

Government of Peoples Republic of Bangladesh
Chattogram Water Supply and Sewerage Authority



IDA Credit No. 7675-BD & 7674-BD

Request for Proposals
for

**Design, Construction, Supply, Installation, Testing & Commissioning for System Improvement and
DMA Formation of**

Lot 1: Mohara Water Supply System

Lot 2: Modunaghat and Kalurghat Water Supply System

Volume-1-Part 1+Part 3

Volume 2A & 2B - Employer's Requirements

Volume 3A & 3B - Conceptual Drawings

Volume 4 – Supplementary Information

RFP No: CWSIP/W1

9

DRAWING INDEX

2

DRAWING No							DESCRIPTION
S/No	PROJECT	PACKAGE NUMBER AND LOT NUMBER	STRUCTURE	DISCIPLINE	SHEET No	REVISION	
PACKAGE 1 (CWSIP-II/W-01) LOT 1							
1 - DRAWING INDEX							
001	CWSIP	W1L1		IND	001	RO	DRAWING INDEX
2 - PROJECT LOCATION MAP							
002	CWSIP	W1L1		GEN	001	RO	PROJECT LOCATION MAP
3 - PROJECT GENERAL							
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004	CWSIP	W1L1		G	002	RO	SCHEMATIC DIAGRAM - WATER SUPPLY SYSTEM - FOR YEAR 2052
4 - STANDARD							
005	CWSIP	W1L1		STD	001	RO	STANDARD DETAILS - PIPE BEDDING AND ROAD REINSTATEMENT FOR DI PIPE
006	CWSIP	W1L1		STD	002	RO	STANDARD DETAILS - PIPE BEDDING AND ROAD REINSTATEMENT FOR HDPE PIPE
007	CWSIP	W1L1		STD	003	RO	STANDARD DETAILS - AIR VALVE & CHAMBER FOR DI PIPES
008	CWSIP	W1L1		STD	004	RO	STANDARD DETAILS - AIR VALVE & CHAMBER FOR HDPE PIPES
009	CWSIP	W1L1		STD	005	RO	STANDARD DETAILS - WASHOUT VALVE CHAMBER FOR DI & HDPE PIPES
010	CWSIP	W1L1		STD	006	RO	STANDARD DETAILS - FIRE HYDRANTS CHAMBER FOR DI AND HDPE PIPES
011	CWSIP	W1L1		STD	007	RO	STANDARD DETAILS - GATE VALVE CHAMBER - DN 300 AND BELOW
012	CWSIP	W1L1		STD	008	RO	STANDARD DETAILS - BUTTERFLY VALVE CHAMBER - DN 350 AND ABOVE
013	CWSIP	W1L1		STD	009	RO	STANDARD DETAILS - CULVERT CROSSING FOR HDPE PIPES
014	CWSIP	W1L1		STD	010	RO	STANDARD DETAILS - CULVERT CROSSING FOR DI PIPES
015	CWSIP	W1L1		STD	011	RO	STANDARD DETAILS - CULVERT CROSSING TYPE E & G FOR DI & HDPE PIPES
016	CWSIP	W1L1		STD	012	RO	STANDARD DETAILS - THRUST BLOCK AND SCHEDULES
017	CWSIP	W1L1		STD	013	RO	STANDARD DETAILS - ABOVE GROUND PIPE SUPPORTS - (DN<800mm)
018	CWSIP	W1L1		STD	014	RO	STANDARD DETAILS - ABOVE GROUND PIPE SUPPORTS - (≥600mm)
019	CWSIP	W1L1		STD	015	RO	STANDARD DETAILS - PROPOSED INLINE BOOSTER ARRANGEMENT
020	CWSIP	W1L1		STD	016	RO	STANDARD DETAILS - SERVICE CONNECTION DETAILS
021	CWSIP	W1L1		STD	017	RO	STANDARD DETAILS - DMA METER CHAMBER - FOR HDPE PIPES
5 - DHAKA TRUNK ROAD GROUND RESERVOIR AND PUMP STATION							
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023	CWSIP	W1L1	DTR	G	001	RO	DHAKA TRUNK ROAD GROUND RESERVOIR AND PUMP STATION - SITE LAYOUT PLAN
024	CWSIP	W1L1	DTR	GA	001	RO	DHAKA TRUNK ROAD GROUND RESERVOIR AND PUMP STATION - PLAN AT +3.50 LEVEL
025	CWSIP	W1L1	DTR	GA	002	RO	DHAKA TRUNK ROAD GROUND RESERVOIR AND PUMP STATION - PLAN AT +10.50 LEVEL
026	CWSIP	W1L1	DTR	GA	003	RO	DHAKA TRUNK ROAD GROUND RESERVOIR AND PUMP STATION - SECTION 1
027	CWSIP	W1L1	DTR	GA	004	RO	DHAKA TRUNK ROAD GROUND RESERVOIR AND PUMP STATION - SECTION 2
028	CWSIP	W1L1	DTR	E	001	RO	DHAKA TRUNK ROAD GROUND RESERVOIR AND PUMP STATION - ELECTRICAL OVERVIEW
029	CWSIP	W1L1	DTR	E	002	RO	DHAKA TRUNK ROAD GROUND RESERVOIR AND PUMP STATION - MCC PANEL FACE WITH REMOTE VFD
030	CWSIP	W1L1	DTR	E	003	RO	DHAKA TRUNK ROAD GROUND RESERVOIR AND PUMP STATION - REMOTE ACTUATION AND MONITORING PANEL (RAMP) DETAILS
031	CWSIP	W1L1	DTR	E	004	RO	DHAKA TRUNK ROAD GROUND RESERVOIR AND PUMP STATION - LOCAL OPERATION STATION AND LOCAL CONTROL PANEL FOR DRAIN PUMPS
032	CWSIP	W1L1	DTR	E	005	RO	DHAKA TRUNK ROAD GROUND RESERVOIR AND PUMP STATION - SWITCHGEAR SINGLE LINE DIAGRAM
033	CWSIP	W1L1	DTR	E	006	RO	DHAKA TRUNK ROAD GROUND RESERVOIR AND PUMP STATION - SCADA SYSTEM OVERVIEW
6- KHULSHI BOOSTER PUMP STATION							
034	CWSIP	W1L1	KUL	PID	001	RO	KHULSHI BOOSTER PUMP STATION - PROCESS ARRANGEMENT - (OVERVIEW)
035	CWSIP	W1L1	KUL	G	001	RO	KHULSHI BOOSTER PUMP STATION - SITE LAYOUT
036	CWSIP	W1L1	KUL	GA	001	RO	KHULSHI BOOSTER PUMP STATION - GENERAL ARRANGEMENT
037	CWSIP	W1L1	KUL	E	001	RO	KHULSHI BOOSTER PUMP STATION - MCC PANEL FACE WITH INTEGRAL VFD
038	CWSIP	W1L1	KUL	E	002	RO	KHULSHI BOOSTER PUMP STATION - LOCAL OPERATION STATION AND LOCAL CONTROL PANEL FOR DRAIN PUMPS
039	CWSIP	W1L1	KUL	E	003	RO	KHULSHI BOOSTER PUMP STATION - SCADA SYSTEM OVERVIEW

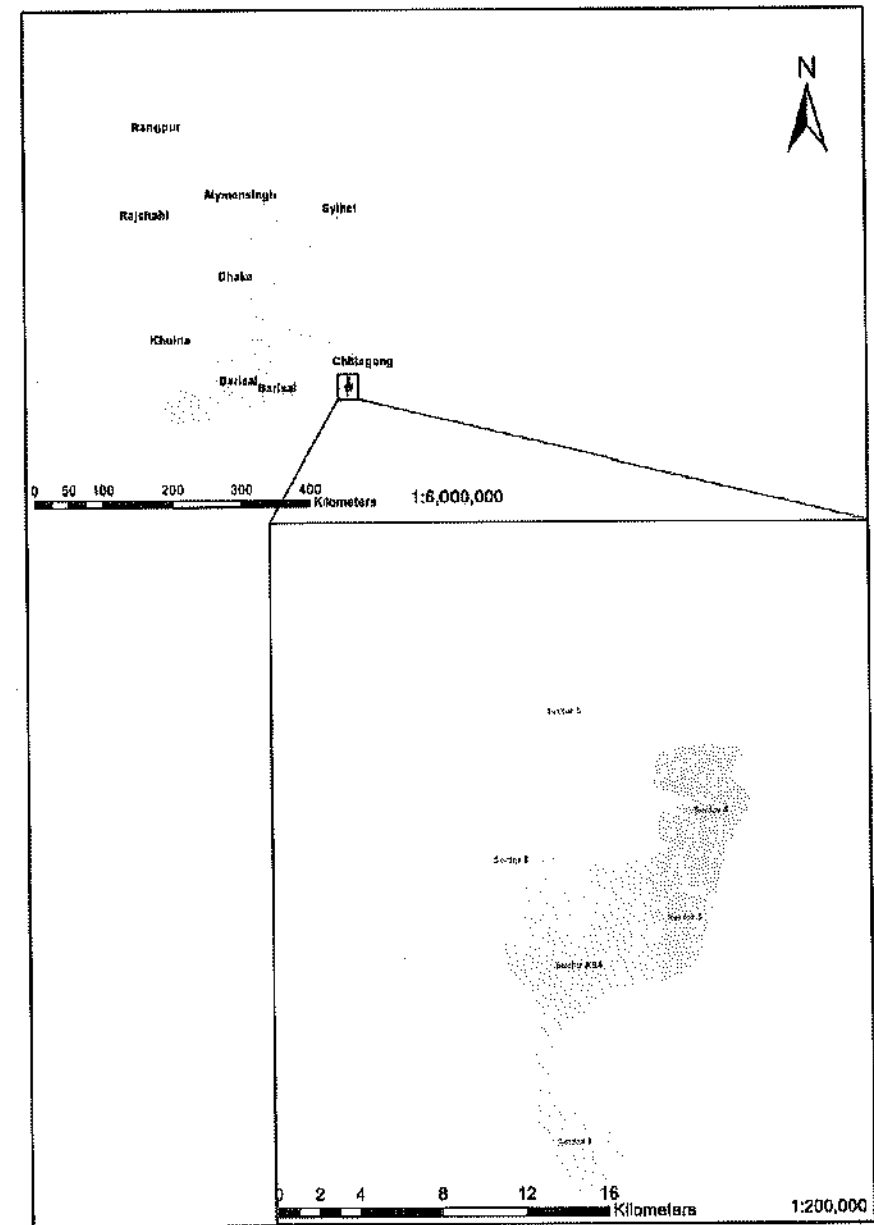
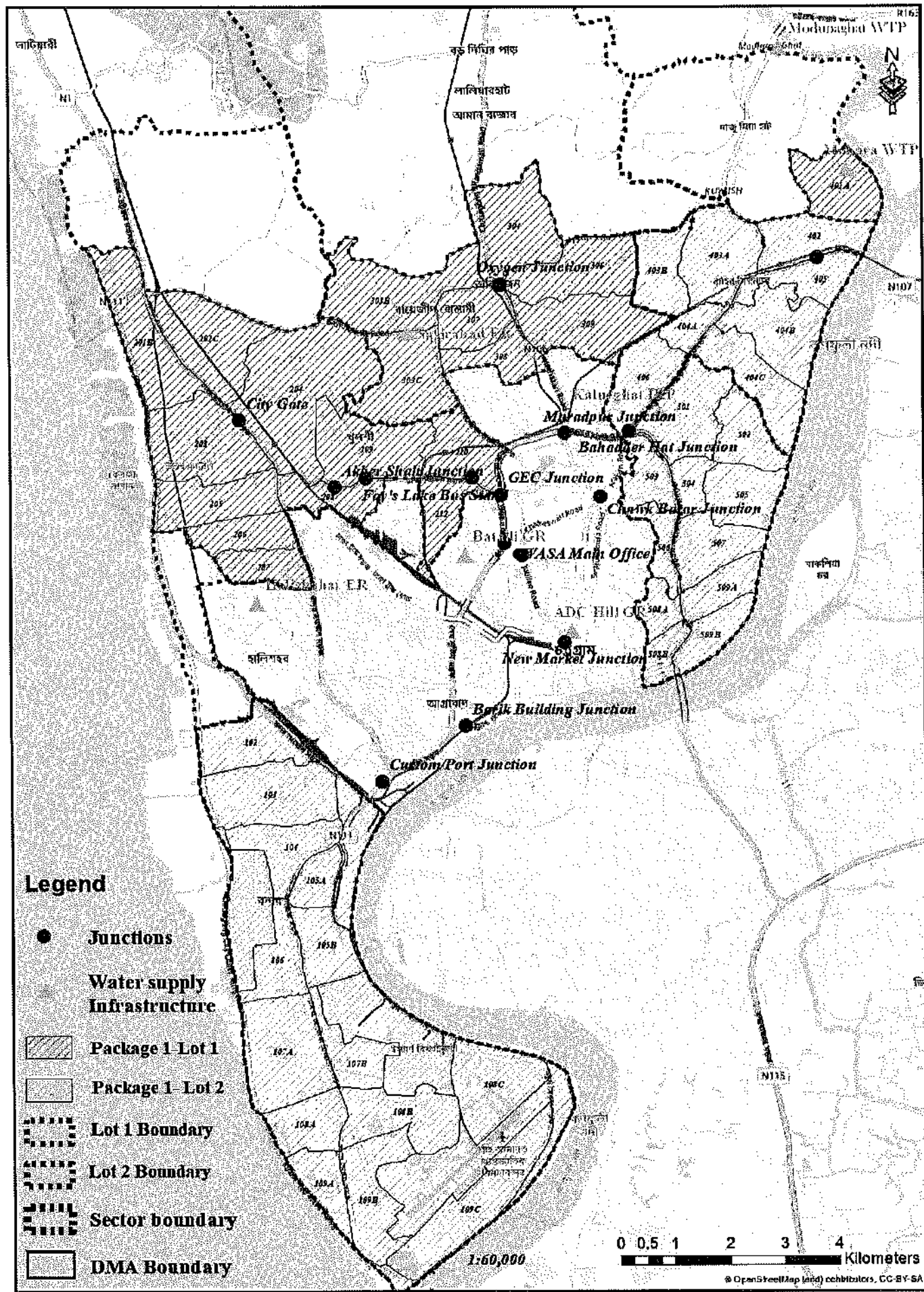
7 - MODIFICATIONS TO MOHARA PUMP STATION - ELECTRICAL							
040	CWSIP	W1L1	MOH	E	001	RO	MODIFICATIONS TO MOHARA PUMP STATION - MCC PANEL FACE WITH REMOTE VFD
041	CWSIP	W1L1	MOH	E	002	RO	MODIFICATIONS TO MOHARA PUMP STATION - REMOTE ACTUATION AND MONITORING PANEL (RAMP) DETAILS
042	CWSIP	W1L1	MOH	E	003	RO	MODIFICATIONS TO MOHARA PUMP STATION - LOCAL OPERATION STATION AND LOCAL CONTROL PANEL FOR DRAIN PUMPS
043	CWSIP	W1L1	MOH	E	004	RO	MODIFICATIONS TO MOHARA PUMP STATION - SWITCHGEAR SINGLE LINE DIAGRAM
044	CWSIP	W1L1	MOH	E	005	RO	MODIFICATIONS TO MOHARA PUMP STATION - SCADA SYSTEM OVERVIEW
8 - DISTRIBUTION SYSTEM							
045							YEAR 2032 COVERAGE & PACKAGE MAP
046	CWSIP	W1L1		DM	001	RO	PIPE NETWORK - SECTOR 02
047	CWSIP	W1L1		DM	002	RO	PIPE NETWORK - SECTOR 03
048	CWSIP	W1L1		DM	003	RO	PIPE NETWORK MAP YEAR 2032 - DMA 201B
049	CWSIP	W1L1		DM	004	RO	PIPE NETWORK MAP YEAR 2032 - DMA 202C
050	CWSIP	W1L1		DM	005	RO	PIPE NETWORK MAP YEAR 2032 - DMA 203
051	CWSIP	W1L1		DM	006	RO	PIPE NETWORK MAP YEAR 2032 - DMA 204
052	CWSIP	W1L1		DM	007	RO	PIPE NETWORK MAP YEAR 2032 - DMA 205
053	CWSIP	W1L1		DM	008	RO	PIPE NETWORK MAP YEAR 2032 - DMA 206
054	CWSIP	W1L1		DM	009	RO	PIPE NETWORK MAP YEAR 2032 - DMA 207
055	CWSIP	W1L1		DM	010	RO	PIPE NETWORK MAP YEAR 2032 - DMA 208
056	CWSIP	W1L1		DM	011	RO	PIPE NETWORK MAP YEAR 2032 - DMA 209
057	CWSIP	W1L1		DM	012	RO	PIPE NETWORK MAP YEAR 2032 - DMA 210
058	CWSIP	W1L1		DM	013	RO	PIPE NETWORK MAP YEAR 2032 - DMA 212
059	CWSIP	W1L1		DM	014	RO	PIPE NETWORK MAP YEAR 2032 - DMA 303B
060	CWSIP	W1L1		DM	015	RO	PIPE NETWORK MAP YEAR 2032 - DMA 303C
061	CWSIP	W1L1		DM	016	RO	PIPE NETWORK MAP YEAR 2032 - DMA 304
062	CWSIP	W1L1		DM	017	RO	PIPE NETWORK MAP YEAR 2032 - DMA 306
063	CWSIP	W1L1		DM	018	RO	PIPE NETWORK MAP YEAR 2032 - DMA 307
064	CWSIP	W1L1		DM	019	RO	PIPE NETWORK MAP YEAR 2032 - DMA 308
065	CWSIP	W1L1		DM	020	RO	PIPE NETWORK MAP YEAR 2032 - DMA 309
066	CWSIP	W1L1		DM	021	RO	PIPE NETWORK MAP YEAR 2032 - DMA 401A

CONCEPTUAL DRAWING

	CHATTOGRAM WATER SUPPLY & SEWERAGE AUTHORITY (CWASA)
PROJECT	CHATTOGRAM WATER SUPPLY IMPROVEMENT PROJECT (CWSIP)
PACKAGE	CWSIP/W1 - LOT 1 Design, Construction, Supply, Installation, Testing & Commissioning for System Improvement and DMA Formation of Mohara Water Supply System
IDA CREDIT NO.	7675-BD & 7674-BD
TITLE	DRAWING INDEX
DRAWING No.	CWSIP/W1L1/IND/001

PROJECT LOCATION
MAP

11

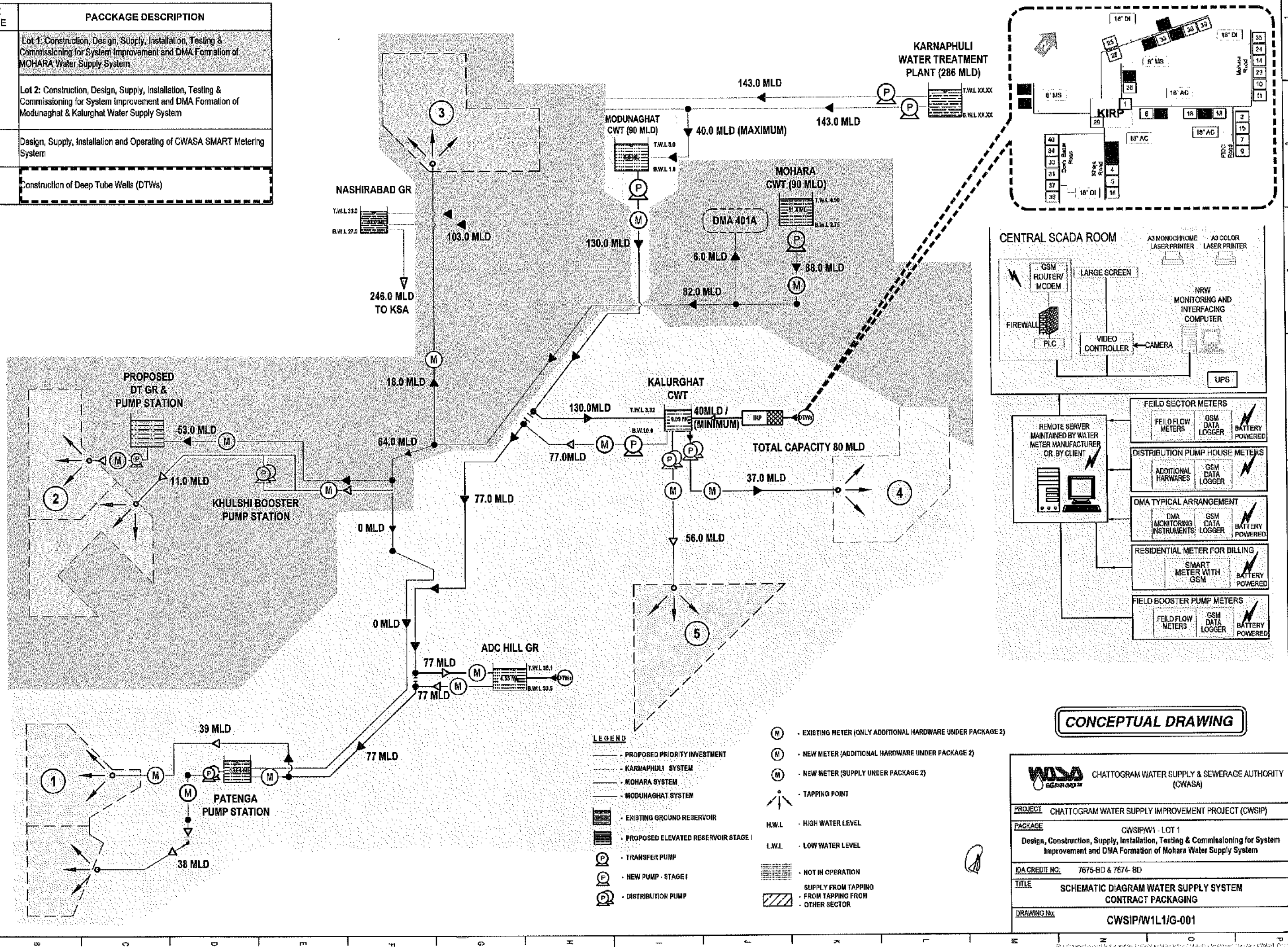


CONCEPTUAL DRAWING

 CHATTOGRAM WATER SUPPLY & SEWERAGE AUTHORITY (CWASA)	
PROJECT	CHATTOGRAM WATER SUPPLY IMPROVEMENT PROJECT (CWSIP)
PACKAGE	CWSIPW1 - LOT 1 Design, Construction, Supply, Installation, Testing & Commissioning for System Improvement and DMA Formation of Mohara Water Supply System
IDA CREDIT NO.	7675-BD & 7674-BD
TITLE	PROJECT LOCATION MAP
DRAWING No.	CWSIP/W1L1/GEN-001

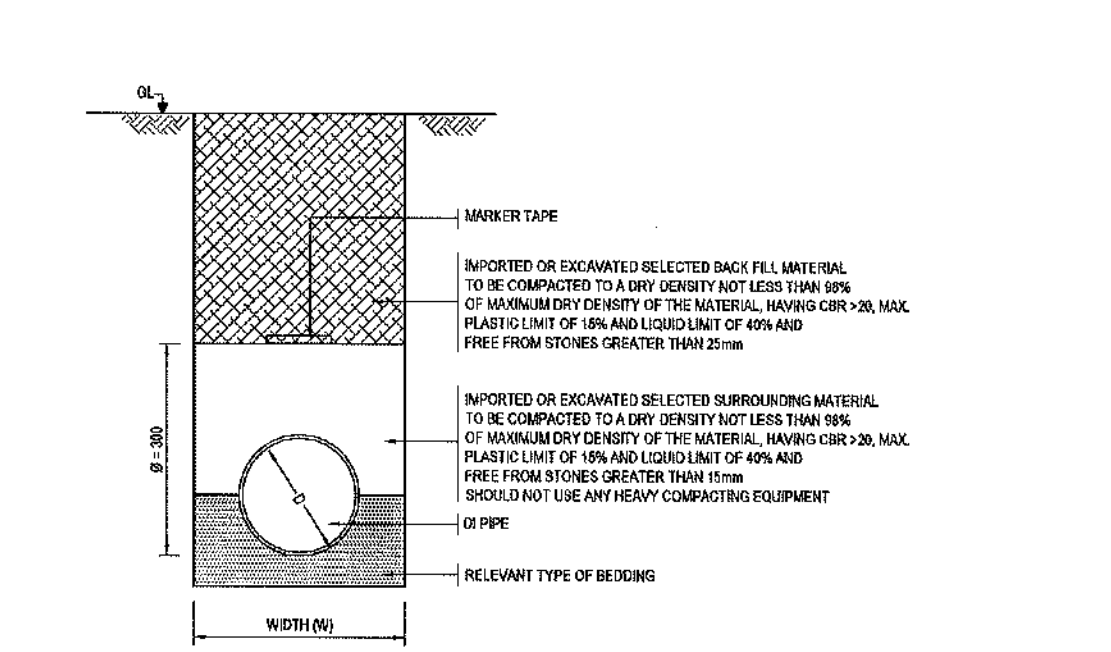
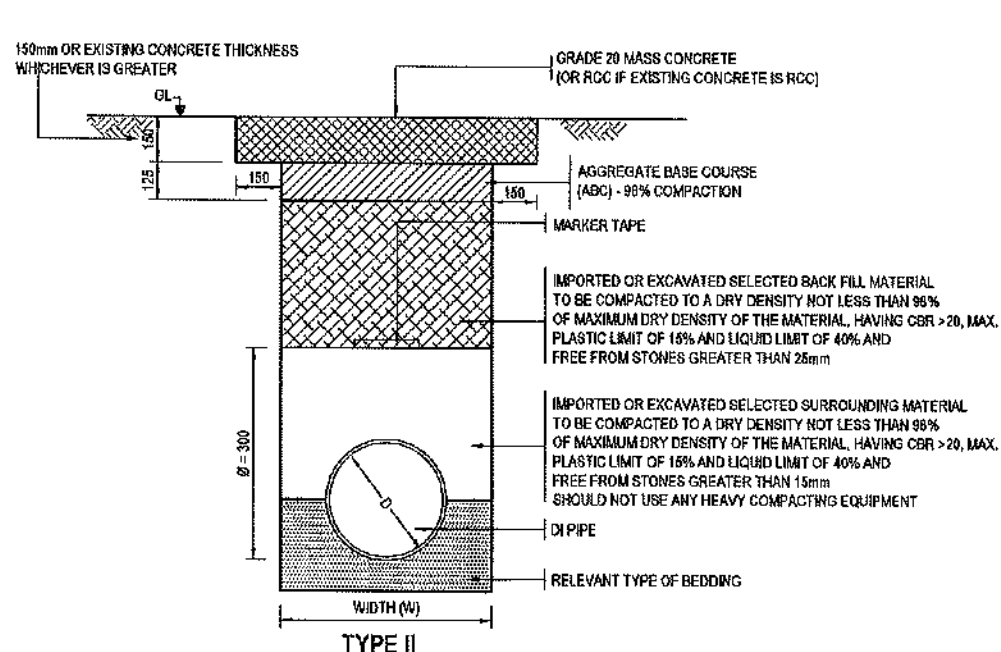
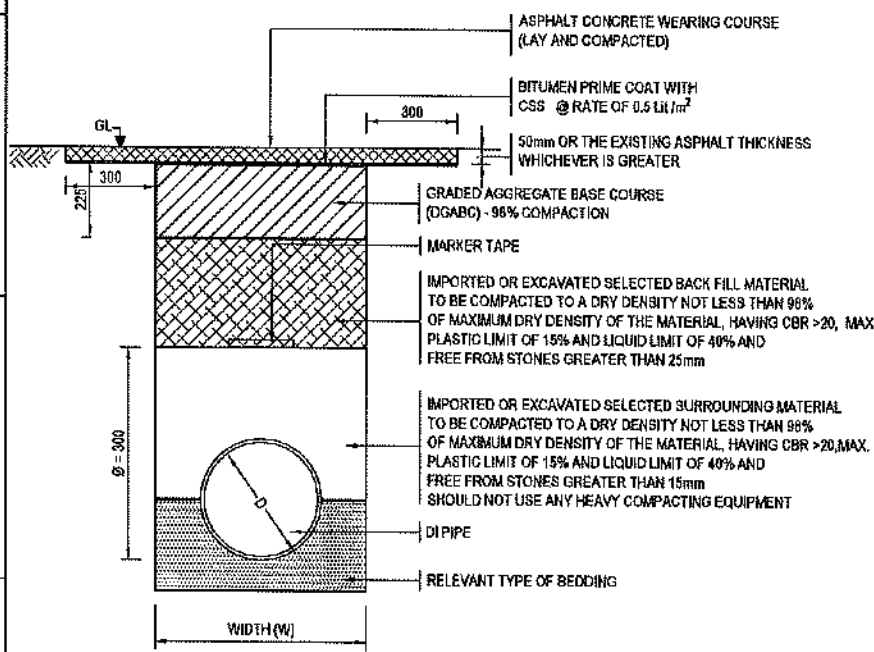
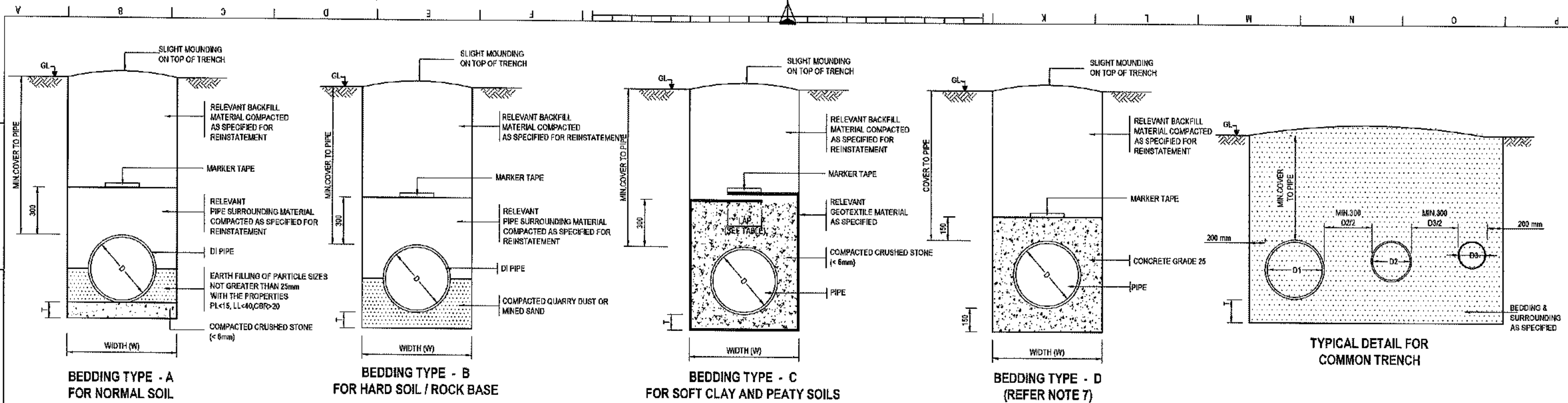
PROJECT GENERAL
DRAWINGS

PACKAGE REFERENCE	PACCKAGE DESCRIPTION
CWSIP/W1	Lot 1: Construction, Design, Supply, Installation, Testing & Commissioning for System Improvement and DMA Formation of MOHARA Water Supply System Lot 2: Construction, Design, Supply, Installation, Testing & Commissioning for System Improvement and DMA Formation of Modunaghat & Kalurghat Water Supply System
CWSIP/G3	Design, Supply, Installation and Operating of CWASA SMART Metering System
CWSIP/W2	Construction of Deep Tube Wells (DTWs)



STANDARD DRAWINGS

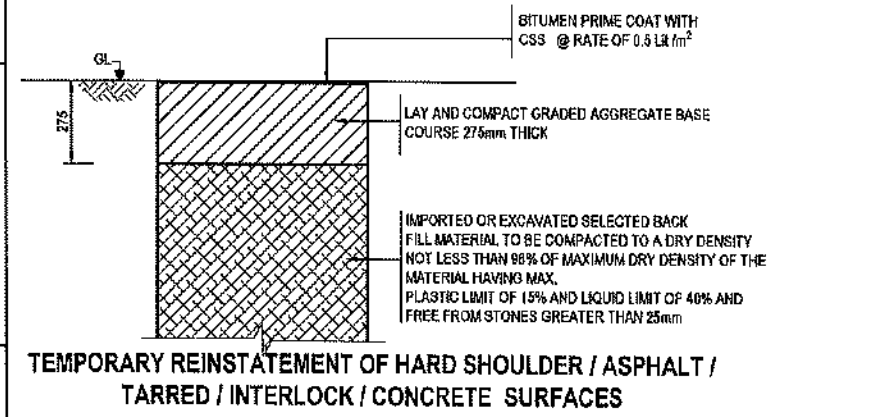




TYPE I HARD SHOULDER AND CARRIAGEWAY OF ASPHALT CONCRETE / TARRED ROADS BACK FILLING AND PERMANENT REINSTATEMENT

TYPE II CONCRETE ROAD BACK FILLING AND PERMANENT REINSTATEMENT

BACKFILLING AND COMPACTION FOR EARTH ROADS / SOFT SHOULDERS



DETAILS OF TRENCH				
PIPE DIA. (mm)	WIDTH (W) (m)	MIN. COVER (m)	BEDDING THICKNESS (T) (mm)	LAP OF GEOTEXTILE (mm)
300	0.800	1.000	150	600
350	0.750	1.000	150	600
400	0.900	1.000	150	800
450	0.900	1.000	150	800
600	0.900	1.000	150	800
600	1.100	1.000	150	800
800	1.300	1.100	200	1000
1000	1.600	1.100	200	1200
1200	1.800	1.200	200	1200

- NOTES :**
- ALL DIMENSIONS ARE IN MILLIMETERS
 - CSS - CATIONIC SLOW SETTING
 - EXCAVATED SOIL CAN BE USED AS BACK FILLING MATERIAL IF THEY CONFORM TO THE REQUIRED SPECIFICATION
 - IN CASE OF INTERLOCK PAVED ROAD SURFACES, THE TYPE II BACKFILLING AND REINSTATEMENT DETAIL HEREOF SHALL APPLY AS APPROPRIATE.
 - FOR PIPES IN SOFT OR PEATY GROUND, THE GRANULAR BEDDING SHALL BE COMPLETELY SURROUNDED BY A GEOTEXTILE AS SHOWN IN THE DRAWING AND AS DIRECTED BY THE ENGINEER TO PREVENT THE INGRESS OF FINES. GEOTEXTILE FABRIC SHALL BE WOVEN POLYPROPYLENE THERMALLY BONDED AS PER THE SPECIFICATIONS.
 - HEAVY COMPACTION MACHINES ARE NOT ALLOWED ABOVE THE PIPES
 - BEDDING TYPE D SHALL BE APPLIED WHEN THE COVER IS LESSER THAN 75% OF THE MINIMUM COVER SPECIFIED.

CONCEPTUAL DRAWING

WSSA CHATTOGRAM WATER SUPPLY & SEWERAGE AUTHORITY (CWASA)

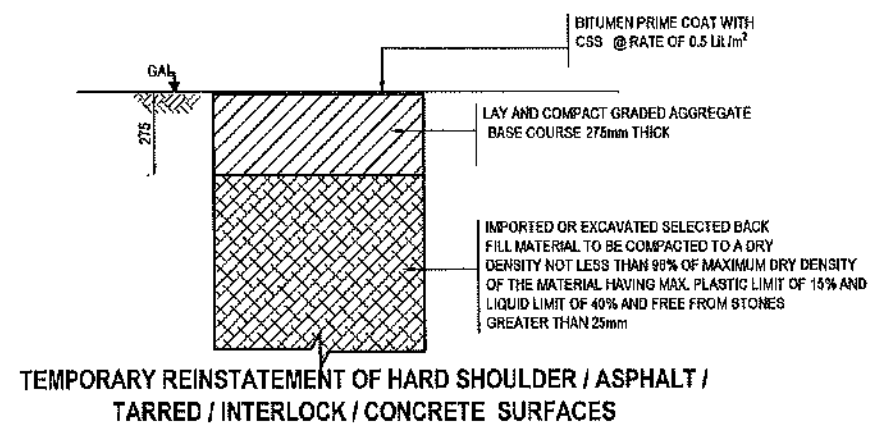
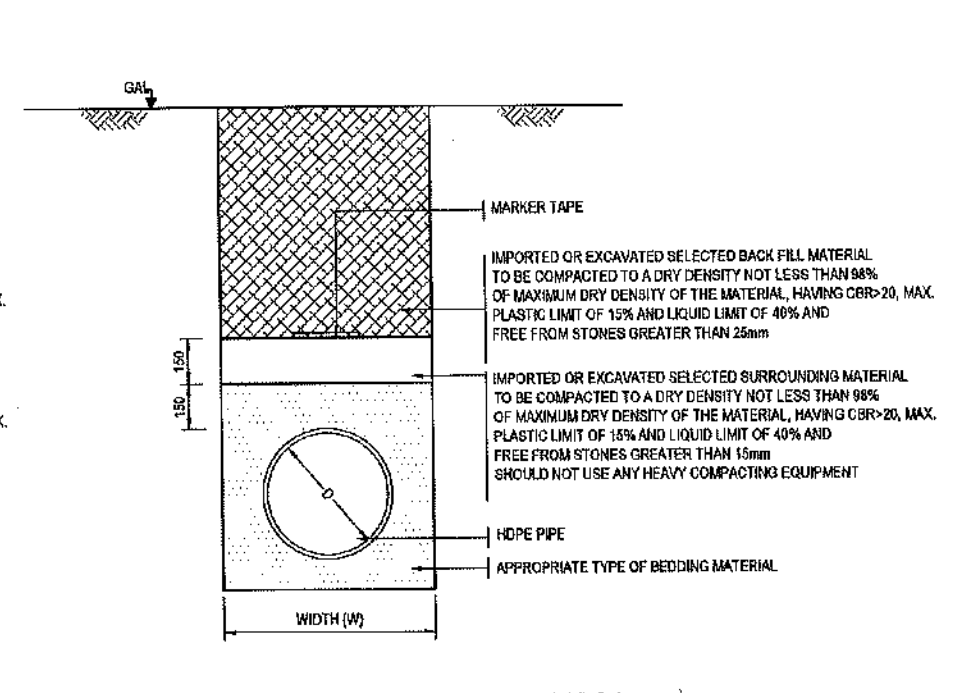
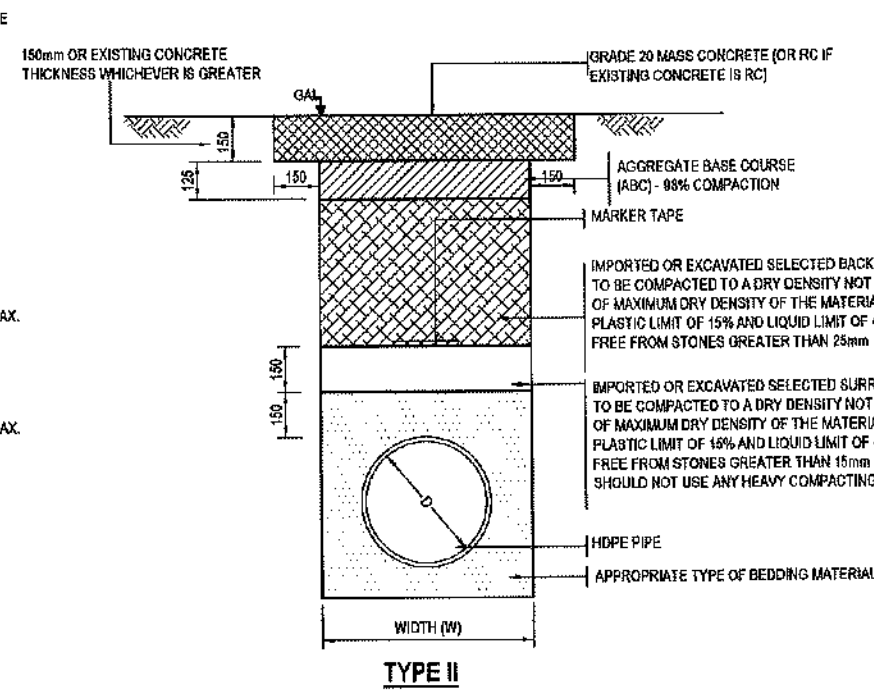
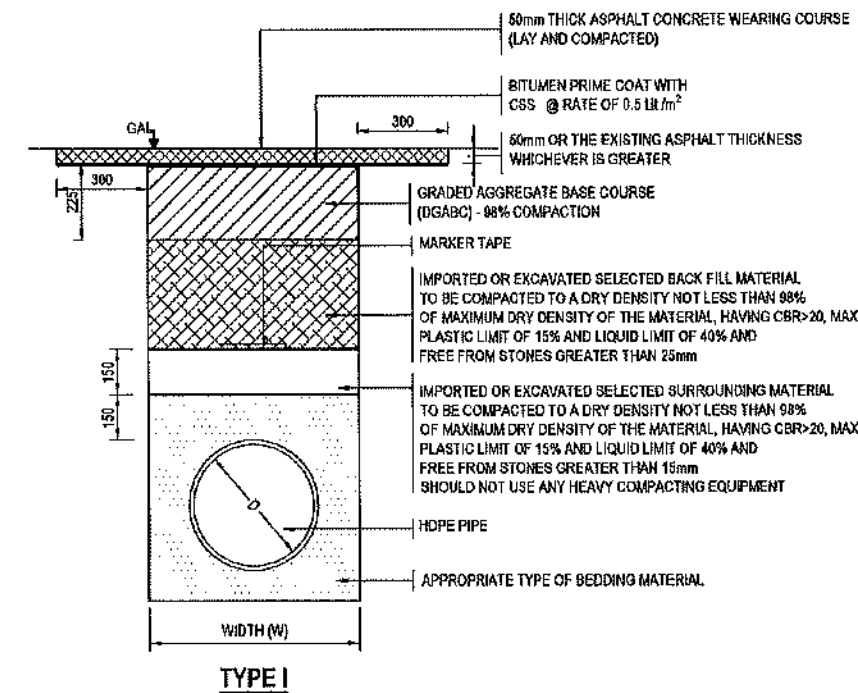
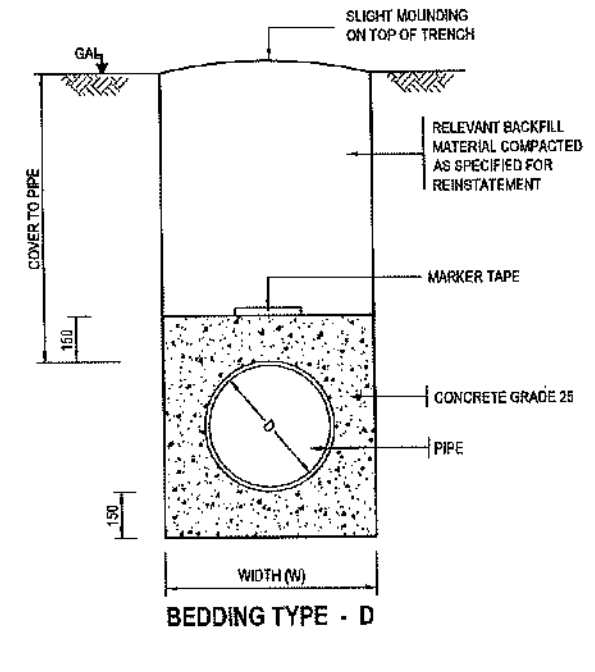
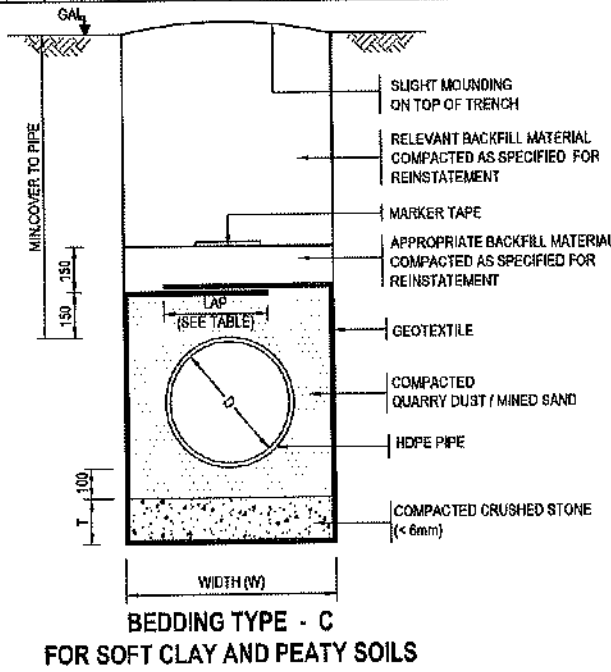
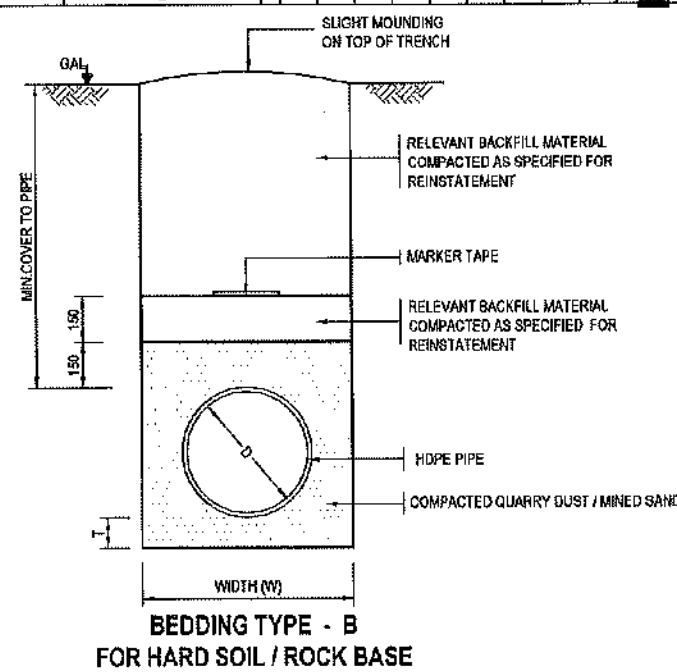
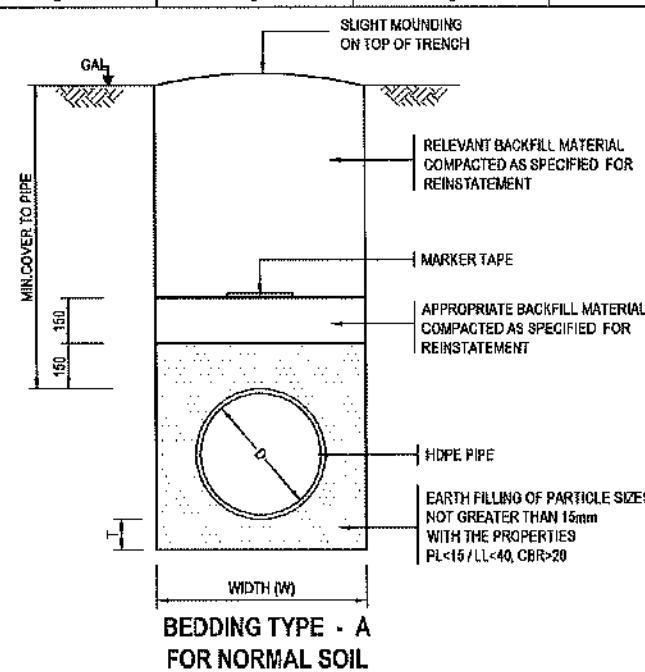
PROJECT CHATTOGRAM WATER SUPPLY IMPROVEMENT PROJECT (CWSIP)

PACKAGE CWSIP/W1 - LOT 1
Design, Construction, Supply, Installation, Testing & Commissioning for System Improvement and DMA Formation of Mohara Water Supply System

IDA CREDIT NO. 7675-BD & 7674- BD

TITLE STANDARD DETAILS
PIPE BEDDING AND ROAD REINSTATEMENT - FOR DI PIPES

DRAWING No. CWSIP/W1L1/STD/001



DETAIL OF TRENCH				
PIPE DIA. (mm)	WIDTH (W) (m)	MIN. COVER (m)	BEDDING THICKNESS (mm) (T)	LAP OF GEOTEXTILE (mm) (L)
90	0.400	0.800	100	300
110	0.400	0.800	100	300
160	0.450	0.800	100	300
225	0.500	1.000	100	400
250	0.500	1.000	100	400
280	0.600	1.000	150	400
315	0.600	1.000	150	400
355	0.700	1.000	150	500
400	0.700	1.000	150	500

NOTES :

- ALL DIMENSIONS ARE IN MILLIMETERS
- CSS - CATATONIC SLOW SETTING
- EXCAVATED SOIL CAN BE USED AS BACK FILLING MATERIAL IF THEY CONFIRM TO THE REQUIRED SPECIFICATION
- IN CASE OF INTERLOCK PAVED ROAD SURFACES, THE TYPE II BACKFILLING AND REINSTATEMENT DETAILS HEREOF SHALL APPLY AS APPROPRIATE.
- FOR PIPES IN SOFT OR PEATY GROUND, THE GRANULAR BEDDING SHALL BE COMPLETELY SURROUNDED BY A GEOTEXTILE AS SHOWN IN THE DRAWING AND AS DIRECTED BY THE ENGINEER TO PREVENT THE INGRESS OF FINES. GEOTEXTILE FABRIC SHALL BE WOVEN POLYPROPYLENE THERMALLY BONDED AS PER THE SPECIFICATIONS.
- HEAVY COMPACTION MACHINES ARE NOT ALLOWED ABOVE THE PIPES
- BEDDING TYPE D SHALL BE APPLIED WHEN THE COVER IS LESSER THAN 75% OF THE MINIMUM COVER SPECIFIED.

