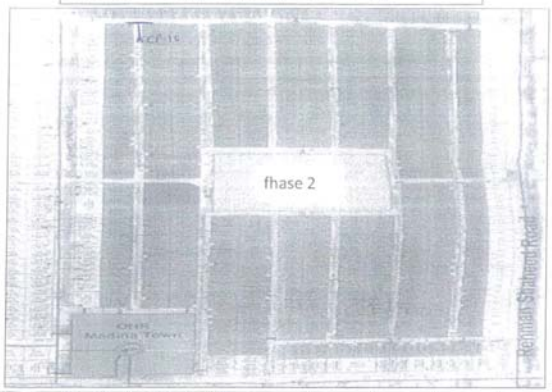
Location CP10+13'
Reducer
Stub end

Date 3-May

318

pipe joint records management

mark: valve, tee pipe, connection point, corner pipe, 90°, 45°, 22°, reducer



day/month	3/4/18	3/5/18	3/5/18					
mark (No)	CP 10	171	172 173					
pipe depth		3'	5'					
offset R/L		6'	6'					
joint condition visual		4	3					
touch		4	4					
status before back filling								
section distance	0-5'	5'	3'					
notes								

confirmation person signature	Project Manager	Site Engineer	Site Supervisor

316

Improvement of water supply distribution system in Madina Town pilot area

HDPE Pipe Joints

Joint # 266, 267, 268

Location CP-11
Tee
Stub end
Valve

Date 12-Jun

Joint # 269, 270, 271
272, 273

Location CP11+3'
Stub end
V.Bend
Straight
V.Bend

Date 12-Jun

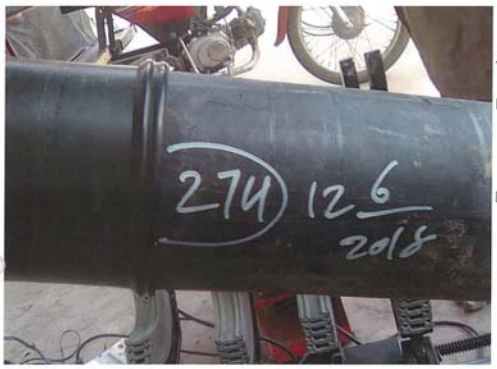
321

CP11

319

Improvement of water supply distribution system in Madina Town pilot area

HDPE Pipe Joints



Joint # 274

Location CP-11+5

Straight

Date 12-Jun

Joint # 275, 276

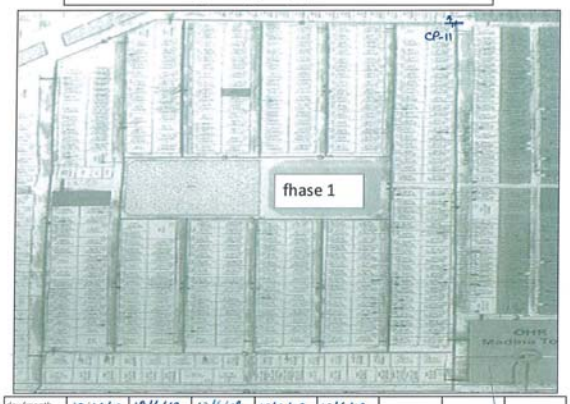
Location CP-11+8
Bend
Reducer
Stub end

Date 12-Jun

322

pipe joint records management

mark: valve, tee pipe, connectipn point, corner pipe, 90°, 45°, 22°



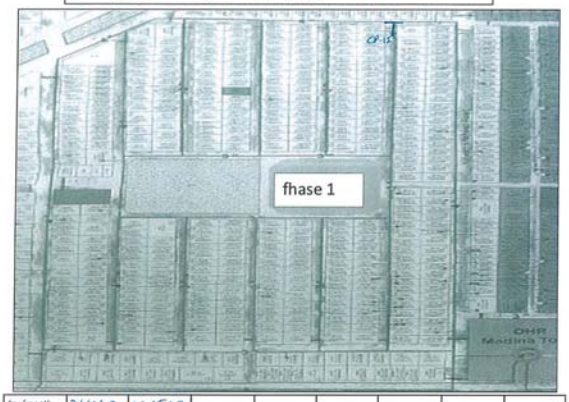
day/month	10/6/18	12/6/18	12/6/18	12/6/18	12/6/18			
mark (No)	CP-11 266 267 268	269 270 V.Bend	271 V.Bend	272	274	275 276		
pipe depth	6'	6'	3.5'	3'	3.5			
offset R/L	–	–	–	–	–			
joint condition visual		4	3	4	3			
verygood 5 4 3 2 1 verybad — touch		3	3	5	4			
status before back filling								
section distance	Existing with leakage 20	2'	2'	3'				
notes								

confirmation person signature	Project Maneger	Site Engineer	Site Supervisor

320

pipe joint records management

mark | valve | tee pipe | connectipn point | corner pipe | 90° | 45° | 22°



day/month	3/4/18	22/5/18
mark (No)	92 93 94	212 213
pipe depth	3.25'	2.75'
offset R/L	4.5	4.5
joint condition visual	3	
joint condition touch	4	
joint condition status before back filling		
section distance	4'	
notes		

confirmation person sign ature	Project Maneger	Site Engineer	Site Supervisor

325

Improvement of water supply distribution system in Madina Town pilot area

HDPE Pipe Joints

Location CP-11

323

Improvement of water supply distribution system in Madina Town pilot area

HDPE Pipe Joints

Joint # 92, 93, 94

Location IP5+96
Tee
CP-12

Date 3-Apr

Joint # 212, 213

Location CP12+4'
Reducer
Stub end

Date 22-May

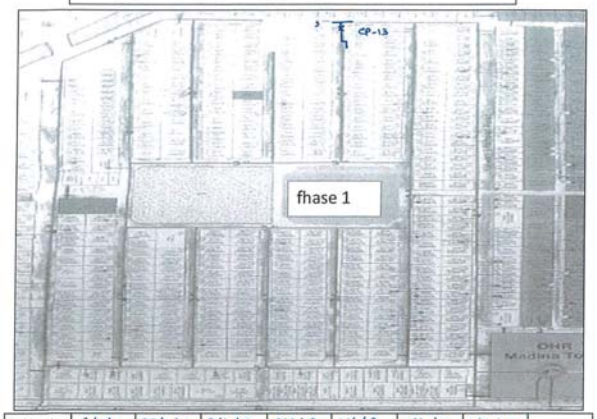
326

CP12

324

pipe joint records management

mark | valve | tee pipe | connectipn point | corner pipe | 90° | 45° | 22°



day/month	6/4/18	27/5/18	2/6/18	2/6/18	2/6/18	2/6/18	2/6/18	
mark (No)	98 99	230	245	246	247	248 249 250		
pipe depth	3.25	3'	3'	3'	3'	3'		
offset R/L	4.5	5'	5'	5'	5'	3'		
joint condition visual		4	4	5	4	3		
joint condition touch		3	4	4	3	4		
joint condition status before back filling								
section distance		4'	1'	40'	40'	2'		
notes								

confirmation person signature	Project Maneger	Site Engineer	Site Supervisor

329

Improvement of water supply distribution system in Madina Town pilot area

HDPE Pipe Joints

327

Improvement of water supply distribution system in Madina Town pilot area

HDPE Pipe Joints

Joint # 98, 99, 100

Location CP12+127'
CP13
Tee

Date 6-Apr

IP5+223'

Joint # 230

Location CP13+4'
Stub end
Valve

Date 27-May

330

CP13

328

Improvement of water supply distribution system in Madina Town pilot area

HDPE Pipe Joints

Joint # 249

Location CP13+86'

Bend

Date 2-Jun

Joint # 250, 251

Location CP13+88'

Bend

Reducer

Stub end

Date 2-Jun

Improvement of water supply distribution system in Madina Town pilot area

HDPE Pipe Joints

Joint # 245

Location CP13+4'

Valve

Stub end

Date 2-Jun

Joint # 246

Location CP13+44'

Straight

Date 2-Jun

Improvement of water supply distribution system in Madina Town pilot area

HDPE Pipe Joints

Improvement of water supply distribution system in Madina Town pilot area

HDPE Pipe Joints

Joint # 247

Location CP13+84'

Bend

Date 2-Jun

Joint # 248

Location CP13+85'

Bend

Date 2-Jun

Improvement of water supply distribution system in Madina Town pilot area

HDPE Pipe Joints

Joint # 117

Location CP-14
Tee

Date 11-Apr

Joint # 229

Location CP14+4'

Straight

Date 24-May

337

CP14

335

Improvement of water supply distribution system in Madina Town pilot area

HDPE Pipe Joints

Joint # 227, 228

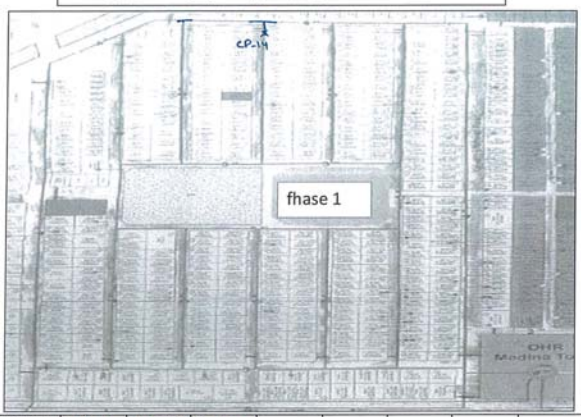
Location CP-14+9'
Reducer
Stub end

Date 24-May

338

pipe joint records management

mark: valve, tee pipe, connectipn point; corner pipe 90°, 45°, 22°



day/month	11/4/18	24/5/18	24/5/18						
mark (No)	116 CP-14 115 117	229	228 227						
pipe depth	2'	2.5	2.5						
offset R/L	4'	6'	6'						
joint condition	visual	4	4						
everygood 5 4 3 2 1 verybad	touch	3	5						
	status before back filling								
section distance	3'	5'							
notes	Above Sewer pipe								