CONCEPTUAL DRAWING



CHATTOGRAM WATER SUPPLY & SEWERAGE AUTHORITY
(CWASA)

PROJECT CHATTOGRAM WATER SUPPLY IMPROVEMENT PROJECT (CWSIP)

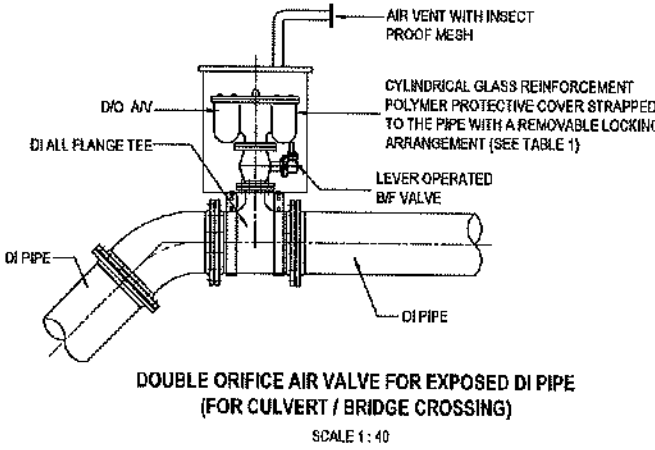
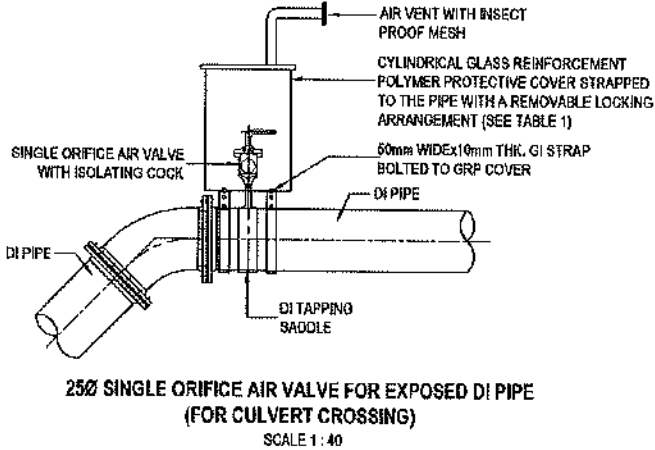
PACKAGE CWSIP/W1 - LOT 1
Design, Construction, Supply, Installation, Testing & Commissioning for System Improvement and DMA Formation of Mohara Water Supply System

IDA CREDIT NO: 7675-BD & 7674-BD

TITLE STANDARD DETAILS
PIPE BEDDING AND ROAD REINSTATEMENT - FOR HDPE PIPES

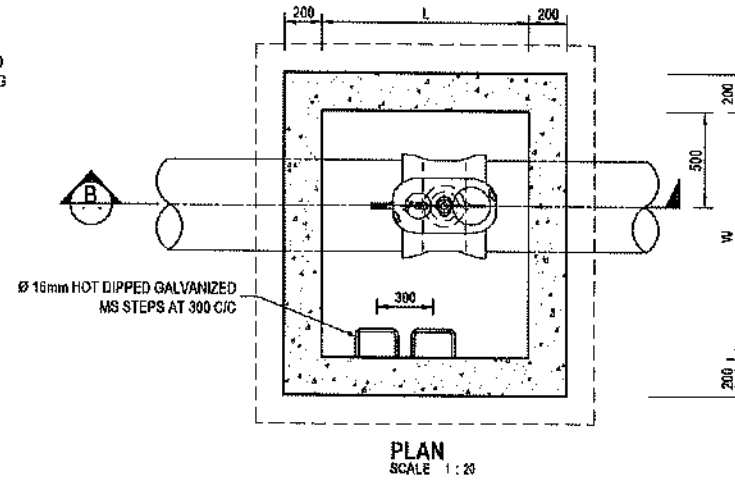
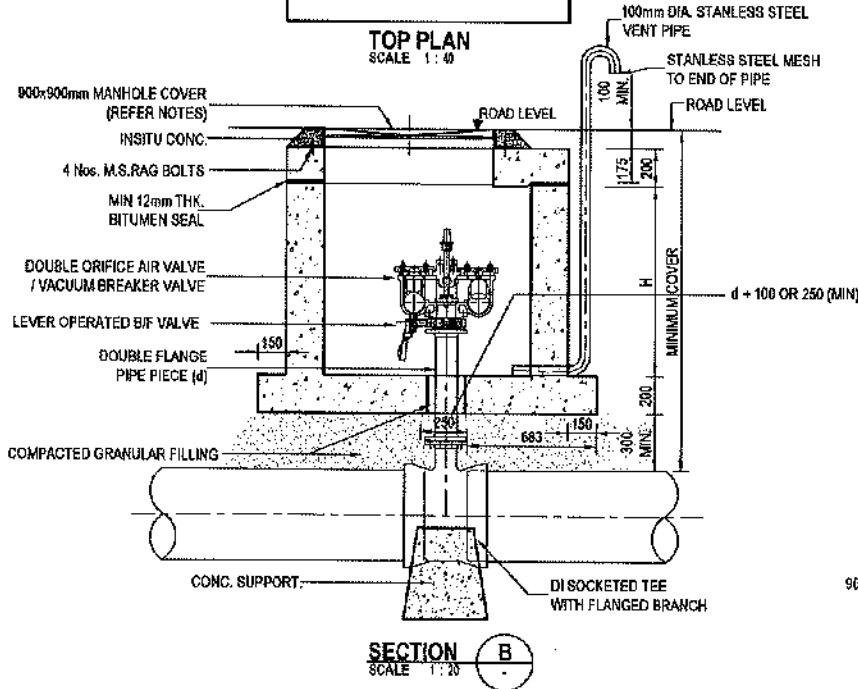
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DIA. OF MAIN PIPE (mm)	COVER DIMENSION (mm)		GI STRAP
	DIA.	HEIGHT	
UPTO 200	400	450	SHALL BE 50mm WIDE x 10mm THK. BOLTED WITH 6mm STAINLESS STEEL NUT AND BOLTS TO THE GRP COVER. DETAILED SHOP DRAWINGS SHALL BE SUBMITTED FOR ENGINEER'S APPROVAL
250 - 350	400	600	
400 - 600	450	600	
800 - 1200	500	700	

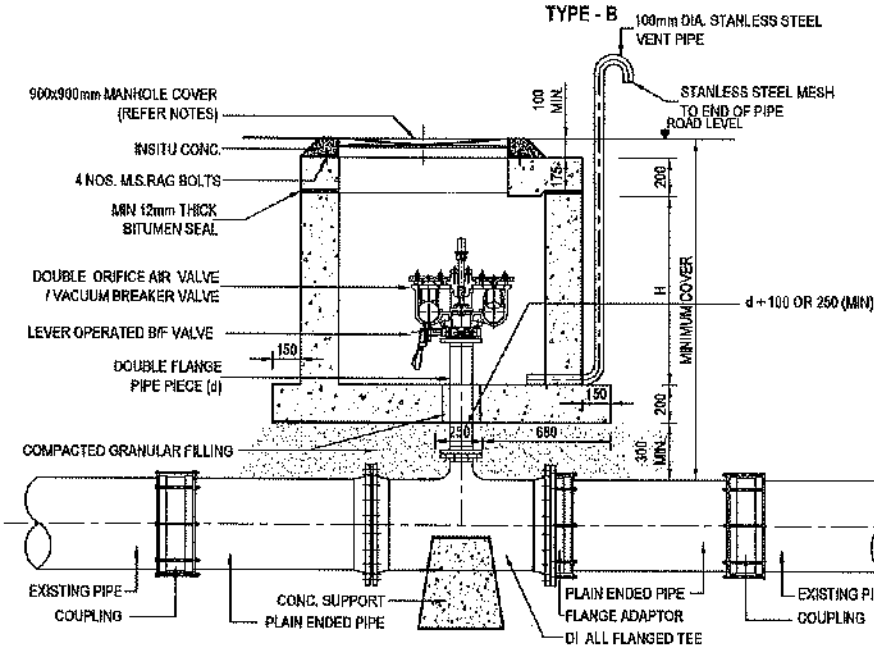
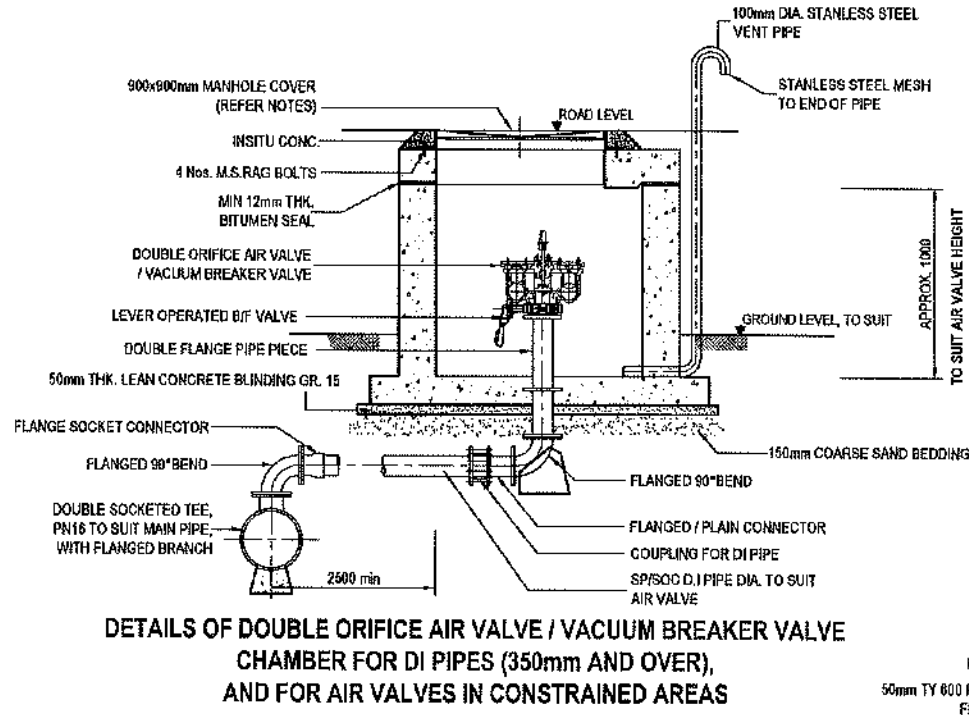


PIPE LINE	DIA. (mm) OF VACUUM BREAKER	DIA. (mm) OF ISOLATING BUTTERFLY VALVE (PN16)	DIA. (mm) OF FLANGED BRANCH	CHAMBER TYPE
TM1	150	150	150	I
TM2	200	200	200	II

CHAMBER TYPE	INTERNAL DIMENSION (mm)			
	L	W	H	MIN.COVER(mm)
I	1300	1300	1000	1800
II	1850	1300	1300	2200



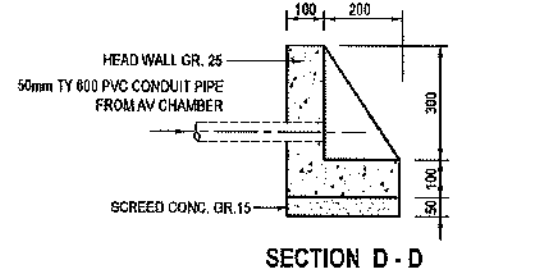
**DETAILS OF DOUBLE ORIFICE AIR VALVE
VACUUM BREAKER VALVE
CHAMBER FOR DI PIPES
TYPE - A**



**TYPICAL SECTION FOR DOUBLE ORIFICE AIR VALVE
VACUUM BREAKER VALVE CHAMBER
FOR EXISTING DI PIPES**

DIA. OF MAIN PIPE	DIA. (mm) OF AIR VALVE	DIA. (mm) OF ISOLATING BUTTERFLY VALVE (PN16)	DIA. (mm) OF FLANGED BRANCH (d)	CHAMBER TYPE
250-350 DI	80 DOUBLE ORIFICE AIR VALVE	DN80 D/F B/F VALVE	80	I
400 - 600 DI	100 DOUBLE ORIFICE AIR VALVE	DN100 D/F B/F VALVE	100	I
800 DI	150 DOUBLE ORIFICE AIR VALVE	DN150 D/F B/F VALVE	150	II
1000 - 1200 DI	200 DOUBLE ORIFICE AIR VALVE	DN200 D/F B/F VALVE	200	II

1. CHAMBER SIZES GIVEN IN THE DRG ARE THE MINIMUM.
2. CHAMBER SIZE AND THE MINIMUM EARTH COVER DETERMINED ACCORDING TO THE DIMENSIONS GIVEN IN A SPECIFIC CATALOGUE. THESE SIZES SHALL BE REVISIT WHEN OTHER PRODUCTS ARE USED.
3. MANHOLE COVER SHALL BE OF HINGED, HEAVY DUTY (CLASS D 400) VENTILATED TYPE WITH 900x900mm MINIMUM CLEAR OPENING.
4. MANHOLE FRAME SHALL BE FIRMLY FIXED TO THE CHAMBER WITH 4 Nos. RAG BOLTS OR SIMILAR MANNER.
5. ALL IN-SITU CONCRETE, SUPPORTS AND THRUST RESTRAINTS ARE GRADE 25 UNLESS OTHERWISE NOTED.
6. FOR PIPES IN COMMON TRENCH, AIR VALVE LOCATION SHALL BE STAGGERED TO ALLOW SPACE FOR THE VALVE CHAMBERS.
7. FOR LARGE PIPELINES ABOVE DN350, FOR AREAS WITH HIGH GROUNDWATER LEVELS OR WITHIN ROADS WITH LIMITED SPACE, AIR VALVE CHAMBERS MAY BE PLACED ABOVE GROUND IN APPROVED LOCATIONS AS DETAILED FOR TYPE B INSTALLATION.
8. AIR VALVE TYPE TO BE SELECTED AS SPECIFIED IN RESPECTIVE LS DRAWINGS.
9. CHAMBER COVERS IN STREETS SHALL BE SCREW-ON MANHOLE COVER WITH GASKET (WATER TIGHT)



SECTION D - D

PLAN

**CONCRETE & REINFORCEMENT DETAIL FOR
DRAIN OUTLET FOR AIR VALVE CHAMBERS TYPE A & B**

SCALE 1:20

CONCEPTUAL DRAWING



CHATTOGRAM WATER SUPPLY & SEWERAGE AUTHORITY
(CWSA)

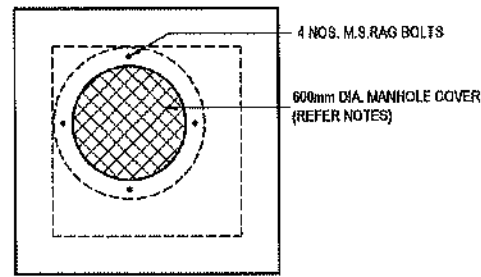
PROJECT	CHATTOGRAM WATER SUPPLY IMPROVEMENT PROJECT (CWSIP)
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PACKAGE CWSIPAW1 - LOT 1
Design, Construction, Supply, Installation, Testing & Commissioning for System Improvement and DMA Formation of Mchara Water Supply System

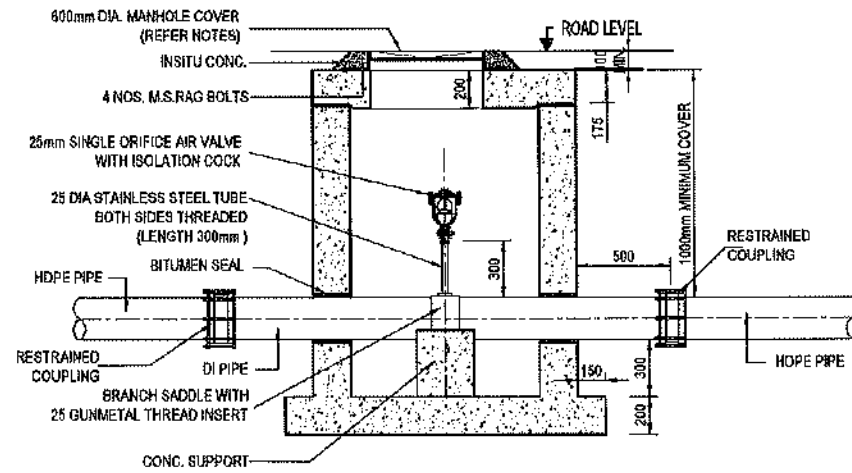
IDA CREDIT NO: 7675-BD & 7674- BD

<u>TITLE</u>	STANDARD DETAILS AIR VALVE CHAMBER FOR DI PIPES
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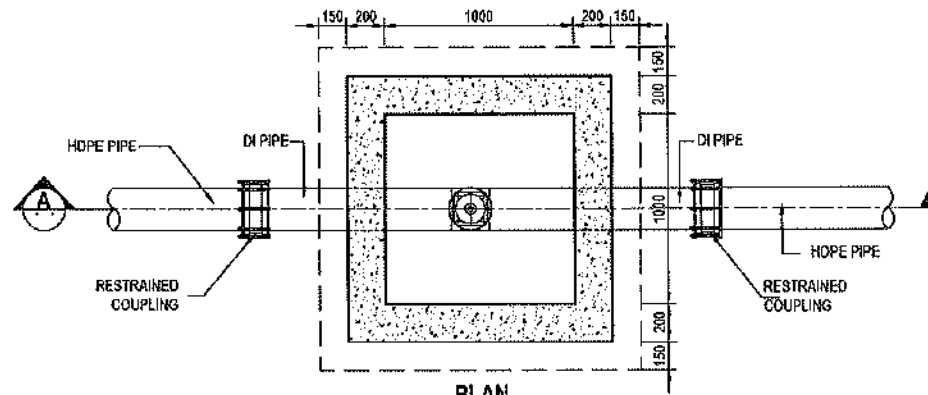
DRAWING No: CWSIP/W1L1/STD/003



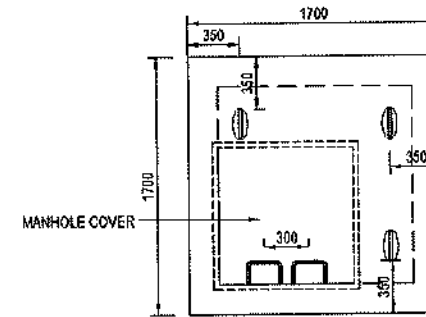
TOP PLAN
SCALE 1 : 40



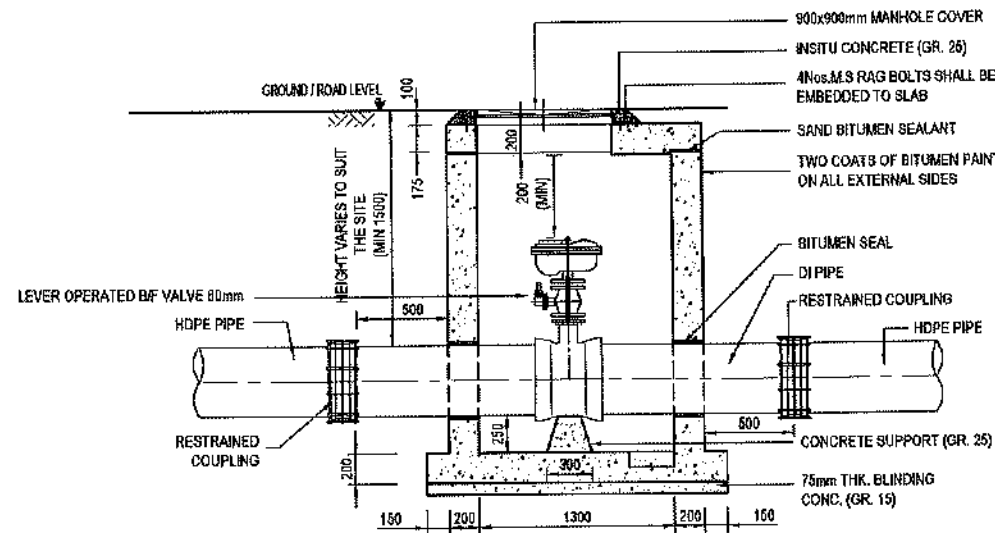
SECTION A
SCALE 1 : 40



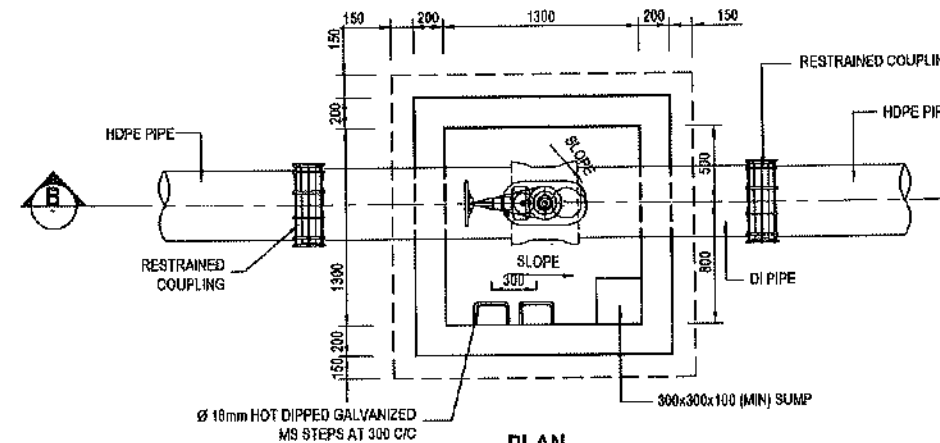
**SINGLE ORIFICE AIR VALVE CHAMBER
FOR HDPE PIPES (UP TO 225mm)**



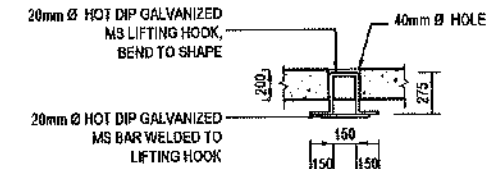
TOP PLAN
SCALE 1 : 50



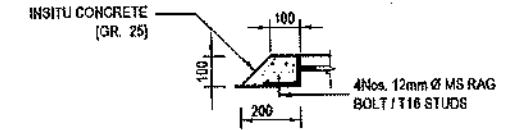
SECTION B
SCALE 1 : 50



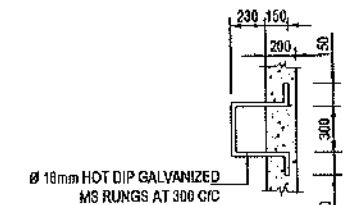
**DETAILS OF 80mm DOUBLE ORIFICE AIR VALVE
CHAMBER FOR HDPE PIPES
(DIA. ABOVE 225mm AND UP TO 400mm)**



DETAILS OF LIFTING HOOK
SCALE 1 : 50



FIXING DETAIL OF MANHOLE COVER
SCALE 1 : 25



DETAILS OF MS STEPS
SCALE 1 : 50

NOTES:

1. CHAMBER SIZES GIVEN IN THE DRG ARE THE MINIMUM.
2. CHAMBER SIZE AND THE MINIMUM EARTH COVER DETERMINED ACCORDING TO THE DIMENSIONS GIVEN IN A SPECIFIC CATALOGUE. THESE SIZES SHALL BE REVISED WHEN OTHER PRODUCTS ARE USED.
3. MANHOLE COVER SHALL BE OF HINGED, HEAVY DUTY (CLASS D 400) VENTILATED TYPE.
4. MANHOLE FRAME SHALL BE FIRMLY FIXED TO THE CHAMBER WITH 4 NOS. RAG BOLTS OR SIMILAR MANNER.
5. ALL IN-SITU CONCRETE, SUPPORTS AND THRUST RESTRAINTS ARE GRADE 25 UNLESS OTHERWISE NOTED.
6. FOR PIPES IN COMMON TRENCH, AIR VALVE LOCATION SHALL BE STAGGERED TO ALLOW SPACE FOR THE VALVE CHAMBERS.
7. CHAMBER COVERS IN STREETS SHALL BE SCREW-ON MANHOLE COVER WITH GASKET (WATER TIGHT).

CONCEPTUAL DRAWING



CHATTOGRAM WATER SUPPLY & SEWERAGE AUTHORITY
(CWASA)

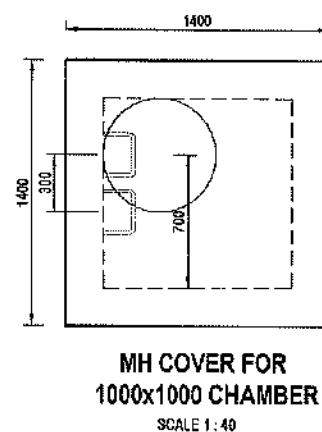
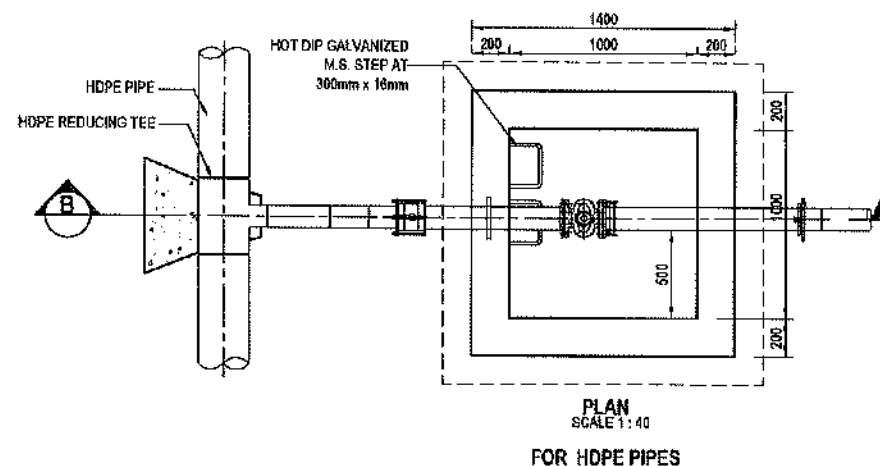
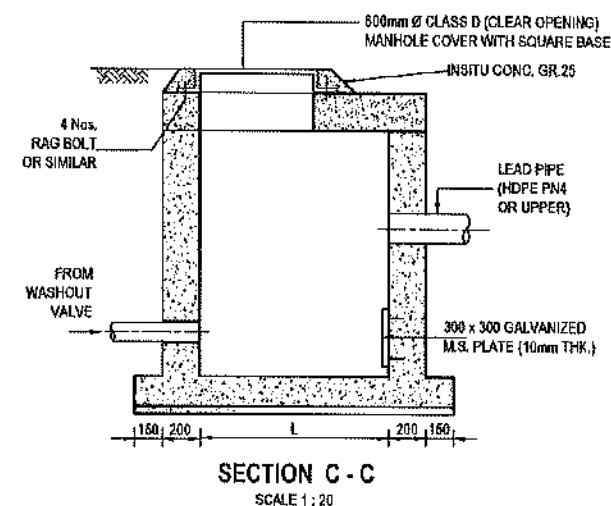
PROJECT CHATTOGRAM WATER SUPPLY IMPROVEMENT PROJECT (CWSIP)

PACKAGE CWSIP/W1 - LOT 1
Design, Construction, Supply, Installation, Testing & Commissioning for System Improvement and DMA Formation of Mohara Water Supply System

DA CREDIT NO. 7675-BD & 7674-BD

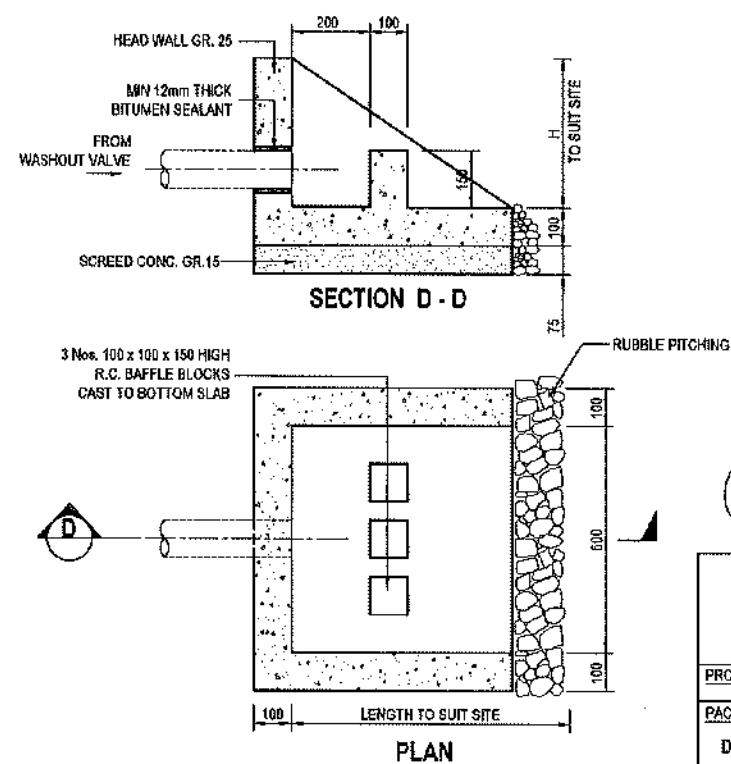
TITLE STANDARD DETAILS
AIR VALVE CHAMBER FOR HDPE PIPES

DRAWING No. CWSIP/W1/STD/004



SCHEDULE OF VALVE, OUTLET PIPE & OUTLET CHAMBER

SIZE OF MAIN PIPE	SIZE OF WASHOUT VALVE (mm)	SIZE OF LEAD AWAY PIPE FROM VALVE CHAMBER TO OUTLET CHAMBER	SIZE OF OUTLET CHAMBER TYPE - A L x L (mm)
UPTO 225 PE	80	90 PE	800 x 600
250 - 450 DI / 400 PE	100	110 PE	1000 x 1000
500 DI - 600 DI	150	160 PE	1000 x 1000
800 DI	200	225 PE	1300 x 1300
1000 DI - 1200 DI	200	225 PE	1300 x 1300



NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETERS.
2. LENGTH OF PIPE FROM THE VALVE TO THE DISCHARGE POINT SHALL BE TO SUIT THE SITE.
3. FOR TYPE A IF THE LOCATION OF CHAMBER DOES NOT PERMIT DIRECT DISCHARGE TO A NATURAL DRAINAGE OUTLET, THEN A LEAD PIPE FROM OUTLET CHAMBER SHALL BE UP TO A SUITABLE LOCATION.
4. CONCRETE TO BE GRADE 20 UNLESS SPECIFIED.
5. PROVIDE MINIMUM 160mm HDPE PN4 LEAD PIPE FROM OUTLET CHAMBER UP TO SUITABLE DISPOSAL POINT.
6. WASHOUT VALVE CAN BE INSTALLED WITH SURFACE BOX ARRANGEMENT. INSTEAD OF VALVE CHAMBER AT PAVED HARD SHOULDER / FOOT WALK OF THE ROAD. REFER STD G-007 FOR DETAILS.
7. CHAMBER COVERS IN STREETS SHALL BE SCREW-ON MANHOLE COVER WITH GASKET (WATER TIGHT)

CONCEPTUAL DRAWING



CHATTOGRAM WATER SUPPLY & SEWERAGE AUTHORITY
(CWSA)

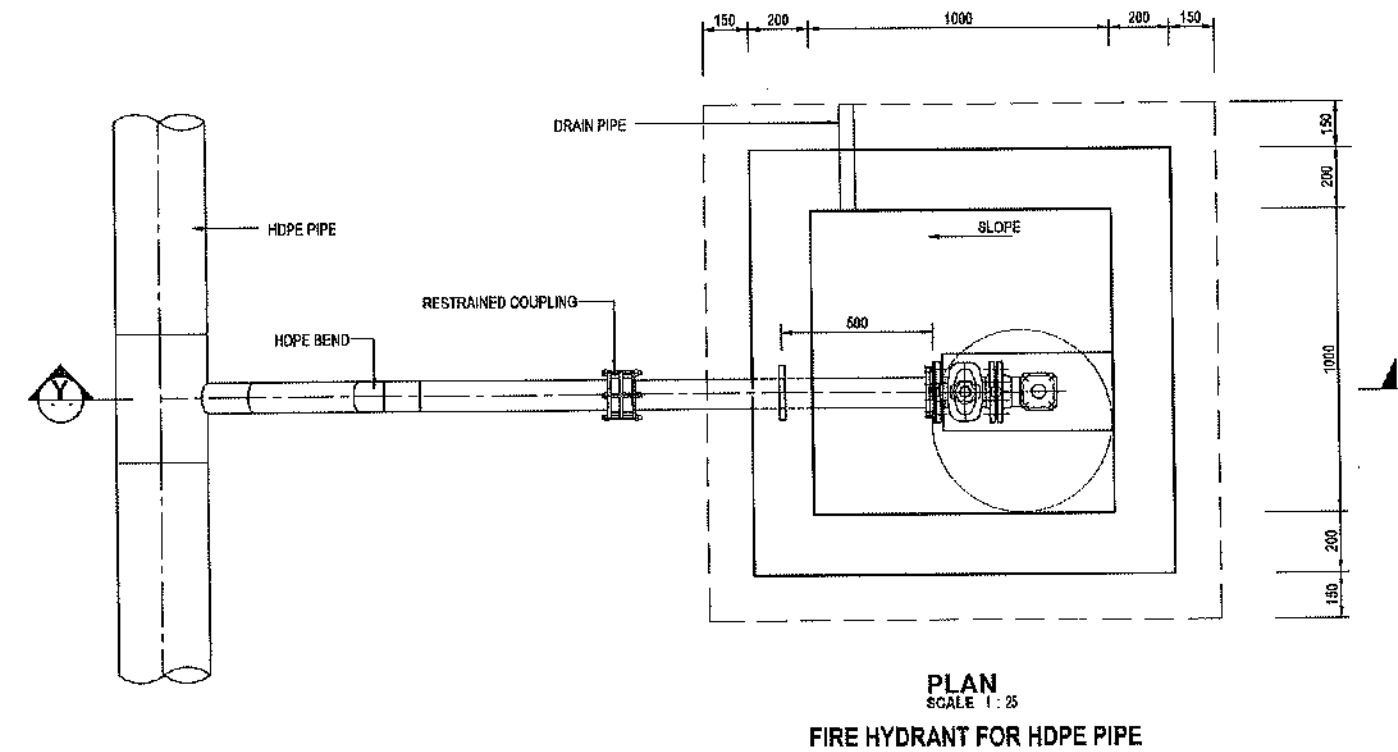
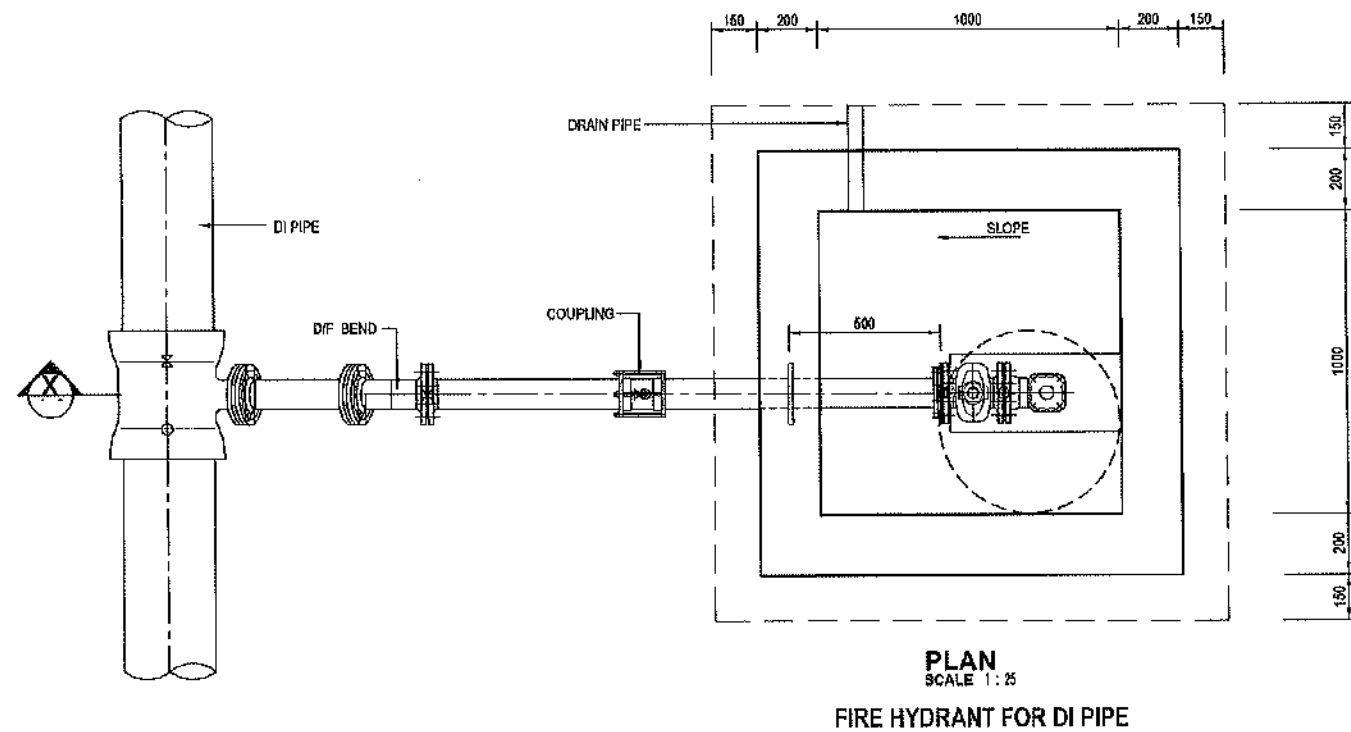
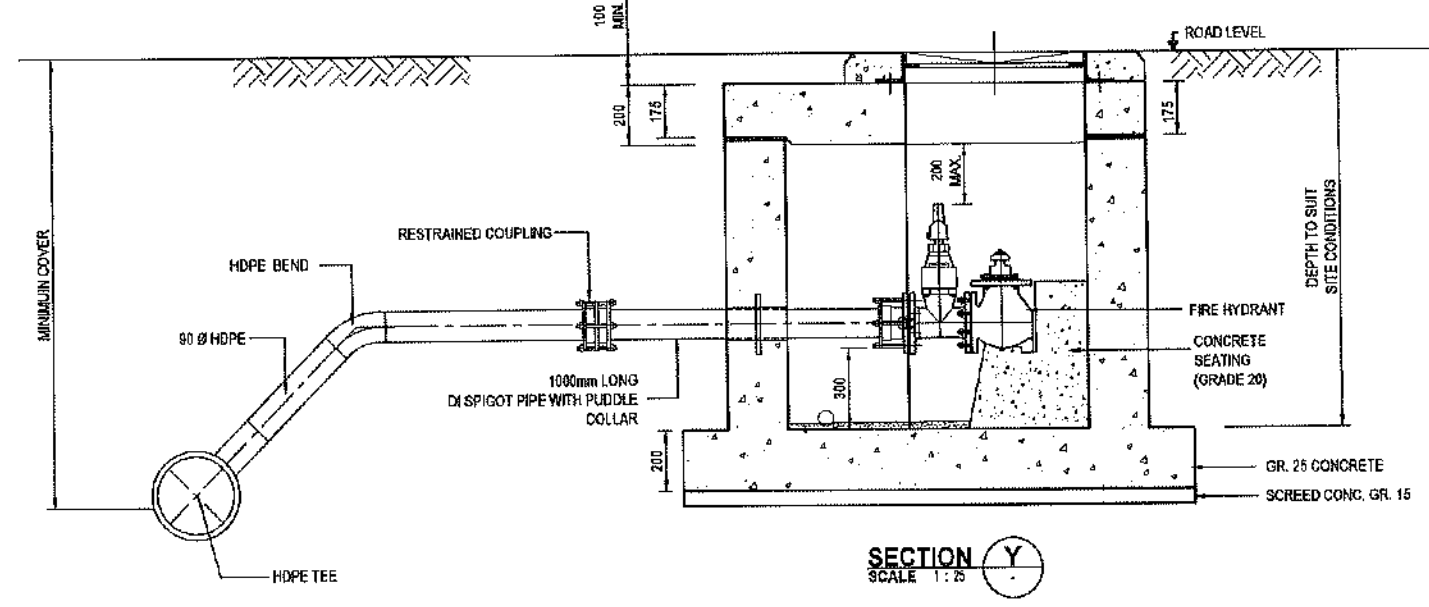
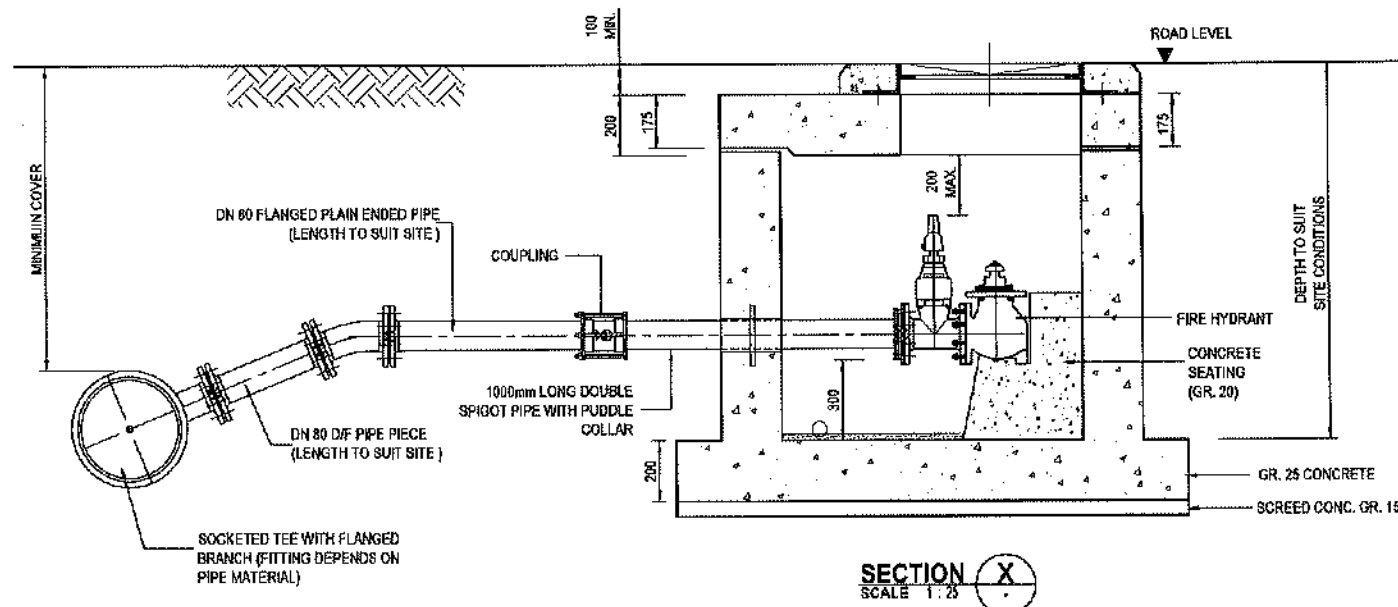
PROJECT	CHATTOGRAM WATER SUPPLY IMPROVEMENT PROJECT (CWSIP)
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PACKAGE	CWSIPWV1 - LOT 1
Design, Construction, Supply, Installation, Testing & Commissioning for System Improvement and DMA Formation of Mohara Water Supply System	

IDA CREDIT NO: 7675-BD & 7674-BD

TITLE	STANDARD DETAILS WASHOUT VALVE CHAMBER FOR DI & HDPE PIPES
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DRAWING No: CW/SIP/W1L1/STD/005

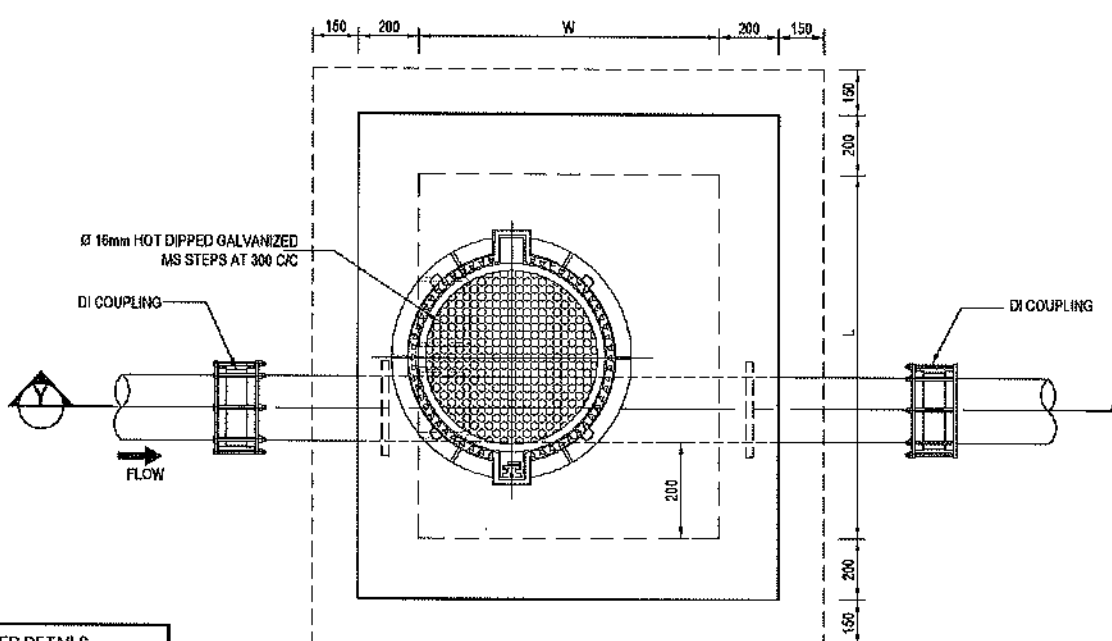
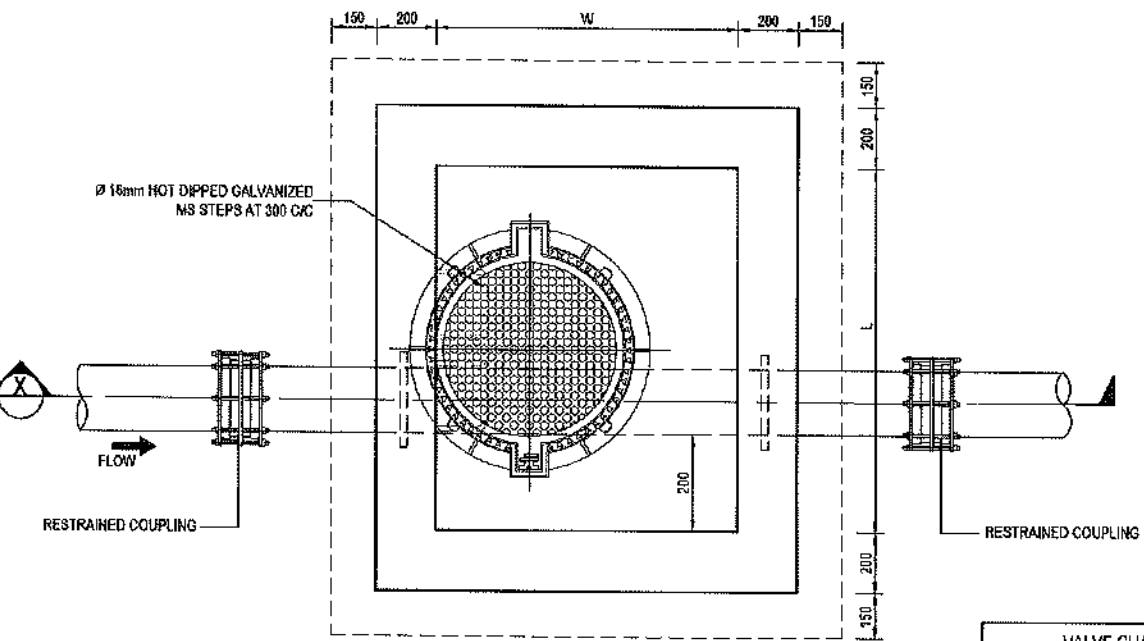
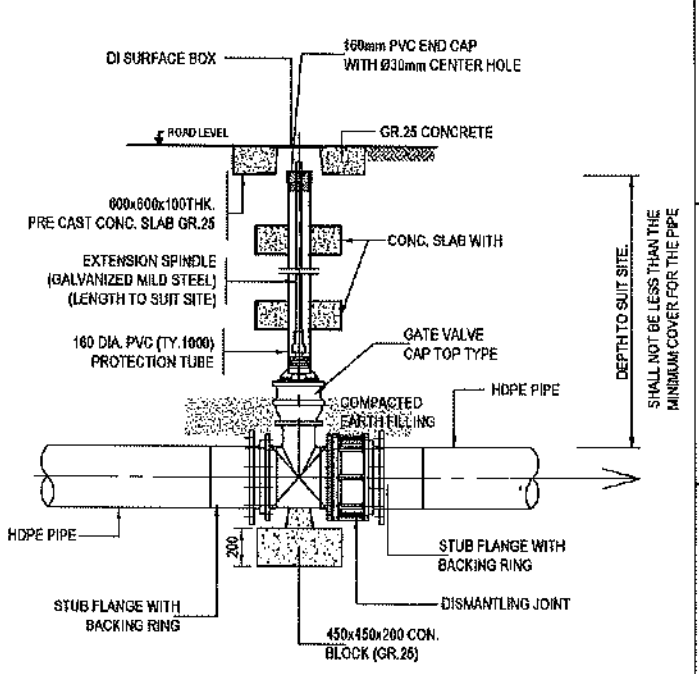
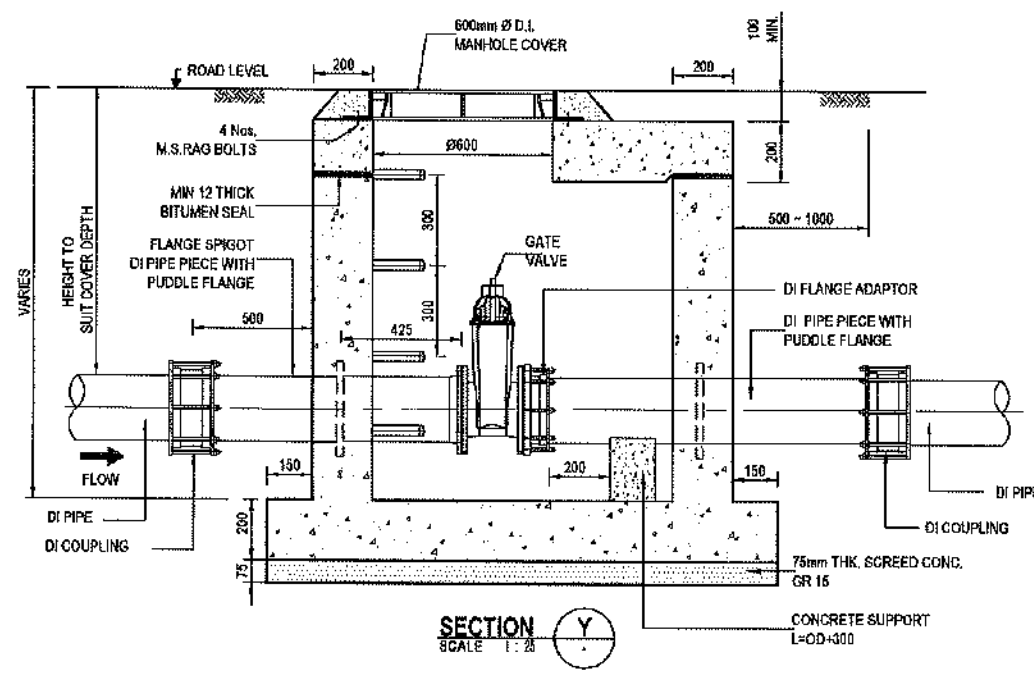
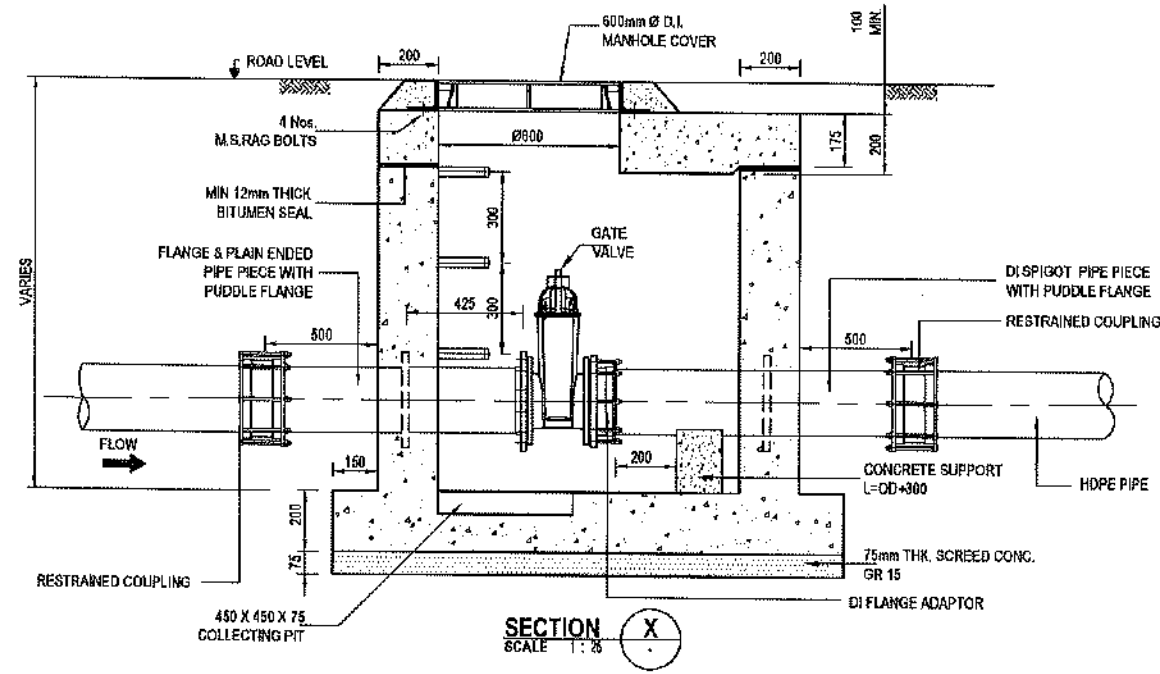


NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE STATED.
2. EXACT LOCATION OF THE FIRE HYDRANT IS TO BE VERIFIED AT SITE.
3. MANHOLE COVER SHALL BE OF HINGED, HEAVY DUTY (CLASS - D 400) VENTILATED TYPE WITH 600 DIA. MINIMUM CLEAR OPENING.
4. MANHOLE FRAME SHALL BE FIRMLY FIXED TO THE CHAMBER WITH 4 Nos. RAG BOLTS OR SIMILAR MANNER.
5. CHAMBER COVERS IN STREETS SHALL BE SCREW-ON MANHOLE COVER WITH GASKET (WATER TIGHT)

CONCEPTUAL DRAWING

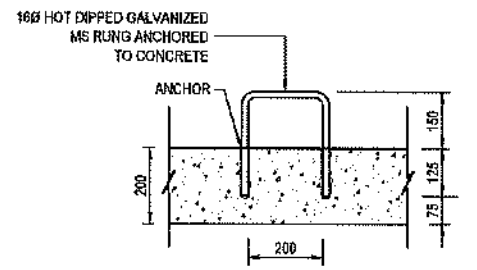
 CHATTOGRAM WATER SUPPLY & SEWERAGE AUTHORITY (CWASA)	
PROJECT	CHATTOGRAM WATER SUPPLY IMPROVEMENT PROJECT (CWSIP)
PACKAGE	CWSIP/W1 - LOT 1 Design, Construction, Supply, Installation, Testing & Commissioning for System Improvement and DMA Formation of Mohara Water Supply System
IDA CREDIT NO.	7675-BD & 7674-BD
TITLE	STANDARD DETAILS FIRE HYDRANT CHAMBER FOR DI AND HDPE PIPES
DRAWING No.	CWSIP/W1L1/STD/006



VALVE CHAMBER DETAILS		
VALVE DIA. (mm)	W (mm)	L (mm)
UP TO 200	1000	1000
250 - 300	1300	1300

TOP PLAN
SCALE 1 : 25
GATE VALVE FOR HDPE PIPE

TOP PLAN
SCALE 1 : 25
GATE VALVE FOR DI PIPE



DETAILS OF MS RUNGS
SCALE - 1:25

- NOTES:**
- DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE STATED.
 - CHAMBER SIZE GIVEN IN THE DRG. ARE THE MINIMUM.
 - MANHOLE COVER SHALL BE OF HINGED, LOCKABLE HEAVY DUTY (CLASS D 400) WITH 600 DIA. MINIMUM CLEAR OPENING.
 - MANHOLE FRAME SHALL BE FIRMLY FIXED TO THE PRECAST COVER.
 - CONG. OF CHAMBER AND VALVE SUPPORT SHALL BE IN GR. 25, SCREED GR. 15.
 - COVER TO R.F. SHALL BE 40mm.
 - THE SURFACE BOX ARRANGEMENT IS PERMITTED ONLY AT PAVED HARD SHOULDER OR FOOT WALK OF THE ROAD. CHAMBER SHALL BE CONSTRUCTED FOR ALL OTHER PLACES.
 - CHAMBER COVERS IN STREETS SHALL BE SCREW-ON MANHOLE COVER WITH GASKET (WATER TIGHT).

CONCEPTUAL DRAWING



CHATTOGRAM WATER SUPPLY & SEWERAGE AUTHORITY (CWASA)

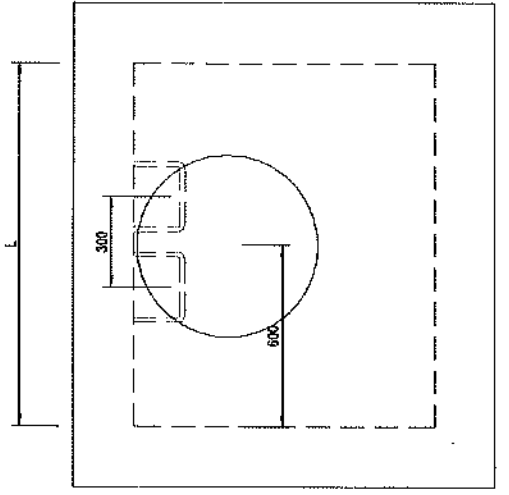
PROJECT: CHATTOGRAM WATER SUPPLY IMPROVEMENT PROJECT (CWSIP)

PACKAGE: CWSIP/W1 - LOT 1
Design, Construction, Supply, Installation, Testing & Commissioning for System Improvement and DMA Formation of Mohara Water Supply System

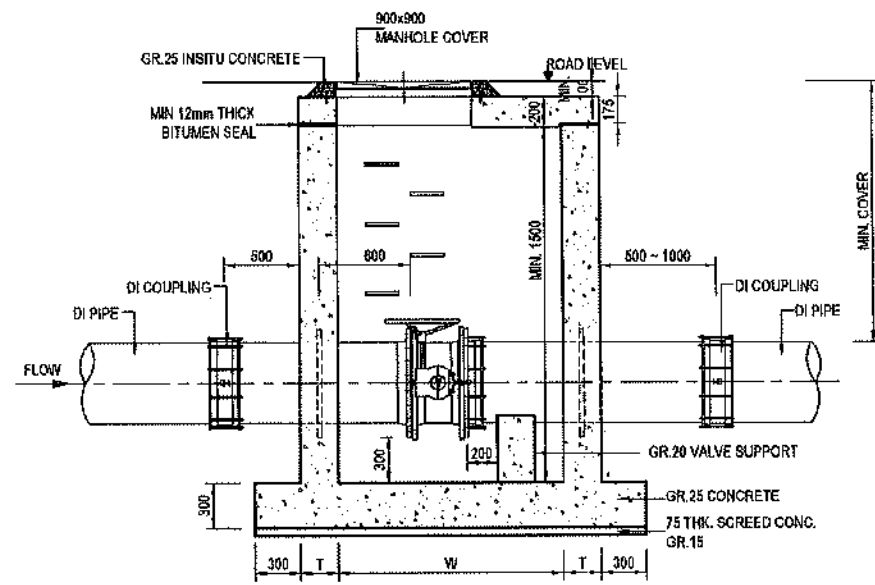
IDA CREDIT NO.: 7675-8D & 7674- BD

TITLE: STANDARD DETAILS
GATE VALVE CHAMBER DN300 AND BELOW

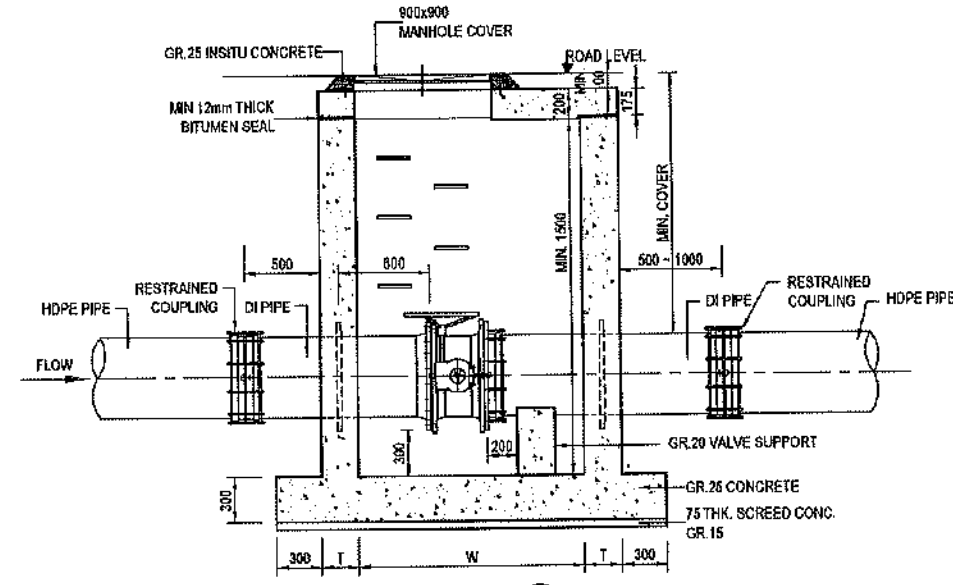
DRAWING No.: CWSIP/W1/L1/STD/007



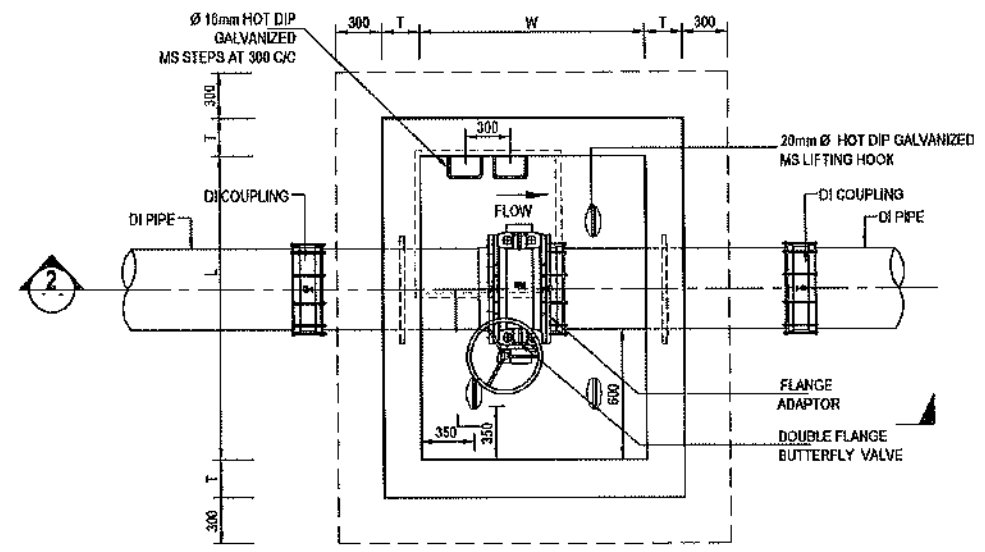
POSITION OF MH COVER
SCALE 1 : 25



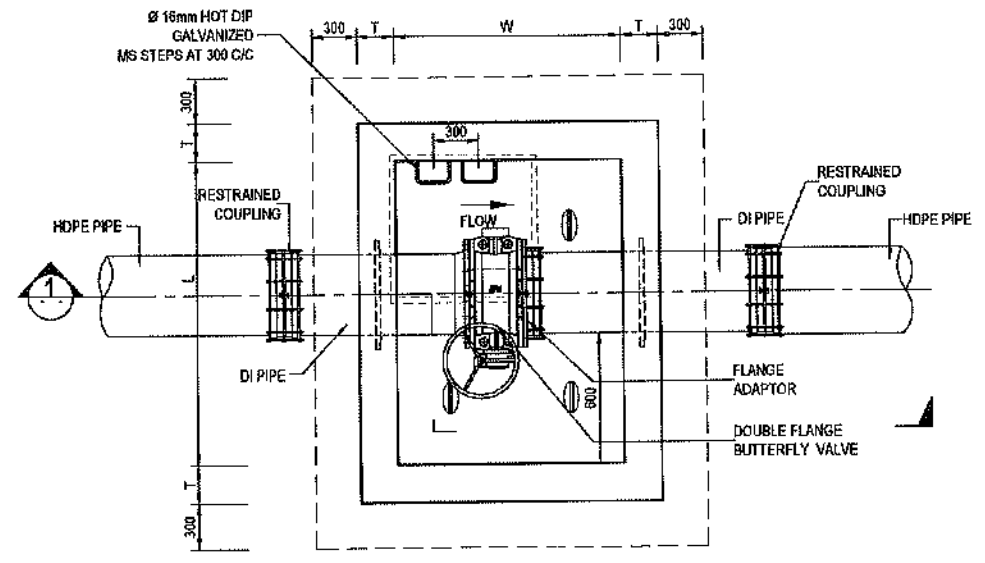
SECTION 2
SCALE 1:50



SECTION 1
SCALE 1:50



PLAN FOR DI PIPE
SCALE 1:50



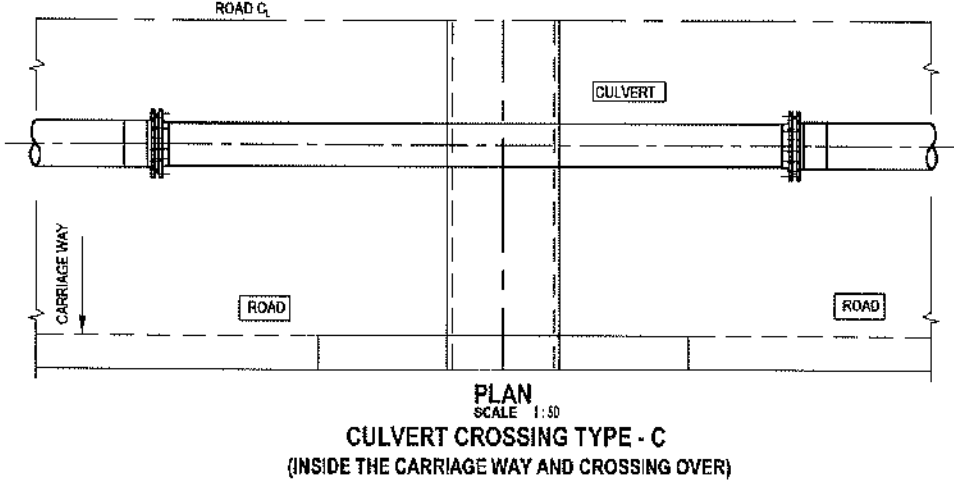
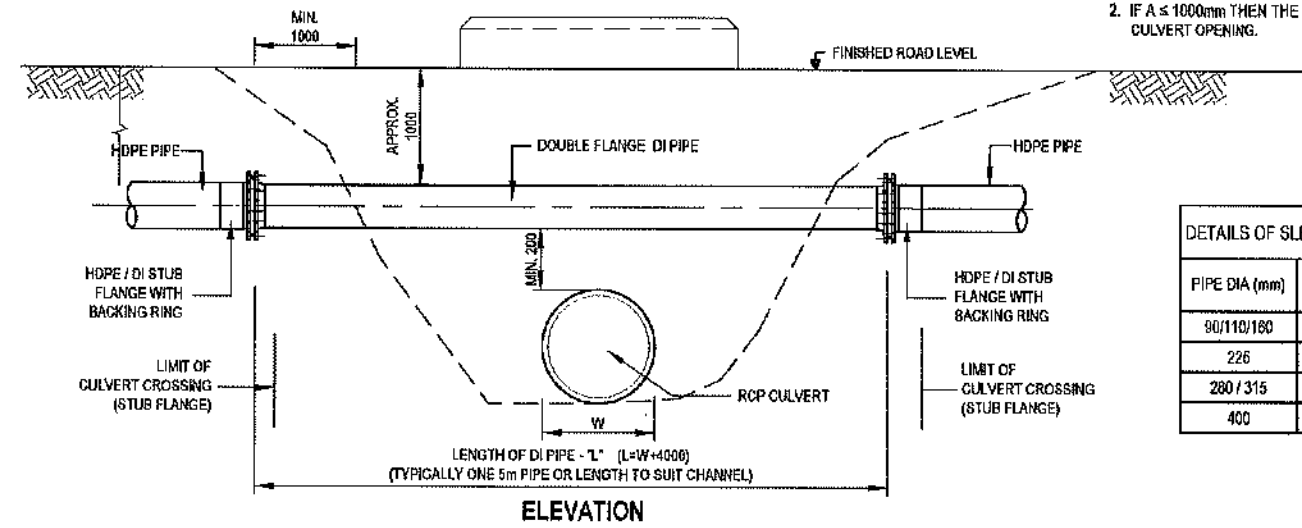
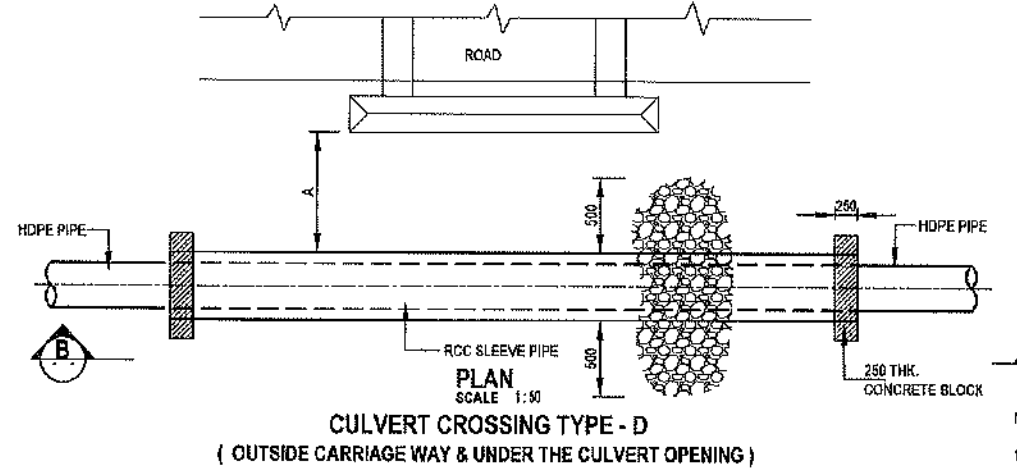
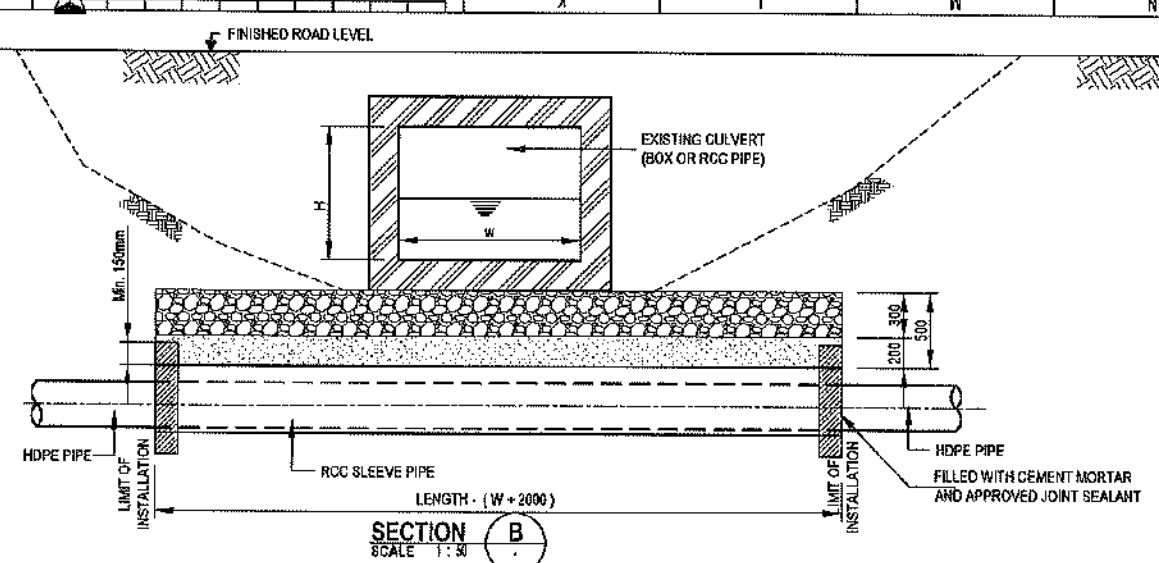
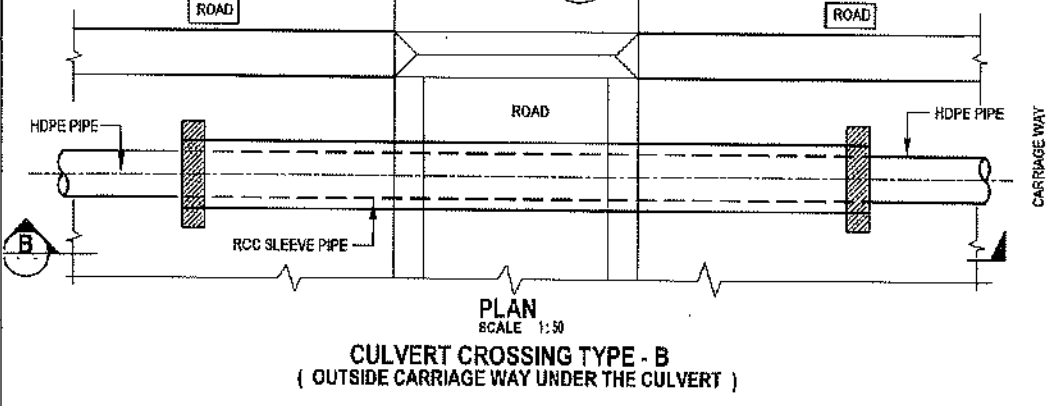
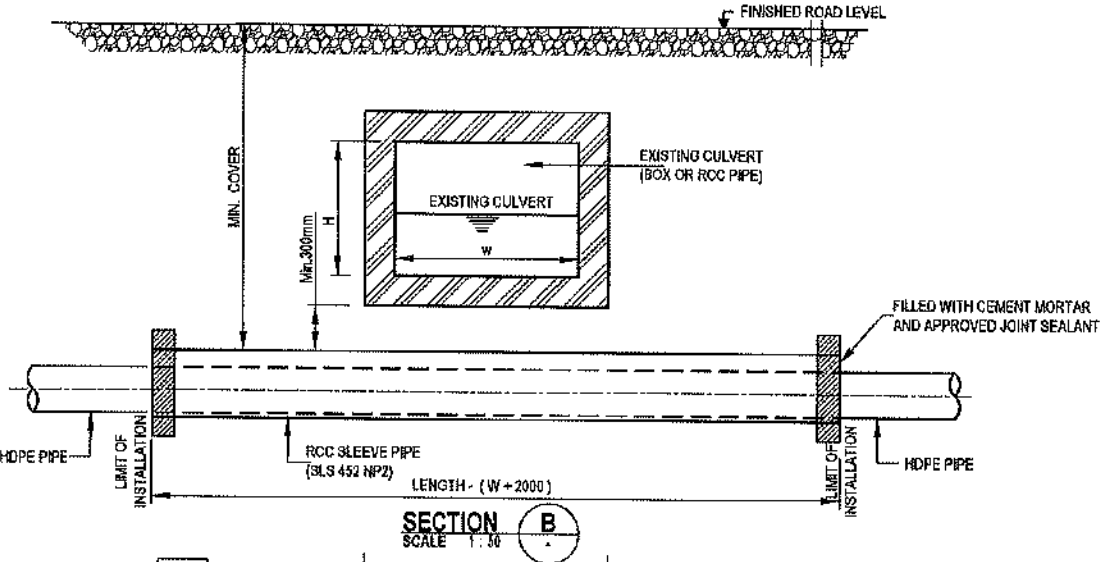
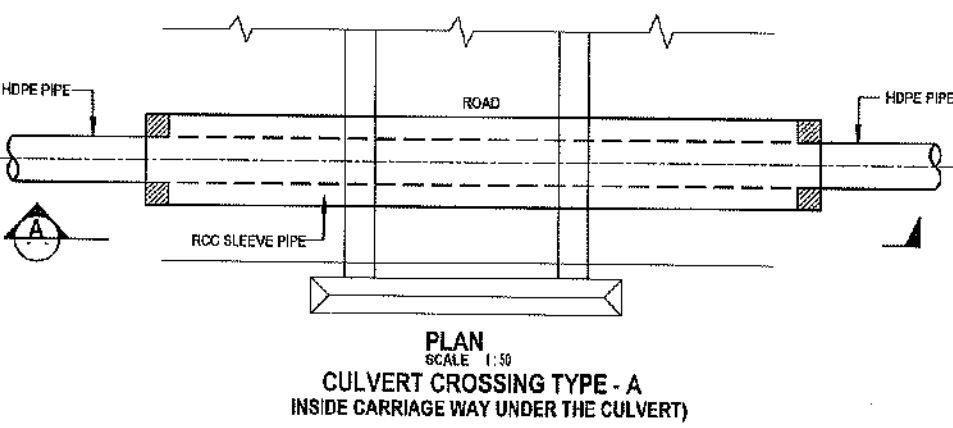
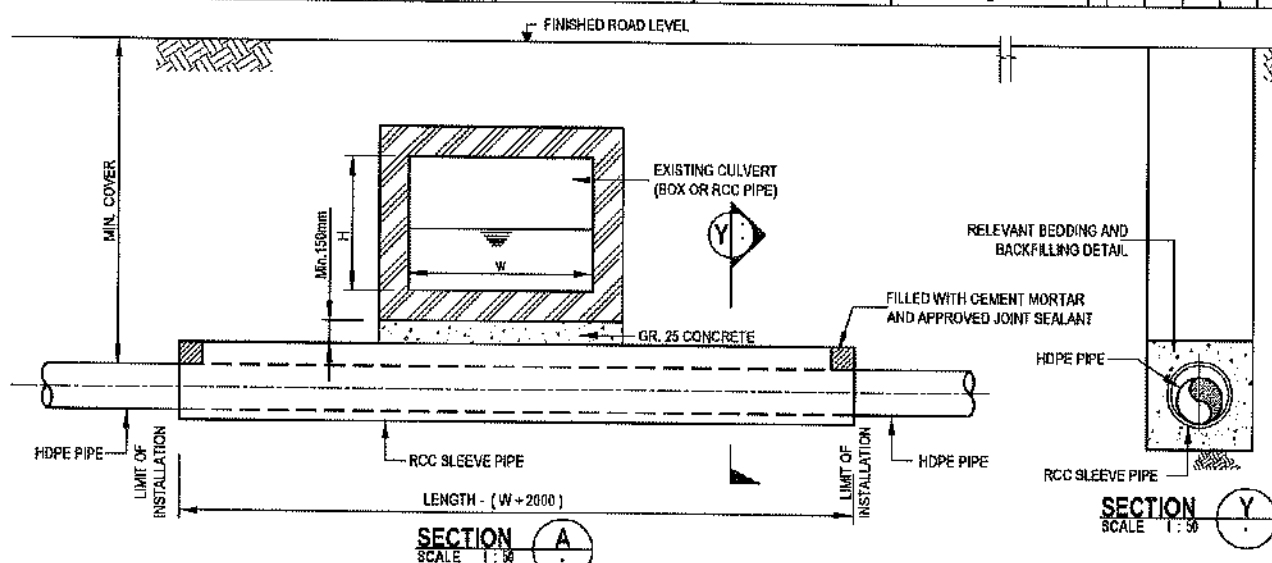
PLAN FOR HDPE PIPE
SCALE 1:50

VALVE CHAMBER DETAIL			
PIPE DIA.(mm)	W	L	T
350 - 600	1800	2000	250
800 - 1000	2000	2300	250
1200	2500	2800	300

- NOTES**
01. EXACT CHAMBER HEIGHT SHOULD BE ACCORDING TO THE SITE CONDITION.
 02. THE GRADE OF CONCRETE SHALL BE Gr 25 AND SCREED Gr15.
 03. THE COVER TO REINFORCEMENT SHALL BE 40mm.
 04. ALL DIMENSIONS ARE IN MILLIMETERS.
 05. PROVIDE EXTRA REINFORCEMENT FOR THE OPENINGS, AS PER THE STANDARD.
 06. CHAMBER COVERS IN STREETS SHALL BE SCREW-ON MANHOLE COVER WITH GASKET (WATER TIGHT)

CONCEPTUAL DRAWING

 CHATTOTGRAM WATER SUPPLY & SEWERAGE AUTHORITY (CWASA)	
PROJECT	CHATTOTGRAM WATER SUPPLY IMPROVEMENT PROJECT (CWSIP)
PACKAGE	CWSIP/W1 - LOT 1 Design, Construction, Supply, Installation, Testing & Commissioning for System Improvement and DMA Formation of Mohara Water Supply System
IDA CREDIT NO.	7675-BD & 7674- BD
TITLE	STANDARD DETAILS - BUTTERFLY VALVE CHAMBER FOR DI AND HDPE PIPES - (DN 350mm AND ABOVE)
DRAWING No.	CWSIP/W1/L1/STD/008



- NOTES:
1. ALL DIMENSIONS ARE IN MILLIMETERS.
 2. IF $A \leq 1000\text{mm}$ THEN THE RIP-RAP SHALL BE PROVIDED UP TO THE CULVERT OPENING.