confirmation person signature	Project Maneger	Site Engineer	Site Supervisor

336

Improvement of water supply distribution system in Madina Town pilot area

HDPE Pipe Joints

Joint # 136, 137

Location IP6b+104'
IP6c
CP15

Date 18-Apr

341

Joint #

Location

Date 31-May

CP15

339

Improvement of water supply distribution system in Madina Town pilot area

HDPE Pipe Joints

Joint #

Location

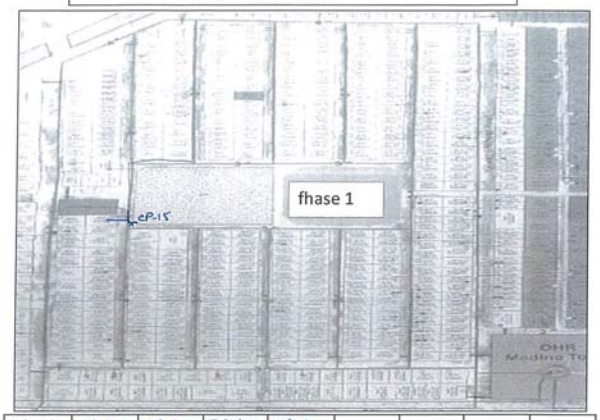
Date 6-Jun

Joint details missing

342

pipe joint records management

mark: valve, tee pipe, connectipn point, corner pipe, 90°, 45°, 22°



day/month	18/4/18	3/6/18	3/6/18	3/6/18				
mark (No)	CP-15 136 137	251	252	V-Bend 254	V-Bend 253			
pipe depth	3'	3'	3'	3'	1'			
offset R/L	6.5'	–	–	–	–			
joint condition visual		4	5	3	4			
joint condition touch (verygood 5 4 3 2 1 verybad)		4	4	4	3			
status before back filling								
section distance	1'	2'	11'	1'				
notes								

confirmation person signature	Project Maneger	Site Engineer	Site Supervisor

340

Improvement of water supply distribution system in Madina Town pilot area

HDPE Pipe Joints

Location IP6c+118'
IP7
CP16
Date 18-Apr

345

Joints # 261, 262
Location CP16
Bend

Date 6-Jun

346

CP16

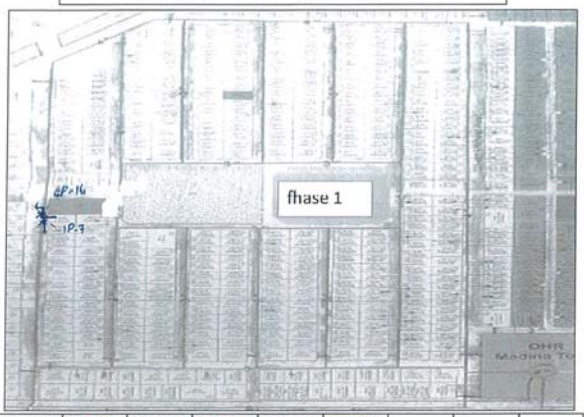
343

Joints # 265
Location CP16+2
Stub end
Valve
Date 6-Jun

Joints # 264, 263
Location CP16+19'
Bend
Date 6-Jun

pipe joint records management

mark: valve, tee pipe, connectipn point, corner pipe, 90°, 45°, 22°



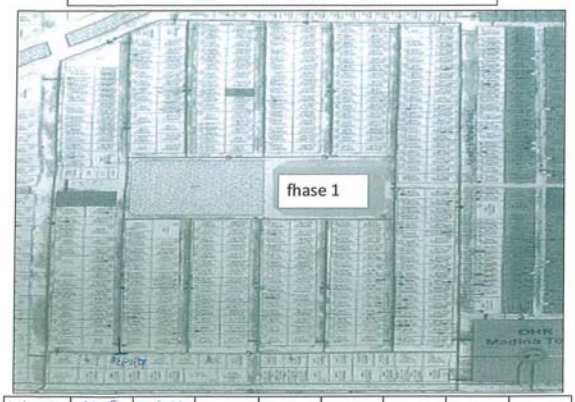
day/month	18/4/18	6/6/18	6/6/18	6/6/18	6/6/18				
mark (No.)	CP-17 141 142 140	262 261	XT 265	263 264	266 267				
pipe depth	3'	3'	3'	3'	2'				
offset R/L	–	–	–	7'	7'				
joint condition visual		4	3	5	4				
touch		4	4	4	3				
status before back filling									
section distance		1'	1'	17'	14'				
notes		Sewer m/h Leakage			Sewer m/h Leakage				

confirmation person signature	Project Maneger	Site Engineer	Site Supervisor

344

pipe joint records management

mark: valve ⋈ | tee pipe ⊥ | connectipn point ⊣⊢ | corner pipe 90° ⌟ 45° ⌟ 22° ⌟



day/month	01/05/18	20/05/18						
mark (No)	CP17							
pipe depth	2.75	2.5'						
offset R/L	9'	—						
joint condition	visual	1						
	touch	4						
	status before flush filling							
section distances	5'							
notes	Existing pipe angle in alignment							

confirmation person signature	Project Maneger	Site Engineer	Site Supervisor

349

Joints # 266, 267
Location CP16+33'
Bend
Reducer
Date 6-Jun

347

Improvement of water supply distribution system in Madina Town pilot area

HDPE Pipe Joints

Photo missing

Joint # 169,170,171

Location IP8+132
CP-17
Tee
Date 1-May

CP17

Joint # 208, 209

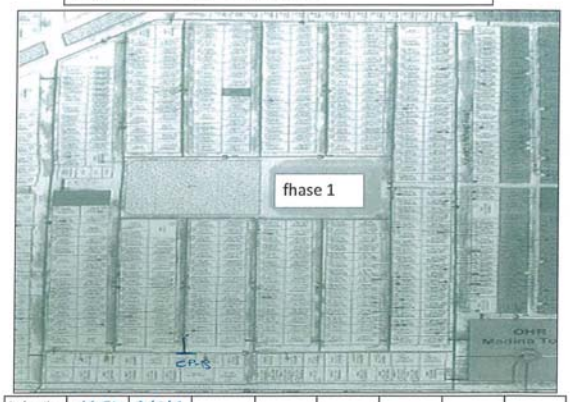
Location CP18+4'
Reducer
Stub end
Date 20-May

350

348

pipe joint records management

mark: valve, tee pipe, connectipn point; corner pipe: 90°, 45°, 22°



day/month		01/05/18	02/5/18					
mark (No)		175 176 177						
pipe depth		2.5	2.5					
offset R/L		10	—					
joint condition (verygood 5 4 3 2 1 verybad)	visual		4					
	touch		4					
	status before back filling							
section distance		8′						
notes								

confirmation person sign ature	Project Maneger	Site Engineer	Site Supervisor

353

Improvement of water supply distribution system in Madina Town pilot area

HDPE Pipe Joints

351

Improvement of water supply distribution system in Madina Town pilot area

HDPE Pipe Joints

Joint # 175, 176, 177

Location IP8+254
CP-18
Tee

Date 1-May

Joint # 210, 211

Location CP18+3'
Reducer
Stub end

Date 20-May

354

CP18

352

pipe joint records management

mark | valve | tee pipe | connectipn point | corner pipe | 90° | 45° | 22°

day/month	10/5/18	10/5/18						
mark (No)	181 CP19 182 183	184 185						
pipe depth	2.25'	2.25						
offset R/L	10'	–						
joint condition	visual	4						
verygood 5 4 3 2 1 verybad	touch	3						
	status before back filling							
section distance	5'							
notes		existing % leakage						

confirmation person signature	Project Maneger	Site Engineer	Site Supervisor

357

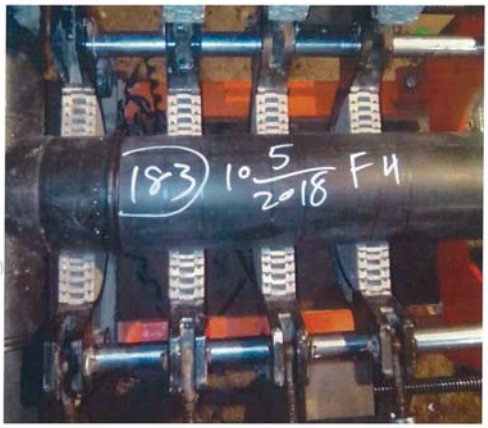
Improvement of water supply distribution system in Madina Town pilot area

HDPE Pipe Joints

355

Improvement of water supply distribution system in Madina Town pilot area

HDPE Pipe Joints



Joint # 183

Location IP8+382'
Tee
CP-19

Date 10-May

Joint # 184, 185

Location CP19+5'
Reducer
Stub end

Date 10-May

358

CP19

356

Impr ovement of water supply distribution system in Madina Town pilot area

HDPE Pip e Joints

Joint # 193

Location IP8+508'
Tee
CP-20

Date 15-May

Joint # 191, 192

Location CP20+4'
Reducer
Stub end

Date 15-May

361

CP20

359

CP21

362

pipe joint records management

mark | valve | tee pipe | connectipn point | corner pipe | 90° | 45° | 22°

day/month	15/5/18	15/5/18						
mark (No)	189 CP20 193 190	191 192						
pipe depth	2.5	2.5						
offset R/L	8.75	–						
joint condition visual		4						
verygood 5 4 3 2 1 verybad touch		5						
status before back filling								
section distance	4'							
notes								

confirmation person sign ature	Project Maneger	Site Engineer	Site Supervisor

360

CP22

pipe joint records management

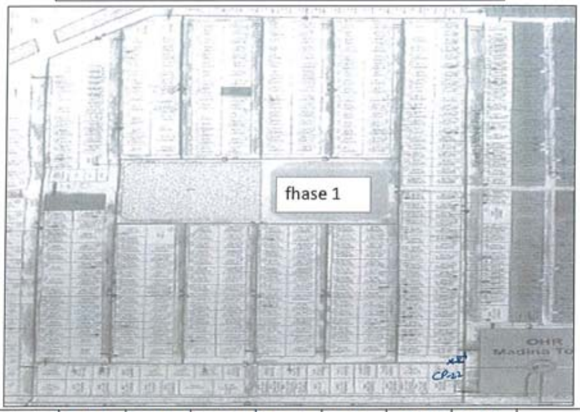
mark	valve ⋈	tee pipe ┴	connectipn point
	corner pipe	90° 45° 22°	

day/month	16/5/18	16/5/18						
mark (No)	CP21, 200, 201, 204	202, 203 X						
pipe depth	2.5	2.5'						
offset R/L	10'	–						
joint condition (verygood 5 4 3 2 1 verybad) visual		4						
touch		4						
status before back filling								
section distance	4'							
notes								

confirmation person signature	Project Maneger	Site Engineer	Site Supervisor
			[signature]

pipe joint records management

mark	valve ⋈	tee pipe ┴	connectipn point
	corner pipe	90° 45° 22°	



day/month	20/5/18	29/5/18	29/5/18	29/5/18	29/5/18	29/5/18	29/5/18	
mark (No)	CP-22, 219, 220, 221	230	231	236	237, 232	233, 234		
pipe depth	7'	7'	6'	5'	4'	3	3'	
offset R/L	9.5'	–	–	–	–	—	–	–
joint condition (verygood 5 4 3 2 1 verybad) visual		3	4	4	3	4		
touch		3	5	4	4	3		
status before back filling								
section distance	–	3'	2''	2'	6"			
notes								

confirmation person signature	Project Maneger	Site Engineer	Site Supervisor
			[signature]