PIPE DIA (mm)	SLEEVE PIPE INNER DIA (mm)	RIP-RAP DIMENSIONS (mm)
90/110/180	250	1100 x 300
226	300	1100 x 300
280 / 315	400	1200 x 300
400	500	1300 x 300

CONCEPTUAL DRAWING

CHATTOGRAM WATER SUPPLY & SEWERAGE AUTHORITY (CWASA)

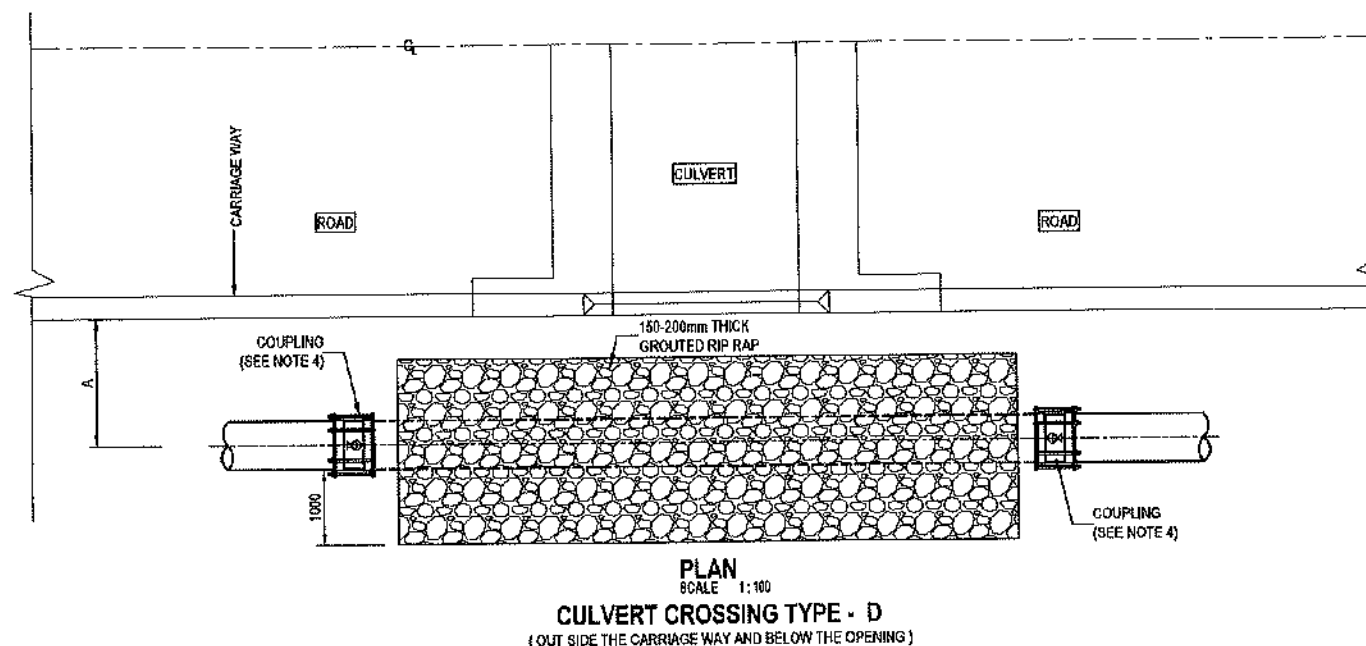
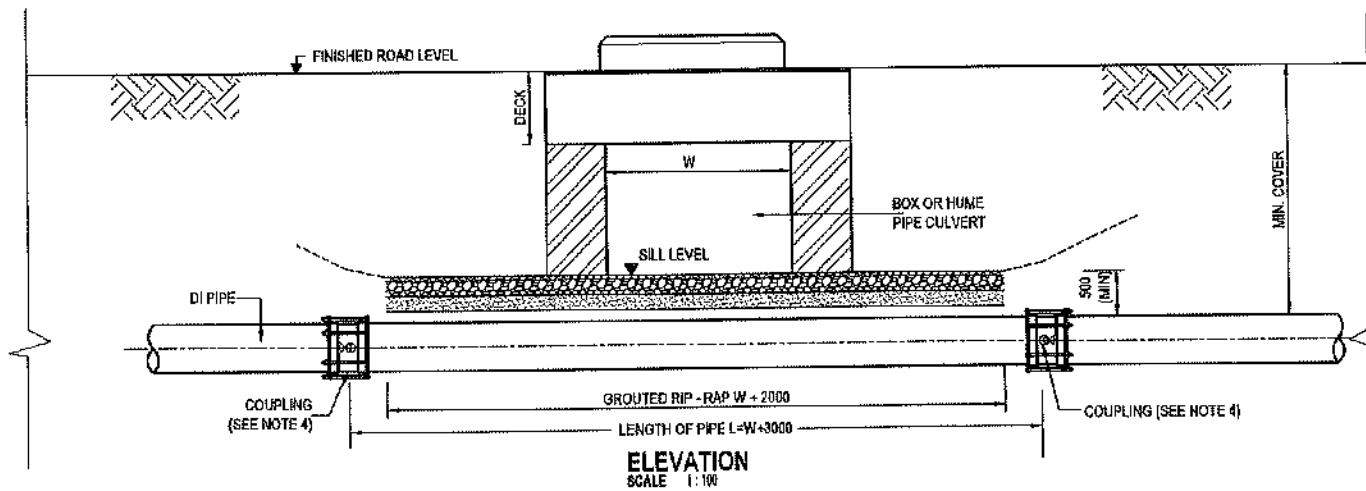
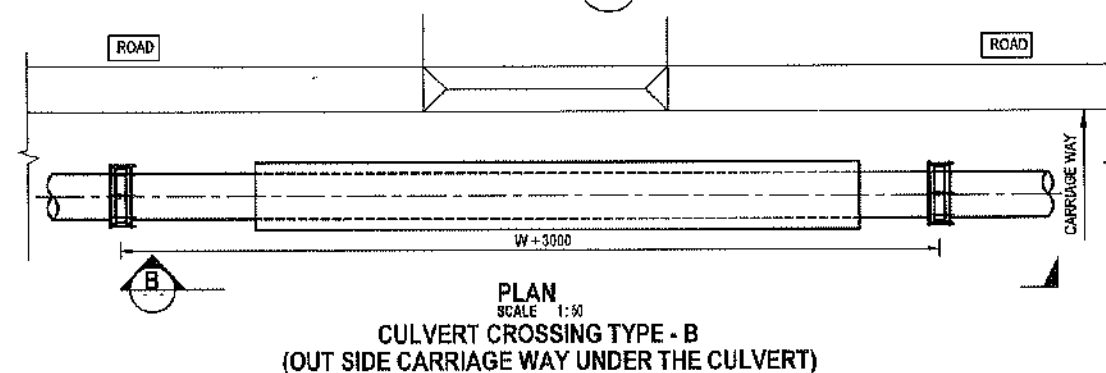
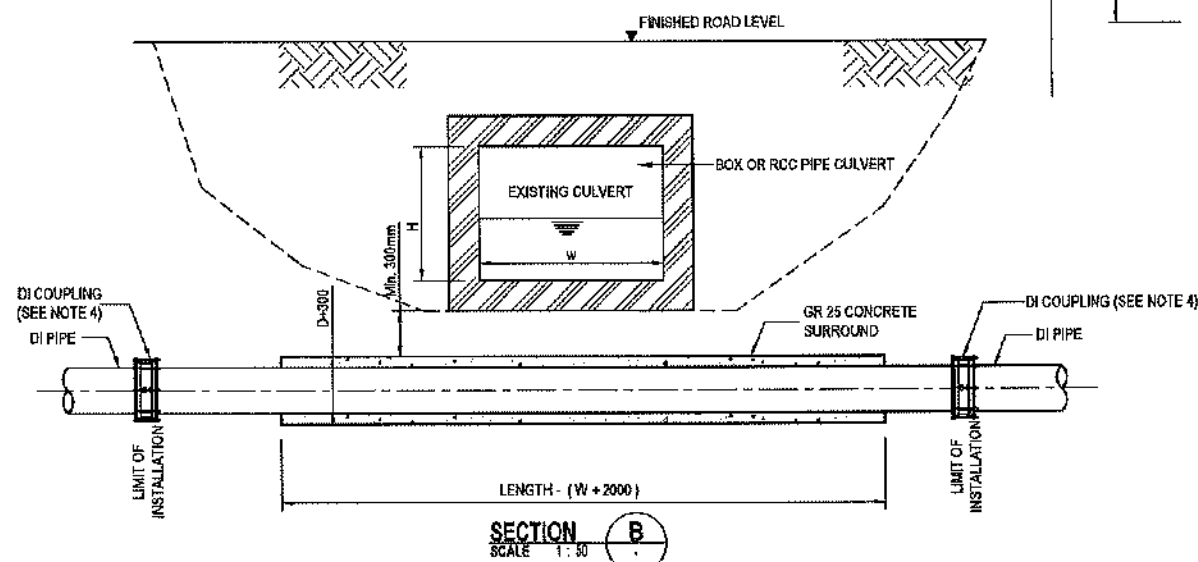
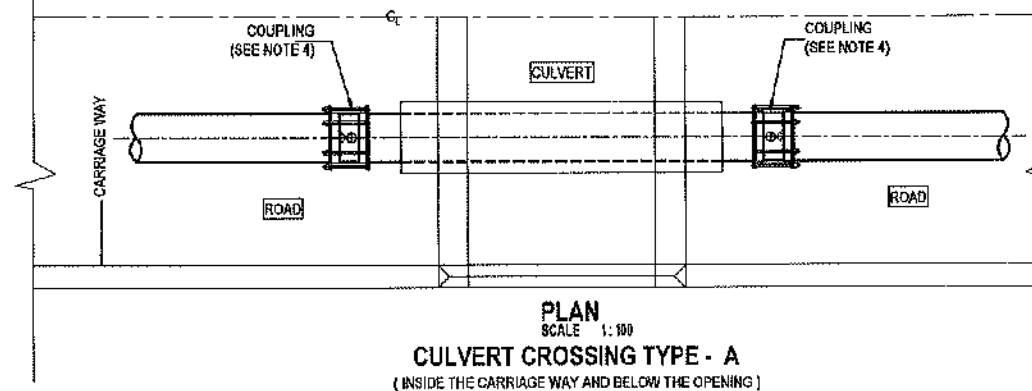
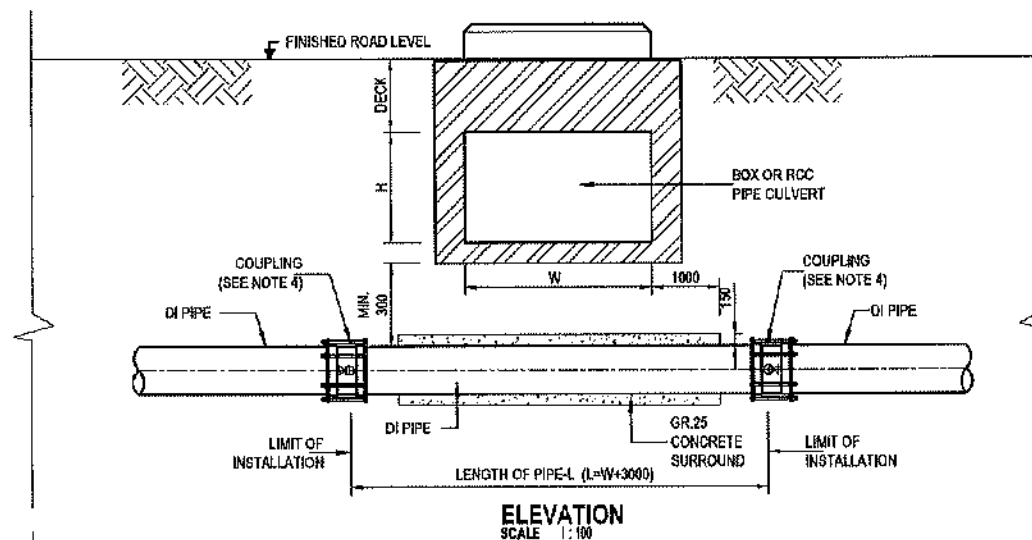
PROJECT CHATTOGRAM WATER SUPPLY IMPROVEMENT PROJECT (CWSIP)

PACKAGE CWSIP/W1 - LOT 1
Design, Construction, Supply, Installation, Testing & Commissioning for System Improvement and DMA Formation of Mohara Water Supply System

IDA CREDIT NO. 7675-BD & 7674- BD

TITLE STANDARD DETAILS
CULVERT CROSSING FOR HDPE PIPE

DRAWING No. CWSIP/W1L1/STD/009



CONCEPTUAL DRAWING



CHATTOGRAM WATER SUPPLY & SEWERAGE AUTHORITY (CWSA)

PROJECT CHATTOGRAM WATER SUPPLY IMPROVEMENT PROJECT (CWSIP)

PACKAGE CWSIP/W1 - LOT 1
Design, Construction, Supply, Installation, Testing & Commissioning for System Improvement and DMA Formation of Mohara Water Supply System

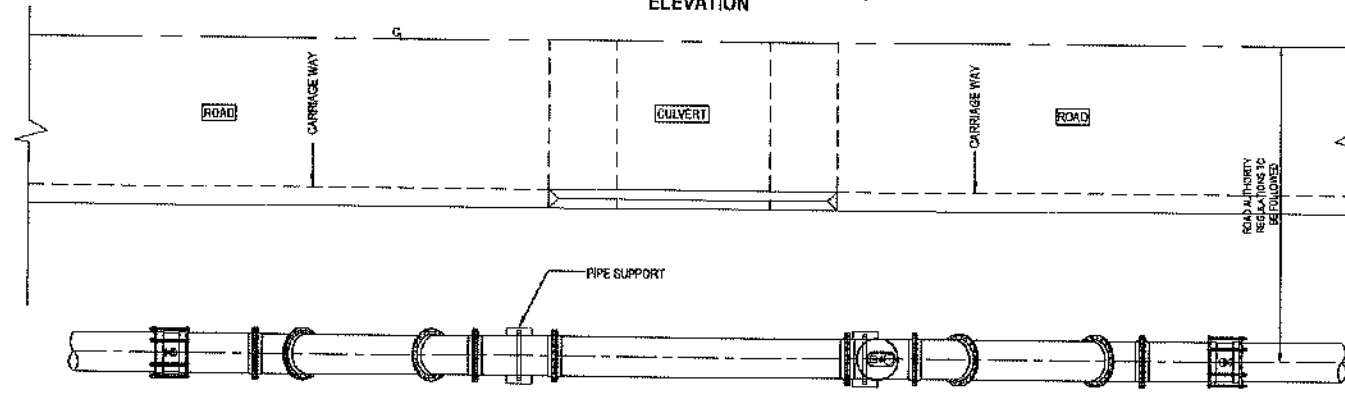
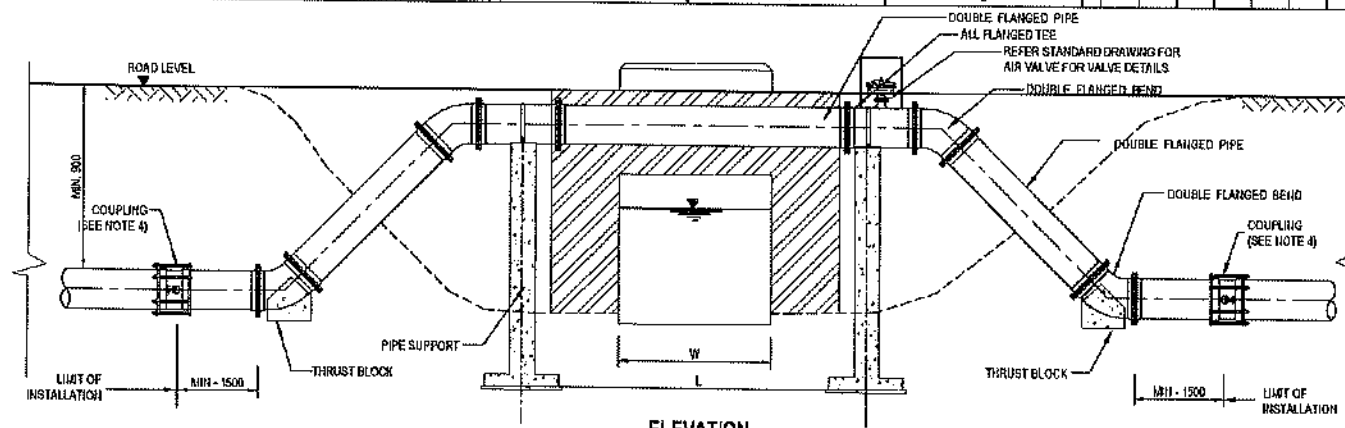
DA CREDIT NO. 7675-BD & 7674-BD

TITLE
STANDARD DETAILS
CULVERT CROSSING FOR DI PIPES

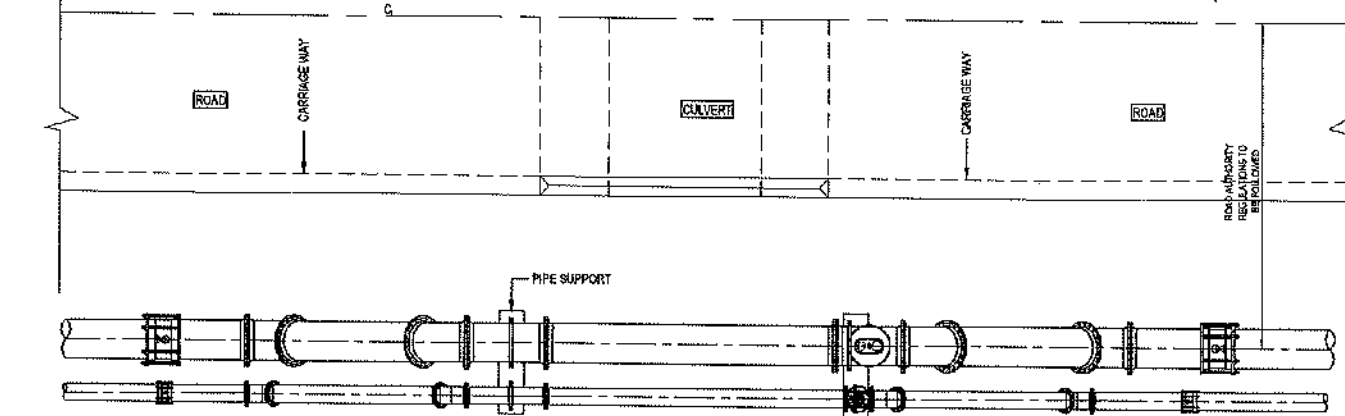
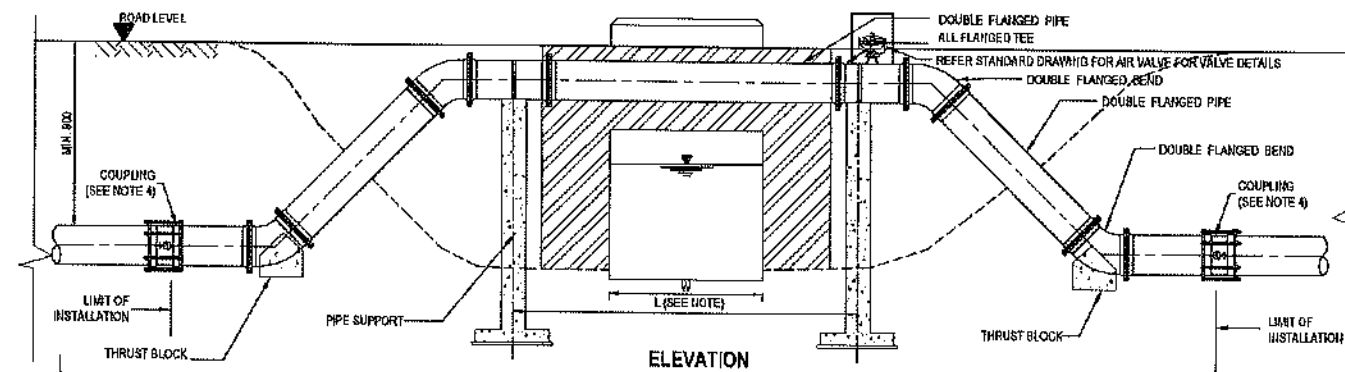
DRAWING No. CWSIP/W1/L1/STD/010

NOTES

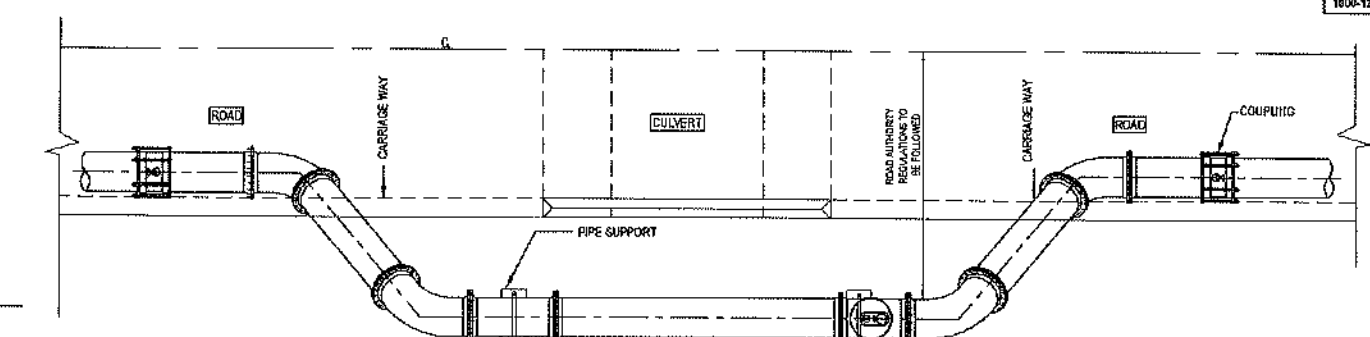
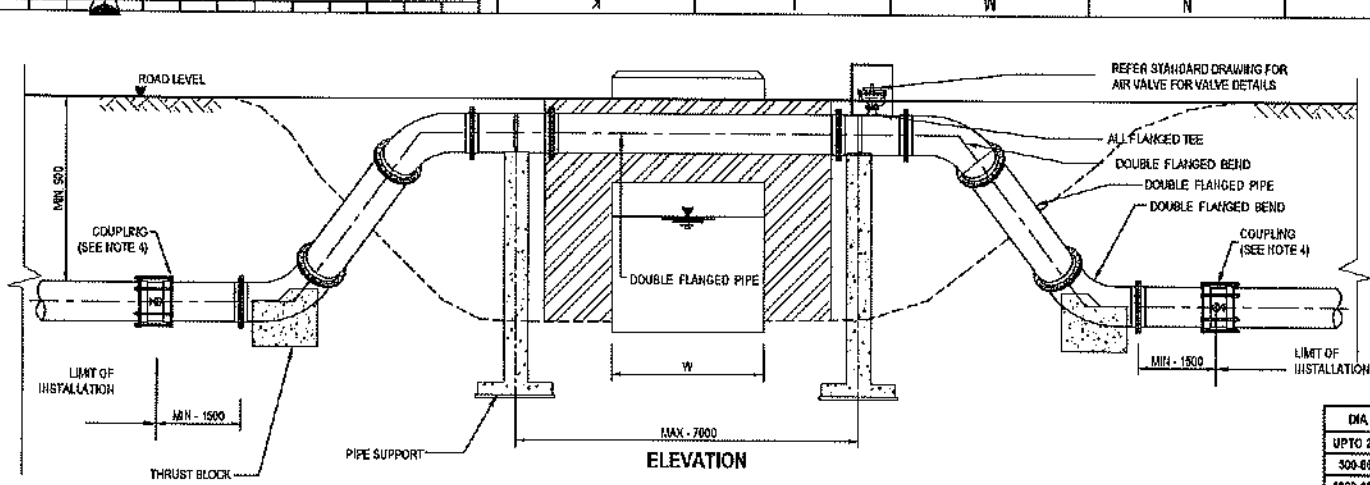
1. ALL DIMENSIONS ARE IN MILLIMETERS
2. WHERE APPLICABLE, THE WASHOUT TEE SHALL BE PROVIDED AT A MINIMUM DISTANCE OF 2D AWAY FROM THE COUPLING.
3. IF $A \leq 1000\text{mm}$ THEN THE RIP - RAP SHALL BE PROVIDED UP TO THE CULVERT OPENING.
4. USE RELEVANT RESTRAINED COUPLING AT BOTH ENDS FOR CONNECTING WITH RESTRAINED DI PIPES.



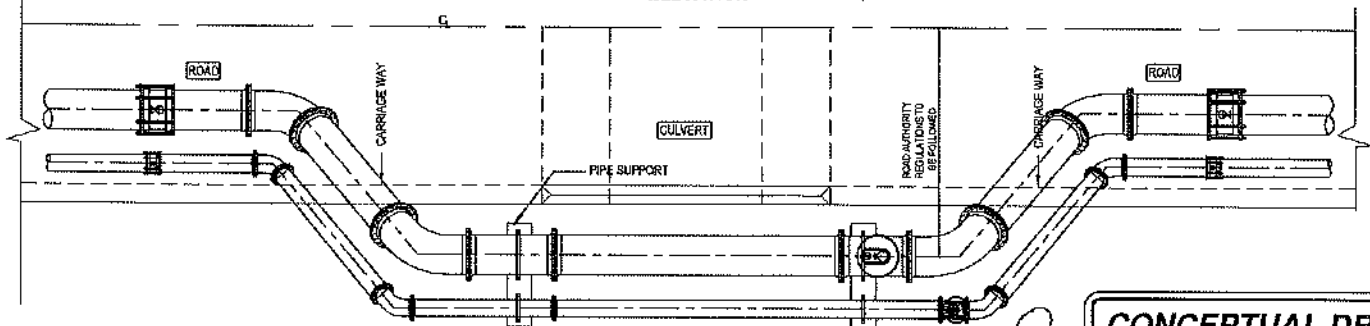
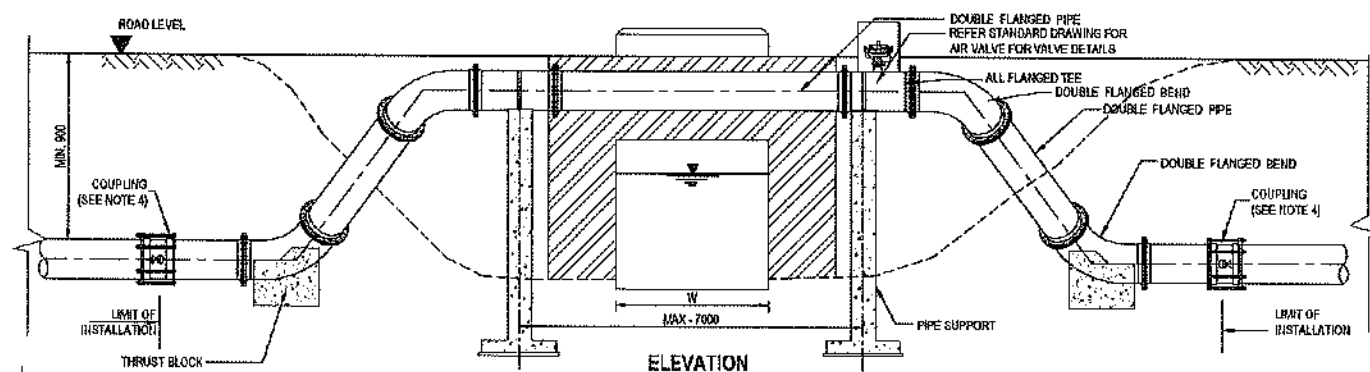
PLAN
CULVERT CROSSING TYPE-E (FOR SINGLE PIPE)



PLAN
CULVERT CROSSING TYPE-E (FOR TWO PIPES)



PLAN
CULVERT CROSSING TYPE-G (FOR SINGLE PIPE)



PLAN
CULVERT CROSSING TYPE-G (FOR TWO PIPES)

CONCEPTUAL DRAWING

NOTES

1. NO OBSTRUCTION TO THE FLOW THROUGH THE CULVERT SHALL OCCUR DUE TO THE PIPE CROSSING.
2. WHERE APPLICABLE THE WASHOUT TEE SHALL BE PROVIDED AT A MINIMUM DISTANCE OF 20' AWAY FROM THE COUPLING.
3. SOME FLANGES MAY NEED SPECIAL DRILLING FOR TYPE G CROSSING.
4. USE RELEVANT RESTRAINED COUPLING AT BOTH ENDS FOR CONNECTING WITH HOPE PIPES AND RESTRAINED DI PIPES.
5. ALL EXPOSED PIPES SHALL BE PAINTED WITH PROTECTION PAINT AS SPECIFIED.



CHATTOGRAM WATER SUPPLY & SEWERAGE AUTHORITY (CWASA)

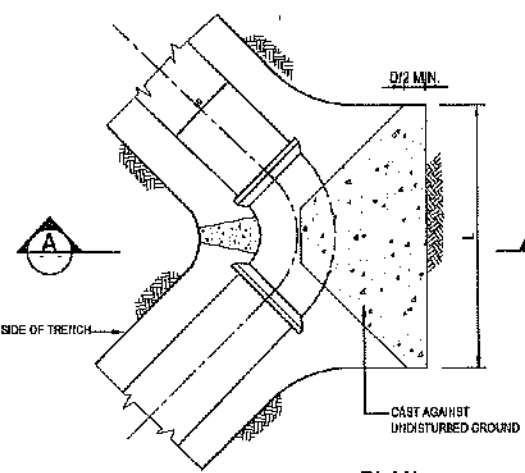
PROJECT CHATTOGRAM WATER SUPPLY IMPROVEMENT PROJECT (CWSIP)

PACKAGE CWSIPW1 - LOT 1
Design, Construction, Supply, Installation, Testing & Commissioning for System Improvement and DMA Formation of Mohara Water Supply System

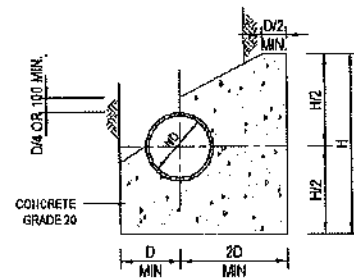
IDA CREDIT NO: 7675-BD & 7674-BD

TITLE STANDARD DETAILS
CULVERT CROSSING TYPE E & G FOR DI & HDPE PIPES

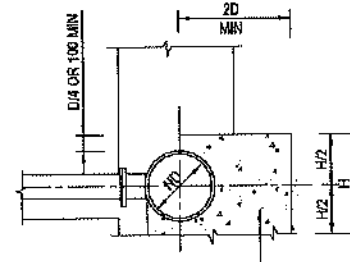
DRAWING No: CWSIP/W1L1/STD/011



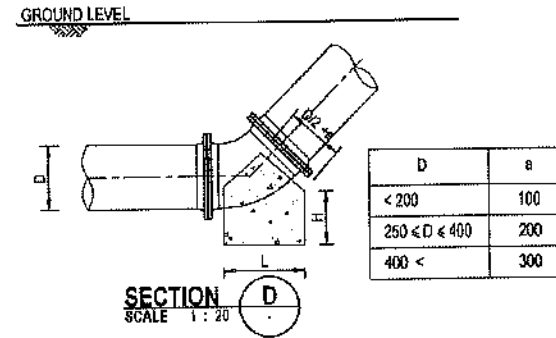
PLAN
90° HORIZONTAL BEND



SECTION A - A

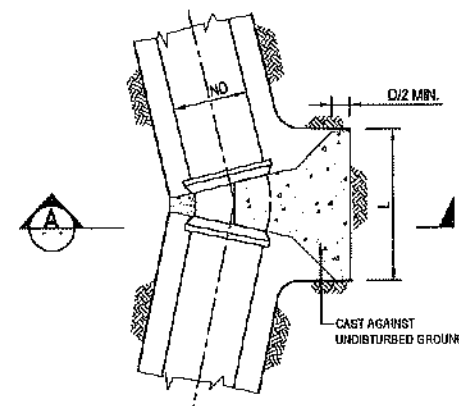


SECTION B - B

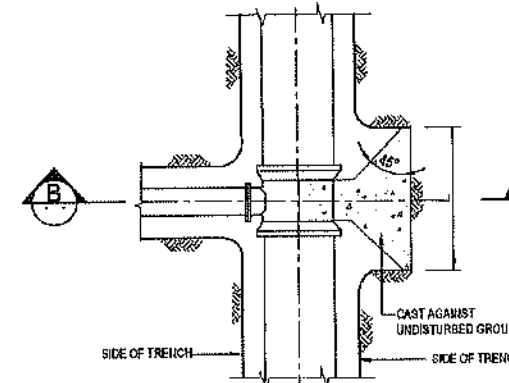


SECTION D - D
SCALE 1 : 20

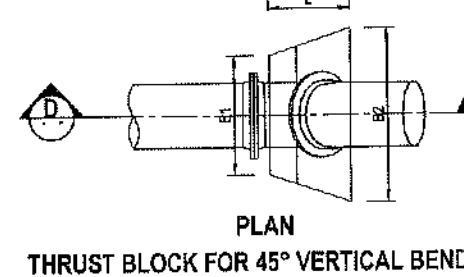
DIMENSIONS OF THRUST BLOCKS FOR DIFFERENT TEST PRESSURES - 45° VERTICAL BEND						
DIA. (mm)	TEST PRESSURE		TEST PRESSURE			
	L (mm)	H (mm)	10 BAR	15 BAR	20 BAR	25 BAR
90, 100, 110	200	200	400	400	400	500
150, 160	250	200	400	450	450	600
200	400	300	500	600	600	800
225, 250	450	300	550	700	700	1000
300	600	400	600	800	800	1100
350	700	500	650	900	800	1200
400	800	450	700	1000	1000	1400
450	900	500	800	1200	1200	1600
500	1000	500	900	1300	1300	1800
600	1200	600	1000	1500	1500	2000



PLAN
22 1/2° HORIZONTAL BEND



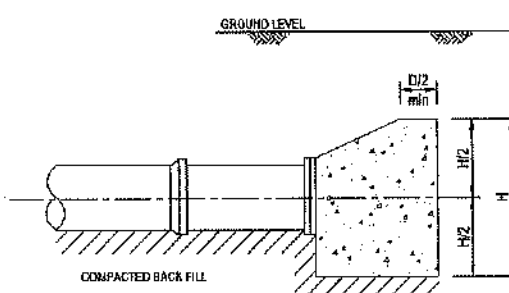
PLAN
THRUST BLOCK FOR TEE



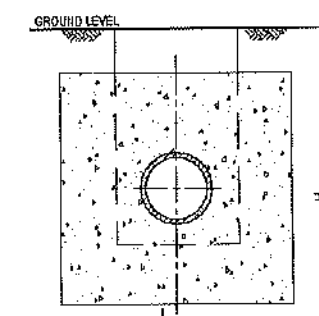
PLAN
THRUST BLOCK FOR 45° VERTICAL BEND

DIA. (mm)	11 1/4		22 1/2		45		90	
	L (m)	H (m)	L (m)	H (m)	L (m)	H (m)	L (m)	H (m)
60	0.30	0.30	0.30	0.30	0.40	0.30	0.60	0.40
100	0.30	0.30	0.30	0.30	0.40	0.30	0.60	0.40
150	0.40	0.30	0.30	0.30	0.50	0.30	0.90	0.50
200	0.40	0.40	0.50	0.30	0.60	0.40	1.30	0.60
250	0.50	0.40	0.70	0.30	0.90	0.70	1.60	0.70
300	0.60	0.40	0.80	0.40	1.00	0.90	1.70	1.00
350	0.70	0.50	0.90	0.50	1.20	1.00	1.90	1.20
400	0.80	0.50	0.90	0.50	1.30	1.10	2.10	1.30
450	0.80	0.60	1.00	0.60	1.40	1.30	2.20	1.50
500	0.90	0.60	1.10	0.60	1.50	1.40	2.40	1.60
600	1.00	0.80	1.20	0.80	1.60	1.60	2.70	1.90
800	1.40	0.80	1.70	1.40	2.40	1.90	3.30	2.50
100	0.30	0.30	0.40	0.30	0.50	0.40	0.60	0.50
150	0.40	0.30	0.50	0.40	0.60	0.50	0.80	0.60
200	0.50	0.40	0.70	0.50	0.90	0.70	1.00	0.80
250	0.70	0.40	0.80	0.70	1.20	0.90	1.30	1.00
300	0.80	0.50	0.90	0.80	1.30	1.10	1.50	1.20
350	0.90	0.50	1.10	0.90	1.40	1.30	1.60	1.50
400	1.00	0.60	1.20	1.00	1.50	1.40	1.80	1.60
450	1.00	0.70	1.30	1.10	1.60	1.50	2.00	1.80
500	1.10	0.80	1.40	1.20	1.70	1.60	2.20	2.00
600	1.20	1.00	1.60	1.40	2.00	1.80	2.50	2.20
800	1.50	1.30	2.20	1.70	2.60	2.40	3.00	2.50

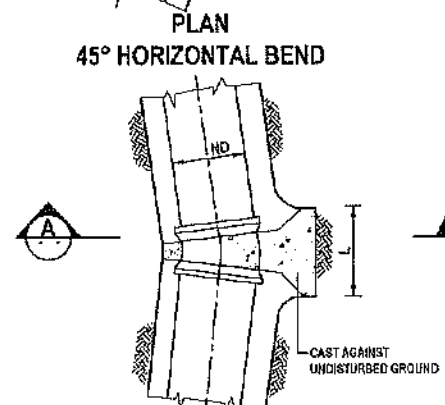
THRUST BLOCKS HAVE BEEN SIZED FOR A SOIL BEARING PRESSURE OF 100 kPa. THE SOIL CONDITION AT EACH LOCATION SHALL BE DETERMINED PRIOR TO CONSTRUCTION. THE THRUST BLOCK SIZE SHALL BE AMENDED TO SUIT THE ACTUAL BEARING CAPACITY OF THE SOIL. FOR 50 kPa USE AMPLIFICATIONS FROM 1.5 ON L&H.



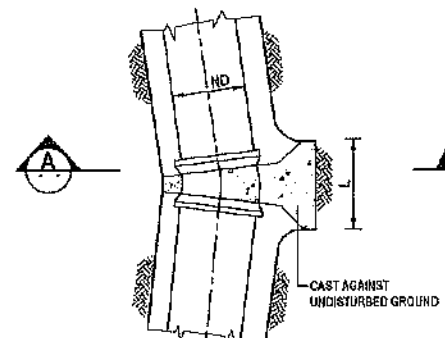
SECTION B - B
SCALE 1 : 20



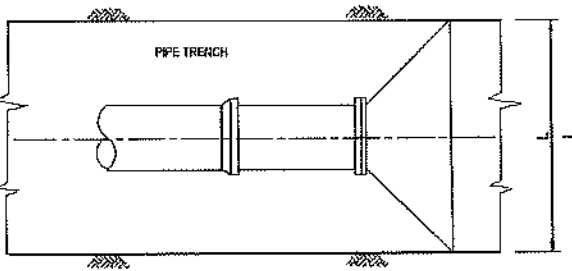
SECTION D - D
SCALE 1 : 20



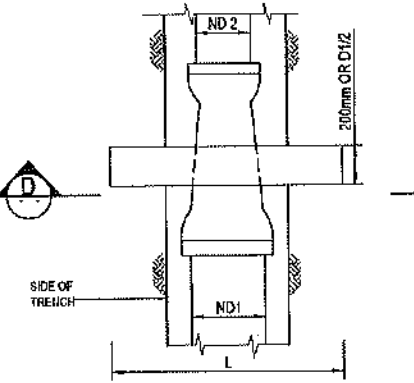
PLAN
45° HORIZONTAL BEND



PLAN
11 1/4° HORIZONTAL BEND



PLAN
THRUST BLOCK FOR END CAP / BLANK FLANGE



PLAN
THRUST BLOCK FOR TAPER

DIA. (mm)	10 BAR		15 BAR	
	L (mm)	H (mm)	L (mm)	H (mm)
60 / 63	0.22	0.22	0.27	0.27
80 / 90	0.31	0.31	0.38	0.40
100 / 110	0.40	0.40	0.50	0.40
150 / 150	0.60	0.60	0.75	0.60
200 / 225	1.00	0.90	1.00	0.90
250 / 280	1.30	1.00	1.30	1.00
300 / 315	1.50	1.20	1.50	1.20
350 / 355	1.70	1.40	1.70	1.40
400	1.90	1.60	1.90	1.60
500	2.30	2.00	2.30	2.00

FOR TAPERS					
DIA. (mm)		10 BAR		15 BAR	
D (mm)	d (mm)	L (mm)	H (mm)	L (mm)	H (mm)
110	90	0.30	0.30	0.40	0.40
150	110	0.50	0.50	0.60	0.60
225	160	0.60	0.60	0.70	0.70
250	150	0.75	0.75	0.90	0.90
300	150	0.90	0.90	1.10	1.10
300	200	0.80	0.80	1.00	1.00
300	250	0.70	0.70	0.80	0.80
400	200	1.20	1.20	1.40	1.40
400	250	1.10	1.10	1.30	1.30
450	300	1.20	1.20	1.40	1.40
450	400	0.80	0.80	1.00	1.00
600	500	1.20	1.20	1.40	1.40

NOTES:

1. WHEN TWO PIPELINES ARE LAID IN COMMON TRENCH, THE BENDS SHALL BE STAGGERED TO MAKE WAY FOR INDEPENDENT THRUST BLOCKS. WHEN STAGGERING OF BENDS IS NOT POSSIBLE, THE THRUST BLOCK SHALL HAVE THE COMBINED AREA OF LxH REQUIRED FOR BOTH BENDS.
2. THE ABOVE DIMENSIONS OF THRUST BLOCKS ARE VALID FOR NON SUBMERGED CONDITION ONLY. FOR SUBMERGED CONDITION, DOUBLE THE EFFECTIVE LATERAL AREA (LxH).
3. L AND H MAY BE ALTERED TO SUIT SITE, BUT THE LATERAL AREA (LxH) SHALL REMAIN THE SAME OR GREATER.
4. WHEN ANCHOR GASKETS ARE USED, THE AREA (LxH) MAY BE REDUCED BY 50%.
5. THE THRUST BLOCKS SHALL EXTEND FROM THE FITTING UP TO THE UNDISTURBED FACE OF THE PIPE TRENCH.
6. ALL THRUST BLOCKS SHALL BE OF GRADE 25 CONCRETE.

CONCEPTUAL DRAWING



CHATTOGRAM WATER SUPPLY & SEWERAGE AUTHORITY (CWASA)

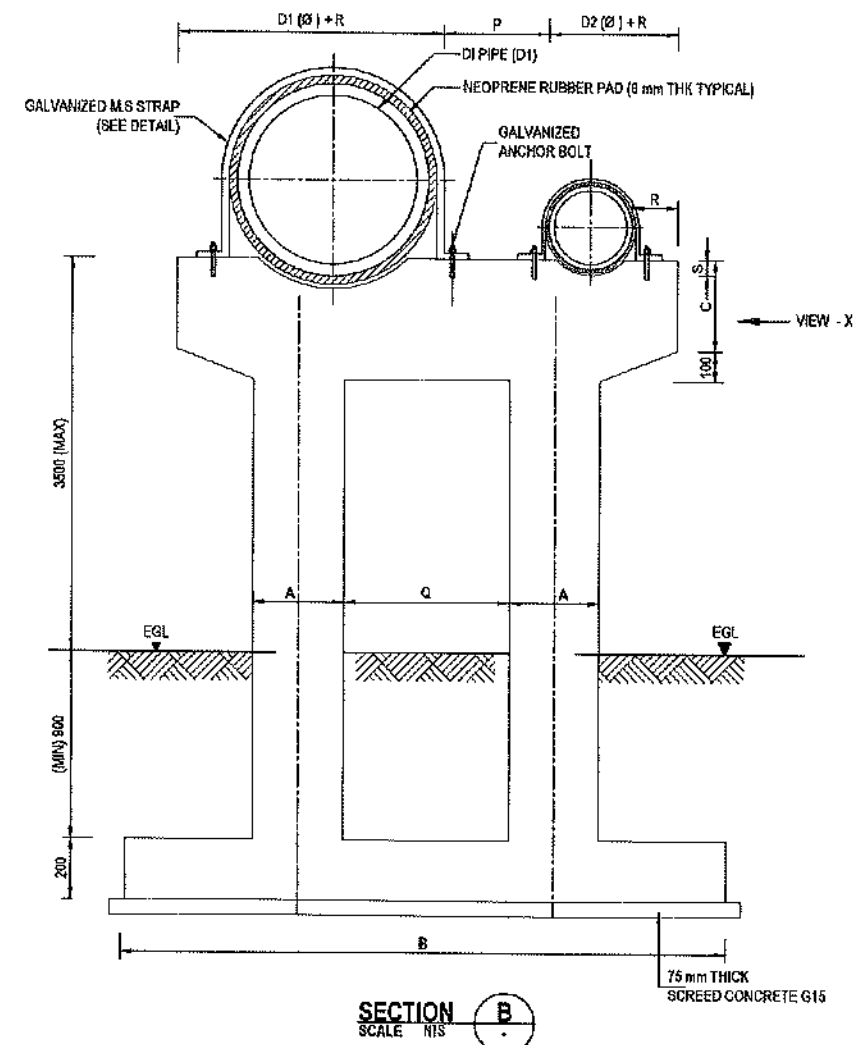
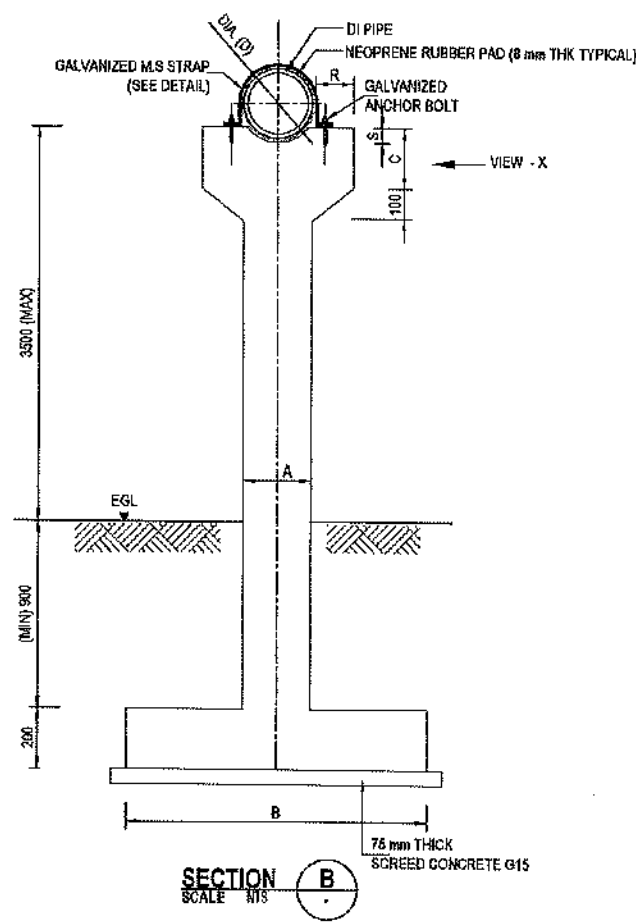
PROJECT CHATTOGRAM WATER SUPPLY IMPROVEMENT PROJECT (CWSIP)

PACKAGE CWSIP/W1 - LOT 1
Design, Construction, Supply, Installation, Testing & Commissioning for System Improvement and DMA Formation of Mohara Water Supply System

IDA CREDIT NO: 7675-BD & 7674-BD

TITLE STANDARD DETAILS
THRUST BLOCKS AND SCHEDULES

DRAWING No: CWSIP/W1/STD/012



DETAILS OF STRAP FOR PIPE POSITIONING								
PIPE SIZE (D) (mm)	T (mm)	W (mm)	D1 (mm)	L (mm)	C1 (mm)	SIZE OF BOLT	LENGTH OF BOLT	SIZE OF NEOPRENE RUBBER PAD
80-150	6	40	13	45	25	M12	200	8x60
200-300	6	50	16	50	30	M16	200	8x70
350-500	10	65	19	65	35	M20	200	8x90
700-1000	10	80	25	80	45	M24	250	8x110
1200	10	100	32	90	50	M30	300	8x120

DOUBLE PIPE CROSSING						
PIPE D1 (Ø)	COLUMN WIDTH (A)	COLUMN HEAD HEIGHT (C)	BETWEEN PIPE (P)	BETWEEN COLUMN (Q)	(R)	(S)
≤ 300	250	200	300	450	100	50
350 - 450	250	250	300	500	150	75
500 - 600	300	300	400	550	200	100
700 - 800	350	350	400	600	225	125

SINGLE PIPE CROSSING					
PIPE (D Ø)	COLUMN WIDTH (A)	COLUMN HEAD HEIGHT (C)	(R)	(S)	BASE (B)
DN ≤ 300	250	200	100	50	1000
350 - 450	300	250	150	75	1200
500 - 600	350	300	200	100	1500
700 - 800	400	350	225	125	1750

D1 (Ø) INDICATES THE LARGER DIAMETER

- NOTES:
- ALL DIMENSIONS ARE IN MILLIMETERS.
 - DIMENSIONS AND LEVELS SHALL BE CHECKED, VERIFIED AT SITE BEFORE STARTING CONSTRUCTION.
 - STRUCTURAL CONCRETE SHALL BE GRADE C25 UNLESS OTHERWISE SPECIFIED.
 - COVER TO R/F IN 50mm UNLESS OTHERWISE SPECIFIED.