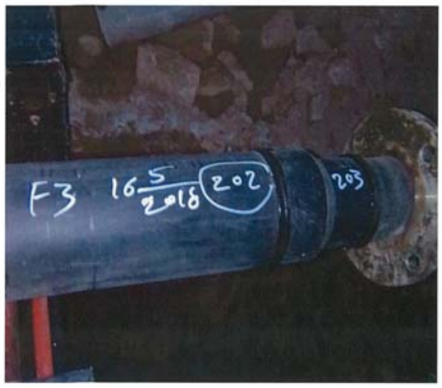
Improvement of water supply distribution system in Madina Town pilot area

HDPE Pipe Joints

Joint # 201

Location IP8+742
Tee
CP-21

Date 16-May



Joint # 202, 203

Location CP21+4'
Reducer
Stub end

Date 16-May

Improvement of water supply distribution system in Madina Town pilot area

HDPE Pipe Joints

Joint # 232

Location CP22+3'

Bend

Date 29-May

Joint # 233

Location CP22+10'

Bend

Date 29-May

369

Improvement of water supply distribution system in Madina Town pilot area

HDPE Pipe Joints

Joint # 219, 221, 220

Location IP8+805'

Stub end

Tee

CP-22

Date 23-May

Photo missing

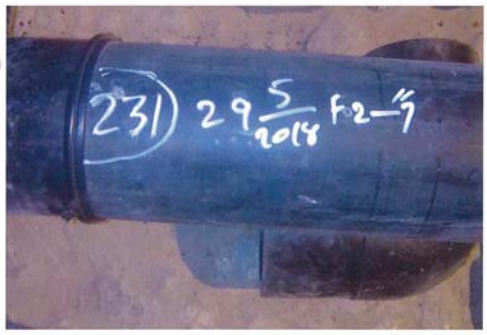
Joint # 230

Location CP22

Valve

Stub end

Date 29-May



Joint # 231

Location CP22+3'

Bend

Date 29-May

367

Improvement of water supply distribution system in Madina Town pilot area

HDPE Pipe Joints

Joint # 234

Location CP22+10'

Bend

Date 29-May

370

Improvement of water supply distribution system in Madina Town pilot area

HDPE Pipe Joints

Joint # 236

Location CP22+7'

Straight

Date 29-May

Joint # 237

Location CP22+11'

Bend

Date 29-May

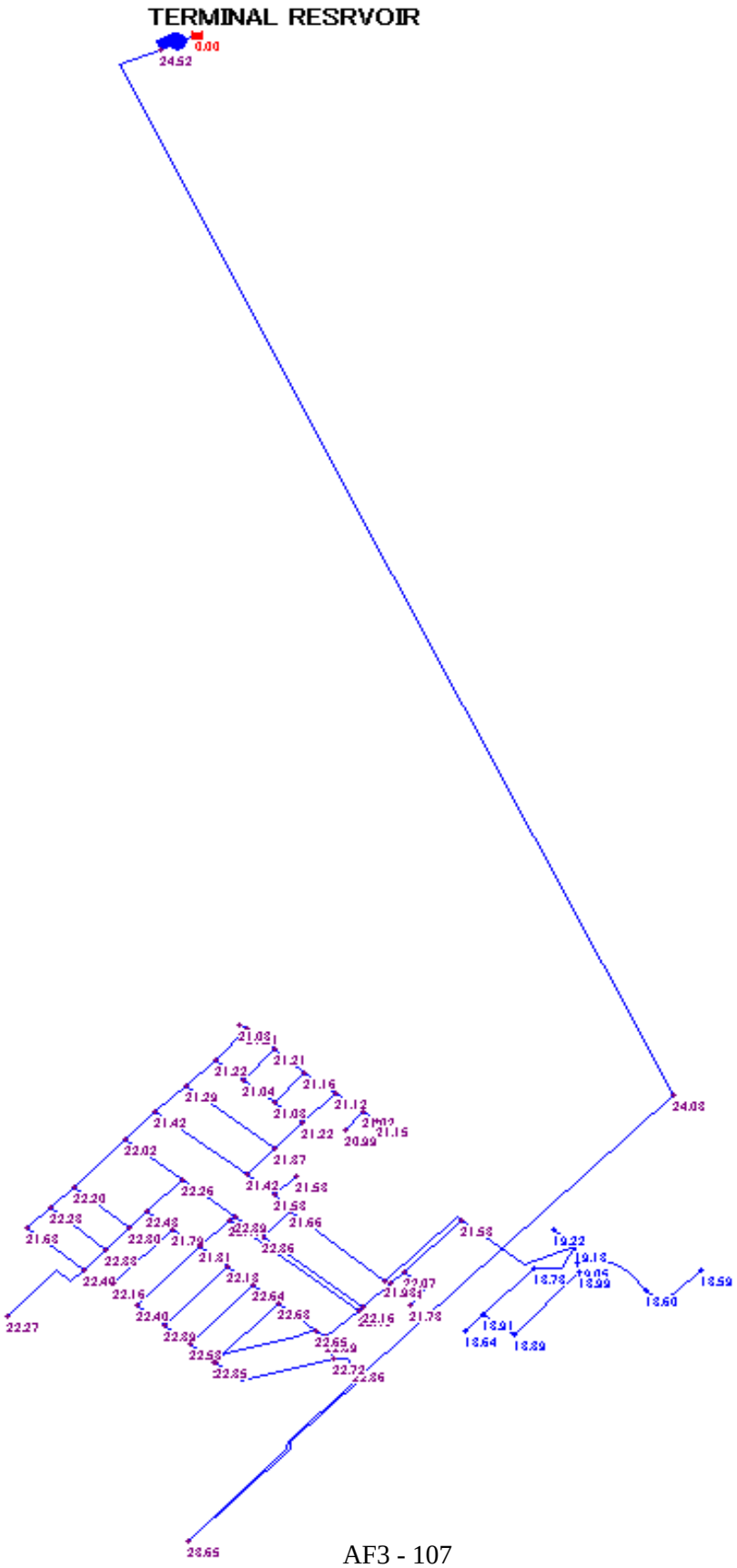
368

Madina Town OHR **تاریخ:** _____ **دستخط:** _____

وقت	زونل میٹر	ٹینک		پمپ					بائی پاس	ٹنکي (ft)	پانی کی فراہمی		تبصر ہ
		بھر رہا ہے	پانی کی سطح (ft)	بجلی	1	2	3	4			دوسرے علاقے	مدینہ ٹاؤن (X-Block)	
06:00 Morning		Yes/No		Yes/No					Yes/No				
07:00		Yes/No		Yes/No					Yes/No				
08:00		Yes/No		Yes/No					Yes/No				
09:00		Yes/No		Yes/No					Yes/No				
10:00		Yes/No		Yes/No					Yes/No				
11:00		Yes/No		Yes/No					Yes/No				
12:00		Yes/No		Yes/No					Yes/No				
01:00 Afternoon		Yes/No		Yes/No					Yes/No				
02:00		Yes/No		Yes/No					Yes/No				
03:00		Yes/No		Yes/No					Yes/No				
04:00		Yes/No		Yes/No					Yes/No				
05:00		Yes/No		Yes/No					Yes/No				
06:00		Yes/No		Yes/No					Yes/No				
07:00		Yes/No		Yes/No					Yes/No				
08:00		Yes/No		Yes/No					Yes/No				
09:00		Yes/No		Yes/No					Yes/No				
10:00		Yes/No		Yes/No					Yes/No				
11:00		Yes/No		Yes/No					Yes/No				
00:00 Midnight		Yes/No		Yes/No					Yes/No				
01:00		Yes/No		Yes/No					Yes/No				
02:00		Yes/No		Yes/No					Yes/No				
03:00		Yes/No		Yes/No					Yes/No				
04:00		Yes/No		Yes/No					Yes/No				
05:00		Yes/No		Yes/No					Yes/No				

Comments:

AF3.9 Hydraulic Analysis Result in Sitara Sapna Pilot Area



Network Table - Nodes at 12:00 Hrs

Node ID	Elevation ft	Base Demand CFS	Demand CFS	Pressure psi
Junc J1	573.9	0.0052	0.01	22.86
Junc J2	574.14	0.0124	0.02	22.72
Junc J3	574.83	0.0069	0.01	22.39
Junc J4	574.2	0.0028	0.00	22.65
Junc J5	574.47	0.0045	0.01	22.40
Junc J6	575	0.0045	0.01	22.16
Junc J7	575.1	0.0017	0.00	22.04
Junc J8	575	0.0043	0.01	22.07
Junc J9	575.7	0.0086	0.02	21.73
Junc J10	575.7	0.0086	0.02	21.53
Junc J11	575.1	0.0043	0.01	21.98
Junc J12	574	0.0047	0.01	22.36
Junc J13	574.2	0.0029	0.01	22.41
Junc J14	574.2	0.0029	0.01	22.39
Junc J15	574.5	0.006	0.01	22.26
Junc J16	574.55	0.003	0.01	22.02
Junc J17	574.5	0.0086	0.02	22.20
Junc J18	574.42	0.0064	0.01	22.23
Junc J19	575.78	0.006	0.01	21.63
Junc J20	574.5	0.0039	0.01	22.30
Junc J21	574.2	0.0064	0.01	22.38
Junc J22	574	0.0047	0.01	22.40
Junc J23	574	0.0123	0.02	22.27
Junc J24	574.14	0.0021	0.00	22.48
Junc J25	575.78	0.0069	0.01	21.79
Junc J26	575.78	0.0064	0.01	21.81
Junc J27	575	0.0043	0.01	22.18
Junc J28	574	0.0052	0.01	22.64
Junc J29	574	0.003	0.01	22.68
Junc J30	574.8	0.0086	0.02	22.16
Junc J31	574.42	0.0073	0.01	22.40
Junc J32	574.47	0.0073	0.01	22.39
Junc J33	574.11	0.006	0.01	22.58
Junc J34	574	0.0043	0.01	22.67
Junc J35	574.75	0.0021	0.00	22.35
Junc J36	576	0.0026	0.00	19.18
Junc J37	576.8	0.0043	0.01	18.73
Junc J38	575.9	.0043	0.01	19.22
Junc J39	576.1	0.0021	0.00	19.05
Junc J40	575	0.006	0.01	21.66