CONCEPTUAL DRAWING

DETAIL OF BASE PLAN
COLUMN SUPPORT - SINGLE PIPES
TYPE - A
NORMAL GROUND

DETAIL OF BASE PLAN
COLUMN SUPPORT - DOUBLE PIPES
TYPE - B
NORMAL GROUND

CHATTOGRAM WATER SUPPLY & SEWERAGE AUTHORITY (CWASA)

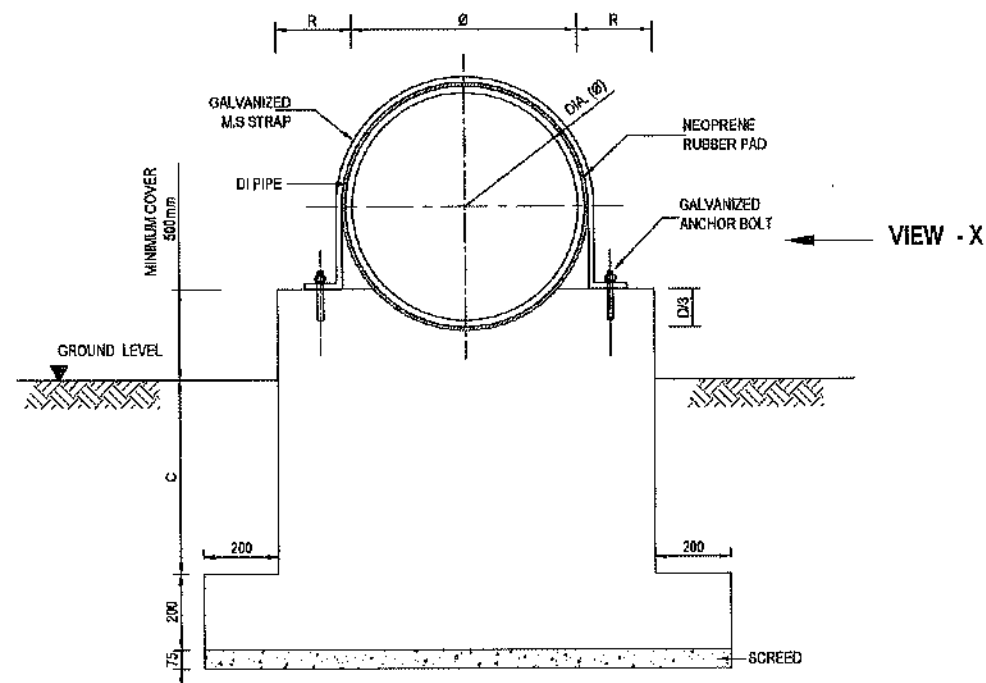
PROJECT CHATTOGRAM WATER SUPPLY IMPROVEMENT PROJECT (CWSIP)

PACKAGE CWSIP/W1 - LOT 1
Design, Construction, Supply, Installation, Testing & Commissioning for System Improvement and DMA Formation of Mohara Water Supply System

IDA CREDIT NO: 7675-BD & 7674-BD

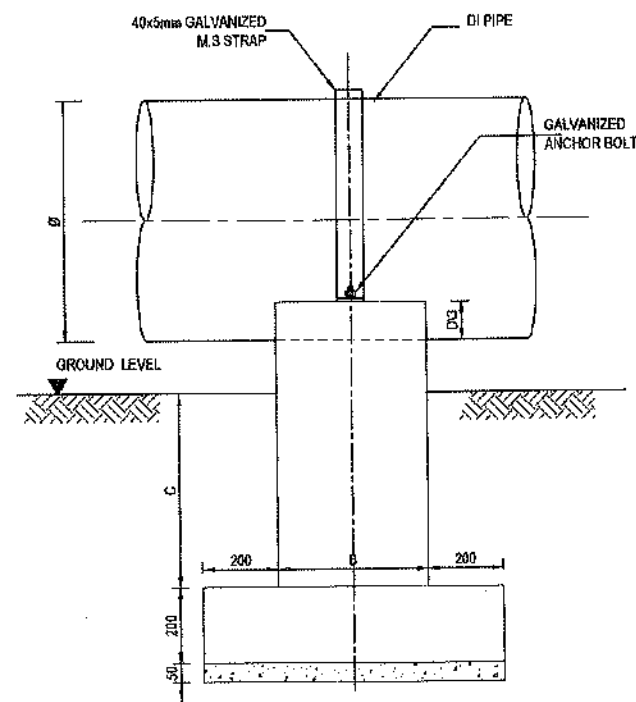
TITLE STANDARD DETAILS
ABOVE GROUND PIPE SUPPORT - (DN<800mm)

DRAWING No: CWSIP/W1L1/STD/013



SUPPORTING SHORTER HEIGHTS DETAILS - SINGLE PIPE

TYPE -D
SCALE 1:20

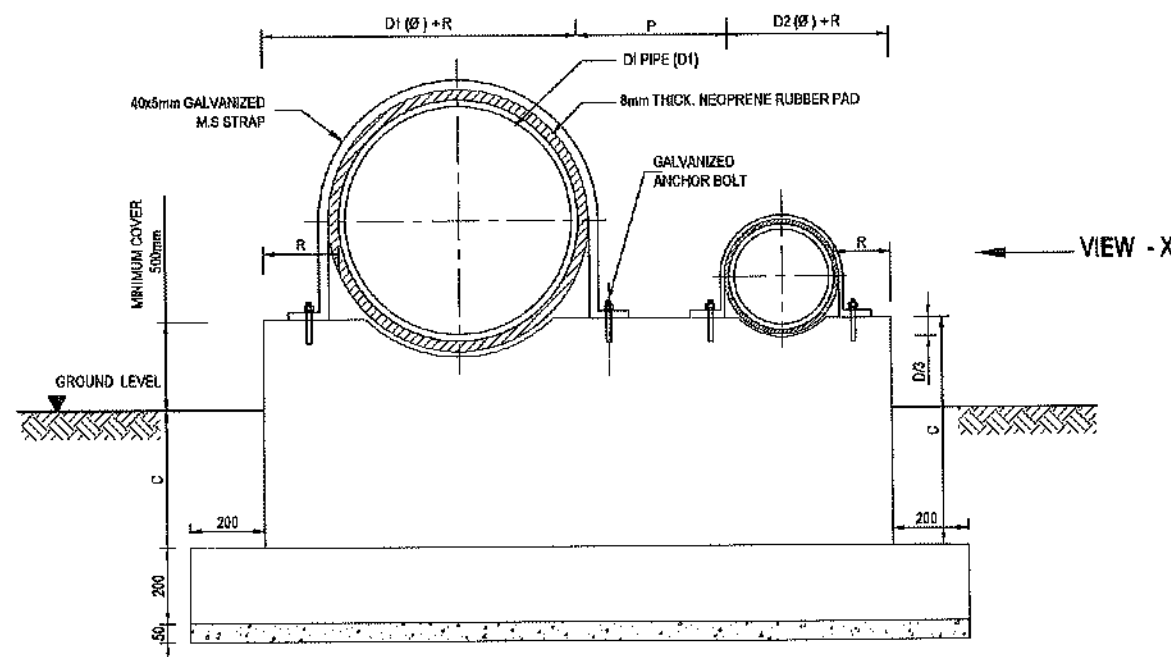


VIEW - X
SCALE 1:20

SINGLE PIPE CROSSING			
PIPE (D Ø)	WIDTH (B)	(R)	HEIGHT (C)
DN ≤ 300	300	100	500
350 - 450	300	150	650
500 - 600	400	200	750

DOUBLE PIPE CROSSING				
PIPE D1 (Ø)	WIDTH (B)	BETWEEN PIPE (P)	(R)	HEIGHT (C)
≤ 300	300	300	100	500
350 - 450	300	300	150	650
500 - 600	400	400	200	750

D1 (Ø) INDICATES THE LARGER DIAMETER



SUPPORTING SHORTER HEIGHTS DETAILS - DOUBLE PIPES

TYPE -E
SCALE 1:20

NOTE :

1. ALL DIMENSIONS ARE IN MILLIMETERS AND ALL LEVELS ARE IN METERS ABOVE MSL.
2. ALL DIMENSIONS AND LEVELS SHALL BE CHECKED/VERIFIED AT SITE BEFORE STARTING CONSTRUCTION.
3. FOR OTHER GENERAL DETAILS REFER STANDARD DRAWINGS.
4. GRADE OF CONCRETE FOR SUPPORTING BLOCKS SHALL BE GR. 25. SCREED GR.15
5. FOR SUPPORT IN ROCKY AREA Ø16 mm DOWEL BARS TO BE PEG 300mm IN TO ROCK.
6. MAXIMUM SPAN BETWEEN PIPE SUPPORT SHALL BE 6000mm.

CONCEPTUAL DRAWING



CHATTOGRAM WATER SUPPLY & SEWERAGE AUTHORITY (CWASA)

PROJECT CHATTOGRAM WATER SUPPLY IMPROVEMENT PROJECT (CWSIP)

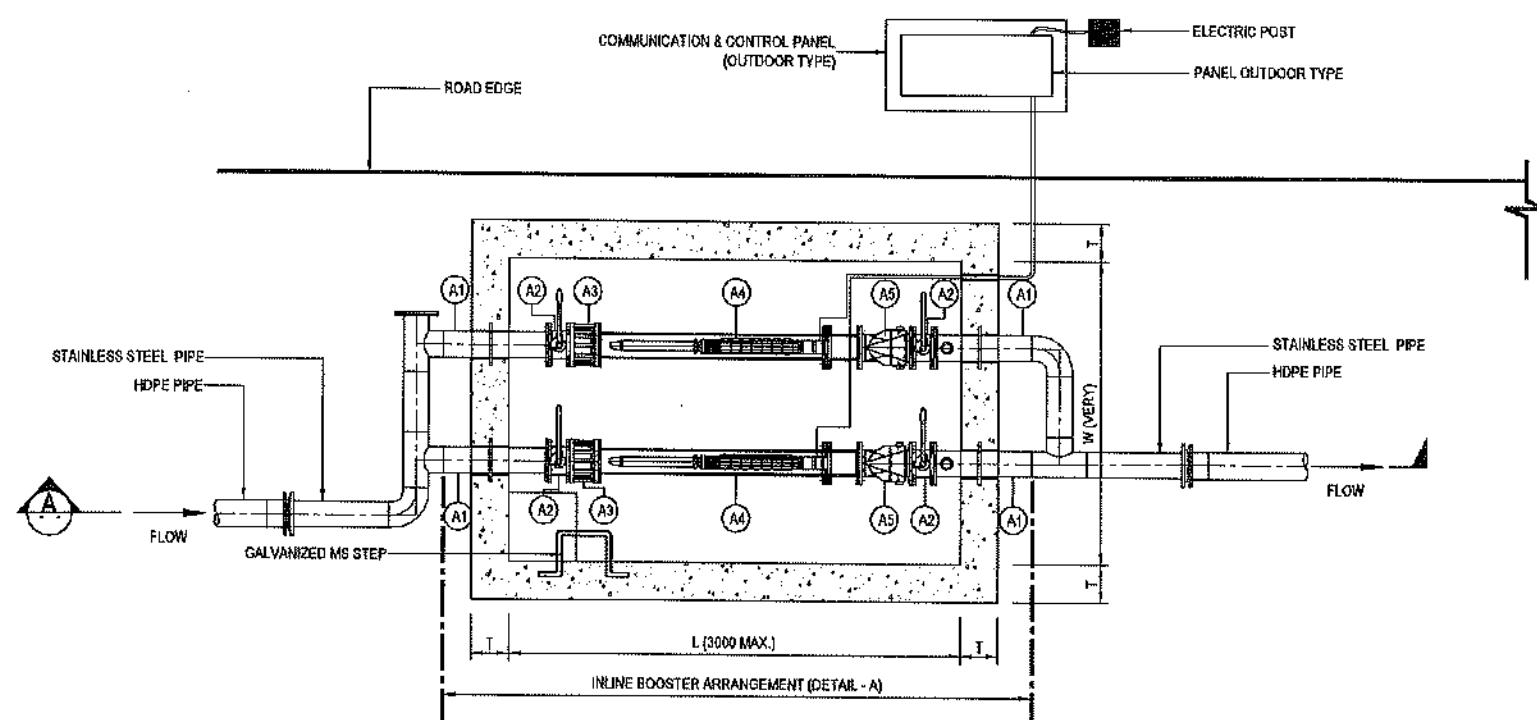
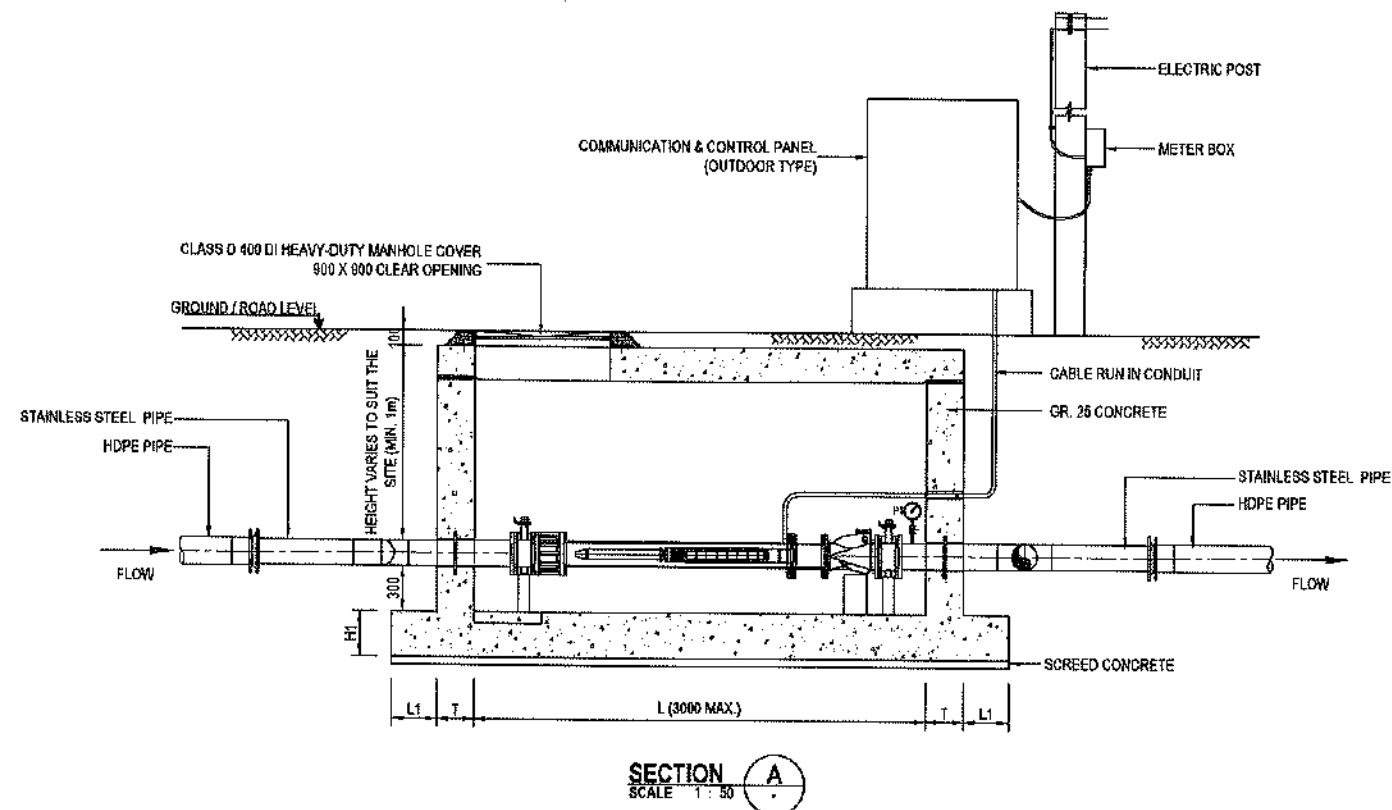
PACKAGE CWSIP/W1 - LOT 1
Design, Construction, Supply, Installation, Testing & Commissioning for System Improvement and DMA Formation of Mohara Water Supply System

IDA CREDIT NO: 7675-BD & 7674- BD

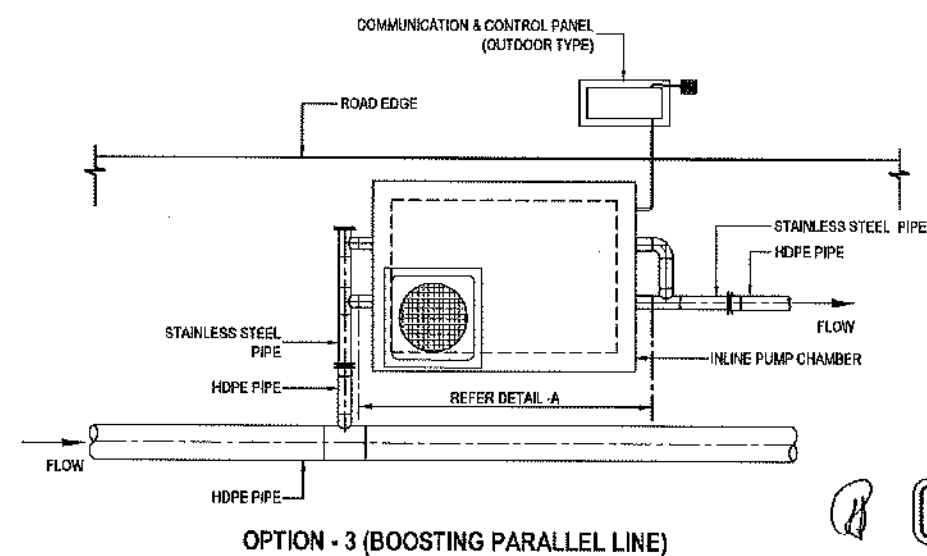
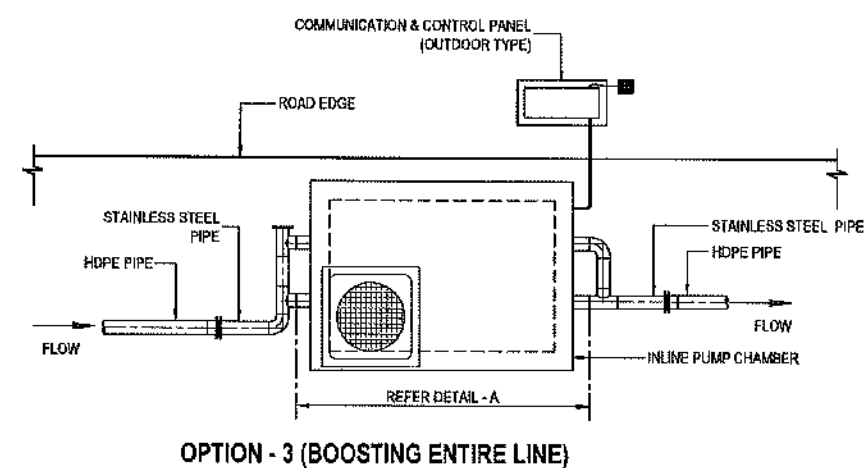
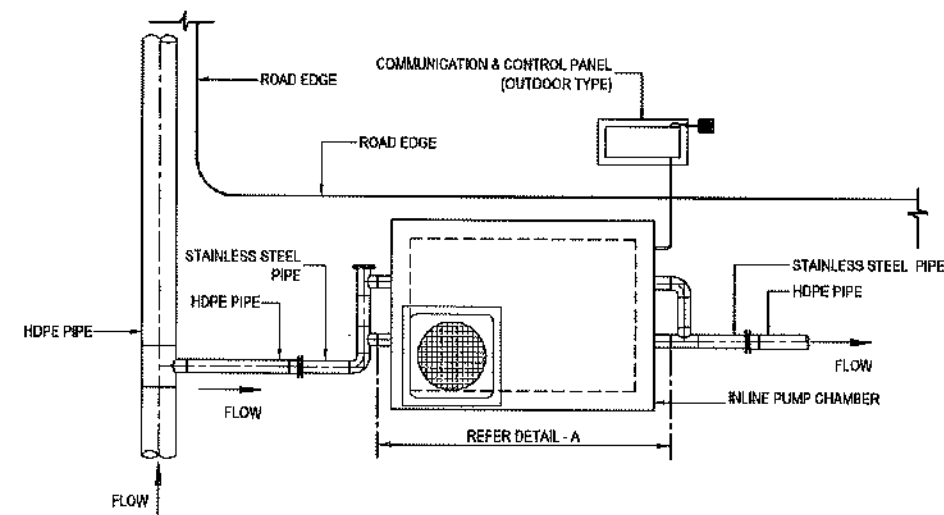
TITLE STANDARD DETAILS
ABOVE GROUND PIPE SUPPORTS (DN≤600mm)

DRAWING No: CWSIP/W1L1/STD/014

PIPE WORK SCHEDULE					
ITEM NO.	DIMENSION		DESCRIPTION	MATERIAL	QTY.
	NO. (mm)	LENGTH (mm)			
A1	80 ~ 200	SUIT TO SITE	FLANGE & SPIGOT PIPE PIECE WITH PUDDLE FLANGE	SS	04
A2	80 ~ 250	-	BUTTERFLY VALVE WITH LEVER	DI	04
A3	80 ~ 250	-	DISMANTLING JOINT	DI	02
A4	80 ~ 250	-	BOREHOLE PUMP ASSEMBLY	-	02
A5	80 ~ 250	-	NON RETURN VALVE	DI	02



* THE PANEL SHALL BE OUTDOOR TYPE AND CONSIST OF INCOMING, VSD & INSTRUMENTATION UNIT ITSELF



NOTES
01. CHAMBER COVERS IN STREETS SHALL BE SCREW-ON MANHOLE COVER WITH GASKET (WATER TIGHT)

CONCEPTUAL DRAWING



CHATTOGRAM WATER SUPPLY & SEWERAGE AUTHORITY (CWASA)

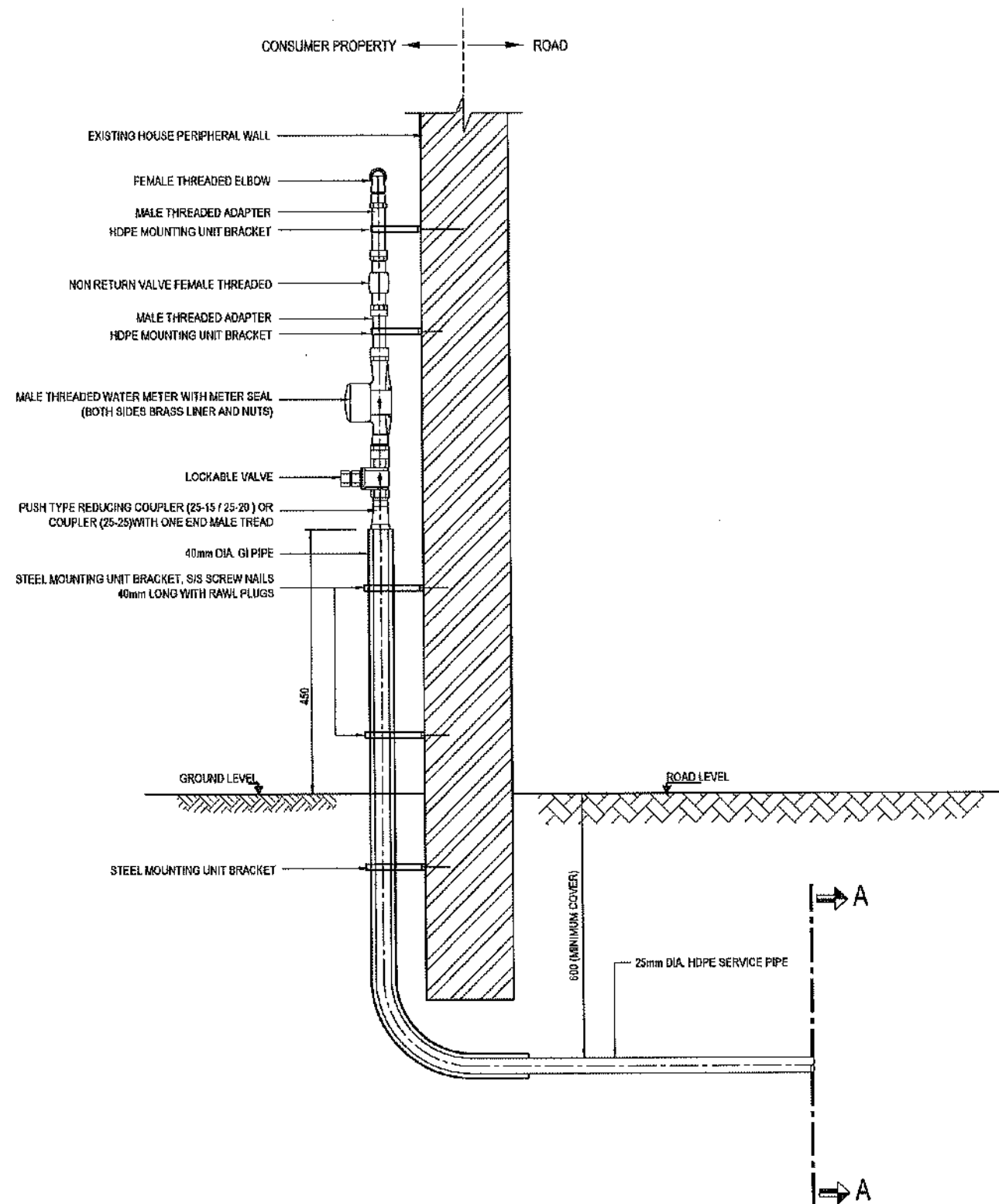
PROJECT CHATTOGRAM WATER SUPPLY IMPROVEMENT PROJECT (CWSIP)

PACKAGE CWSIPW1 - LOT 1
Design, Construction, Supply, Installation, Testing & Commissioning for System Improvement and DMA Formation of Mohara Water Supply System

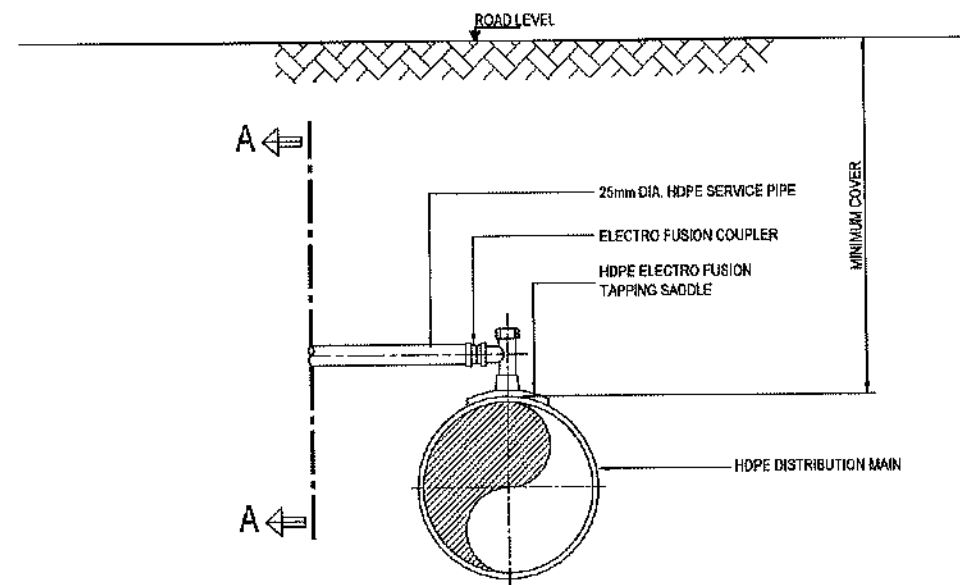
IDA CREDIT NO. 7675-BD & 7674-BD

TITLE STANDARD DETAILS
PROPOSED INLINE BOOSTER ARRANGEMENT

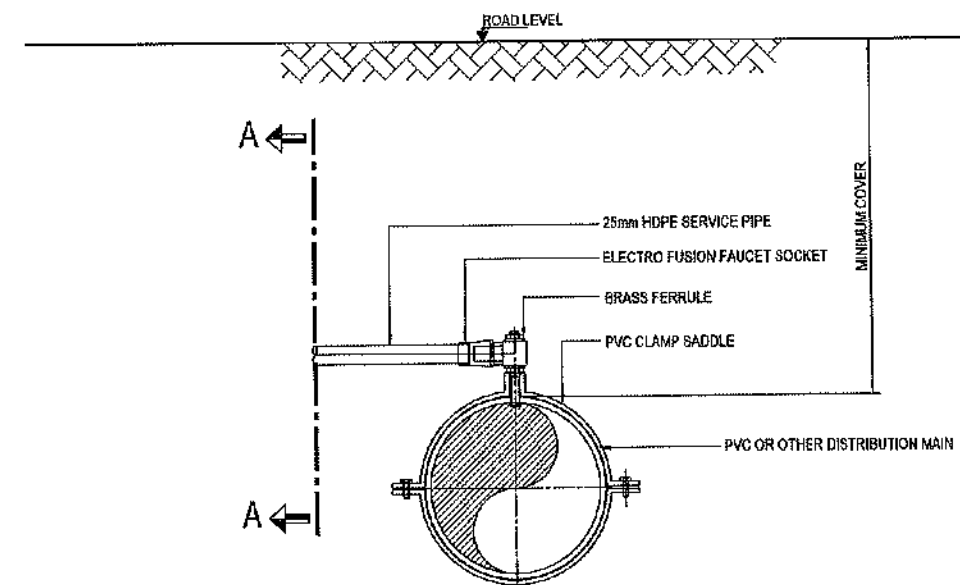
DRAWING No. CWSIP/W1L1/STD/015



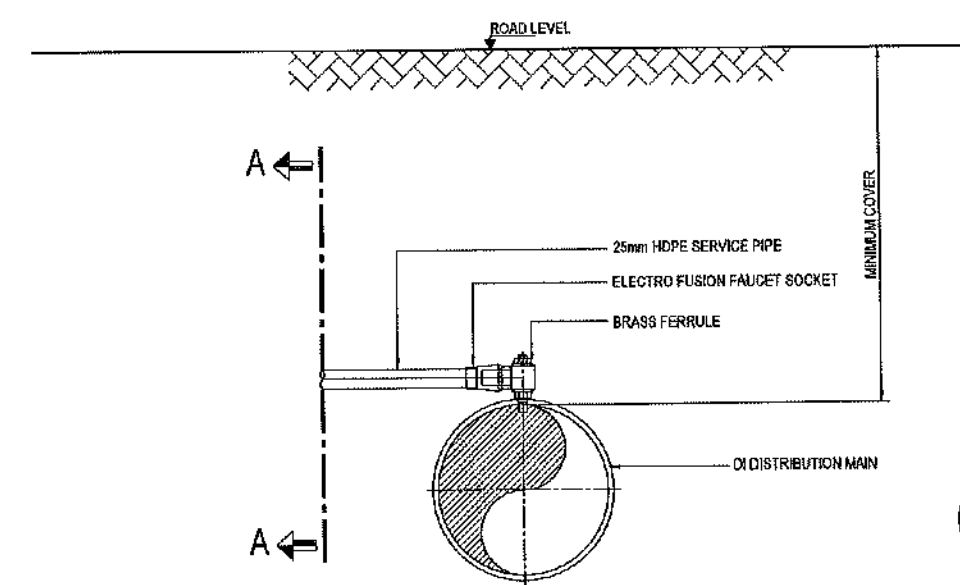
TYPICAL 15mm, 20mm AND 25mm SERVICE CONNECTION DETAILS FOR DISTRIBUTION PIPE LINES
(DETAIL - A)
(SCALE - NTS)



TYPICAL SERVICE CONNECTION DETAILS FOR HDPE PIPE LINE (REFER DETAIL - A)
(SCALE - NTS)



TYPICAL SERVICE CONNECTION DETAILS FOR PVC PIPE LINE (REFER DETAIL - A)
(SCALE - NTS)



TYPICAL SERVICE CONNECTION DETAILS FOR DI PIPE LINE (REFER DETAIL - A)
(SCALE - NTS)

NOTES

01. MINIMUM COVER TO THE TAPPING SADDLE AND SERVICE CONNECTION PIPE SHALL BE 300mm.

CONCEPTUAL DRAWING



CHATTOGRAM WATER SUPPLY & SEWERAGE AUTHORITY (CWASA)

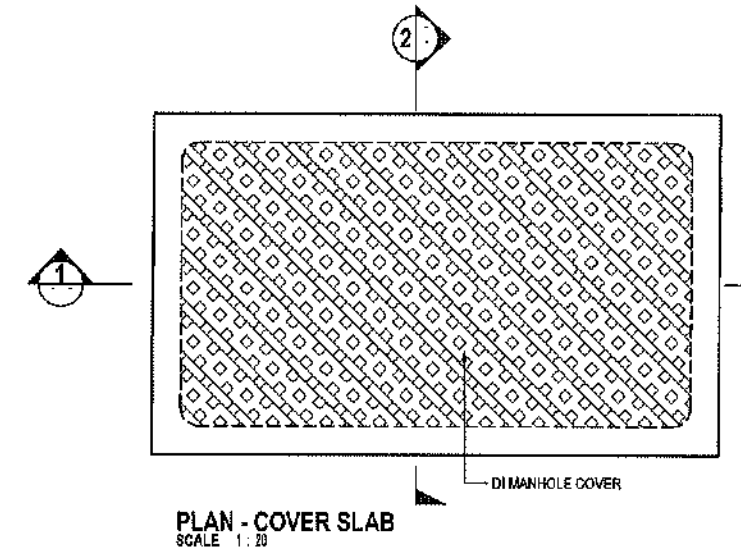
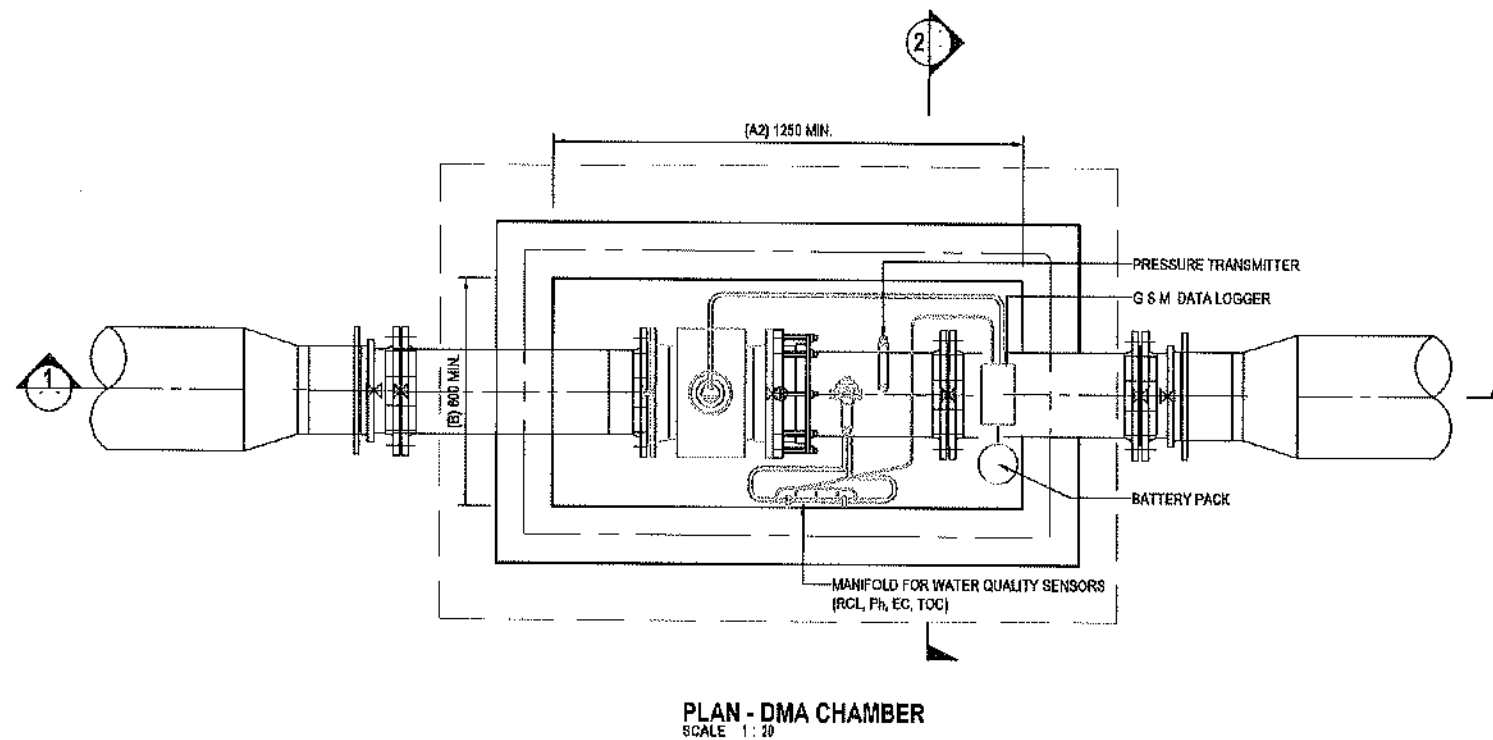
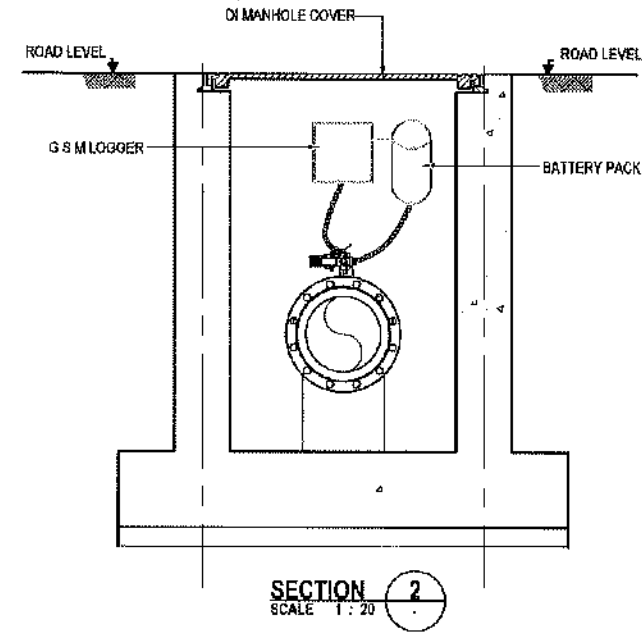
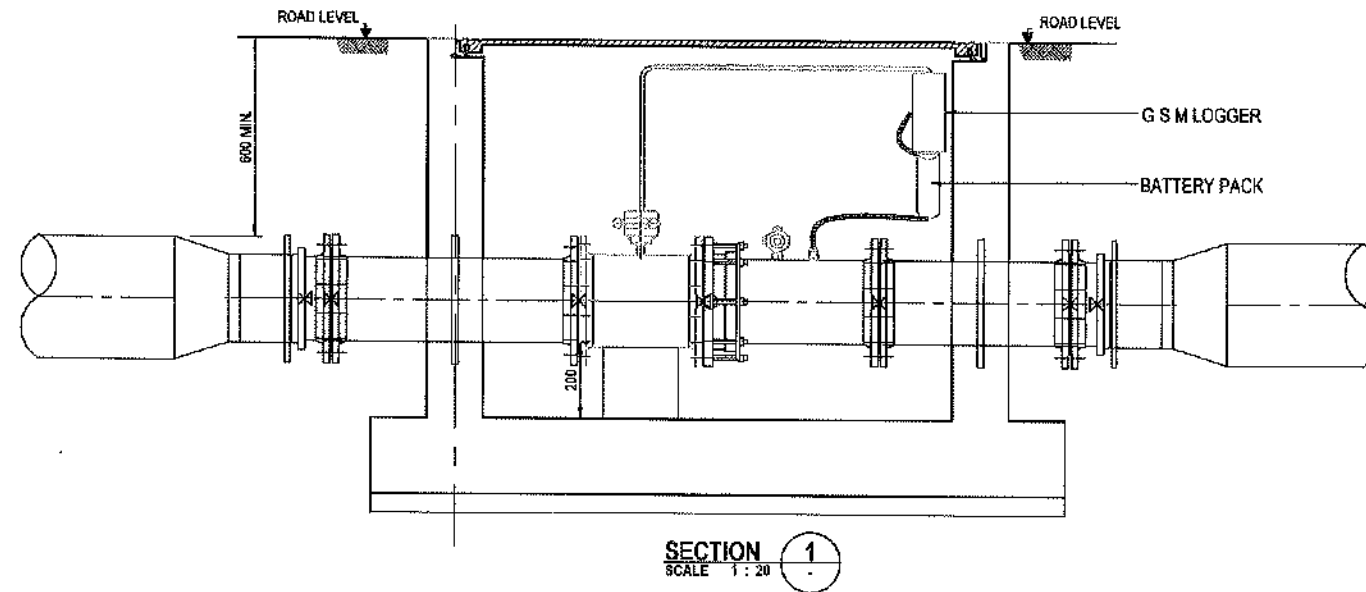
PROJECT CHATTOGRAM WATER SUPPLY IMPROVEMENT PROJECT (CWSIP)

PACKAGE CWSIP/W1 - LOT 1
Design, Construction, Supply, Installation, Testing & Commissioning for System Improvement and DMA Formation of Mohara Water Supply System

IDA CREDIT NO: 7675-BD & 7674-BD

TITLE STANDARD DETAILS
SERVICE CONNECTION DETAILS

DRAWING No: CWSIP/W1L1/STD/016



LEGEND

- SUPPLY AND INSTALL UNDER PACKAGE 2

NOTES:

1. MINIMUM INTERNAL DIMENSIONS OF METER CHAMBER SHALL BE 600x1200mm FOR PIPE DIAMETERS UP TO 200mm AND THESE INTERNAL DIMENSIONS SHALL BE INCREASED ACCORDINGLY WITH INCREASING PIPE DIAMETERS GREATER THAN 200mm OR AS PER INTERNATIONAL STANDARD FOR HAND HALL.
2. MINIMUM COVER OF PIPE SHALL BE 600mm TO THE ROAD SURFACE AT DI PIPES WITH MIN. PRESSURE PN16 ARE USED.
3. THE CHAMBER COVER SHALL BE 600x1200mm.
4. L1 AND L2 DIMENSIONS SHALL BE DESIGNED MINIMIZE AIR TRAPS TO HAVE AN ACCURATE METER READING.
5. FURTHER CONTRACTOR SHALL PROVIDE AIR VALVES OR ANY OTHER SPECIALS TO MINIMIZE AIR TRAPS NEAR TO WATER METER TO REPRESENT AN ACCURATE READING.
6. CHAMBER COVERS IN STREETS SHALL BE SCREW-ON MANHOLE COVER WITH GASKET (WATER TIGHT)

CONCEPTUAL DRAWING



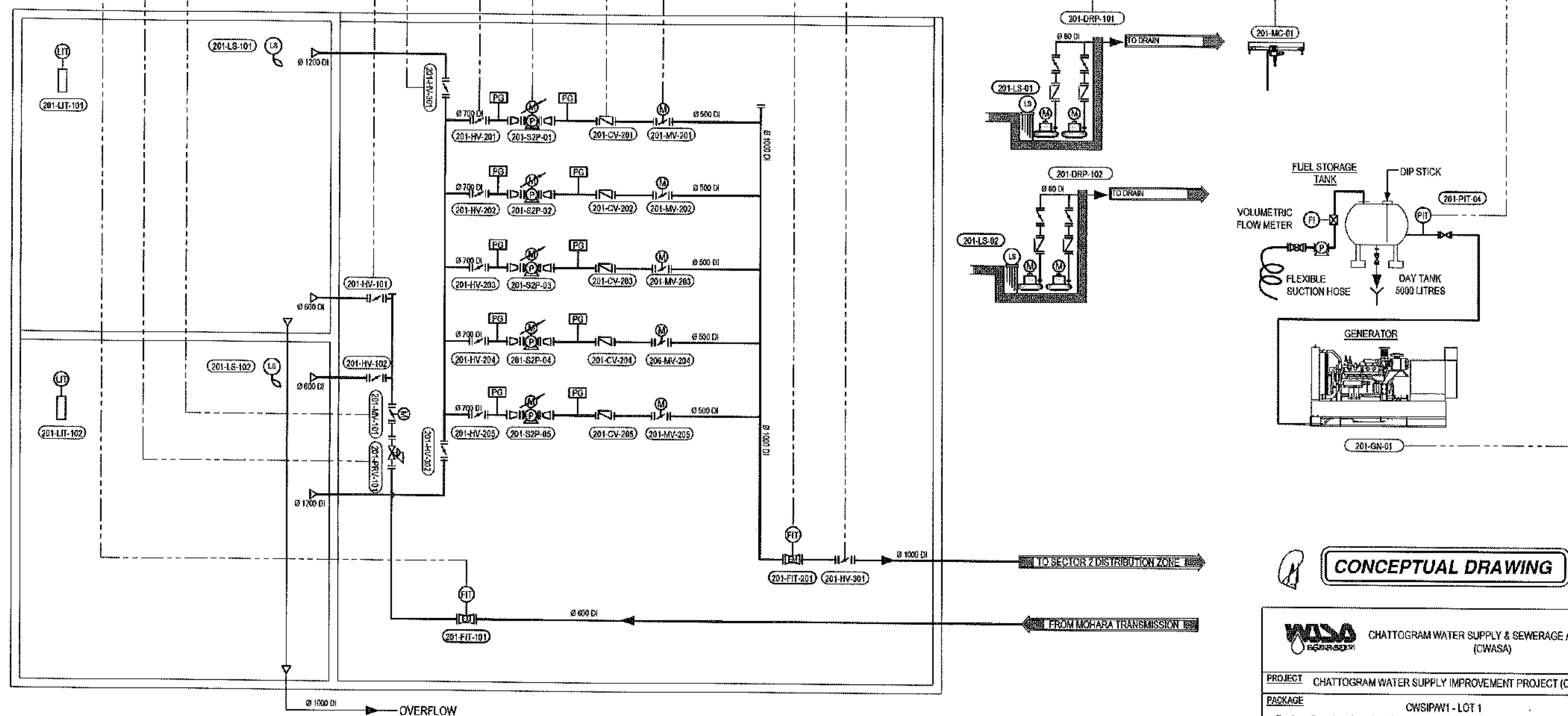
CHATTOGRAM WATER SUPPLY & SEWERAGE AUTHORITY (CWASA)