Node ID	Elevation ft	Base Demand CFS	Demand CFS	Pressure psi
Junc J41	575.1	0.0052	0.01	21.53
Junc J42	575.15	0.0052	0.01	21.42
Junc J43	575.14	0.009	0.02	21.42
Junc J44	575.3	0.009	0.02	21.29
Junc J45	575.4	0.0056	0.01	21.22
Junc J46	575.4	0.0052	0.01	21.21
Junc J47	575.4	0.0034	0.01	21.21
Junc J48	575.6	0.0053	0.01	21.12
Junc J49	575.12	0.0073	0.01	21.37
Junc J50	575.4	0.0039	0.01	21.22
Junc J51	575.8	0.0041	0.01	21.02
Junc J52	575.5	0.0047	0.01	21.16
Junc J53	575.78	0.003	0.01	21.04
Junc J54	575.7	0.003	0.01	21.08
Junc J55	576.2	0.0061	0.01	18.91
Junc J56	576.8	0.0073	0.01	18.64
Junc J57	576.25	0.008	0.01	18.89
Junc J58	576.2	0.0052	0.01	18.99
Junc J59	577	0.0052	0.01	18.60
Junc J60	577	0.0043	0.01	18.59
Junc J61	575.5	0.0012	0.00	21.15
Junc J62	575.85	0.0015	0.00	20.99
Junc J63	575.1	0.0012	0.00	21.53
Junc J64	575.8	0.0015	0.00	21.03
Junc J66	573	0	0.00	23.65
Junc J65	571	0	0.00	24.52
Junc J67	572	0	0.00	24.08
Resvr R1	571	#N/A	−0.58	0.00

Network Table - Links at 12:00 Hrs

Link ID	Length ft	Diameter in	Roughness	Flow CFS
Pipe P1	145.83	10	120	0.57
Pipe P2	139.11	10	120	0.53
Pipe P3	256.84	6	120	0.23
Pipe P4	35.84	6	120	0.20
Pipe P5	231.23	6	120	0.17
Pipe P6	113.55	6	120	0.10
Pipe P7	480.84	4	120	0.07
Pipe P8	630.24	3	120	-0.03
Pipe P9	835.37	3	120	0.09
Pipe P10	334.56	3	120	0.03
Pipe P11	176.51	3	120	-0.01
Pipe P12	96.35	3	120	0.05
Pipe P13	813.78	3	120	0.02
Pipe P14	72.96	8	120	0.29
Pipe P15	689.75	3	120	0.01
Pipe P16	15.11	3	120	0.03
Pipe P17	302.46	8	120	0.27
Pipe P18	540.48	3	120	0.00
Pipe P19	334.73	3	120	0.02
Pipe P21	771.72	3	120	0.03
Pipe P22	993.98	3	120	0.02
Pipe P23	221.81	3	120	-0.04
Pipe P24	33.91	3	120	-0.04
Pipe P25	403.59	3	120	0.00
Pipe P26	437.53	3	120	0.04
Pipe P27	433.86	3	120	-0.03
Pipe P28	195.41	3	120	0.01
Pipe P29	197.52	3	120	0.01
Pipe P30	437.78	3	120	0.00
Pipe P31	639.82	3	120	0.02
Pipe P32	433.26	3	120	-0.02
Pipe P33	429.12	4	120	-0.05
Pipe P34	189.42	3	120	-0.03
Pipe P35	198.76	4	120	-0.06
Pipe P36	157.47	6	120	-0.11
Pipe P37	293.44	4	120	0.05
Pipe P38	194.97	8	120	0.26
Pipe P39	198.49	8	120	0.25
Pipe P40	212.19	8	120	0.23
Pipe P41	208.47	8	120	0.19

Link ID	Length ft	Diameter in	Roughness	Flow CFS
Pipe P42	200.08	8	120	0.17
Pipe P43	251.71	3	120	-0.03
Pipe P44	500.79	3	120	0.02
Pipe P45	537.72	3	120	0.00
Pipe P46	208.20	3	120	-0.01
Pipe P47	198.84	3	120	-0.02
Pipe P48	194.42	3	120	-0.02
Pipe P49	537.14	3	120	0.01
Pipe P50	539.15	3	120	0.01
Pipe P51	740.56	3	120	0.04
Pipe P52	240.61	3	120	-0.05
Pipe P53	143.66	4	120	0.08
Pipe P54	216.54	4	120	0.07
Pipe P55	699.05	4	120	0.01
Pipe P56	257.78	4	120	0.05
Pipe P57	236.35	4	120	0.04
Pipe P58	278.61	4	120	0.02
Pipe P59	210.34	4	120	0.01
Pipe P60	244.08	4	120	0.00
Pipe P61	235.70	4	120	0.00
Pipe P62	209.70	3	120	0.01
Pipe P63	236.35	4	120	0.05
Pipe P64	240.11	4	120	0.04
Pipe P65	273.93	4	120	0.02
Pipe P67	687.92	3	120	0.00
Pipe P68	222.80	3	120	0.01
Pipe P69	240.43	3	120	0.00
Pipe P70	220.17	3	120	-0.01
Pipe P71	253.82	3	120	0.06
Pipe P72	269.90	3	120	0.00
Pipe P73	265.45	3	120	0.00
Pipe P74	420.55	3	120	0.02
Pipe P75	156.98	3	120	0.01
Pipe P76	58.59	3	120	0.03
Pipe P77	563.57	3	120	0.02
Pipe P78	235.36	3	120	0.00
Pipe P79	513.75	3	120	0.02
Pipe P80	421.45	3	120	0.01
Pipe P81	33.87	3	120	0.07
Pipe P82	177.46	3	120	0.00
Pipe P83	99.13	3	120	0.00

Link ID	Length ft	Diameter in	Roughness	Flow CFS
Pipe P84	158.02	3	120	0.00
Pipe P85	62.05	3	120	0.00
Pipe P86	1597.44	10	120	0.58
Pipe P20	7399.46	60	140	0.58
Pipe P66	4125.51	40	140	0.58
Pump PU1	#N/A	#N/A	#N/A	0.58

Network Table - Links at 12:00 Hrs

Link ID	Velocity fps
Pipe P1	1.04
Pipe P2	0.97
Pipe P3	1.16
Pipe P4	1.04
Pipe P5	0.86
Pipe P6	0.50
Pipe P7	0.86
Pipe P8	0.55
Pipe P9	1.76
Pipe P10	0.56
Pipe P11	0.15
Pipe P12	0.96
Pipe P13	0.34
Pipe P14	0.83
Pipe P15	0.27
Pipe P16	0.53
Pipe P17	0.78
Pipe P18	0.08
Pipe P19	0.31
Pipe P21	0.54
Pipe P22	0.32
Pipe P23	0.74
Pipe P24	0.78
Pipe P25	0.05
Pipe P26	0.72
Pipe P27	0.60
Pipe P28	0.13
Pipe P29	0.24
Pipe P30	0.02
Pipe P31	0.44
Pipe P32	0.33
Pipe P33	0.59
Pipe P34	0.58
Pipe P35	0.64
Pipe P36	0.58
Pipe P37	0.56
Pipe P38	0.75
Pipe P39	0.71
Pipe P40	0.67
Pipe P41	0.55

Link ID	Velocity fps
Pipe P42	0.48
Pipe P43	0.57
Pipe P44	0.31
Pipe P45	0.00
Pipe P46	0.26
Pipe P47	0.38
Pipe P48	0.46
Pipe P49	0.14
Pipe P50	0.14
Pipe P51	0.71
Pipe P52	1.11
Pipe P53	0.91
Pipe P54	0.78
Pipe P55	0.07
Pipe P56	0.57
Pipe P57	0.42
Pipe P58	0.21
Pipe P59	0.07
Pipe P60	0.05
Pipe P61	0.00
Pipe P62	0.24
Pipe P63	0.60
Pipe P64	0.43
Pipe P65	0.24
Pipe P67	0.05
Pipe P68	0.20
Pipe P69	0.00
Pipe P70	0.18
Pipe P71	1.22
Pipe P72	0.08
Pipe P73	0.09
Pipe P74	0.41
Pipe P75	0.26
Pipe P76	0.54
Pipe P77	0.36
Pipe P78	0.07
Pipe P79	0.34
Pipe P80	0.15
Pipe P81	1.41
Pipe P82	0.04
Pipe P83	0.04

Link ID	Velocity fps
Pipe P84	0.05
Pipe P85	0.05
Pipe P86	1.06
Pipe P20	0.03
Pipe P66	0.07
Pump PU1	0.00

APPENDIX FOR CHAPTER 4 OUTCOMES AND FUTURE CHALLENGES

AF4.1 Water Supply Faisalabad Regulations

EXTRA ORDINARY ISSUE REGISTERED No. L-7532

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LAHORE THURSDAY OCTOBER 29, 2015

WATER AND SANITATION AGENCY (FDA) FAISALABAD

No. 551 /MD/WASA/2015 **Dated 28 / 10 / 2015**

NOTIFICATION

WATER SUPPLY FAISALABAD REGULATIONS – 2015

In exercise of the powers conferred under Section 44 of the Punjab Development of Cities Act, 1976, the Governing Body of Faisalabad Development Authority, Faisalabad in its 91st meeting held on 21/05/2015 is pleased to frame the regulations namely Faisalabad Development Authority (Water and Sanitation Agency) Faisalabad – Water Supply Faisalabad Regulations, 2015.

WATER SUPPLY FAISALABAD REGULATIONS – 2015

PART – I
DEFINITIONS

1. **Short Title-**
   These regulations shall be called the Faisalabad Development Authority (Water and Sanitation Agency) Water Supply Faisalabad Regulations – 2015.

2. **Commencement** –
   These Regulations shall come into force in Faisalabad at once.

Price Rs.10.00 Per Page **(2239)**

3. Definition – In these regulations, unless there is anything contrary to the subject or context.

"Agency" means the Water and Sanitation Agency established under Punjab Development of Cities Act 1976.

"Aquifer" means a layer of water bearing rock or strata located underground that conveys water in sufficient quantity to pumping wells or natural springs.

"Consumer" means (1) any person, occupier, institution, organization or concern who in agreement with the Agency is entitled to use the facilities of the water supply as per terms of the agreement, and (2) any end user who receives water supply or sanitation services from the Agency.

Occupier" means *(a)* a person in occupation or control of premises; and *(b)* in relation to premises where different parts of the premises are occupied by different persons, the respective persons in occupation or control of each part of the premises;

"Engineer" means an Engineer; employee of the Water and Sanitation Agency of the Faisalabad Development Authority for the purpose of enforcement of these regulations and shall include any officer or official deputed by the Engineer to act for him.