PROJECT	CHATTOGRAM WATER SUPPLY IMPROVEMENT PROJECT (CWSIP)
PACKAGE	CWSIP/W1 - LOT 1 Design, Construction, Supply, Installation, Testing & Commissioning for System Improvement and DMA Formation of Mohara Water Supply System
IDA CREDIT NO.	7675-BD & 7674- BD
TITLE	STANDARD DETAILS DMA METER CHAMBER - FOR HDPE PIPES
DRAWING No.	CWSIP/W1/L1/STD/017

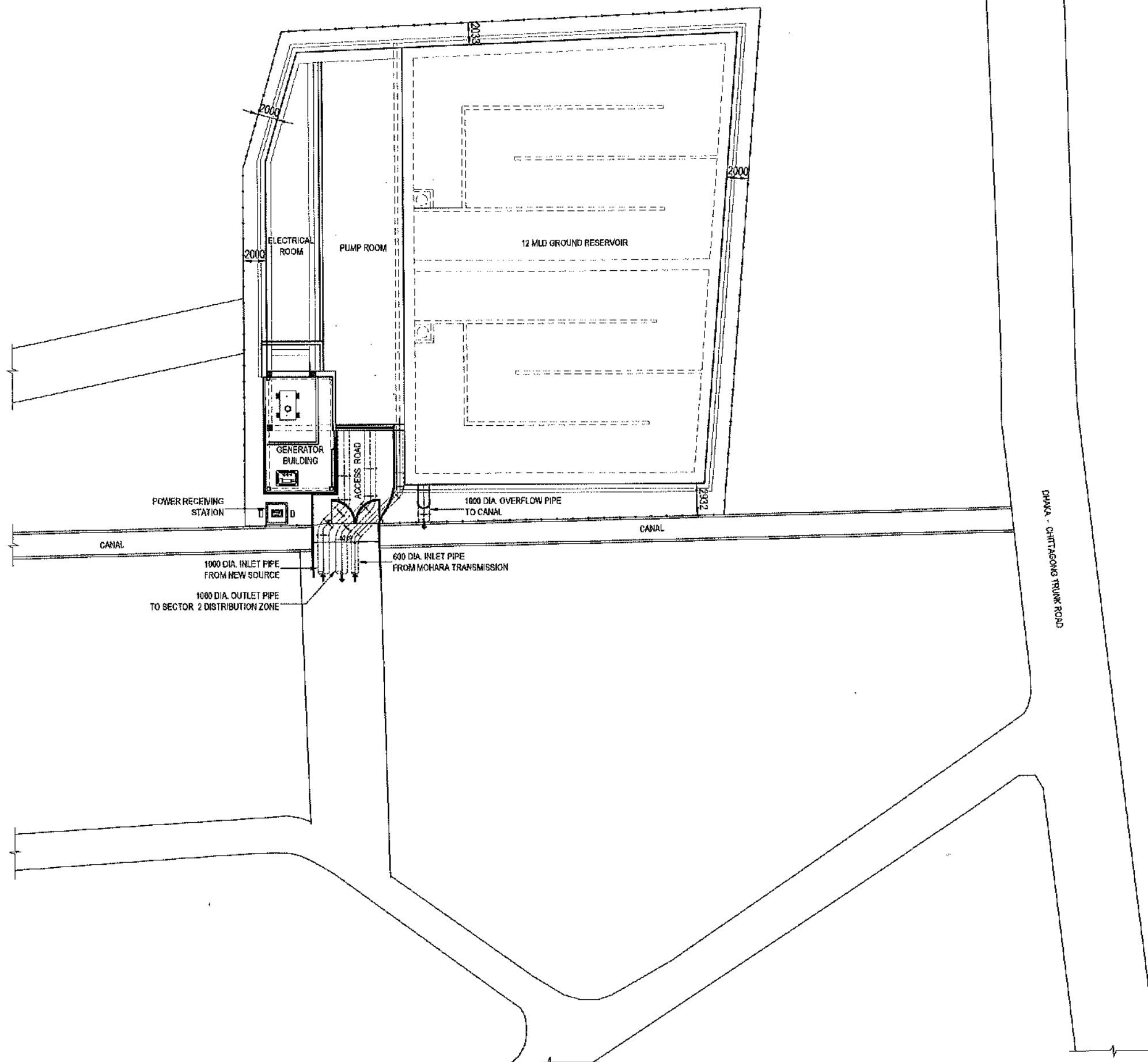
DHAKA TRUNK ROAD GROUND
RESERVOIR AND PUMP STATION

Q

ITEM NO.	201-FIT-101	201-PRV-101	201-MV-101	201-HV-101/102	201-HV-301/302	201-HV-101 to 205	201-S2P-201 to 205	201-CV-201 to 205	201-CV-201 to 205	201-FIT-201	201-HV-301	201-DRP-101 / 102	201-MC-01	201-PIT-04	201-GN-01
ITEM NAME	600 Ø INLET ELECTROMAGNETIC FLOWMETER	600 Ø INLET PRESSURE SUSTAIN VALVE	600 Ø INLET MOTORIZED BUTTERFLY VALVE	600 Ø INLET MANUAL OPERATED BUTTERFLY VALVE	1200 Ø SUCTION MANUAL OPERATED BUTTERFLY VALVE	700 Ø SUCTION MANUAL OPERATED BUTTERFLY VALVE	HORIZONTAL CENTRIFUGAL PUMP	500 Ø DISCHARGE CHECK VALVE	500 Ø DISCHARGE MOTORIZED BUTTERFLY VALVE	1000 Ø OUTLET ELECTROMAGNETIC FLOWMETER	1200 Ø OUTLET MANUAL OPERATED BUTTERFLY VALVE	SUBMERSIBLE SUMP DRAINAGE PUMP	MOTORIZED OVERHEAD GANTRY CRANE	EMERGENCY GENERATOR	EMERGENCY GENERATOR
QUANTITY	1	1	1	2	2	5	4 DUTY / 1 STANDBY	5	5	1	1	2	1	1	1

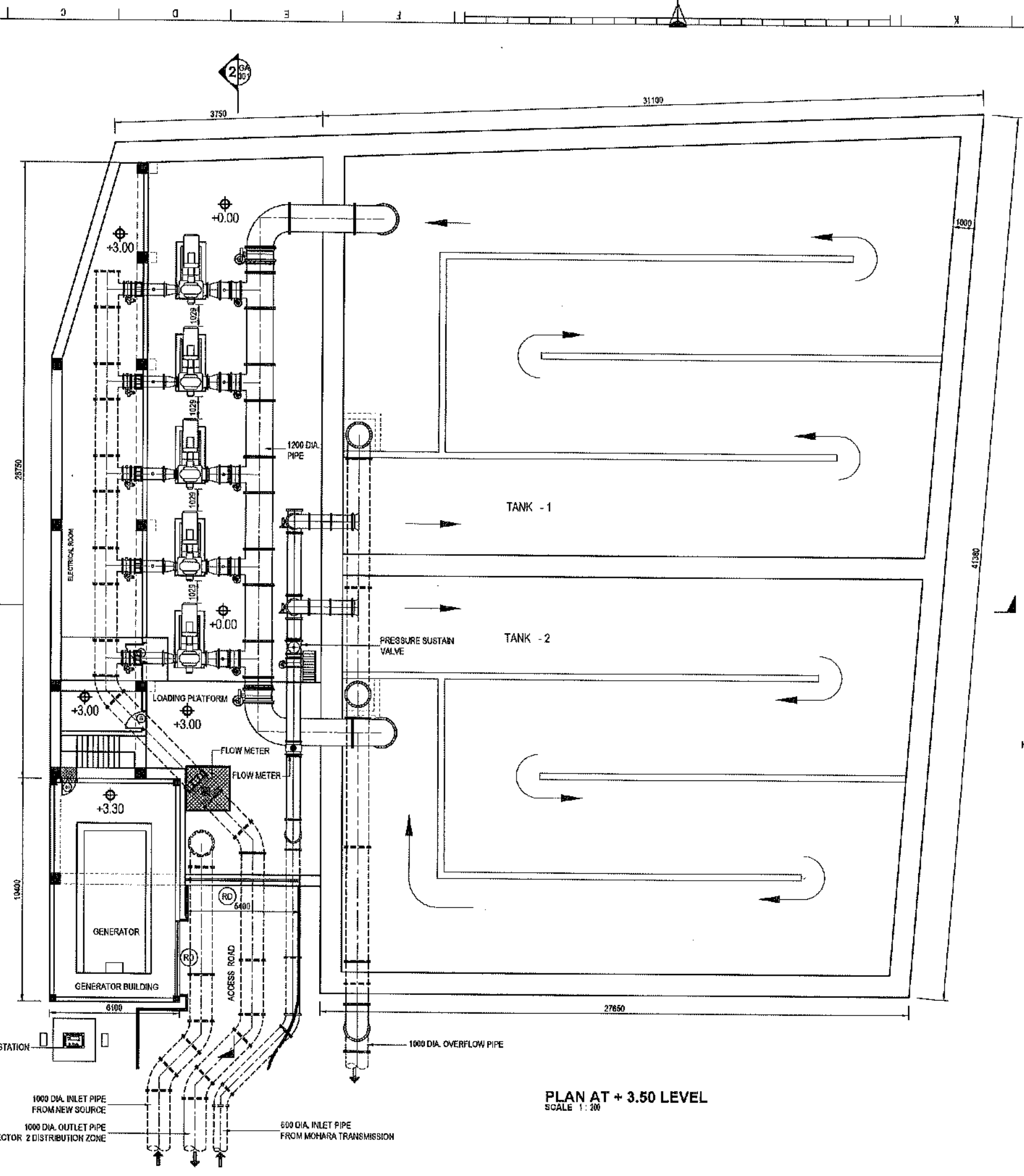


CONCEPTUAL DRAWING	
WASA	CHATTOGRAM WATER SUPPLY & SEWERAGE AUTHORITY (CWASA)
PROJECT	CHATTOGRAM WATER SUPPLY IMPROVEMENT PROJECT (CWSIP)
PACKAGE	CWSIPW1 - LOT 1 Design, Construction, Supply, Installation, Testing & Commissioning for System Improvement and DMA Formation of Mohara Water Supply System
IDA CREDIT NO.	7675-BD & 7674-BD
TITLE	DHAKA TRUNK ROAD GROUND RESERVOIR AND PUMP STATION PROCESS ARRANGEMENT - (OVERVIEW)
DRAWING No.	CWSIP/W1L1/DTR/PID-001



CONCEPTUAL DRAWING

	CHATTOGRAM WATER SUPPLY & SEWERAGE AUTHORITY (CWASA)
PROJECT	CHATTOGRAM WATER SUPPLY IMPROVEMENT PROJECT (CWSIP)
PACKAGE	CWSIP/W1 - LOT 1 Design, Construction, Supply, Installation, Testing & Commissioning for System Improvement and DMA Formation of Mohara Water Supply System
IDA CREDIT NO.	7675-BD & 7674-BD
TITLE	DHAKA TRUNK ROAD GROUND RESERVOIR AND PUMP STATION - SITE LAYOUT PLAN
DRAWING No.	CWSIP/W1L1/DTR/G-001



PLAN AT + 3.50 LEVEL
SCALE 1:200

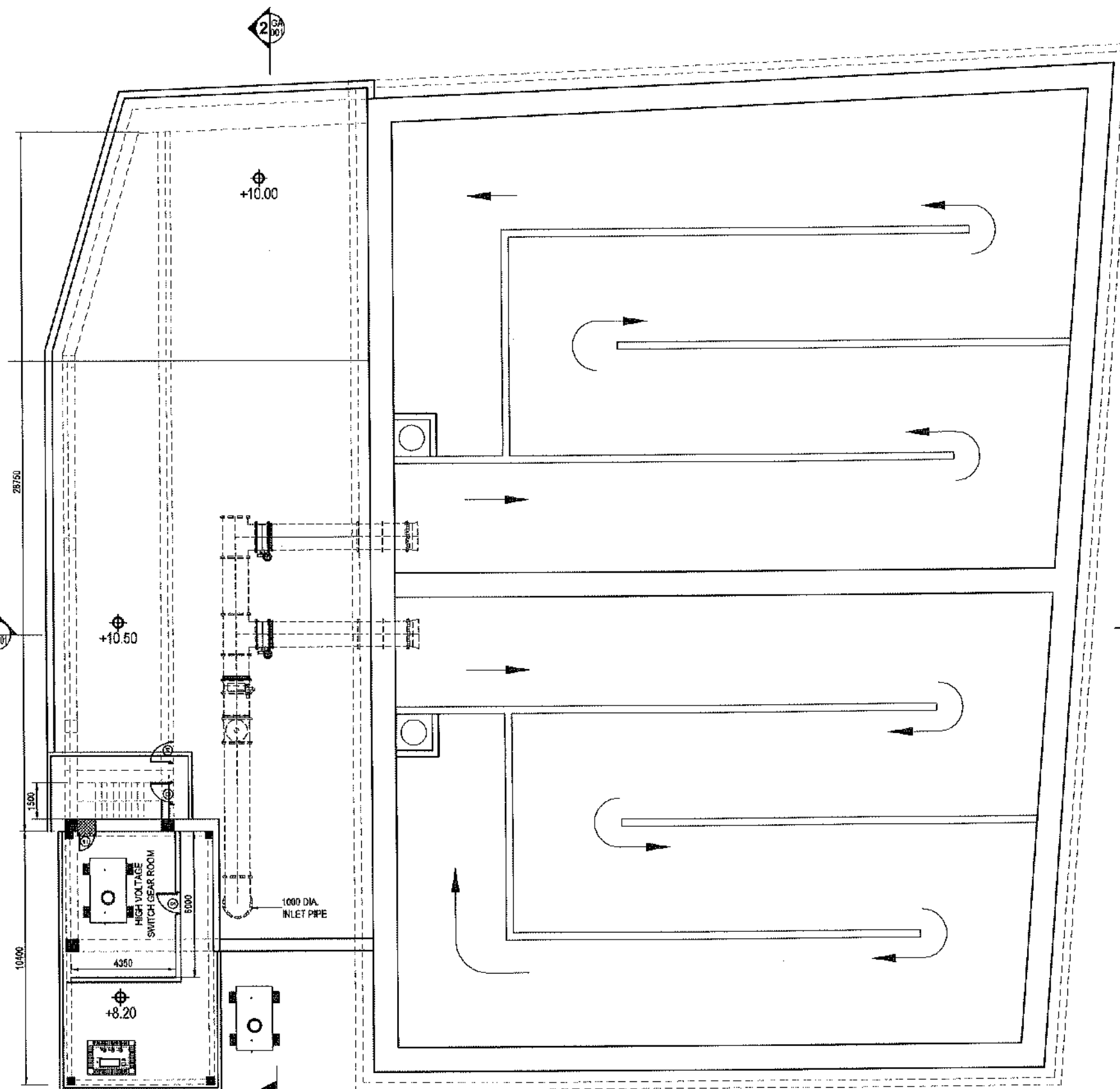
NOTE:

1. THE GIVEN SIZE OF THE PUMP HOUSE, PIPES, PUMPS AND ALL DETAILS ARE BASED ON PRELIMINARY DESIGN ONLY. CONTRACTOR MAY CARRYOUT DETAILED DESIGN CONSIDERING ALL THE SPECIFICATIONS AND DESIGN GUIDELINES HIGHLIGHTED IN THE EMPLOYER REQUIREMENT.
2. THIS DRAWING IS ONLY FOR THE GUIDANCE OF THE CONTRACTOR ON THE EXPECTED ARRANGEMENT OF THE PUMP HOUSE.
3. THE CONTRACTOR IS EXPECTED IN DESIGN THE PIPE WORK TO SUIT HIS SELECTED PUMPS WITH REQUIRED SUPPORTS, THRUST BLOCK AND WALK WAYS FOR UNOBSTRUCTED MAINTENANCE WORK.
4. INTERNAL DRAINS AND DRAIN PITS SHALL BE ADEQUATELY SIZED FOR REMOVING BEARING WASH WATER FROM THE PUMP HOUSE FLOW.



CONCEPTUAL DRAWING

CHATTOGRAM WATER SUPPLY & SEWERAGE AUTHORITY (CWASA)	
PROJECT	CHATTOGRAM WATER SUPPLY IMPROVEMENT PROJECT (CWSIP)
PACKAGE	CWSIP/W1 - LOT 1 Design, Construction, Supply, Installation, Testing & Commissioning for System Improvement and DMA Formation of Mohara Water Supply System
IDA CREDIT NO:	7675-BD & 7674- BD
TITLE	DHAKA TRUNK ROAD GROUND RESERVOIR AND PUMP STATION - PLAN AT + 3.50 LEVEL
DRAWING No:	CWSIP/W1L1/DTR/GA-001



NOTE:

1. THE GIVEN SIZE OF THE PUMP HOUSE, PIPES, PUMPS AND ALL DETAILS ARE BASED ON PRELIMINARY DESIGN ONLY. CONTRACTOR MAY CARRYOUT DETAILED DESIGN CONSIDERING ALL THE SPECIFICATIONS AND DESIGN GUIDELINES HIGHLIGHTED IN THE EMPLOYER REQUIREMENT.
2. THIS DRAWING IS ONLY FOR THE GUIDANCE OF THE CONTRACTOR ON THE EXPECTED ARRANGEMENT OF THE PUMP HOUSE.
3. THE CONTRACTOR IS EXPECTED IN DESIGN THE PIPE WORK TO SUIT HIS SELECTED PUMPS WITH REQUIRED SUPPORTS, THRUST BLOCK AND WALK WAYS FOR UNOBSTRUCTED MAINTENANCE WORK.
4. INTERNAL DRAINS AND DRAIN PITS SHALL BE ADEQUATELY SIZED FOR REMOVING BEARING WASH WATER FROM THE PUMP HOUSE FLOW.

CONCEPTUAL DRAWING

PLAN AT + 10.50 LEVEL
SCALE 1 : 200



CHATTOGRAM WATER SUPPLY & SEWERAGE AUTHORITY
(CWASA)

PROJECT CHATTOGRAM WATER SUPPLY IMPROVEMENT PROJECT (CWSIP)

PACKAGE CWSIP/W1 - LOT 1
Design, Construction, Supply, Installation, Testing & Commissioning for System Improvement and DMA Formation of Mohara Water Supply System

IDA CREDIT NO: 7675-BD & 7674-BD

TITLE DHAKA TRUNK ROAD GROUND RESERVOIR AND
PUMP STATION - PLAN AT + 10.50 LEVEL

DRAWING No: CWSIP/W1L1/DTR/GA-002

SECTION 1
SCALE 1:150

NOTE:

1. THE GIVEN SIZE OF THE PUMP HOUSE, PIPES, PUMPS AND ALL DETAILS ARE BASED ON PRELIMINARY DESIGN ONLY. CONTRACTOR MAY CARRYOUT DETAILED DESIGN CONSIDERING ALL THE SPECIFICATIONS AND DESIGN GUIDELINES HIGHLIGHTED IN THE EMPLOYER REQUIREMENT.
2. THIS DRAWING IS ONLY FOR THE GUIDANCE OF THE CONTRACTOR ON THE EXPECTED ARRANGEMENT OF THE PUMP HOUSE.
3. THE CONTRACTOR IS EXPECTED IN DESIGN THE PIPE WORK TO SUIT HIS SELECTED PUMPS WITH REQUIRED SUPPORTS, THRUST BLOCK AND WALK WAYS FOR UNOBSTRUCTED MAINTENANCE WORK.
4. INTERNAL DRAINS AND DRAIN PITS SHALL BE ADEQUATELY SIZED FOR REMOVING BEARING WASH WATER FROM THE PUMP HOUSE FLOW.

Q

CONCEPTUAL DRAWING



CHATTOGRAM WATER SUPPLY & SEWERAGE AUTHORITY (CWASA)

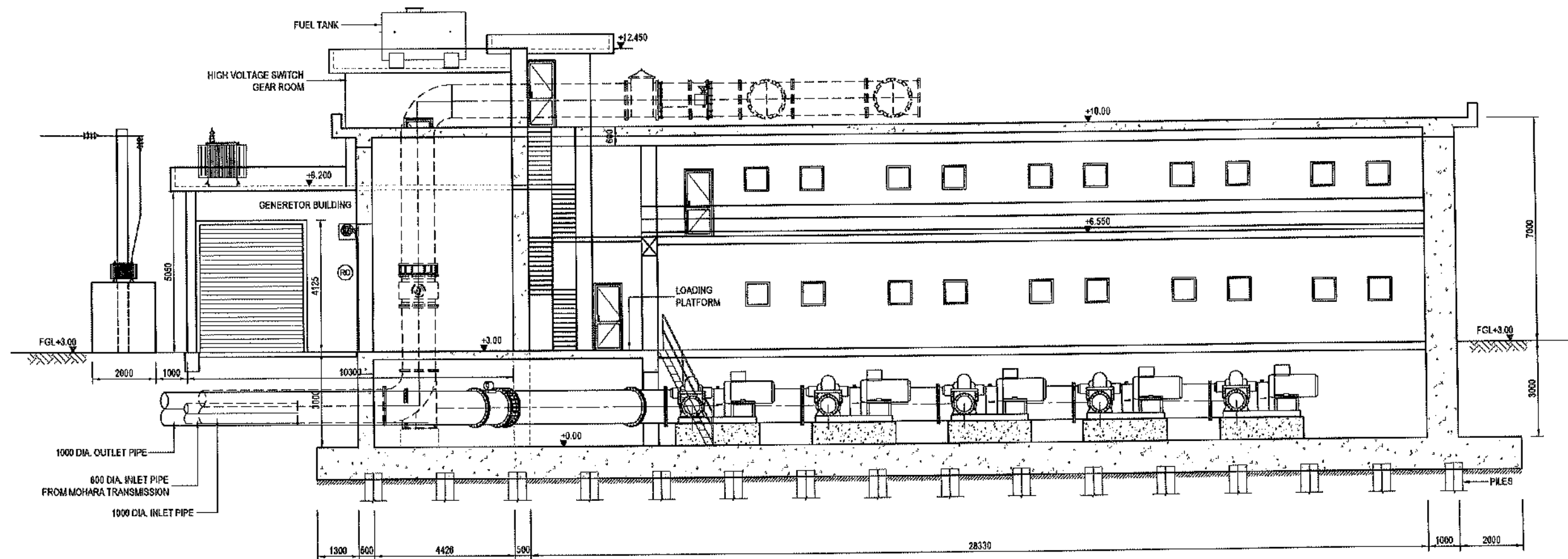
PROJECT CHATTOGRAM WATER SUPPLY IMPROVEMENT PROJECT (CWSIP)

PACKAGE CWSIP/W1 - LOT 1
Design, Construction, Supply, Installation, Testing & Commissioning for System Improvement and DMA Formation of Mohara Water Supply System

IDA CREDIT NO: 7675-BD & 7674- BD

TITLE DHAKA TRUNK ROAD GROUND RESERVOIR AND PUMP STATION - SECTION - 1

DRAWING No: CWSIP/W1L1/DTR/GA-003



SECTION 2
SCALE 1:150

NOTE:

1. THE GIVEN SIZE OF THE PUMP HOUSE, PIPES, PUMPS AND ALL DETAILS ARE BASED ON PRELIMINARY DESIGN ONLY. CONTRACTOR MAY CARRYOUT DETAILED DESIGN CONSIDERING ALL THE SPECIFICATIONS AND DESIGN GUIDELINES HIGHLIGHTED IN THE EMPLOYER REQUIREMENT.
2. THIS DRAWING IS ONLY FOR THE GUIDANCE OF THE CONTRACTOR ON THE EXPECTED ARRANGEMENT OF THE PUMP HOUSE.
3. THE CONTRACTOR IS EXPECTED IN DESIGN THE PRE WORK TO SUIT HIS SELECTED PUMPS WITH REQUIRED SUPPORTS, THRUST BLOCK AND WALK WAYS FOR UNOBSTRUCTED MAINTENANCE WORK.
4. INTERNAL DRAINS AND DRAIN PITS SHALL BE ADEQUATELY SIZED FOR REMOVING BEARING WASH WATER FROM THE PUMP HOUSE FLOW.

CONCEPTUAL DRAWING



CHATTOGRAM WATER SUPPLY & SEWERAGE AUTHORITY (CWASA)

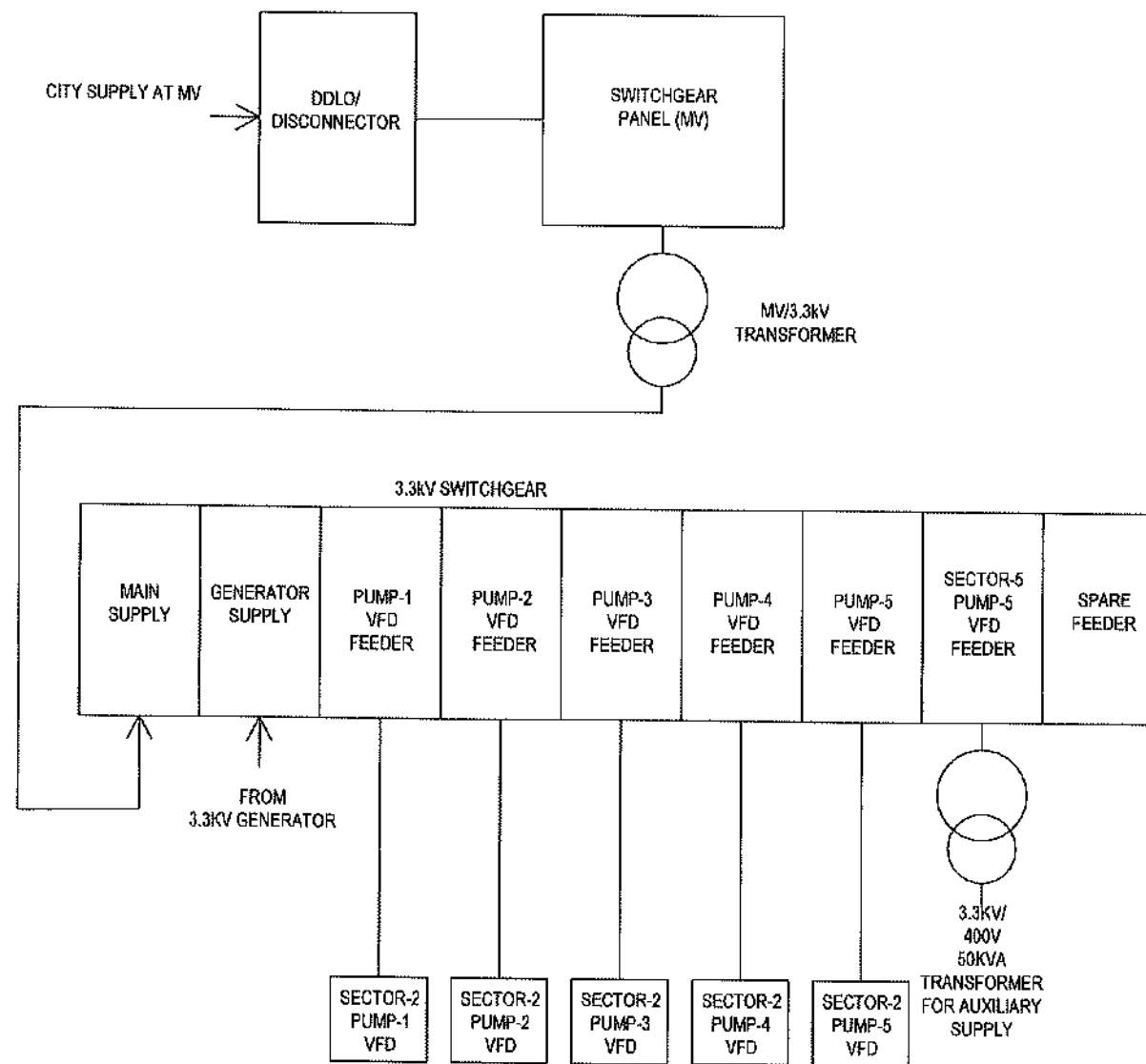
PROJECT CHATTOGRAM WATER SUPPLY IMPROVEMENT PROJECT (CWSIP)

PACKAGE CWSIP/W1 - LOT 1
Design, Construction, Supply, Installation, Testing & Commissioning for System Improvement and DMA Formation of Mohara Water Supply System

IDA CREDIT NO: 7675-BD & 7674-BD

TITLE DHAKA TRUNK ROAD GROUND RESERVOIR AND PUMP STATION - SECTION - 2

DRAWING No: CWSIP/W1/L1/DTR/GA-004



CONCEPTUAL DRAWING



CHATTOGRAM WATER SUPPLY & SEWERAGE AUTHORITY
(CWASA)

PROJECT CHATTOGRAM WATER SUPPLY IMPROVEMENT PROJECT (CWSIP)

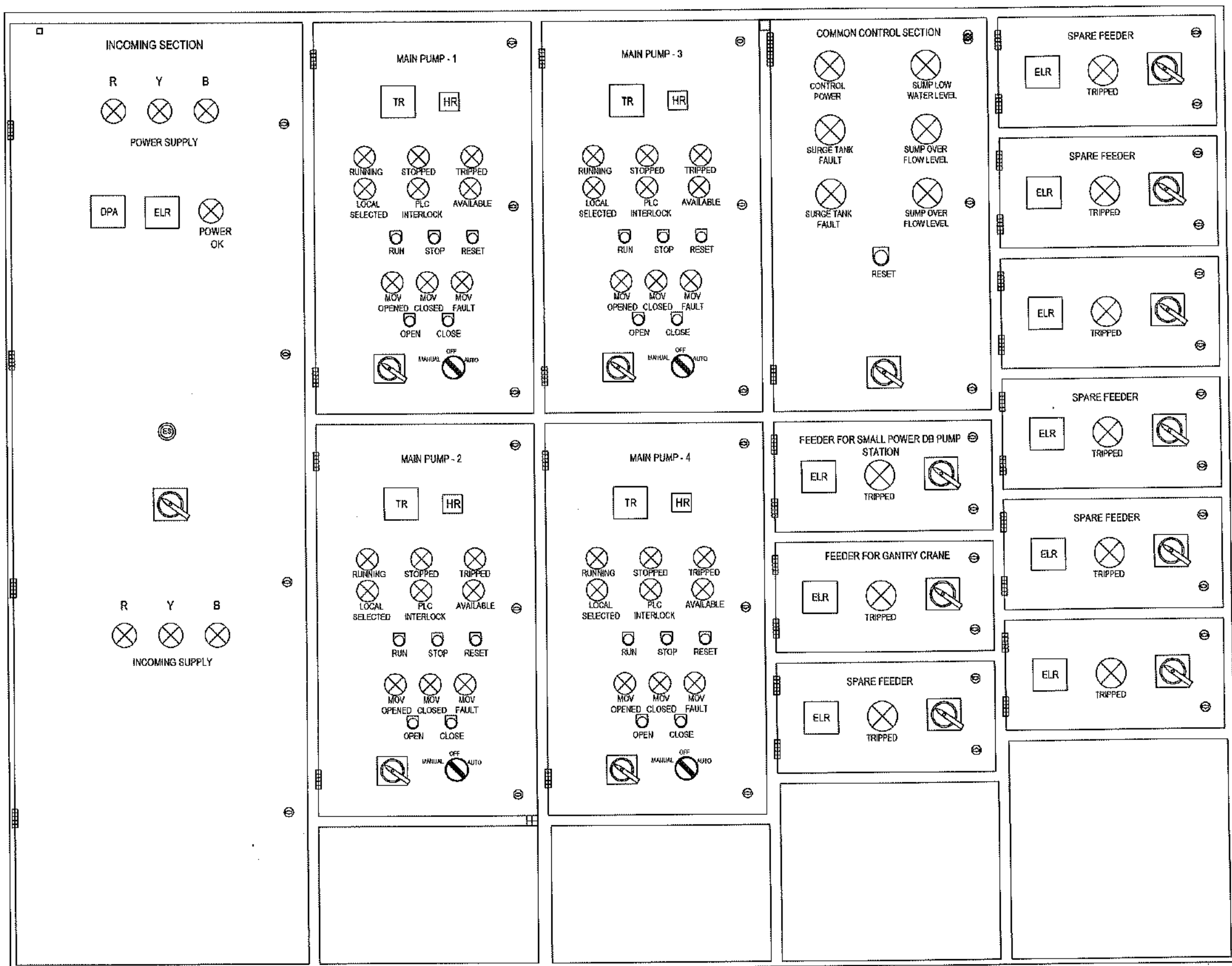
PACKAGE CWSIP/W1 - LOT 1
Design, Construction, Supply, Installation, Testing & Commissioning for System Improvement and DMA Formation of Mohara Water Supply System

IDA CREDIT NO: 7675-BD & 7674- BD

TITLE DHAKA TRUNK ROAD GROUND RESERVOIR AND PUMP STATION
ELECTRICAL OVERVIEW

DRAWING No: CWSIP/W1L1/DTR/E-001

MCC PANEL FACE - REMOTE VFD



LEGEND	
ELR	EARTH CURRENT RELAY
HR	HOUR RUN METER
DPA	DIGITAL POWER ANALYZER
TR	PT-100 TEMPERATURE RELAY
VR	VIBRATION RELAY
⊗	INDICATION LIGHT
⬮	PUSH BUTTON

NOTES:

- THIS DRAWING IS FOR GUIDANCE. THE MANUFACTURER SHALL PREPARE DETAIL ELECTRICAL DRAWINGS AND SUBMIT FOR APPROVAL.
- NUMBER OF MAIN PUMPS / FEEDERS ARE TO BE CHANGED ACCORDING TO THE ACTUAL NUMBERS INSTALLED.
- PANEL SHALL HAVE PROVISIONS FOR FUTURE PUMPS.
- EACH CIRCUIT SHALL BE WITH INDIVIDUAL EARTH LEAKAGE PROTECTION.
- EACH CUBICLE SHALL HAVE 400/230V CONTROL TRANSFORMER.
- ENCLOSURE SHALL MEET WITH IP-54 INGRESS PROTECTION AFTER INSTALLATION OF ALL COMPONENTS.

CONCEPTUAL DRAWING



CHATTOTGRAM WATER SUPPLY & SEWERAGE AUTHORITY (CWASA)

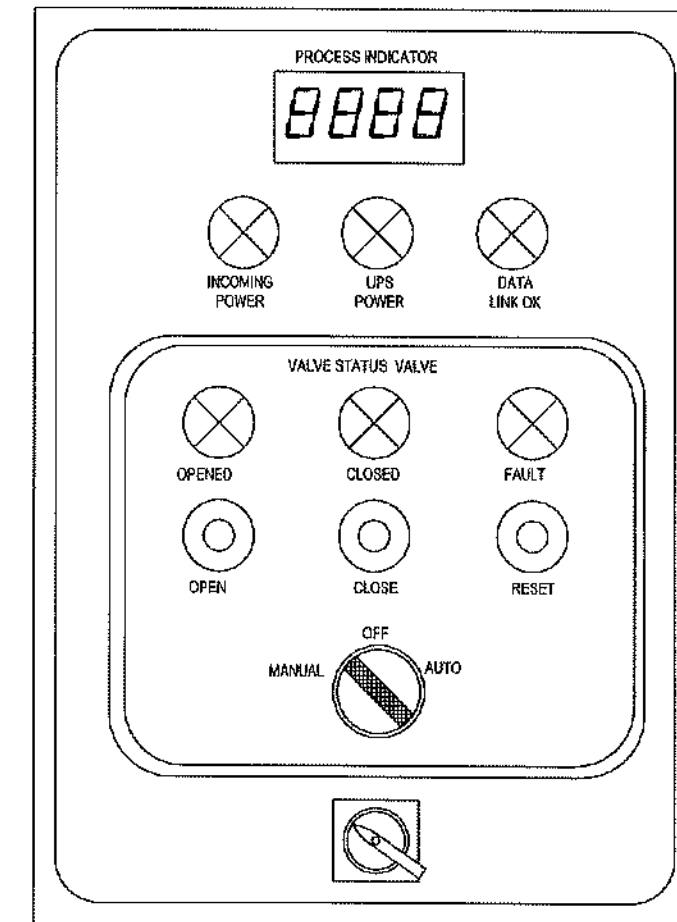
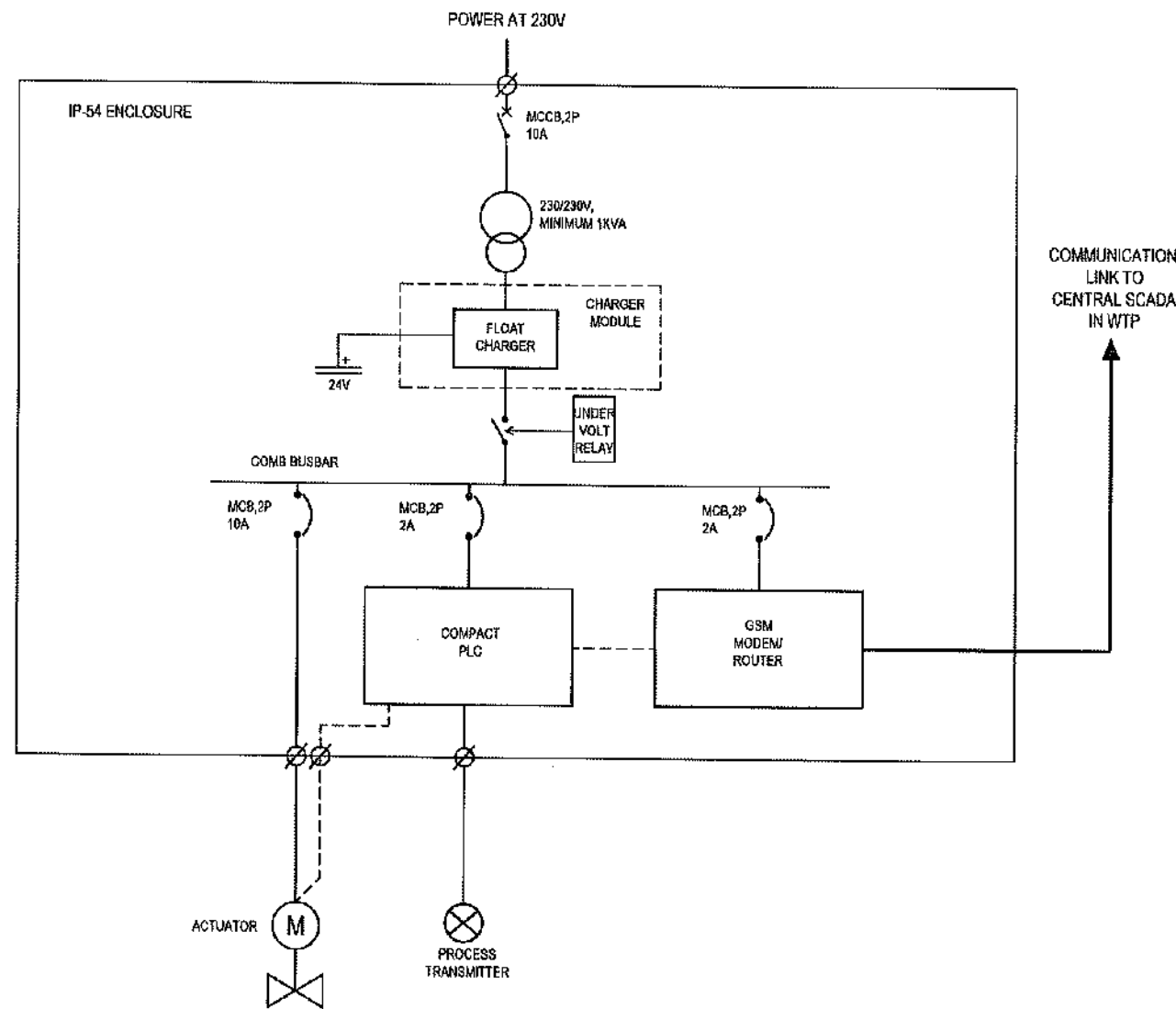
PROJECT CHATTOTGRAM WATER SUPPLY IMPROVEMENT PROJECT (CWSIP)

PACKAGE CWSIPW1 - LOT 1
Design, Construction, Supply, Installation, Testing & Commissioning for System Improvement and DMA Formation of Mohara Water Supply System

IDA CREDIT NO: 7675-BD & 7674- BD

TITLE DHAKA TRUNK ROAD GROUND RESERVOIR AND PUMP STATION
MCC PANEL FACE WITH REMOTE VFD

DRAWING No: CWSIP/W1L1/DTR/E-002



LEGEND					
	MCCB		AMMETER		PANEL MOUNTED KEY BOARD FOR THE DRIVE
	MCB		VOLT METER		PF CAPACITOR
	CONTACTOR		EARTH CURRENT RELAY		POWER/ENERGY ANALYZER
	FUSE		HOUR RUN METER		
	CURRENT TRANSFORMER		SUPPLY MONITORING RELAY		
	SELECTOR SWITCH		MOTOR		
	SURGE ARRESTOR		TRANSFORMER 400/230V, 500VA		
	RCB WITH AUX, CONTACT		INDICATION LIGHT		

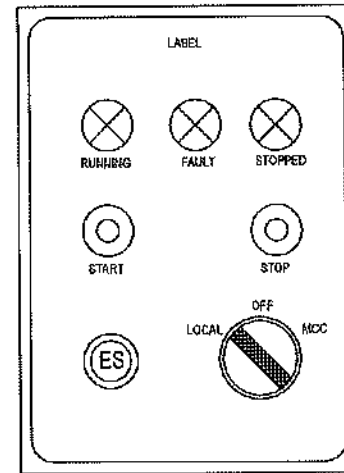
NOTES:

- 1) ENCLOSURE SHALL BE IP-54.
- 2) IF INSTALLED OUTDOOR ADDITIONAL SUN / RAIN COVER SHALL BE PROVIDED TO SUIT SITE CONDITIONS.
- 3) ENCLOSURE SHALL BE SUITABLE FOR POLE / PEDESTAL / WALL MOUNTING TO SUIT SITE CONDITIONS.
- 4) FOR BATTERY CAPACITY SHOULD BE SUFFICIENT FOR 8 HOUR NORMAL OPERATION
- 5) UNDER VOLTAGE RELAY FOR THE UPS SHALL BE AUTO RESET TYPE.
- 6) BATTERIES SHALL BE SEALED LEAD ACID TYPE.
- 7) THIS TYPICAL DRAWING MAY BE ADOPTED TO SUIT SPECIFIC REQUIREMENT

CONCEPTUAL DRAWING

	CHATTOGRAM WATER SUPPLY & SEWERAGE AUTHORITY (CWASA)
PROJECT	CHATTOGRAM WATER SUPPLY IMPROVEMENT PROJECT (CWSIP)
PACKAGE	CWSIP/W1 - LOT 1 Design, Construction, Supply, Installation, Testing & Commissioning for System Improvement and DMA Formation of Mohara Water Supply System
IDA CREDIT NO:	7675-BD & 7674- BD
TITLE	DHAKA TRUNK ROAD GROUND RESERVOIR AND PUMP STATION REMOTE ACTUATION AND MONITORING PANEL (RAMP) DETAILS
DRAWING No:	CWSIP/W1L1/DTR/E-003

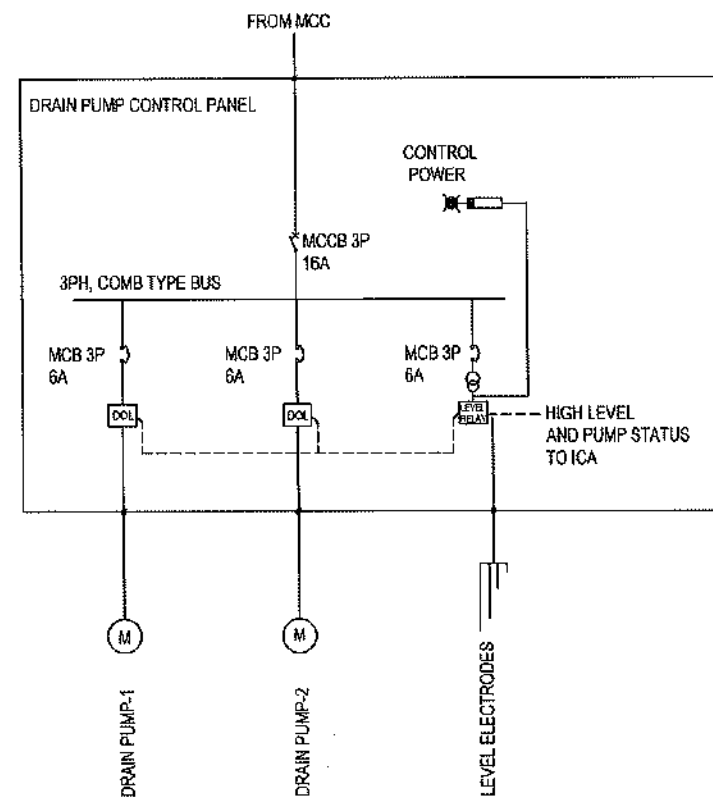
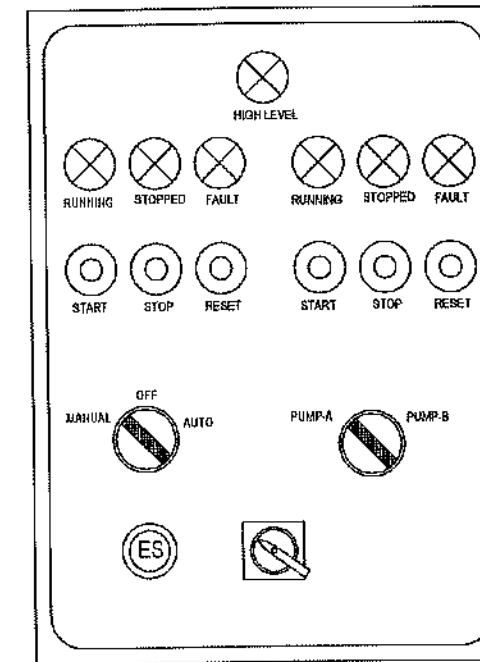
LOCAL OPERATION STATION (LOS)



NOTES:

- 1) LOS SHALL BE PEDESTAL MOUNTED TYPE / WALL MOUNTED TYPE TO SUIT SITE CONDITIONS.
- 2) ENCLOSURE PROTECTION SHALL BE IP-54
- 3) ADDITIONAL WEATHER PROTECTIVE COVERS SHALL BE PROVIDED WHERE REQUIRED CONSIDERING INSTALLATION LOCATION.