"Ground Water" means water located beneath the earth surface in soil pores / spaces and in fractures of rock formations or ecological formations.

"Contractor" means any person who for the time being is authorized by the Agency to carry out any work of water supply under these regulations.

"Meter" means any appliance, equipment or device used for the purpose of measuring the quantity of water supplied;.

"Person" means any person or body of persons whether corporate or incorporate.

"Regulations" means the Faisalabad Development Authority (Water and Sanitation Agency) Water Supply Regulations-2015.

"Service Pipe or service water pipe" means the pipe from the Agency's distribution main / distribution network to inside the consumer's property or any pipe for supplying water from the public mains to any premises which is subject to water pressure from the mains or would be so subject but for the closure of some taps or valves.

"Water", means drinkable water supplied by Water and Sanitation Agency;

"Water fittings" includes pipes (other than the public mains), specials, taps, cocks, valves, ferrules, meters, sub-meters, cisterns, baths, water closets, hot water apparatus, soil pans and other similar apparatus or appliance used in connection with the supply and use of water;

"Water Main" means a water pipe or conduit carrying water for public use which is owned and operated by the Agency.

"Water Quality" means quality of water whereof is appropriate as per WHO Guidelines for the purpose it is supplied or used.

"Water Service" means the pipe and fittings used in connection with the supply of water from the Agency's mains to any premises.

"Water supply distribution area" means *(a)* an area within which WASA is responsible to distribute and supply of water; and *(b)* in case of public private partnership project area, WASA is only responsible for bulk supply of water and distribution / maintenance will lie with private partner as per contract.

"Water supply services" means the abstraction and chlorination of ground water or treatment of surface water, the distribution and supply of drinkable or treated water to consumers, and includes the operation and maintenance of the water supply system;

"Water supply system" means the whole system incorporating transmission mains, collector mains, distribution mains, pipes, chambers, treatment plants, pumping stations, tube wells, service or balancing reservoirs or any combination thereof and all other structures, installations, buildings, equipment and appurtenances used and the lands where the same are located for the storage, abstraction, collection, conveyance, treatment, distribution and supply of water;

"Well" means a well sunk / drilled / bored for the search or abstraction of water by a person or persons for carrying out scientific investigations, exploration, development or management work for the survey and assessment of water resources or for providing water, and includes open well, dug well, bore well, dug-cum-bore well, tube well and collector well.

"Work of Water Supply" means the construction, alteration, extension, disconnection, removal, maintenance, repair, renewal or cleaning of any pipe or fitting of any water service communicating or intended to communicate directly or indirectly with any water main of the Agency.

PART – II
APPLICATION AND GENERAL PROVISIONS

4. Existing Water Services –

Any water connection with or through the water main transferred to the Agency under the Act and lawfully existing on the date on which these regulations come into force shall be deemed to have been made under these regulations subject to the provisions herein contained.

5. Application for Installation –

(a) No person shall carry out any water supply installation work or make, cause or permit any private connection pipe to connect directly or indirectly to any new or existing building or in any other premises and connect the same with the Agency's main without first obtaining permission from the Agency.

(b) Application for a new connection shall be submitted on the prescribed form along with copy of CNIC and evidence of Ownership. The application form can be obtained from any office of the Water and Sanitation Agency on payment of the appropriate fee.

(c) A new water connection shall be allowed only on the request of or with the approval of the owner of the property.

(d) If ownership lies with any Trust, the connection shall be made only with the permission of the Trust provided that a tenant or such other person occupying the premises or a part of the premises not owned by them may apply for a domestic supply of water with the approval of the owner but such connection will always be sanctioned in name of the owner. Upon transfer of legal ownership of the property, the responsibility lies with the new owner to intimate WASA in order to change the name of the consumer.

(e) Water connection shall not be sanctioned if ownership of property is disputed.

6. False or Incorrect Description in the Application

In case the entries made in the application or documents attached with it are found false or incorrect at a later stage, WASA has the right to disconnect the water connection without any notice and confiscate the security amount deposited by the consumer. If there are any further dues payable by the consumer, he will have to clear the same in any case. The facility of water supply shall be resumed only after submission of correct information / description of particulars in accordance with these regulations.

7. Deposit of Plans –

The consumer when required shall deposit with the application request two copies of as-built plans and sections clearly and indelibly drawn on a durable material (to a scale of not less than one inch to eight feet which shall be clearly marked on each drawing) which shall show thereon every floor of the building in connection with which such water supply installation is to be used. The position, form, level and arrangements of several parts of such buildings shall be shown including proposed size and measurements of the pipe lines to be laid, stop valves, cisterns, sink taps, hot water boilers and all other fittings to which a supply of water line is to begin or from which a supply is to be taken.

8. Connection Requirement –

a) All new connections shall be sanctioned as metered.
b) The connection may not be given unless following conditions are fulfilled:
   (i) Adequate drainage facilities are provided to the satisfaction of the Engineer.
   (ii) A written consent of the owner giving his Computerized National Identity Card (CNIC) issued by the Government of Pakistan are accompanied by the application for water connection has been produced.
   (iii) A deposit sufficient to cover the following items has been made by the applicant or owner as specified by the Agency.
      (a) Connection fee;
      (c) Cost of fixing meter and main stop valve;
      (d) Security deposit;
      (e) Regularization Fee (in case of illegal connection)
      (f) Any other charges as per tariff
   (iv) The deposit as per clause (iii) shall be in accordance with the scale which may from time to time be fixed by the Agency.
   (v) For new water connection, construction of ground water tank is mandatory. For houses up to 5 Marlas steel, fiber glass or plastic tanks can be kept on surface. Water connection from the Agency's water main will be made directly with this tank. Water from the tank may be pumped to roof tank. Previously sanctioned connection should have this arrangement by the end of year 2016.

9. Inspection of Premises –

Presentation of the new connection application shall be deemed to authorize the Engineer to enter the premises after reasonable notice and to examine and test the applicant's pipes and fittings with which the connection is to be made and the drains, water closets, receptacles and latrines into which water received is to be discharged and also for reading meters, inspecting and testing any apparatus belonging to the Agency on the consumer's premises when water connection is provided.

10. Approval of Application –

The Engineer shall within ten days of the deposit of the application and such plans and sections as may be required, inform in writing the applicant as to whether the application, plans and sections are approved or not.

11. Alteration to Application –
The Engineer may direct an applicant to make alterations or improvements which appear to be necessary or desirable and the applicant shall comply and resubmit the plans and sections accordingly.

12. Service Connection –
(a) In case the aforesaid application is accepted by the Engineer, he shall thereupon cause the system of water pipes in the applicant's premises to be connected with the Agency water main by its own staff/contractor by a connecting pipe and appropriate water fittings of approved material extended from such water main to the terminal point of the applicant's water piping system which may be outside or inside the applicant's premises and therefore levy charges in accordance with the prescribed rate.
(b) No connection shall be made to the public mains until the estimated cost of making the connection has been deposited with the Agency and all the internal water fittings requisite for the supply of water have been erected and completed in accordance with any requirement.

13. Water Use for Other than Agreed Purpose –
The consumer is obliged to use water only for the purpose for which the connection was originally obtained as per agreement. For any other purpose the consumer shall have to seek written permission of the Engineer.

14. Permission of Water Use outside the Sanctioned property –
The consumer shall not permit the use of water by a neighbor or any person for outside the property with the water connection sanctioned. In case of violation of this rule, the consumer shall be responsible to pay all the costs of illegal use of water. It may also result in disconnection of the water supply to the consumer.

15. Separate Connection –
In the event of a consumer requiring a separate water connection for separate house or portion of the same property, the Engineer may permit a supply of water through common feeding pipes subject to the condition that:-
(i) The service shall be maintained to the requirement of theses regulation; and
(ii) The owner shall not object to the tapping of the ferrule for giving connection to the applicant, provided that the number and particulars of the services do not exceed following unless otherwise approved by the Engineer:

Sr. No.	No. of houses, shop, flats, etc.	Ferrule size (inches)	HDPE pipe size (mm)	
			From main to meter	Within the curtilage of the property
1	1	¼	25	½
2	2	¼	32	¾
3	03-05	¼	50	1¼
4	06-10	¾	60	1 ½
5	11	1	75	1 ½

16. Main Stop Valve Required –
A main stop valve preferably lockable magnetic stop valve is required on service water pipe before entering the premises of the consumer position to the convenience and satisfaction of the Engineer so that any disconnection may, if required, be arranged easily without disturbing the supply to the other consumers.

17. Average consumption in case of damaged/no meter

A) Domestic Water Service:

If the meter is damaged or does not exist, the consumer shall be charged on the average consumption over one year or as detailed below whichever is higher:

Property Area	Average Monthly Consumption
Upto 2.5 Marlas	2500 gallons
Above 2.5 to 3.5 Marlas	3500 gallons
Above 3.5 to 5 Marlas	5000 gallons
Above 5 to 10 Marlas	10000 gallons
Above 10 to 20 Marlas	20000 gallons
Above 20 to 40 Marlas	40000 gallons
Above 40 Marlas	50000 gallons

B) Non Domestic Water Service:

(a) A request for the grant of a water service for non-domestic purposes shall be made in the same manner as for a domestic service.

(b) A non –domestic water service shall include a service for:
  (i) Any trade, manufacture, or business
  (ii) Construction and building purposes

No connection shall be sanctioned for the following:

(i) Watering or bathing of animals
(ii) Washing vehicles when such vehicles kept for sale or hire.(iii) Swimming pools or for any environmental and mechanical purposes
(iv) Gardens or for the purposes of irrigation;
(v) Washing roads and paths.
(vi) Public stand post

Keeping the meter in proper condition shall be the responsibility of the consumer. In case of any repair / replacement needed, the cost shall be borne by the consumer.

In case a meter is damaged, the consumer shall be charged on the average consumption over one year.

18. Auxiliary Temporary Water Services –

The Engineer may arrange a temporary or auxiliary water service in such a manner as he deems fit for any person or for any occasion and period in accordance with these regulations and charge the same at the prescribed rates or such other manner as may be approved by the Agency.

19. Adherence to Regulations –

The consumer shall obey and carry out, as the case may be, each and all provisions of these regulations, directions or order lawfully issued there under by the Agency.

20. Payment of Bills

Bills shall be regularly delivered to all consumers by the Agency. If due to any reason, the consumer does not receive a bill, he shall have either to personally get the bill from the Agency or use WASA official website and make payment within the stipulated period. Non receipt of a bill shall not be considered an excuse for nonpayment. If a tenant or any other resident does not pay dues of the Agency, the owner of the property shall have to pay and in this matter the owner shall not resort to any court of Law.

21. Places for and Procedure of Payment –

(a) The bills shall be payable at such places in accordance with such procedure as the Agency may prescribe.

(b) The employees of the Agency are not authorized to receive in cash or in any other form of the bill amount. It must be deposited in authorized banks. The Agency shall never be responsible for the amount of bill that is paid to any employee of the Agency.

22. Legal Actions on Recovery of Bill Amount –

In case of non-payment, the amount of bill shall be recovered as arrears of land revenue under the prevailing rules.

23. Complaints about Bills –

If any consumer has some objections on bill amount then he must pay the bill before registering complaint. Otherwise, connection can be disconnected. Submission of a complaint shall not be accepted as an excuse for non-payment of bill.

24. Calculation of Dues in Case of an out-of-Order Meter –

Taking due care of water meter shall be the responsibility of the consumer. If the meter goes out of order, the consumer shall accept the method of calculation of dues adopted by the Agency as elaborated in regulation 17.

25. Outstanding Dues of Water Used by Previous Owner –

Before purchasing a property, the consumer shall be bound to make sure that all the dues of water supply have been duly paid by the seller. If there are any outstanding dues of water used by previous owner, the new owner shall be responsible to pay all the dues. No excuse in this regard shall be acceptable.

26. Responsibility for the Water Service Installation –

The water service from the Agency's water main to the points of water supply in a consumer premises shall be installed by the WASA as explained in regulation 12. A water meter and main stop valve shall be fixed above the ground on firm support outside a consumer's premises through the Agency's staff/contractor. Installation of pipe line from ferrule up to the house shall be the responsibility of WASA at consumer's cost. The Consumer shall be responsible for the repair of service pipe and also prevent loss of water. In case of any damage because of water leakage from service pipe, the consumer shall be considered entirely responsible for it and his connection shall be disconnected without any notice, except that;

i) If the water service installation under the public road outside a consumer's premises has any damage which is not clearly attributed to a consumer, such damage shall be repaired by the Agency with no cost to a consumer.

ii) If a water meter is out of order (without apparent damage) or any fault is found in meter reading, such a meter shall be repaired by the Agency with no cost to the consumer. However, the average billing will be charged as per regulation 17 till repair /replacement of meter.

27 Keeping the Water Service Installation in Good Conditions –

A consumer shall be responsible to keep the water service installation in good conditions at all times with his goodwill and, if he finds any defect thereon, he shall immediately inform the Agency of it.

PART – III
INSTALLATION AND MAINTENANCE OF SERVICES

28. Water Supply and Pressure

WASA shall make its best efforts to provide water at adequate pressure but is not bound to supply water during some specified timings or at a specified pressure. If in case of uncontrollable circumstances, the water supply or pressure decreases, the consumer shall not have the right to reduce the amount of water bill payable by him.

29. Service in Good Order –

Every consumer whose water service is connected to an Agency's water main shall install, provide and at all times keep in good order and condition and free from defects, all water service pipes, fixtures and fittings thereof, upon the property and from the Agency's main to such property in accordance with the regulations. Failure to do so within three days of the serving of notice shall be an offence under these regulations.

30. Altered or Defective Service —

1) If any such water service pipe or fitting or fixture in the opinion of the Engineer:-
   (i) is constructed, altered, added or used otherwise than in accordance with these regulations;
   (ii) is or becomes of bad or defective quality or construction or is choked or placed or situated in a position contrary to these regulations;
   (iii) is required to be removed, altered, extended, cleaned, repaired or disconnected from the water main of the Agency;
   (iv) is causing damage to the property of the owner of a neighbor or subjecting property due to any kind to deterioration from the said water connection;
   (v) is causing damage to the state owned infrastructure

   the consumer to whom such water service pipe or fitting or fixtures belongs or in connection with which it is used, shall upon serving him a notice in writing signed by the Engineer, reconstruct, renew, remove, alter, extend, clean or repair to clear the choking or disconnect it from the water main of the Agency within 24 hours of the serving of notice.
2) Any fitting whether damaged or not, worn out or otherwise unserviceable, if connected or arranged in a faulty manner shall not be used or remain connected. It cannot be used if notwithstanding its use or connection does not contravene any of the regulations that it causes or permits undue consumption, misuse, erroneous measurement or contamination of water supplied by the Agency, or reverberation in pipes.
3) Any contravention of this regulation shall be an offence under these regulations.
4) If, through any act, neglect or default, any person has committed an offence and has caused damage to any public water supply system, that person shall, in addition to any penalty that may be imposed for that offence, be liable to make good the loss.
5) The amount to be paid in making good any damage under clause (4) shall, in case of dispute, be determined by the court by which the person causing such damage is convicted.
6) Any change in connection point with WASA main shall be intimated by the consumer to the Agency. The previous / old connection points if any may also be pointed out by consumers to their best knowledge.

31. Notice to Connect to Water Main –

The owner of a property may be required upon serving him a notice singed by the Engineer, requring any work or things to be executed or done with such material within such time or in such a manner may be directed therein, for the purpose of providing a sufficient water supply for the use of the occupier of such permises to connect the said permises to a water main supply of the Agency, extended or laid subsequent to his getting the water connection. In the event of the owner agreeing in writing to the said work being undertaken by the Agency, the owner will forego all material, pipes, fittings and fixtures which are salvaged in moving the connection in the manner herein before described and will pay for such charges and shall be responsiable for the provision of new or the replacement of any defective and affected material. Failure to comply with these requirements shall be an offence under these regulations.

32. Restriction on Work and Water Usage —

1) A consumer shall not —

   (i) Permit any person other than Engineer /authorized contractor to lay, relay, repair, construct, connect, modify or in any way alter or add to his system of piping and no person other than Engineer /authorized contractor shall undertake any of the work in connection with the premises connected with a water main of the Agency;

   (ii) Interfere with the main stop valve or meter on his supply line;

   (iii) Use or permit to be used a water connection in such a way to cause damage or for any purpose other than that for which it had been obtained;

   (iv) Use or permit to be used (by) or any connivance having the effect at any time of joining the (supplying) system with any other service of water.

   (v) Carry out any works necessary to connect a private connection pipe to the Agency's pipeline within or outside the Agency's water supply distribution area;

   (vi) Construct, install or modify any part of a water supply system;

   (vii) Carry out maintenance services for a water supply system;

2) A person / consumer who fails to comply with clause (1) commits an offence and shall, on conviction, be liable to a fine not exceeding Rs.5,000/- (Rupees Five thousand).

33. Pump Directly Connected: —

1) No consumer shall be permitted to install a pump mechanically or manually operated, directly on a connection. In case the consumer fails to remove such an installation within 24 hours of the serving of notice, he shall be guilty of an offence under these regulations.

2) After the year 2016, a person who is found guilty as per clause (1), shall be liable to a fine not exceeding Rs.8,000/- (Rupees Eight thousand). Failure to pay the fine, the accused will undergo simple imprisonment up to one month. Previously sanctioned connection should comply with regulation 8(v).

PART – IV

SPECIFICATION FOR THE LAYING OF WATER SUPPLY PIPES AND FITTINGS

34. Excavation, Laying and Fixing –

1) The material from the excavation shall be placed so as to cause the least possible obstruction and inconvenience to the public.
2) Proper barriers and lights shall be maintained where necessary to guard against accident during the progress of the work. On completion of refilling, the surface shall be restored as early as possible to the same condition as it was before the commencement of excavation unless the Engineer in writing otherwise requires. The formal approval of dismantling of pavement shall be obtained by the Engineer.
3) Unless otherwise approved, a water service pipe to any property shall be laid up to the Agency's Main at right angles, at a point opposite the property to be served as indicated by the Engineer.

35. Separate Supply to Property –

1) Each property shall have a separate and distinct supply from water main provided that where the Engineer approves more than one property to be supplied from one water service in such a manner as the Engineer may determine.
2) If a property is divided into two portions, each portion should have separate water connection. In case the second connection is not approved by the Engineer, it may be considered as an illegal connection. Rules and regulations for the illegal connection shall be applicable on it.

36. Pipe Through Foul Material –

No person shall lay any water service pipe or fitting through any sewer, drain, ash pit, cesspool or manure pit or through, in or into any place where in any event the water supplied by the Agency through such pipe or fitting shall be liable to be polluted or to escape without observation unless such pipe or fitting be laid to the satisfaction of the Engineer through a conduit of cast iron, or other approved material of sufficient length and strength to effect adequate protection to the same and to facilitate the detection of any leakage of water or unless in the case of water service pipe submerged in a sanitary flushing cistern or passing immediately below a waste pipe, it is to be constructed of a corrosion resistant material without seams or joints. The refilling of excavated area should be done with the suitable material with prior approval of Engineer.

37. Pipe Cover –

1) Every pipe laid in the ground shall, unless it is under a flooring of permanent character, be not less than 2 feet below the surface of the road. Provided that if by reason of some obstruction it is not reasonably practicable to lay the pipe or some part of a pipe at a depth of 2 feet or more, that pipe or part of a pipe be at the depth that is reasonably practicable.
2) Water service in street, where the soil is loose, shall have not less than 2 feet 6 inches of cover and in hard solid material or highly surfaced streets not less than 2 feet of cover.
3) Water service pipe on private property shall have not less than 12 inches of cover.

38. Pipe Clips –
Water service pipe shall be properly supported and secured by approved pipe hooks or clips. Wherever it is necessary to fix pipes clear of walls, approved extension clips shall be provided. Every water fitting whether inside or outside a building which is so placed as to be liable to damage from impact or some other cause shall be effectively protected from such damage.

39. Connection to Water Main –
Every water service pipe shall be connected to the water main by means of an approved ferrule, non-return valve, male-female adapters and bend etc. arranged in Engineer's specified manner, where necessary approved PVC saddle clamp shall be used to connect the water service main.

40. Location of Main Stop Valve –
It shall be placed outside the boundary of the property served preferably within 9 inches of the buildings line. The protection and firm fixing as per satisfaction of Engineer of main stop valve is the responsibility of consumer.

41. Stop Valve on Joint Services –
In all cases of joint water services where the stop valve is placed on private property, each house service must have separate stop valves within its own grounds in such a way that every outlet in each house can be shut off without the supply to any other houses being affected and the master valve must be fixed near the building line, in a similar position to that required for a single service.

42. Stop Valve on Meter Inlet –
Stop valve shall be fixed on the inlet coupling of all meters except where an existing stop valve is, in the opinion of the Engineer, suitably placed and close enough to act as a substitute therefor.