DRAIN PUMP CONTROL PANEL



LEGEND					
	MCCB		AMMETER		PANEL MOUNTED KEY BOARD FOR THE DRIVE
	MCB		VOLT METER		PF CAPACITOR
	CONTACTOR		EARTH CURRENT RELAY		POWER /ENERGY ANALYZER
	FUSE		HOUR RUN METER		
	CURRENT TRANSFORMER		SUPPLY MONITORING RELAY		
	SELECTOR SWITCH		MOTOR		
	SURGE ARRESTOR		TRANSFORMER 400/230V, 500VA		
	RCCB WITH AUX. CONTACT		INDICATION LIGHT		

NOTES:

- 1) THIS DRAWING IS TYPICAL FOR ALL DRAIN PUMPS PANELS
- 2) DEGREE OF ENCLOSURE PROTECTION SHALL BE IP-54
- 3) CONSTRUCTION SHALL BE SUITABLE FOR WALL MOUNTING
- 4) IF MOTOR CAPACITY IS MORE THAN 3.7 KW SOFT STARTER SHALL BE USED

CONCEPTUAL DRAWING



CHATTOGRAM WATER SUPPLY & SEWERAGE AUTHORITY (CWASA)

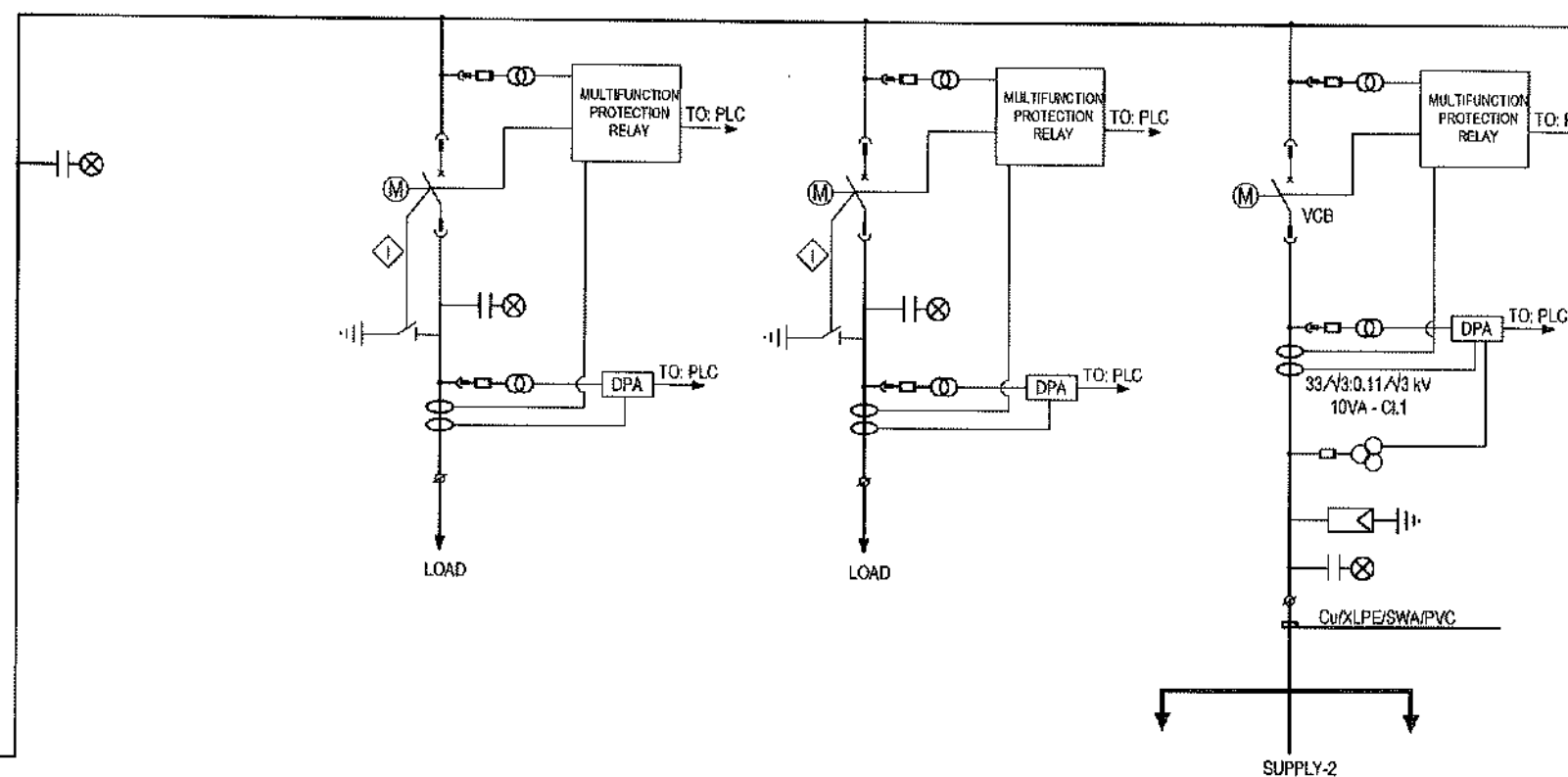
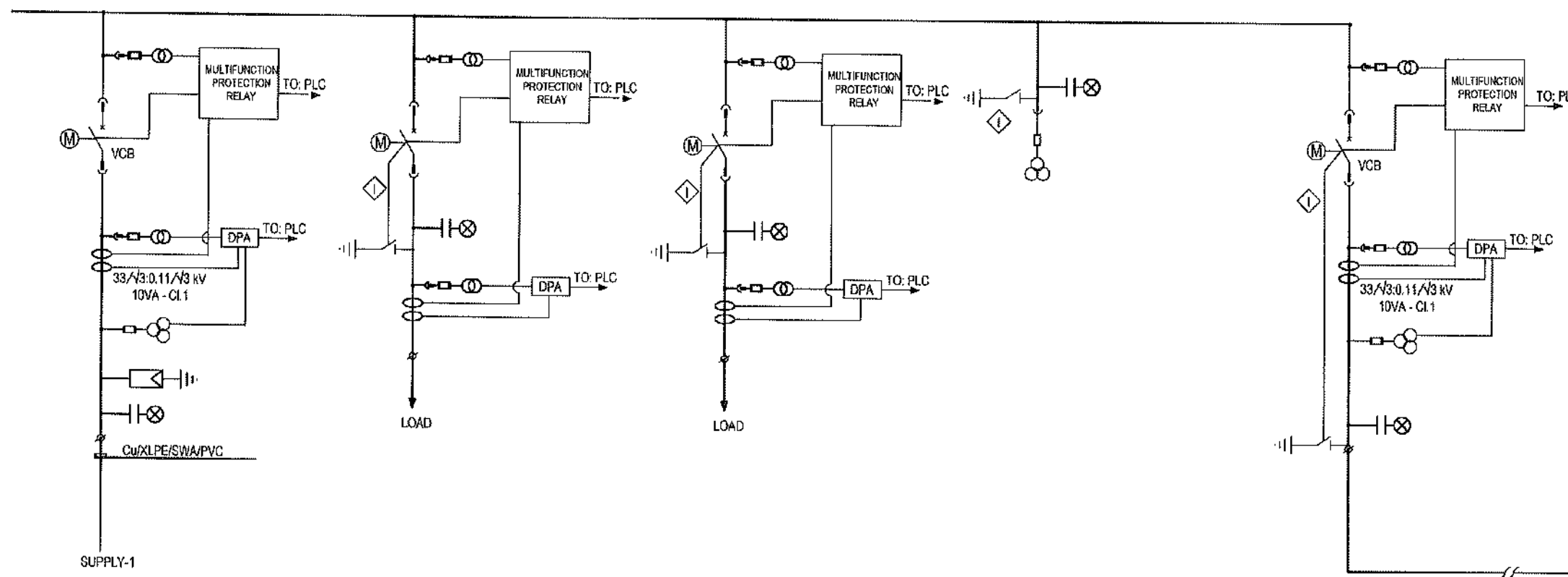
PROJECT CHATTOGRAM WATER SUPPLY IMPROVEMENT PROJECT (CWSIP)

PACKAGE CWSIP/W1 - LOT 1
Design, Construction, Supply, Installation, Testing & Commissioning for System Improvement and DMA Formation of Mohara Water Supply System

IDA CREDIT NO: 7675-BD & 7674- BD

TITLE DHAKA TRUNK ROAD GROUND RESERVOIR AND PUMP STATION
LOCAL OPERATION STATION AND LOCAL CONTROL PANEL FOR DRAIN PUMPS

DRAWING No: CWSIP/W1L1/DTR/E-004



NOTES:

- 1) ELECTRICAL AND MECHANICAL INTERLOCKS SHALL BE PROVIDED TO ENSURE SAFE ACCESS FOR MAINTENANCE.
- 2) SPECIAL KEY INTERLOCK ARRANGEMENT SHALL BE IMPLEMENTED TO ENSURE BUS EARTHING.
- 3) SPECIAL KEY INTERLOCK ARRANGEMENT SHALL BE IMPLEMENTED TO RESTRICT ACCESS TO INCOMING CUBICLES TO ENSURE UPSTREAM SUPPLY IS DISCONNECTED AND BUS EARTH IS CLOSED. (IN COORDINATION WITH SUPPLY AUTHORITY)
- 4) PROTECTION CIRCUITS SHALL OPERATE AT 110V. (110V DC SUPPLY SHALL BE INCLUDED IN THE SCOPE)
- 5) MULTIFUNCTION RELAYS AND POWER ANALYZERS SHALL BE CONNECTED PLC WITH COMMUNICATION.
- 6) ALL ACCESSORIES INCLUDING SPARE PARTS, MAINTENANCE TOOLS, DIAGNOSTIC TOOLS SHALL BE SUPPLIED.
- 7) NUMBER OF INCOMINGS, FEEDERS SHALL BE CHANGED TO SUIT PROJECT REQUIREMENT.



CONCEPTUAL DRAWING



CHATTOGRAM WATER SUPPLY & SEWERAGE AUTHORITY (CWASA)

PROJECT CHATTOGRAM WATER SUPPLY IMPROVEMENT PROJECT (CWSIP)

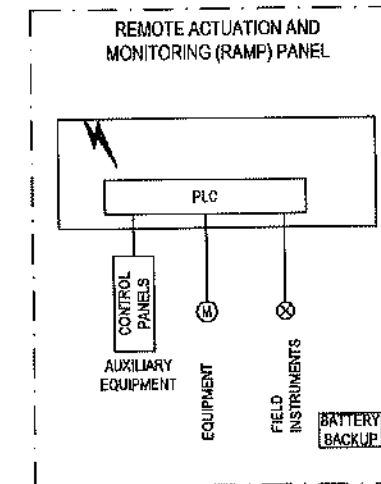
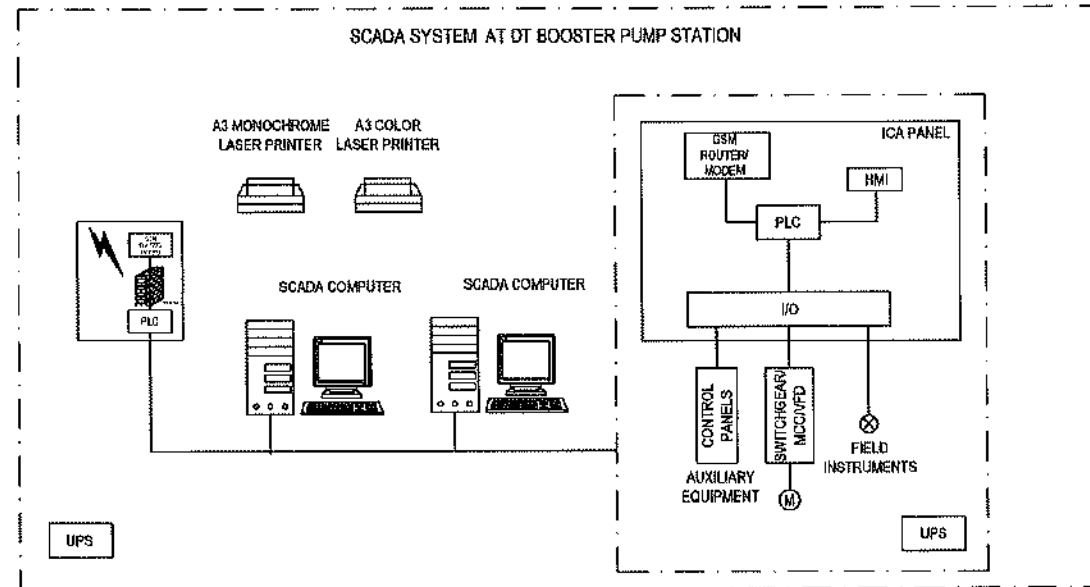
PACKAGE CWSIP/W1 - LOT 1
Design, Construction, Supply, Installation, Testing & Commissioning for System Improvement and DMA Formation of Mohara Water Supply System

IDA CREDIT NO: 7675-BD & 7674-BD

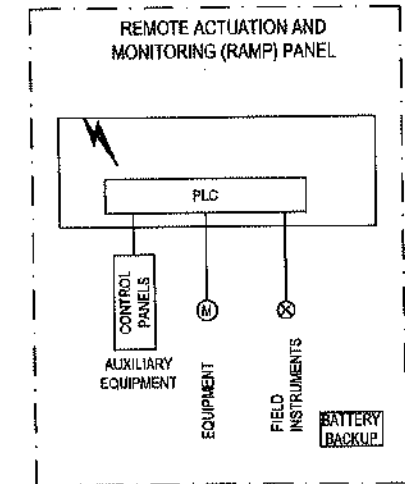
TITLE DHAKA TRUNK ROAD GROUND RESERVOIR AND PUMP STATION
SWITCHGEAR SINGLE LINE DIAGRAM

DRAWING No. CWSIP/W1L1/DTR/E-005

SCADA SYSTEM OVERVIEW- DT BOOSTER PUMP STATION



SECTOR-2 CRITICAL PRESSURE MONITORING



ROAD SIDE BOOSTER FOR MONITORING DELIVERY PRESSURE AND FAULT STATUS

ABBREVIATIONS	
ICA	INSTRUMENTATION CONTROL & AUTOMATION PANEL
PLC	PROGRAMMABLE LOGIC CONTROLLER
CPLC	COMPACT PLC
I/O	INPUT/OUTPUT MODULES
PSP	PUMP STARTER PANEL
UPS	UNINTERRUPTIBLE POWER SUPPLY

LEGEND	
—	ETHERNET CABLE
—	FIBRE OPTIC CABLE
⊗	FIELD INSTRUMENT
⚡	GSM CONNECTION (VPN)

NOTES:

- 1) NUMBER OF ROAD SIDE BOOSTER PUMP STATIONS ARE TO BE DECIDED BASED ON THE HYDRAULIC CALCULATION.
- 2) PROVISION FOR INTEGRATION WITH FUTURE EQUIPMENT / COMPUTERS SHALL BE AVAILABLE.
- 3) ALL INFORMATION AVAILABLE IN THE SCADA SYSTEM SHALL BE MADE AVAILABLE FOR THIRD PARTY EQUIPMENT VIA INTERNET.
- 4) STATUS / MEASUREMENTS INCLUDING ALARM CONDITIONS SHALL BE ANNOUNCED IN ASSIGNED EQUIPMENT INCLUDING SMART PHONES.
- 5) WHEN PUMP DELIVERY FLOW METER CAN BE USED AS SECTOR/DMA METER PROVISION FOR INTERFACING WITH EXTERNAL HARDWARE SHALL BE PROVIDED AS SPECIFIED.

CONCEPTUAL DRAWING



CHATTOGRAM WATER SUPPLY & SEWERAGE AUTHORITY (CWASA)

PROJECT CHATTOGRAM WATER SUPPLY IMPROVEMENT PROJECT (CWSIP)

PACKAGE CWSIPW1 - LOT 1
Design, Construction, Supply, Installation, Testing & Commissioning for System Improvement and DMA Formation of Mohara Water Supply System

IDA CREDIT NO: 7675-BD & 7674-BD

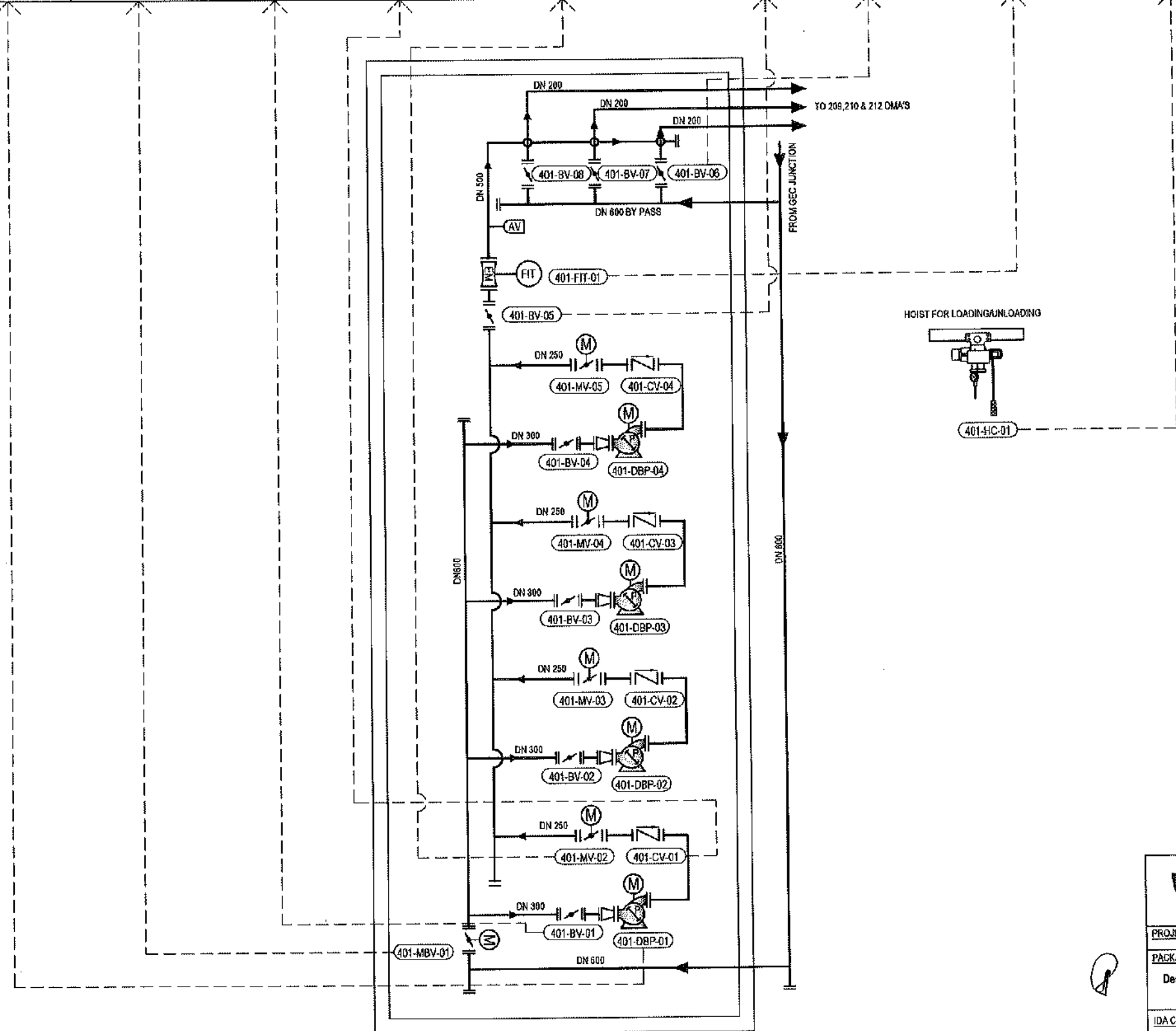
TITLE DHAKA TRUNK ROAD GROUND RESERVOIR AND PUMP STATION
SCADA SYSTEM OVERVIEW

DRAWING No: CWSIP/W1L1/DTR/E-006

KHULSHI BOOSTER PUMP STATION

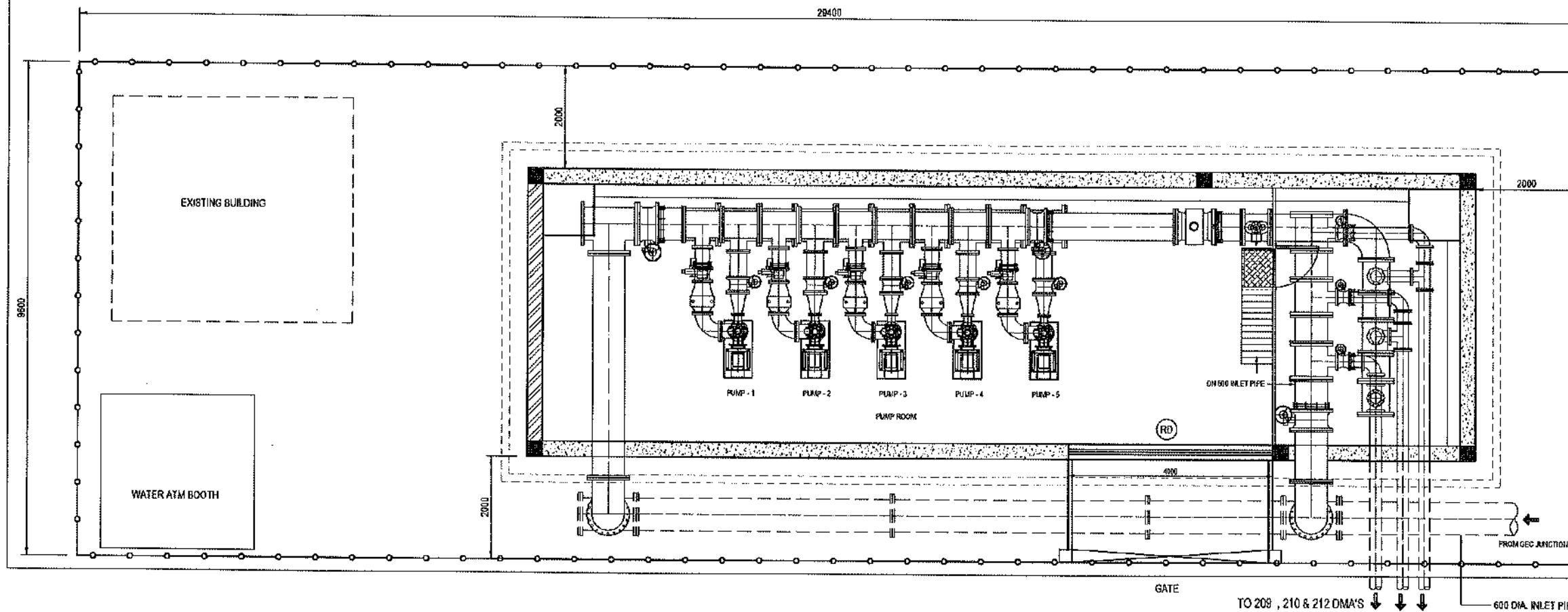
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ITEM NO.	401-DBP-01/04	401-MBV-01	401-MBV-02/05	401-CV-01/04	401-BV-01/04	401-BV-05	401-BV-06/08	401-FIT-01	401-MC-01
ITEM NAME	DISTRIBUTION PUMP	SUCTION HEADER VALVE	PUMP SUCTION HEADER VALVE	PUMP DICHARGE VALVE	PUMP DICHARGE VALVE	DELIVERY HEADER VALVE	BY PASS VALVE	DELIVERY HEADER FLOW METER	HOIST
SPECIFICATIONS	HORIZONTAL END SUCTION VOLT PUMP	MOTORIZED BUTTERFLY VALVE	MOTORIZED BUTTERFLY VALVE	CHECK VALVE (SHORT BODY TYPE)	MANUAL OPERATED BUTTERFLY VALVE	MANUAL OPERATED BUTTERFLY VALVE	MANUAL OPERATED BUTTERFLY VALVE	ELECTROMAGNETIC FLOWMETER	MANUAL OPERATED MONORAIL HOIST
QUANTITY	04	01	04	04	04	01	03	01	



CONCEPTUAL DRAWING

WASA	CHATTOTRAM WATER SUPPLY & SEWERAGE AUTHORITY (CWASA)
PROJECT	CHATTOTRAM WATER SUPPLY IMPROVEMENT PROJECT (CWSIP)
PACKAGE	CWSIP/W1 - LOT 1 Design, Construction, Supply, Installation, Testing & Commissioning for System Improvement and DMA Formation of Mohara Water Supply System
IDA CREDIT NO.	7675-BD & 7674-BD
TITLE	KHULSHI BOOSTER PUMP STATION PROCESS ARRANGEMENT - (OVERVIEW)
DRAWING No.	CWSIP/W1/L1/KUL/PID-001



PLAN
SCALE 1:100

CONCEPTUAL DRAWING



CHATTOGRAM WATER SUPPLY & SEWERAGE AUTHORITY
(CWASA)

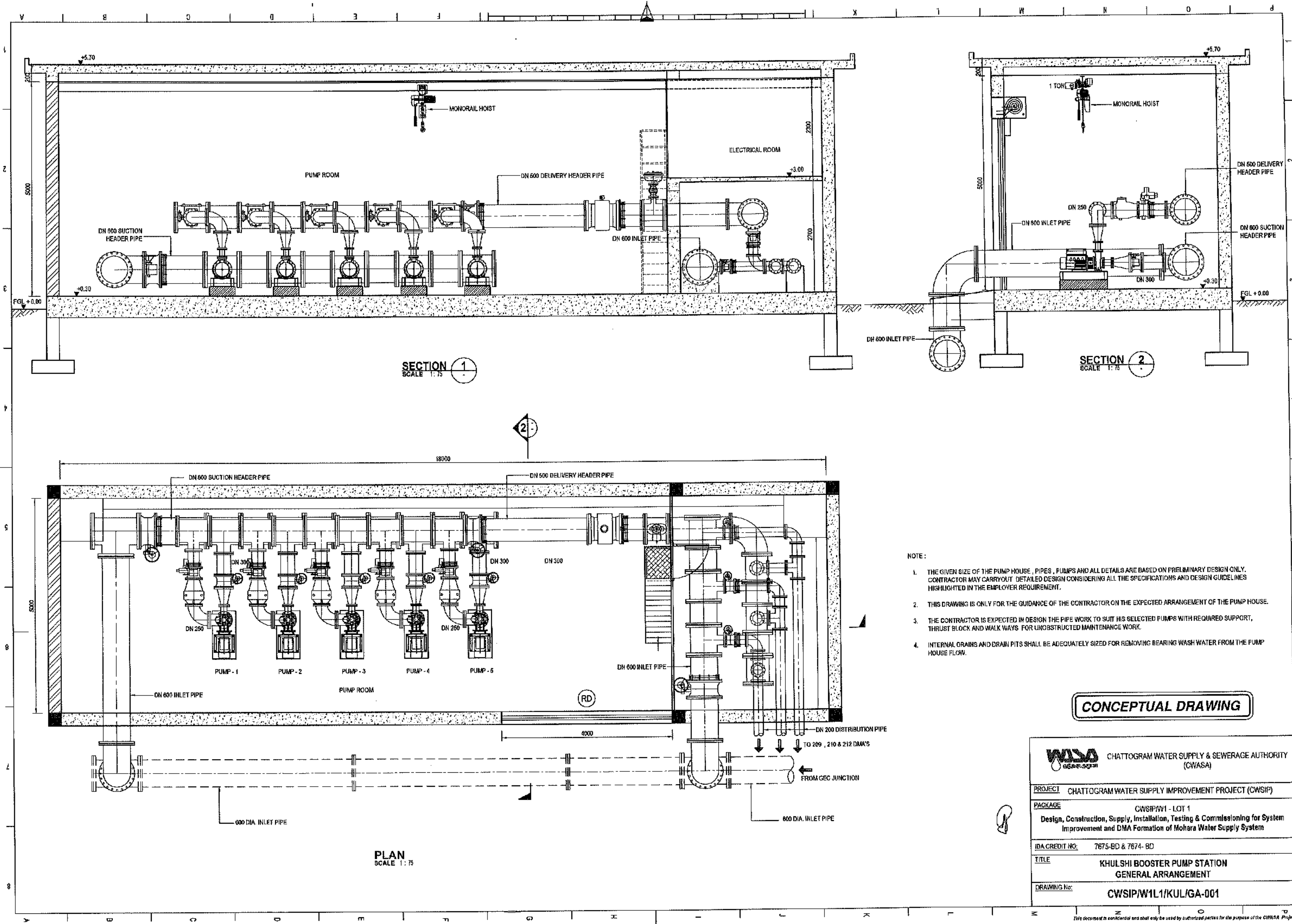
PROJECT CHATTOGRAM WATER SUPPLY IMPROVEMENT PROJECT (CWSIP)

PACKAGE CWSIP/W1 - LOT 1
Design, Construction, Supply, Installation, Testing & Commissioning for System Improvement and DMA Formation of Mohara Water Supply System

IDA CREDIT NO: 7675-BD & 7674-BD

TITLE KHULSHI BOOSTER PUMP STATION
SITE LAYOUT PLAN

DRAWING No: CWSIP/W1/L1/KUL/G-001

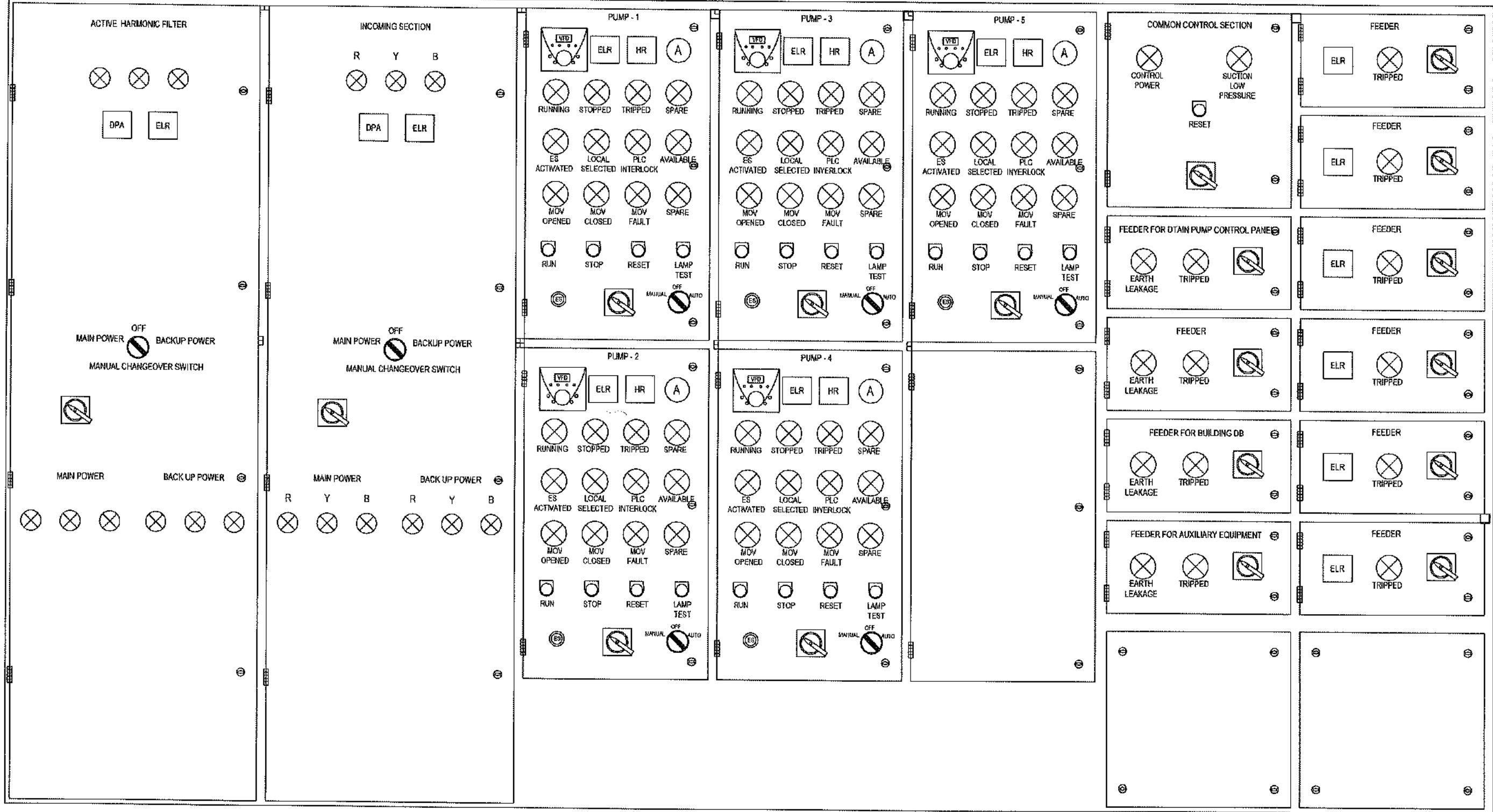


- NOTE:
1. THE GIVEN SIZE OF THE PUMP HOUSE, PIPES, PUMPS AND ALL DETAILS ARE BASED ON PRELIMINARY DESIGN ONLY. CONTRACTOR MAY CARRY OUT DETAILED DESIGN CONSIDERING ALL THE SPECIFICATIONS AND DESIGN GUIDELINES HIGHLIGHTED IN THE EMPLOYER REQUIREMENT.
 2. THIS DRAWING IS ONLY FOR THE GUIDANCE OF THE CONTRACTOR ON THE EXPECTED ARRANGEMENT OF THE PUMP HOUSE.
 3. THE CONTRACTOR IS EXPECTED IN DESIGN THE PIPE WORK TO SUIT HIS SELECTED PUMPS WITH REQUIRED SUPPORT, THRUST BLOCK AND WALK WAYS FOR UNOBSTRUCTED MAINTENANCE WORK.
 4. INTERNAL DRAINS AND DRAIN PITS SHALL BE ADEQUATELY SIZED FOR REMOVING BEARING WASH WATER FROM THE PUMP HOUSE FLOW.

CONCEPTUAL DRAWING

 CHATTOTRAM WATER SUPPLY & SEWERAGE AUTHORITY (CWASA)	
PROJECT	CHATTOTRAM WATER SUPPLY IMPROVEMENT PROJECT (CWSIP)
PACKAGE	CWSIP/W1 - LOT 1 Design, Construction, Supply, Installation, Testing & Commissioning for System Improvement and DMA Formation of Mohara Water Supply System
IDA CREDIT NO.	7675-BD & 7674- BD
TITLE	KHULSHI BOOSTER PUMP STATION GENERAL ARRANGEMENT
DRAWING No.	CWSIP/W1L1/KUL/GA-001

MCC IN KULSHI PUMP STATION



NOTES:

- 1) ENCLOSURE PROTECTION SHOULD BE IP-54 AFTER INSTALLATION OF ALL PANEL MOUNTED EQUIPMENT
- 2) LAYOUT IS FOR GUIDANCE ONLY. VENDOR SHALL SUBMIT FABRICATION DRAWINGS FOR APPROVAL.



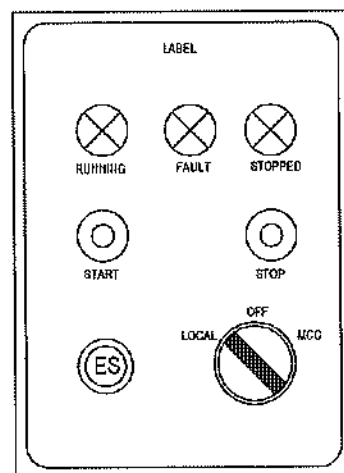
CONCEPTUAL DRAWING



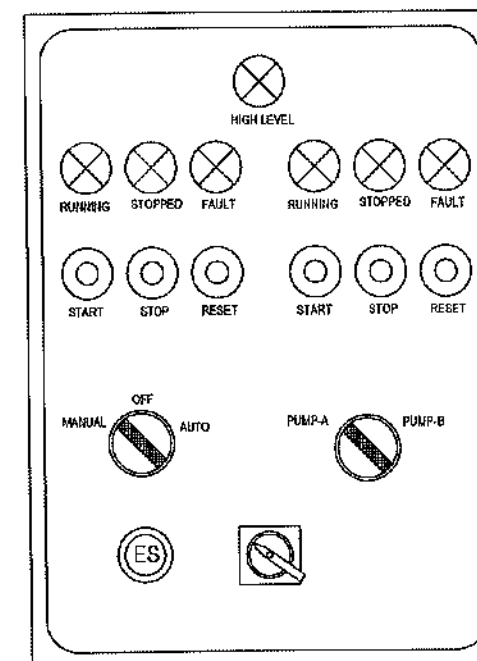
CHATTOGRAM WATER SUPPLY & SEWERAGE AUTHORITY (CWASA)

PROJECT	CHATTOGRAM WATER SUPPLY IMPROVEMENT PROJECT (CWSIP)
PACKAGE	CWSIP/W1 - LOT 1 Design, Construction, Supply, Installation, Testing & Commissioning for System Improvement and DMA Formation of Mohara Water Supply System
IDA CREDIT NO.	7675-BD & 7674- BD
TITLE	KHULSHI BOOSTER PUMP STATION MCC PANEL FACE WITH INTEGRAL VFD
DRAWING No.	CWSIP/W1/L1/KUL/E-001

LOCAL OPERATION STATION (LOS)

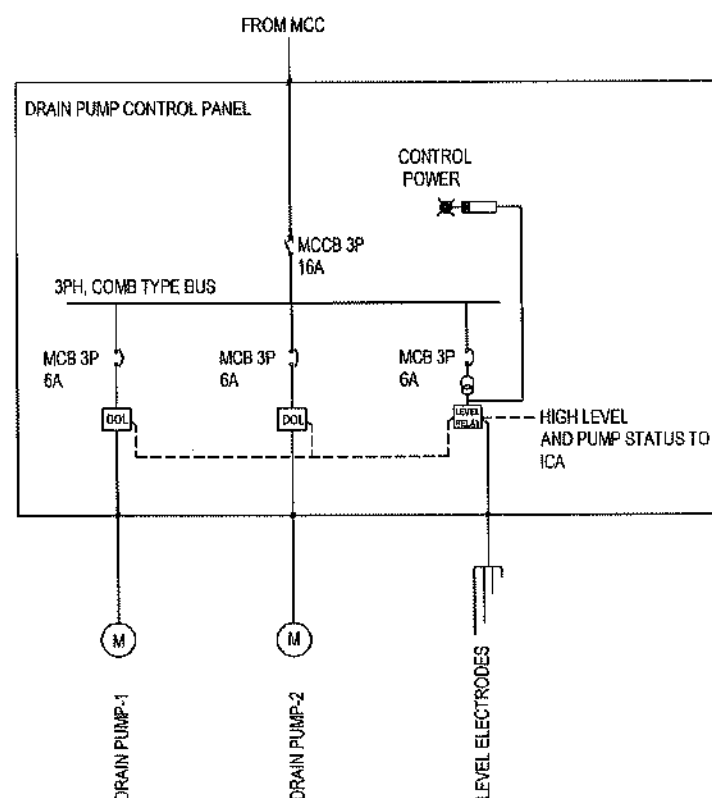


DRAIN PUMP CONTROL PANEL



NOTES:

- 1) LOS SHALL BE PEDESTAL MOUNTED TYPE / WALL MOUNTED TYPE TO SUIT SITE CONDITIONS.
- 2) ENCLOSURE PROTECTION SHALL BE IP-54
- 3) ADDITIONAL WEATHER PROTECTIVE COVERS SHALL BE PROVIDED WHERE REQUIRED CONSIDERING INSTALLATION LOCATION.



LEGEND					
	MCCB		AMMETER		PANEL MOUNTED KEY BOARD FOR THE DRIVE
	MCB		VOLT METER		PF CAPACITOR
	CONTACTOR		EARTH CURRENT RELAY		POWER /ENERGY ANALYZER
	FUSE		HOUR RUN METER		
	CURRENT TRANSFORMER		SUPPLY MONITORING RELAY		
	SELECTOR SWITCH		MOTOR		
	SURGE ARRESTOR		TRANSFORMER 400/230V, 500VA		
	RCCB WITH AUX. CONTACT		INDICATION LIGHT		

NOTES:

- 1) THIS DRAWING IS TYPICAL FOR ALL DRAIN PUMPS PANELS
- 2) DEGREE OF ENCLOSURE PROTECTION SHALL BE IP-54
- 3) CONSTRUCTION SHALL BE SUITABLE FOR WALL MOUNTING
- 4) IF MOTOR CAPACITY IS MORE THAN 3.7 KW SOFT STARTER SHALL BE USED

CONCEPTUAL DRAWING



CHATTOGRAM WATER SUPPLY & SEWERAGE AUTHORITY (CWASA)

PROJECT CHATTOGRAM WATER SUPPLY IMPROVEMENT PROJECT (CWSIP)

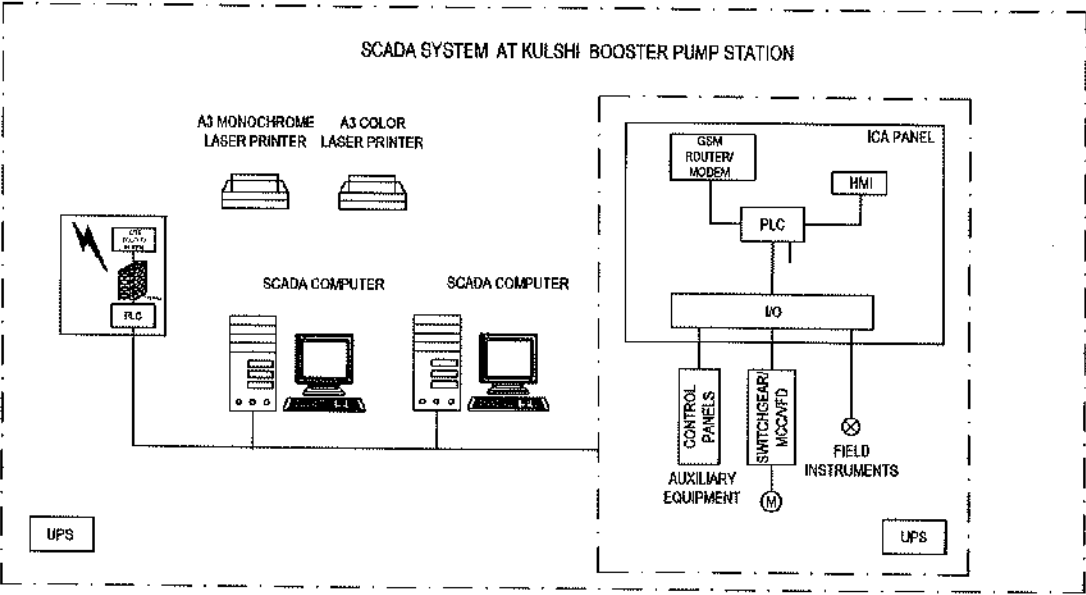
PACKAGE CWSIP/W1 - LOT 1
Design, Construction, Supply, Installation, Testing & Commissioning for System Improvement and DMA Formation of Mohara Water Supply System

IDA CREDIT NO: 7675-BD & 7674-BD

TITLE KHULSHI BOOSTER PUMP STATION
LOCAL OPERATION STATION AND LOCAL CONTROL PANEL
FOR DRAIN PUMPS AND LOS

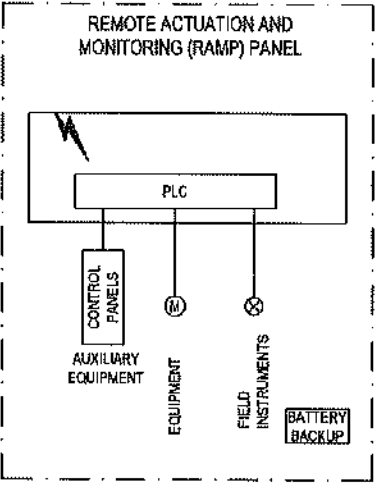
DRAWING No: CWSIP/W1L1/KUL/E-002

SCADA SYSTEM OVERVIEW- KULSHI BOOSTER PUMP STATION

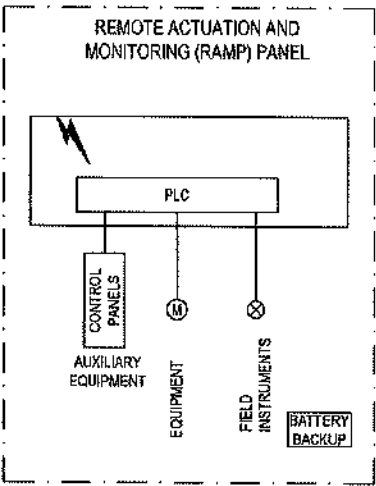


ABBREVIATIONS	
ICA	INSTRUMENTATION CONTROL & AUTOMATION PANEL
PLC	PROGRAMMABLE LOGIC CONTROLLER
CPLC	COMPACT PLC
I/O	INPUT/ OUTPUT MODULES
MCC	MOTOR CONTROL CENTER
PSP	PUMP STARTER PANEL
UPS	UNINTERRUPTIBLE POWER SUPPLY

LEGEND	
—	ETHERNET CABLE
—○—	FIBRE OPTIC CABLE
⊗	FIELD INSTRUMENT
⚡	GSM CONNECTION (VPM)



SECTOR-2 CRITICAL PRESSURE MONITORING



ROAD SIDE BOOSTER FOR MONITORING DELIVERY PRESSURE AND FAULT STATUS

- NOTES:
- 1) NUMBER OF ROAD SIDE BOOSTER PUMP STATIONS ARE TO BE DECIDED BASED ON THE HYDRAULIC CALCULATION.
 - 2) PROVISION FOR INTEGRATION WITH FUTURE EQUIPMENT / COMPUTERS SHALL BE AVAILABLE.
 - 3) ALL INFORMATION AVAILABLE IN THE SCADA SYSTEM SHALL BE MADE AVAILABLE FOR THIRD PARTY EQUIPMENT VIA INTERNET.
 - 4) STATUS / MEASUREMENTS INCLUDING ALARM CONDITIONS SHALL BE ANNOUNCED IN ASSIGNED EQUIPMENT INCLUDING SMART PHONES.
 - 5) WHEN PUMP DELIVERY FLOW METER CAN BE USED AS SECTOR/ DMA METER PROVISION FOR INTERFACING WITH EXTERNAL HARDWARE SHALL BE PROVIDED AS SPECIFIED.