43. Valve on Meter Outlet –
In any case in which there is a danger of back water causing damage or being a nuisance when meters are being removed or cleaned, and in any other case ordered by the Engineer, a stop valve or reflux valve shall also be placed on the meter outlet.

44. Stop valve on Cistern Connection –
Every cistern supplied with water from the Agency mains shall have a stop valve on the outside of the cistern and in a convenient and accessible place. The stop valve shall be so placed that the cistern can be readily removed without closing any other valve. Where the water service is directly connected to the cistern, a union shall be furnished between the stop valve and the cistern, and the joint between the stop valve and the cistern and the joint between the water service pipe and cistern shall be made water tight by the use of back nuts.

45. Stop Valve on Renewed Cisterns –
In all cases where cisterns on water services as being renewed and the feed pipe to the cistern is not fitted with a stop valve, a stop valve, union and back nuts shall be fitted as part of the renewal operation.

46. Stop Valve on Private Premises –
Stop Valve shall also be fitted on any water services situated on private premises as the Engineer may direct.

47. Stop Valve to be Accessible –
All Stop valves fitted on water services and situated on private property shall, wherever practicable, be exposed to view above the ground and be in approved, protected and accessible position.

48. Missing Fittings –

In all cases where meters are being fitted or altered in position or where any renewals, alterations or repairs are being carried out on water services and any necessary stop valves, surface boxes or other fittings prescribed by the regulations do not exist, the deficiency shall be made as part of the work.

49. Services in Multi Storey Buildings –

In a building consisting of more than two floors:-

(i) Every branch service at each floor shall be controlled by a stop valve, except as provided in clause (iii) below.

(ii) Where two or more groups of fixtures are supplied from such a branch service each group shall be controlled by a separate stop valve; and

(iii) Subject to the approval of the Engineer, the stop valve controlling each branch services at each floor may be omitted in cases where a vertical riser serves only one fixture or individual floor and a stop valve to control the supply is provided at the foot of such riser.

50. Stop Valve on Pipes Supplying Buildings –

1) Every pipe supplying water to a building (except a pipe conveying water from one building to another building the supply to which is not separately chargeable and which is within the same boundary) shall be fitted with a stop valve inside and as near as is reasonably practicable to the point where it enters that building.

2) Each pipe supplying water to a part of a building to which the supply is separately chargeable shall, unless the pipe passes through that part to another such part, be fitted with a stop valve inside and as near as is reasonably practicable, to the point where the pipe enters that part.

3) Where a pipe supplies water to a part of a building to which the supply is separately chargeable and passes through that part to another such part, every branch pipe connected to that pipe in the first mentioned part shall be fitted with a stop vale as near as is reasonably practicably, to the point of connection.

4) Where a service pipe supplies water to a part of a building to which the supply is separately chargeable and passes through one or more of such parts to another, it shall be so laid that before entering the first of the parts, it passes through a place, whether inside or outside the buildings to which the occupier of each of the parts has access, and in that place the pipeline shall be fitted with a stop valve, as near as is reasonably practicable, to the point where it enters the building.

5) Every pipe conveying water from a building to another building the supply to which is separately chargeable and which is within the same boundary but has no direct access from the first mentioned building, shall be fitted with a stop valve inside, as near as is reasonably practicable, to the point where it leaves the first mentioned building.

6) Where it is not reasonably practicable to fit a stop valve inside the first mentioned building, the side pipe shall be fitted with a stop valve inside and as near as is reasonably practicable the point where it enters the other building.

7) No stop valve fitted in accordance with any of the preceding paragraphs of this regulation portion shall be a plug cock or plug valve.

8) Failure to provide a stop valve within 7 days of the serving of a notice shall be an offence under these regulations.

51. Operation of Stop Valve –
Every stop valve shall be so placed that it can be readily tested by the means by which it is designed to be operated.

52. Location of Drain Taps –
No drain tap shall be buried in the ground or so placed that its outlet is in danger of getting flooded.

53. Buried or Sunken Cisterns –
1) No storage cistern shall be so placed that it is in danger of getting flooded.
2) No such cistern shall be buried or sunk in the ground unless:-
   i. There is sufficient space around and beneath it for the purposes of maintenance, detection of leakage; and
   ii. Either –
      a) it is a closed vessel with a tightly fitted access cover, bolted or screwed in position, with an air inlet and overflow pipe or pipes all suitably screwed; or
      b) its inlet pipe discharges into the air not less than 6 inches above its top edge.

54. Material of Storage Cisterns –
(a) Every Storage cistern shall be watertight and of adequate strength and shall be constructed of galvanized iron, fiber glass, steel, copper, asbestos cement, concrete, masonry or such other material as may be supplied or approved by the Engineer.
(b) Where the cistern is not made of a corrosion resistant material, it shall be effectively protected from corrosion.

PART – V
SPECIFICATION OF MATERIAL

55. Pipe Material –
All water service pipes shall be of High Density Polyethylene Pipe (HDPE) conforming to ISO 4427 or DIN 8074/8075 or equivalent standards of SDR 17 including PP (polypropylene) compression fittings and saddle clamp, FTA (Female Threaded Adaptor), coupler, bend, end cap, brass ferrule, including the manufacturer approved by Engineer or such other material as the Agency may from time to time approve or as may be approved in any particular case by the Engineer. (This includes FTA 25mm x3/4", equal bend 25mm, end cap 25mm, polyethylene saddle clamp including plugging of ends of polyethylene pipe).

56. Size of Service Pipe –
The size of service pipe shall conform to regulation 15.

57. Quality of Material –
(a) All materials, pipes, bends, junctions, fittings and apparatus shall be of the best quality of their respective kinds, free from defects and of the kind or standard approved from time to time by the Agency.
(b) To maintain the water quality no second hand material shall be used. If in any case, it is intended to be used in the internal plumbing, it may be done only with the prior approval of the Engineer on the written request of the owner of the property provided that such materials comply with the requirements of the regulation with regard to conditions, type, quality soundness and efficiency.

58. Approved Material –
No person shall use any materials in or for any work of water supply which have not been approved by the Engineer, or which do not comply with the requirements of these regulations.

59. Pipes under Roads and Footpaths –
Where a water service is laid or renewed under a road way or footpath that part of the water service between the main and the stop valve shall be of High Density Polyethylene Pipe (HDPE) as mentioned in regulation 50 having casing of best galvanized steel tube or of such other materials as the Agency may specifically approve keeping minimum soil cover as inscribed in Regulation 37.

60. Pipe and Fitting
(a) Water Service pipes of galvanized iron or steel tube, if allowed by the Engineer in special case, shall be circular in section, straight, properly galvanized, smooth, clean and free from internal flaws, blisters or other obstructions to the flow of water.
(b) If allowed by the Engineer in special case, fittings shall be of welded, pressed iron or steel of suitable strength and formed to correct line and shape. They shall be free from internal obstructions to the flow of water.
(c) Galvanized iron or steel pipes and fittings, shall be screwed internally or externally with British Standard Pipe thread to provide satisfactory water tight connections.

61. Joints and Washers –
Joints and washers for use in water services shall be of the best vegetable tanned, oil dressed hydraulic leather or such other material as may be approved by the Engineer.

62. Stop Valves –
(a) Stop valves for use in water services shall be of the high pressure non rusting spindle, magnetic lockable ball valve or gate valve type, having a copper alloy body and brass or gunmetal spindle and shall conform to the standard adopted from time to time by the Agency.
(b) Spindles on water service stop valve shall be properly packed with greasy cotton or flax, such packing to be held in position by a correctly shaped gland and gland nut.
(c) All water service stop valves to be used below ground or in inaccessible situations shall have the bonnet secured to the body by means of a locking nut to prevent inadvertent un-screwing of the bonnet.
(d) Stop valves shall be clearly marked with the test pressure and the manufacturers name or identification mark.
(e) Main Stop Valve shall preferably be magnetic lockable ball valve having pressure rating of PN 20.

63. Alloy Fittings –
Alloy fittings used in connection with water services shall be of new metal without the admixture of old metal or scrap.

64. Concrete –
Concrete unless otherwise ordered shall consist by volume or by weight of one part Portland cement, two parts clean sharp sand and four parts approved hard stone not exceeding 1½ inch nominal gauge and shall be thoroughly and homogeneously mixed with clean water to such an extent as may be ordered or approved by the Engineer. In special circumstances, if required by Engineer, sulphate resisting cement (SR) and / or chemical admixtures shall be used.

65. Cement Mortar –
Cement mortar unless otherwise ordered shall consist by volume or by weight of one part Portland cement and two parts clean sharp sand thoroughly mixed with an approved proportion of clean water. In special circumstances, if required by the Engineer, sulphate resisting cement (SR) and / or chemical admixtures shall be used.

66. Cement and admixture –
(a) Cement used in connection with any work of water supply shall be Portland cement or sulphate resisting cement (SR) of an approved brand and shall be submitted for test if so required by the Engineer. No cement or concrete shall be used which has been mixed for longer than one hour.
(b) Appropriate admixtures depending upon the circumstances as per recommendation of the Engineer should be used.

PART – VI
PROTECTIVE MEASURES

67. Building Services –
Every draw-off cock used on building services shall be provided with an approved device, so fitted and maintained as to prevent the use of such cock whilst building operations are not in progress.

68. Support of Pipe –
Every pipe shall be adequately supported and shall be so arranged as to avoid any air lock or reverberation.

69. Protection of Pipe from Corrosion and Contact with Contaminating Substances:-

(a) No pipe or pipe fitting shall be laid, installed or allowed to remain in or on the ground unless it is either of a corrosion resistant material or effectively protected from external corrosion.

(b) No pipe shall pass into or through any ash pit, manure pit, sewer, drain, cesspool or refuse chute or any manholes connected therewith.

(c) No pipe shall be laid, installed or allowed to remain in or on any foul soil or other substance which could cause contamination of the water in the pipe unless it is impracticable for the pipe to be elsewhere and all necessary measures are taken to avoid any risk of contaminating the water in the pipe.

(d) No pipe made of any material susceptible to permeation by any gas or any other substance which could cause contamination of the water in the pipe shall be laid, installed or allowed to remain in position where such permeation could reasonably be expected to occur.

70. Inspection of Material and Work –
(a) All material, pipes, fittings and apparatus shall be approved by the Engineer and where required by him shall be submitted to the Agency for examination and test.

(b) No person shall cover up or conceal from view any underground or enclosed water service or put into use any water service until it has been inspected and approved by the Engineer.

(c) Every Person and his employee carrying out or engaged on or in connection with any work of water supply shall afford every reasonable facility and information to enable the Engineer to make his inspection.

(d) The Engineer shall ensure the inspection of material and work within 2 working days after receiving the inspection request.

PART – VII
TESTS

71. Test of Pipes and Fittings –

(a) All pipes and fitting for use in water services shall be capable of withstanding a hydrostatic test pressure of 150 lbs. per sq. inch.

(b) No brass or copper alloy fitting shall be used in any water services until it has been approved by the Agency.

(c) The Engineer may order the application of a hydrostatic test or such other test or tests as he may require or approve and such test or tests shall be applied to any water services pipe or fitting.

(d) The hydrostatic test shall be applied by filling the water service pipe or fitting with water, sealing all openings and by means of an approved test pump or other suitable apparatus subjecting the pipe or fitting to the specified pressure.

(e) All equipment, materials, transport, power and labor necessary for inspection and tests shall be provided by the person to whom the permit for the work under test was issued.

(f) Every fitting or apparatus submitted for approval and being of a type or design not previously approved by the Agency, shall be accompanied by a tracing of approved size. One print of same be submitted, together with the test fee as prescribed. The tracing and print shall constitute a fully dimensioned working drawing of the fitting or apparatus submitted and shall be retained by the Agency.

(g) In the event of such fitting or apparatus not being approved by the Agency, an additional test fee shall be required for each subsequent submission.

PART – VIII
ADDITIONAL INSTRUCTIONS

72. Work by Engineer/contractor –

(a) No person other than a Engineer/Contractor shall execute any work described in these regulations and no person shall permit any such work to execute except by Engineer/Contractor whose name is, at the time, included in the list of Engineer/Contractor.

(b) All service pipes and fittings shall be supplied by the consumer for the work of laying such pipes and fittings shall be done by a Engineer/Contractor at the cost of the consumer.

(c) The connection of a service pipe to an Agency main shall be done by an Agency plumber or contractor. In case of non-Agency plumber, intimation of the connection shall be made to the Agency, at least, three days before the connection activity.

73. Defective Work –
All pipes and fittings which on inspection or test are found to be defective shall be removed by the owner of the property and replaced by sound, approved pipes and fittings and all leaking or defective joints shall be made tight and good.

74. Maintenance –
Every Consumer who shall execute any work in connection with water supply shall, when so directed by the Agency, make good at his own expense any defect found within twelve months of the date of completion of such work, if in the opinion of the Agency, it is due to faulty workmanship or defective material.

75. Disconnection –
A water service provided by the Agency under these regulations may be cut off from the ferrule, service line or main stop valve without notice if:-

(i) A consumer makes a written request that the services be disconnected at least 30 days prior to the required disconnection provided that such request is accompanied by the prescribed fee. He shall also clear all the dues before any action is taken by the Agency on his request;
(ii) The consumer fails to pay the water charges and other allied charges within the specified time;
(iii) In the opinion of the Engineer, temporary disconnection is essential in order to make another connection or repair., however the connection of these consumers will be restored, who have cleared all the outstanding dues of the Agency.
(iv) It appears to the Engineer, that the supplying of water to any premises constitutes a danger or nuisance or has become un-necessary or is resulting in the misuse or wastage of water.
(v) If, in the opinion of the Engineer, act(s) of the consumer is threatening the water quality of distribution main.
(vi) Prior written notice, served on the consumer to arrange his services in accordance with the provisions of these regulations remains unattended.

76. Re-Connection –

(a) A water service disconnected under regulation 75 (i) may be reconnected on application as if it were an application for a new connection.
(b) A water service disconnected under regulation 75 (ii) may be reconnected on the request of consumer and on payment of any outstanding charges and the prescribed fee.
(c) A disconnected water service shall not be reconnected without the approval of the Engineer.
(d) For regulation 75 (iv) and (v), the reconnection will be provided only subject to removal of the cause of disconnection.

77. Disused Services –
Where any fixture on a water service is abolished or disused, the pipes to or from such fixture shall be sealed or removed and the service pipe sealed at the point of disconnection to the satisfaction of the Engineer.

78. Disconnected Services –

1) Misused water services shall be disconnected from the Agency's main in the following manner-
    a. in the case of a main which is not under pressure, the main stop valve shall be removed and replaced by a galvanized wrought or galvanized malleable iron crowned plug securely screwed; or
    b. in the case of a main which is under pressure, the main stop valv

shall be shut down, the union or coupling nut removed and the outlet of the valve securely closed with a galvanized wrought or galvanized malleable iron cap, socket or plug;

c. in cases where a tee and valve have been inserted for the services, the disconnection shall be carried out in such manner as the Agency may direct;

d. the removal or sealing of a main valve shall be carried out under the supervision of the Engineer: and

e. The removal of tees and insertion of plug where necessary shall be affected only by employees of the Agency and the cost of such work shall be charged on the property previously supplied with water by the disused service and shall be recoverable from the owner of such property of the renewed work at the time of re-connection.

2) In all cases of removal of water services where tapping bends exist on metal mains of more than one inch diameter, or where plug cocks exist, such tapping bends and plug cocks shall be removed and new drilling of the main with an approved ferrule shall be made as part of the renewal work.

79. Private Source of Water Supply –

Private sources of water supply within the operation area of the Water and Sanitation Agency shall be subject to control, regulation and inspection by the Agency.

80. New Wells –

No new well, water pump or any other source of water for drilling purposes shall be dug, constructed or provided except with the prior sanction of the Agency. In case, a person fails to get such sanction, the Agency shall be competent to require the owner to abandon such service.

81. Penalties –

Any person contravening any of these regulations shall be liable to summary convictions to a fine not exceeding Rs.10,000/- (Rupees Ten Thousand) in respect of each offence and in the case of a continuing offence, to a further fine not exceeding Rs.100/- for each day during which the offence continues after conviction therefor if not mentioned against the regulation.

82 Offence of Contamination of Water

1) A person(s) who contaminates or causes to be contaminated any water supply line or the water supply system or any part of the water supply system with any act;

   a. with or without intention to cause contamination;

   b. which would likely endanger the life of any person,

   commits an offence.

2) A person(s) found guilty of an offence under clause (1), on conviction;

   a. where death is the result of the act, shall be punished with imprisonment for a term following the clauses of Pakistan Penal Code;

   b. where death is not the result of the act shall be liable to imprisonment as per Pakistan Penal Code or to a fine not exceeding Rs.10,000/- (Rupees Ten thousand) or both;

3) It shall not be a defense for the person who is with an offence under this regulation that the Agency may stop water supply to that person and all remedial work will be carried out at the expenses of that person.

83 Offence of Poisoning of Water

1) A person who poisons or causes to be poisoned any water supply line or the water supply system or any part of the water supply system with any substance—
   (a) with the intention to cause death;
   (b) with the knowledge that he is likely to cause death; or
   (c) which would likely endanger the life of any person or community
   commits an offence.

2) A person found guilty of an offence under clause (1), on conviction—
   (a) where death is the result of the act, shall be punished with death or imprisonment for a term following the clauses of Pakistan Penal Code;
   (b) where death is not the result of the act but the substance which is used to contaminate / poison any water supply line or the water supply system or any part of the water supply system, shall be liable to imprisonment for a term following the clauses of Pakistan Penal Code.
   (c) in any other case, shall be liable to a fine not exceeding Rs.100,000/- (one hundred thousand Pak Rupees) or to imprisonment for a term following the clauses of Pakistan Penal Code; or to both.

3) The Agency who owns the water supply system or who provides the water supply services shall immediately stop the supply of water. If the Agency does not do so, necessary action will be initiated under Pakistan Penal Code against the Agency's field staff responsible for operation and maintenance of water supply.

84 Damaging of Pipes.

1) A person(s) who—

   (a) willfully, negligently or recklessly damages or causes to be damaged any water supply pipe, or structure, chamber, fixture, equipment, reservoir, cistern, pump, valve, meter, sub-meter or any part of any public water supply system ;

   (b) flushes, draws off, diverts or takes water from any public water supply system or part of the system, unless the person is otherwise permitted under these By Laws or any Water Act or any other written law;

   (c) bathes, wastes or throws any rubbish or creature, dead or alive, into any public water supply system or part of the system; or

   (d) trespasses on any area of a service reservoir or booster station of a public water supply system,

   commits an offence.

2) A person(s) who is convicted for an offence under clause (1) shall be liable to pay compensation for such damage and such compensation shall be recoverable from such person by the Agency. Failure to pay the penalty will result in possible conviction under Pakistan Penal Court.

85 Illegal Connections

1) No person shall make or get any water connection from a public main without the permission of the Engineer.
2) A person(s) who contravenes clause (1) commits an offence and shall, on conviction, be liable to a fine not exceeding three years Water Bill.

86 Illegal Reconnection

1) If a person or official re-connects the water supply illegally at the disconnection made by the Agency, it will be considered as an offence.
2) A person who commits an offence under clause (1) shall be liable to a fine not exceeding Rs. 10,000/- (Rupees Ten Thousand) or to imprisonment not exceeding for a term of one month or to both.

87. Tampering of Water Meter

A person or official who tampers with a meter or sub-meter or causes the tampering of a meter or sub-meter used for the measurement of water supplied to any premises in such a manner so as to cause the meter or sub-meter to show incorrect readings commits an offence and shall, on conviction, be liable to a fine not exceeding Rs.10,000/-(Rupees Ten Thousand).

88. Tampering of Water Supply System

A person(s) or official who tampers with any water pipe, structure, chamber, fixture and equipment, including any valve, hydrant or any part of a water supply system commits an offence and shall, on conviction, be liable to a fine not exceeding Rs.10,000/- (Rupees Ten Thousand) in addition to restoration charges for reinstating the connection.

89. Use of Unapproved material for Water Supply

A person(s) who use pipe of other than approved material shall be liable for a fine not exceeding Rs.1,000/- (Rupees One Thousand) in addition to charging the expenses of replacement of service pipe.

90. Wastage of Drinking Water

1) Consumers are required to adopt the practices of conservation of water. No drinking water should run or flow across the gates and accumulates on the roads due to washing of cars, floors or for the other purposes. If any water accumulates on the roads or in the streets which may cause the nourishment of mosquitoes then it shall be an offence under these regulations.

2) A person(s) who commits this offence shall be liable for following actions according to the order of committal:-

   a. For the first time, a written warning shall be issued to him.

   b. For the second time, a fine not exceeding Rs.1,000/- (Rupees One Thousand) shall be imposed on him.

3) For the third and subsequent times, a fine not exceeding Rs.5,000/- (Rupees Five Thousand) shall be imposed on him.

For and on behalf of
Faisalabad Development Authority

MANAGING DIRECTOR
WATER AND SANITATION AGENCY
(FDA) FAISALABAD