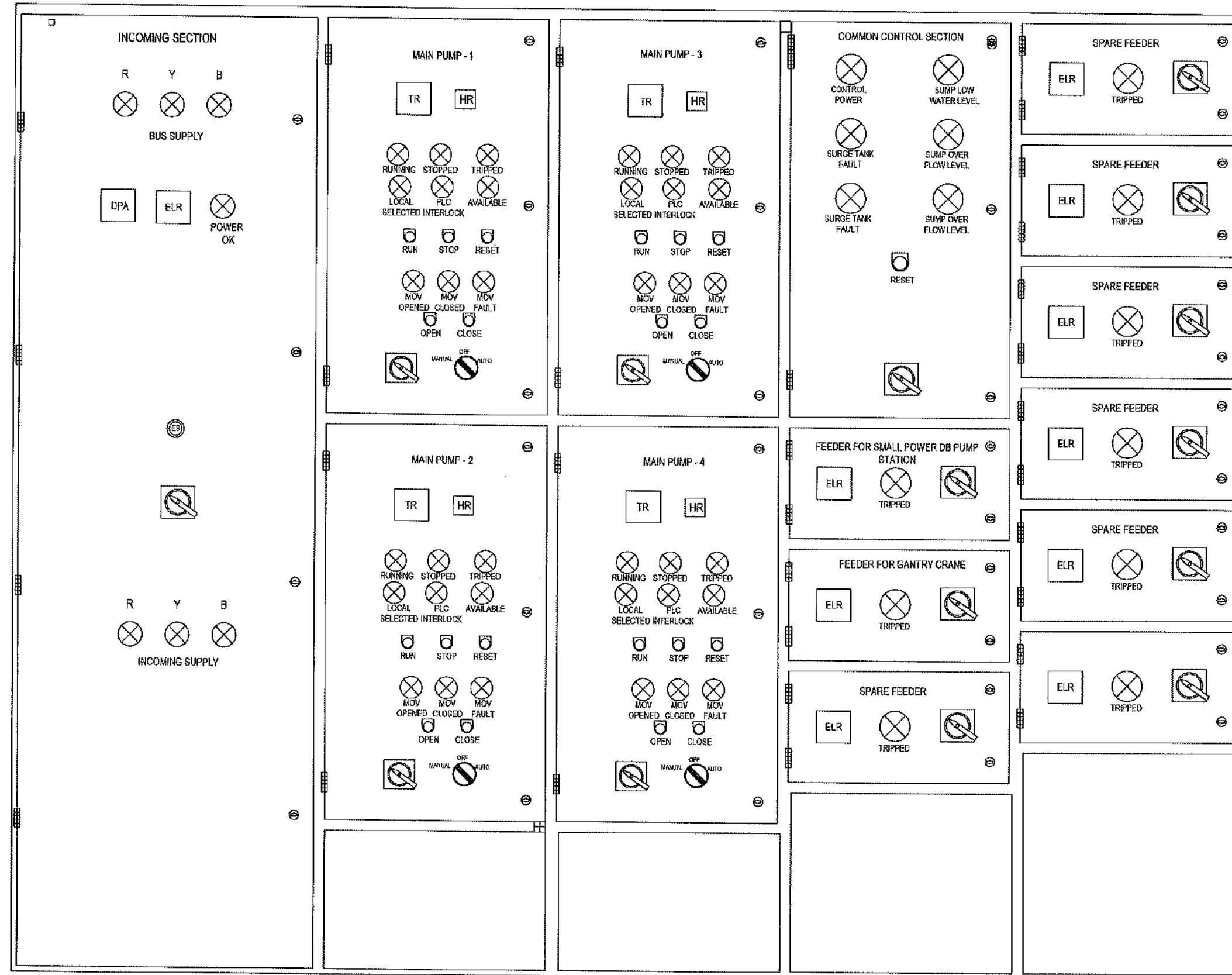
CONCEPTUAL DRAWING

 CHATTOGRAM WATER SUPPLY & SEWERAGE AUTHORITY (CWASA)	
PROJECT	CHATTOGRAM WATER SUPPLY IMPROVEMENT PROJECT (CWSIP)
PACKAGE	CWSIPW1 - LOT 1 Design, Construction, Supply, Installation, Testing & Commissioning for System Improvement and DMA Formation of Mohara Water Supply System
IDA CREDIT NO.	7675-BD & 7674- BD
TITLE	KHULSHI BOOSTER PUMP STATION SCADA SYSTEM OVERVIEW
DRAWING No.	CWSIP/W1L1/KUL/E-003

MODIFICATIONS TO MOHARA PUMP STATION ELECTRICAL

11

MCC PANEL FACE - REMOTE VFD



LEGEND	
	EARTH CURRENT RELAY
	HOUR RUN METER
	DIGITAL POWER ANALYZER
	PT-100 TEMPERATURE RELAY
	VIBRATION RELAY
	INDICATION LIGHT
	PUSH BUTTON

NOTES:

- THIS DRAWING IS FOR GUIDANCE. LABELS, DESCRIPTIONS MAY NOT BE APPLICABLE. THE MANUFACTURER SHALL PREPARE DETAIL ELECTRICAL DRAWINGS AND SUBMIT FOR APPROVAL.
- NUMBER OF MAIN PUMPS AND FEEDERS ARE TO BE CHANGED ACCORDING TO THE ACTUAL NUMBER OF INSTALLED PUMPS AND REQUIREMENTS FOR FEEDERS.
- PANEL SHALL HAVE PROVISIONS FOR FUTURE PUMPS.
- EACH CIRCUIT / FEEDER SHALL BE WITH INDIVIDUAL EARTH LEAKAGE PROTECTION.
- EACH CUBICLE SHALL HAVE 400/230V CONTROL TRANSFORMER.
- ENCLOSURE SHALL MEET WITH IP-54 INGRESS PROTECTION AFTER INSTALLATION OF ALL COMPONENTS.



CONCEPTUAL DRAWING



CHATTOGRAM WATER SUPPLY & SEWERAGE AUTHORITY (CWASA)

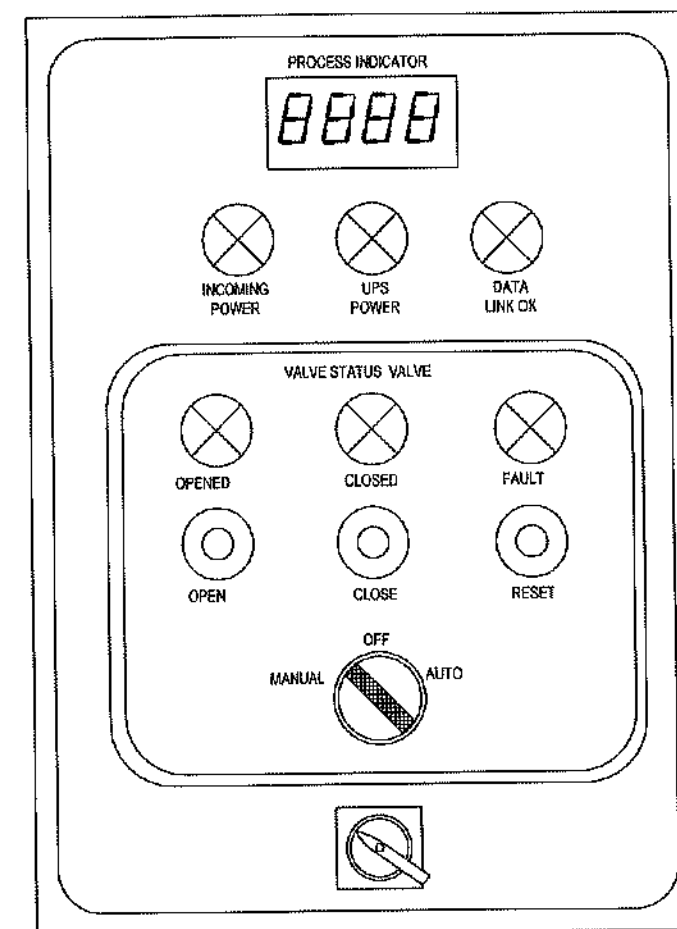
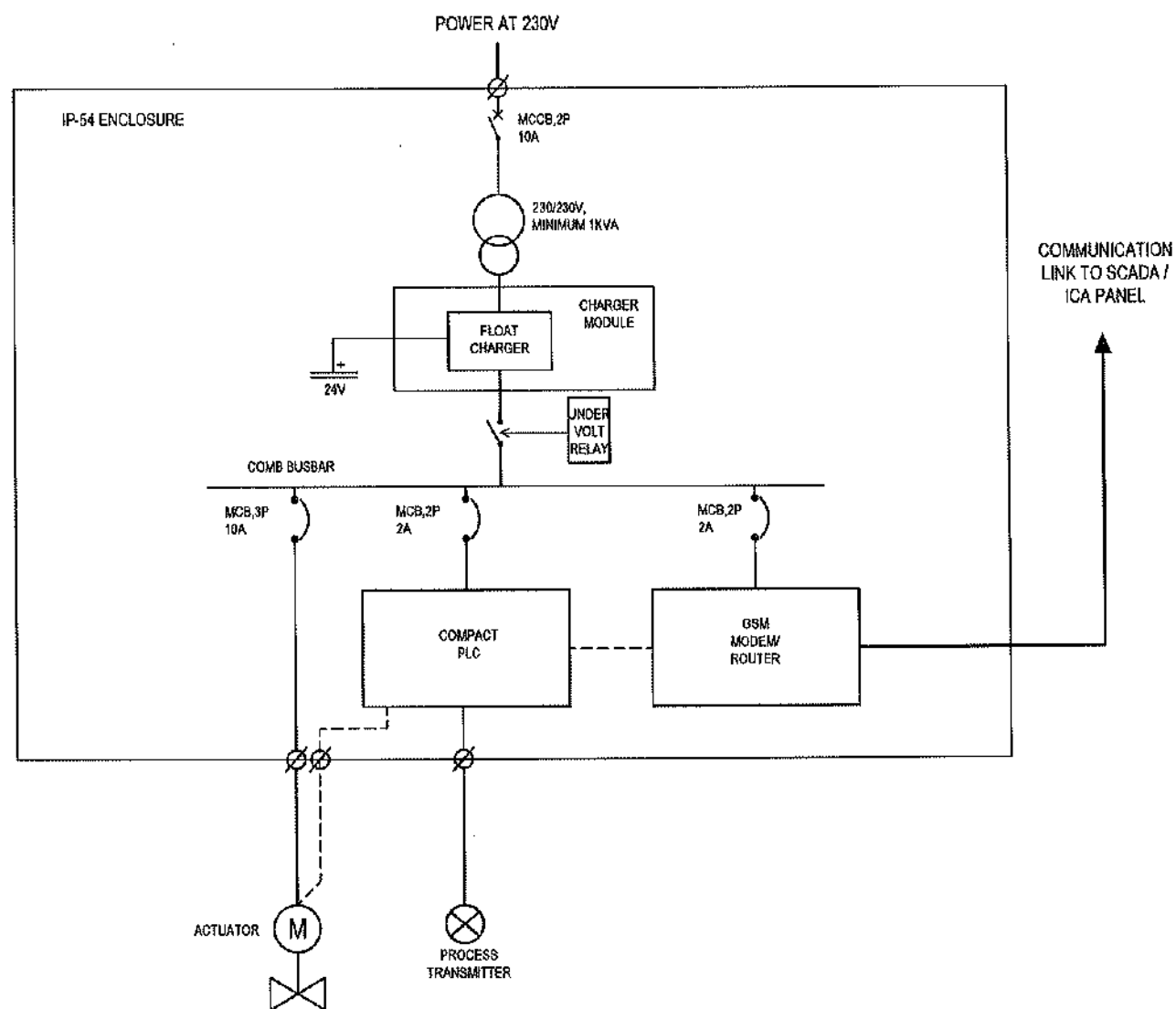
PROJECT CHATTOGRAM WATER SUPPLY IMPROVEMENT PROJECT (CWSIP)

PACKAGE CWSIPW1 - LOT 1
Design, Construction, Supply, Installation, Testing & Commissioning for System Improvement and DMA Formation of Mohara Water Supply System

IDA CREDIT NO: 7675-BD & 7674-8D

TITLE MODIFICATIONS TO MOHARA PUMP STATION
MCC PANEL FACE WITH REMOTE VFD

DRAWING No: CWSIP/W11/MOH/E-001



LEGEND					
	MCB		AMMETER		PANEL MOUNTED KEY BOARD FOR THE DRIVE
	MCB		VOLT METER		PF CAPACITOR
	CONTACTOR		EARTH CURRENT RELAY		POWER/ENERGY ANALYZER
	FUSE		HOUR RUN METER		
	CURRENT TRANSFORMER		SUPPLY MONITORING RELAY		
	SELECTOR SWITCH		MOTOR		
	SURGE ARRESTOR		TRANSFORMER 400/230V, 500VA		
	RCCB WITH AUX. CONTACT		INDICATION LIGHT		

NOTES:

- ENCLOSURE SHALL BE IP-54.
- IF INSTALLED OUTDOOR ADDITIONAL SUN / RAIN COVER SHALL BE PROVIDED TO SUIT SITE CONDITIONS.
- ENCLOSURE SHALL BE SUITABLE FOR POLE / PEDESTAL / WALL MOUNTING TO SUIT SITE CONDITIONS.
- FOR BATTERY CAPACITY SHOULD BE SUFFICIENT FOR 8 HOUR NORMAL OPERATION.
- UNDER VOLTAGE RELAY FOR THE UPS SHALL BE AUTO RESET TYPE.
- BATTERIES SHALL BE SEALED LEAD ACID TYPE.
- THIS TYPICAL DRAWING MAY BE ADOPTED TO SUIT SPECIFIC REQUIREMENT.

CONCEPTUAL DRAWING



CHATTOGRAM WATER SUPPLY & SEWERAGE AUTHORITY (CWASA)

PROJECT CHATTOGRAM WATER SUPPLY IMPROVEMENT PROJECT (CWSIP)

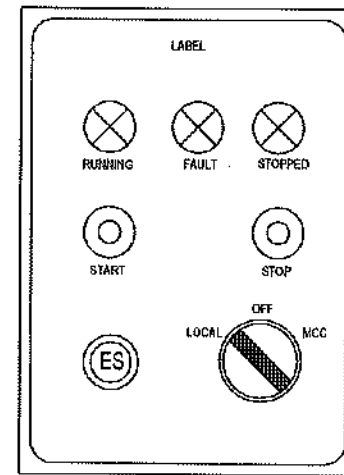
PACKAGE CWSIP/W1 - LOT 1
Design, Construction, Supply, Installation, Testing & Commissioning for System Improvement and DMA Formation of Mohara Water Supply System

IDA CREDIT NO: 7675-BD & 7674-BD

TITLE MODIFICATIONS TO MOHARA PUMP STATION
REMOTE ACTUATION AND MONITORING PANEL (RAMP) DETAILS

DRAWING No: CWSIP/W1L1/MOH/E-002

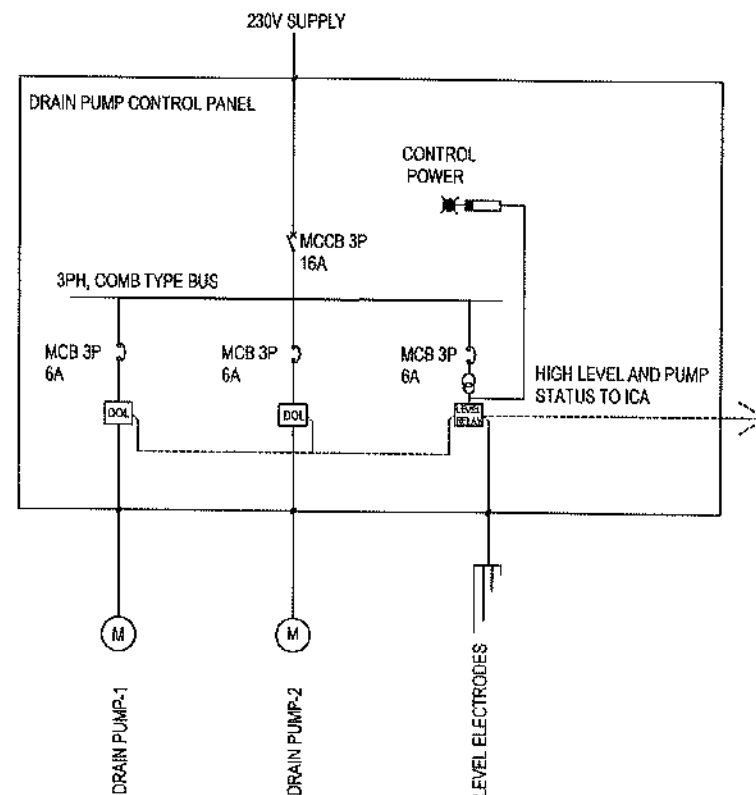
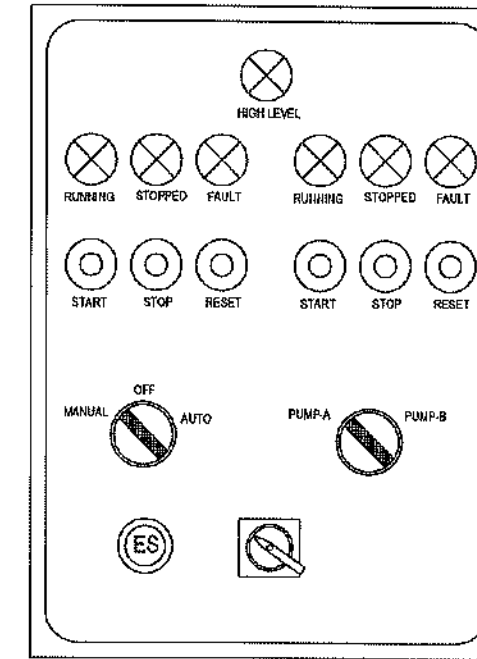
LOCAL OPERATION STATION (LOS)



NOTES:

- 1) LOS SHALL BE PEDESTAL MOUNTED TYPE / WALL MOUNTED TYPE TO SUIT SITE CONDITIONS.
- 2) ENCLOSURE PROTECTION SHALL BE IP-54
- 3) ADDITIONAL WEATHER PROTECTIVE COVERS SHALL BE PROVIDED WHERE REQUIRED CONSIDERING INSTALLATION LOCATION.

DRAIN PUMP CONTROL PANEL



NOTES:

- 1) THIS DRAWING IS TYPICAL FOR ALL DRAIN PUMPS PANELS
- 2) DEGREE OF ENCLOSURE PROTECTION SHALL BE IP-54
- 3) CONSTRUCTION SHALL BE SUITABLE FOR WALL MOUNTING
- 4) IF MOTOR CAPACITY IS MORE THAN 3.7 KW SOFT STARTER SHALL BE USED

LEGEND

	MCCB		AMMETER		PANEL MOUNTED KEY BOARD FOR THE DRIVE
	MCB		VOLT METER		PF CAPACITOR
	CONTACTOR		EARTH CURRENT RELAY		POWER ENERGY ANALYZER
	FUSE		HOUR RUN METER		
	CURRENT TRANSFORMER		SUPPLY MONITORING RELAY		
	SELECTOR SWITCH		MOTOR		
	SURGE ARRESTOR		TRANSFORMER 400/230V, 500VA		
	RCCB WITH AUX. CONTACT		INDICATION LIGHT		

CONCEPTUAL DRAWING



CHATTOGRAM WATER SUPPLY & SEWERAGE AUTHORITY (CWASA)

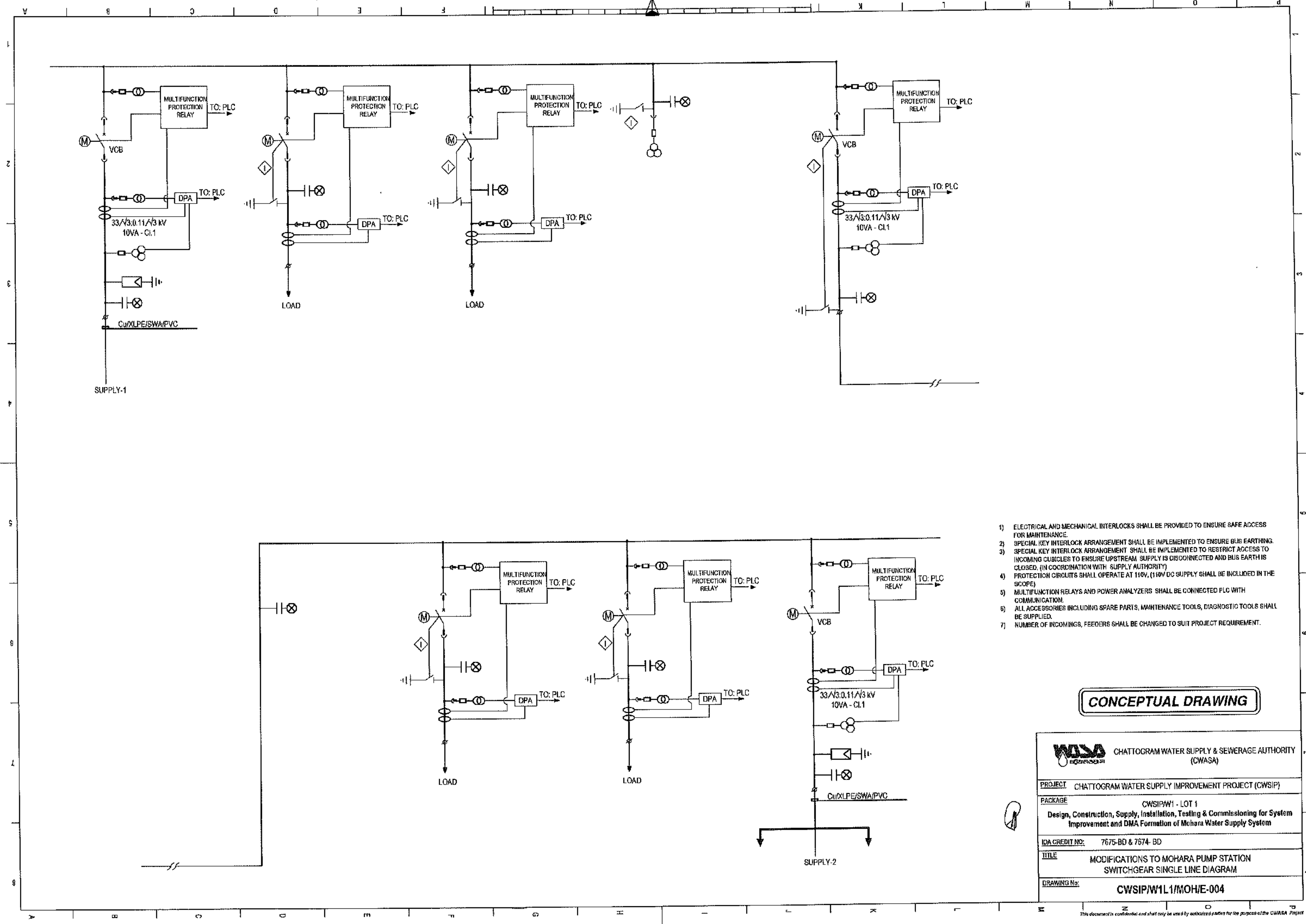
PROJECT CHATTOGRAM WATER SUPPLY IMPROVEMENT PROJECT (CWSIP)

PACKAGE CWSIPW1 - LOT 1
Design, Construction, Supply, Installation, Testing & Commissioning for System Improvement and DMA Formation of Mohara Water Supply System

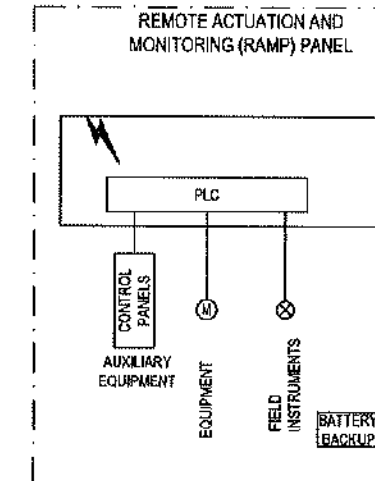
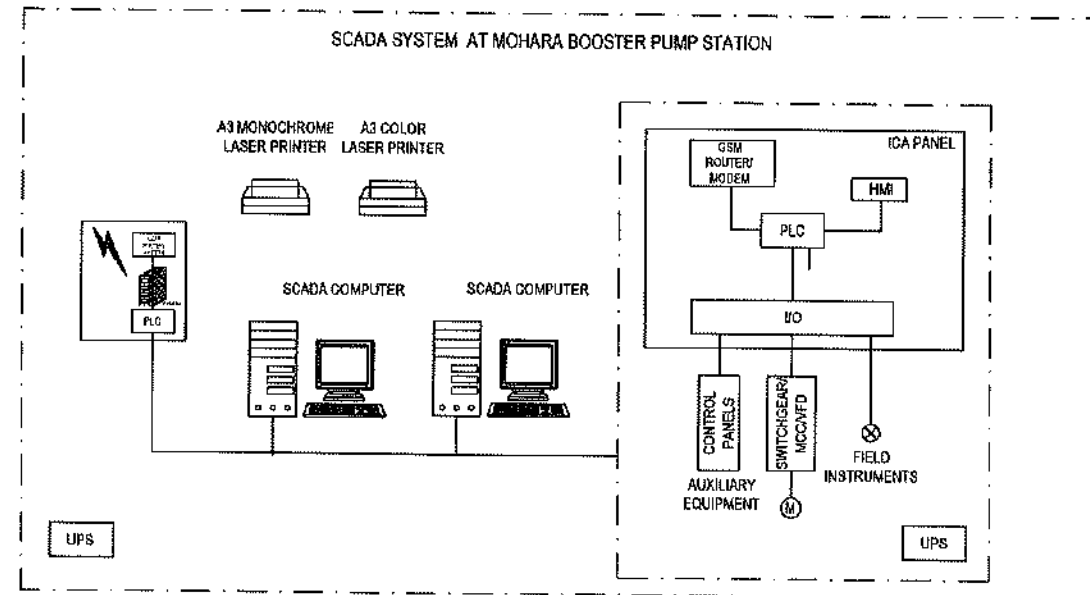
IDA CREDIT NO: 7675-BD & 7674-BD

TITLE MODIFICATIONS TO MOHARA PUMP STATION
LOCAL OPERATION STATION AND LOCAL CONTROL PANEL FOR DRAIN PUMPS

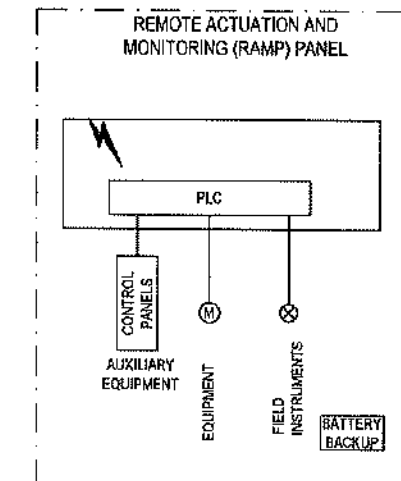
DRAWING No: CWSIP/W1L1/MOH/E-003



SCADA SYSTEM OVERVIEW- MOHARA PUMP STATION



SECTOR-2 CRITICAL PRESSURE MONITORING



ROAD SIDE BOOSTER FOR MONITORING DELIVERY PRESSURE AND FAULT STATUS

ABBREVIATIONS	
ICA	INSTRUMENTATION CONTROL & AUTOMATION PANEL
PLC	PROGRAMMABLE LOGIC CONTROLLER
CPLC	COMPACT PLC
I/O	INPUT/OUTPUT MODULES
MCC	MOTOR CONTROL CENTER
PSP	PUMP STARTER PANEL
UPS	UNINTERRUPTIBLE POWER SUPPLY

LEGEND	
—	ETHERNET CABLE
—	FIBRE OPTIC CABLE
⊗	FIELD INSTRUMENT
⚡	GSM CONNECTION (VPN)

NOTES:

- 1) NUMBER OF ROAD SIDE BOOSTER PUMP STATIONS ARE TO BE DECIDED BASED ON THE HYDRAULIC CALCULATION.
- 2) PROVISION FOR INTEGRATION WITH FUTURE EQUIPMENT / COMPUTERS SHALL BE AVAILABLE.
- 3) ALL INFORMATION AVAILABLE IN THE SCADA SYSTEM SHALL BE MADE AVAILABLE FOR THIRD PARTY EQUIPMENT VIA INTERNET.
- 4) STATUS / MEASUREMENTS INCLUDING ALARM CONDITIONS SHALL BE ANNOUNCED IN ASSIGNED EQUIPMENT INCLUDING SMART PHONES.
- 5) WHEN PUMP DELIVERY FLOW METER CAN BE USED AS SECTOR/ DMA METER PROVISION FOR INTERFACING WITH EXTERNAL HARDWARE SHALL BE PROVIDED AS SPECIFIED.



CONCEPTUAL DRAWING



CHATTOGRAM WATER SUPPLY & SEWERAGE AUTHORITY (CWASA)

PROJECT CHATTOGRAM WATER SUPPLY IMPROVEMENT PROJECT (CWSIP)

PACKAGE CWSIP/W1 - LOT 1
Design, Construction, Supply, Installation, Testing & Commissioning for System Improvement and DMA Formation of Mohara Water Supply System

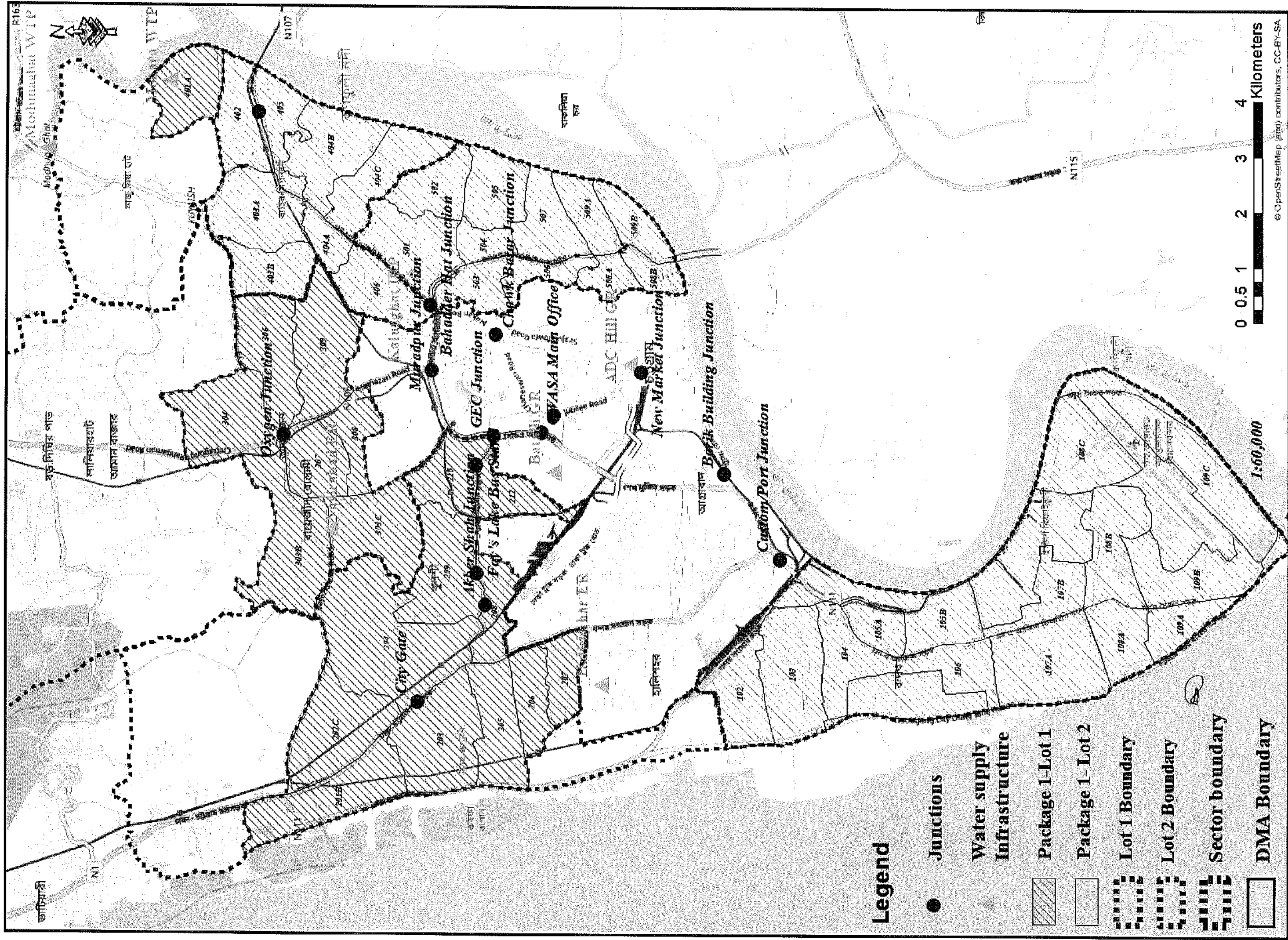
IDA CREDIT NO: 7675-BD & 7674-BD

TITLE MODIFICATIONS TO MOHARA PUMP STATION
SCADA SYSTEM OVERVIEW

DRAWING No: CWSIP/W1L1/MOH/E-005

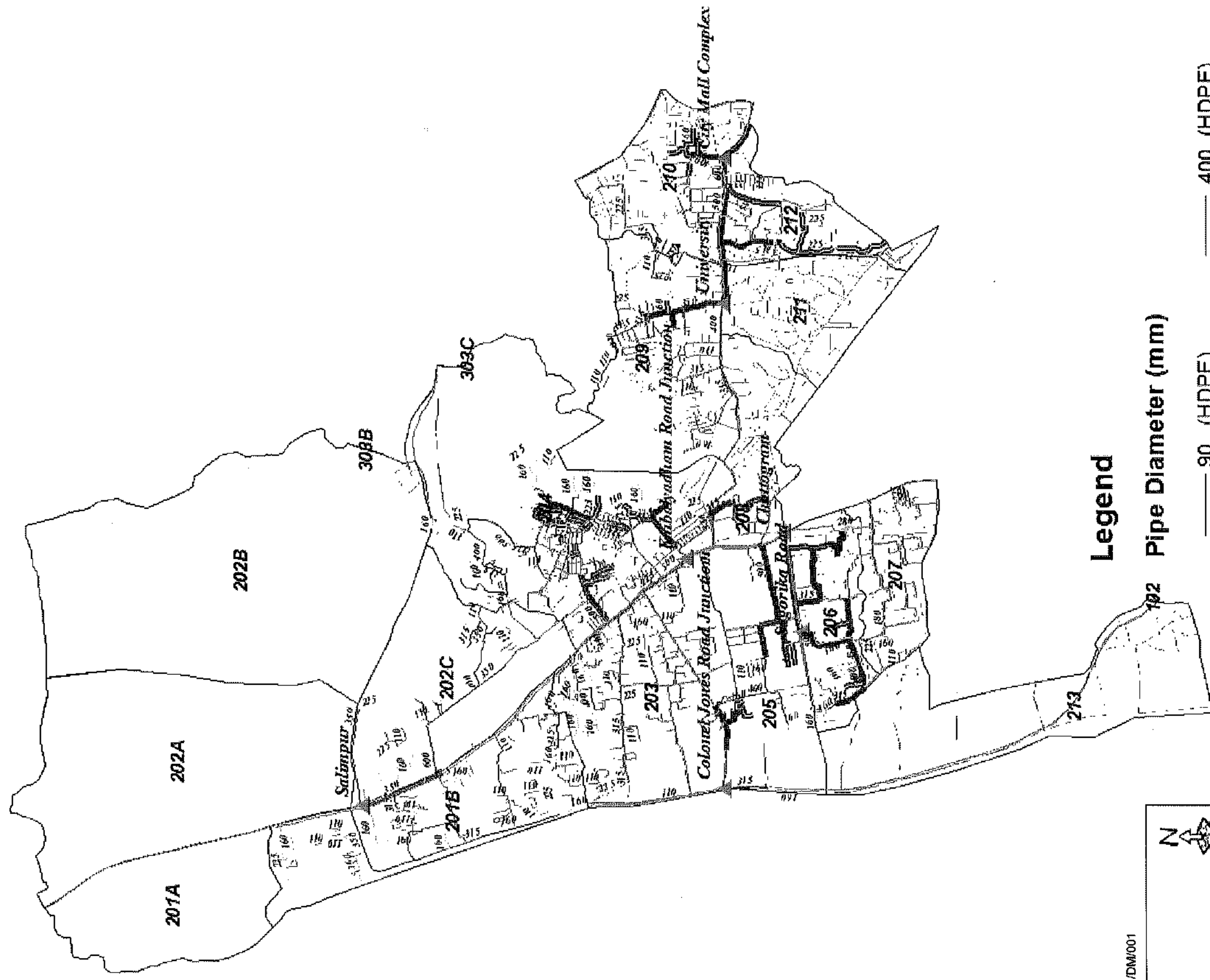
DMA MAPS

4



LOT I

Q



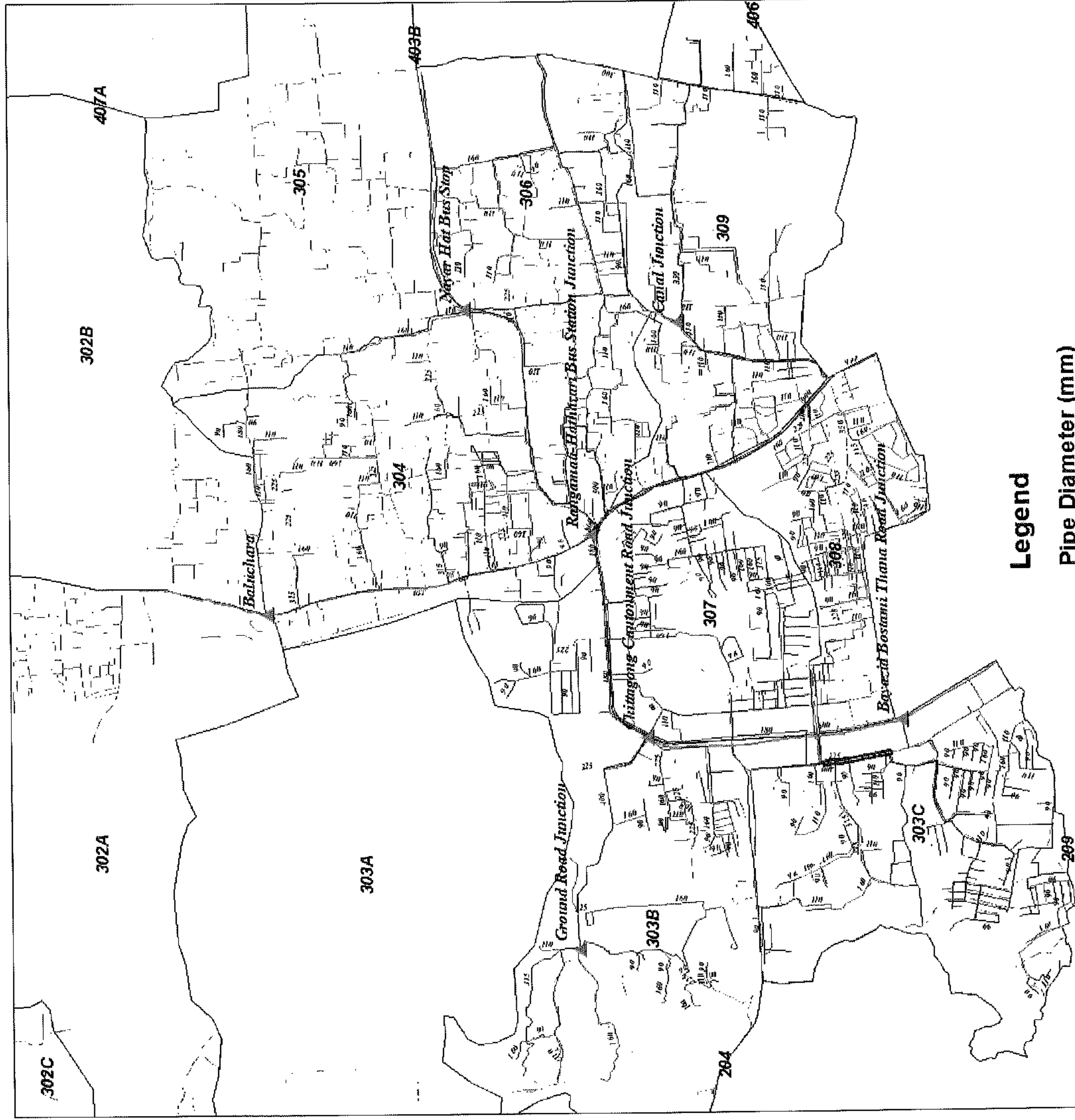
Pipe Diameter (mm)

— 90 (HDPE)	— 400 (HDPE)
— 110 (HDPE)	— 450 (DI)
— 160 (HDPE)	— 500 (HDPE)
— 200 (HDPE)	— 600 (DI)
— 225 (HDPE)	■ Replace Pipe
— 280 (HDPE)	— Existing Pipe
— 300 (HDPE)	▨ Roads
— 315 (HDPE)	Sector - 02
— 350 (HDPE)	

1:40.000

Kilometers

0 2.75 5.5 11 16.5 22

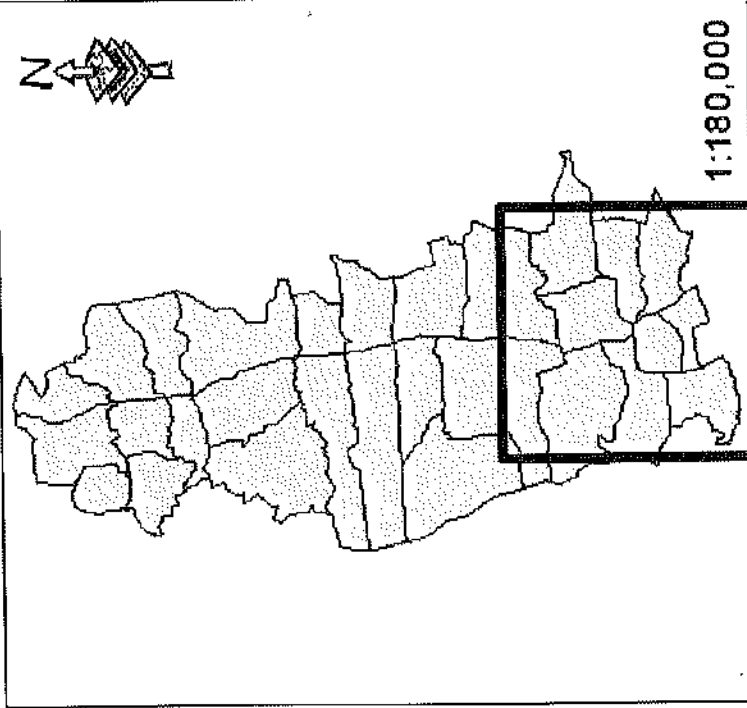


Legend

Pipe Diameter (mm)

- | | |
|--------------|------------------|
| — 90 (HDPE) | — 500 (HDPE) |
| — 110 (HDPE) | — 600 (DI) |
| — 160 (HDPE) | — 800 (DI) |
| — 180 (HDPE) | — 900 (DI) |
| — 225 (HDPE) | — Replace Pipe |
| — 300 (HDPE) | — Existing Pipes |
| — 315 (HDPE) | — Roads |
| — 350 (HDPE) | — Sector - 03 |
| — 400 (HDPE) | |

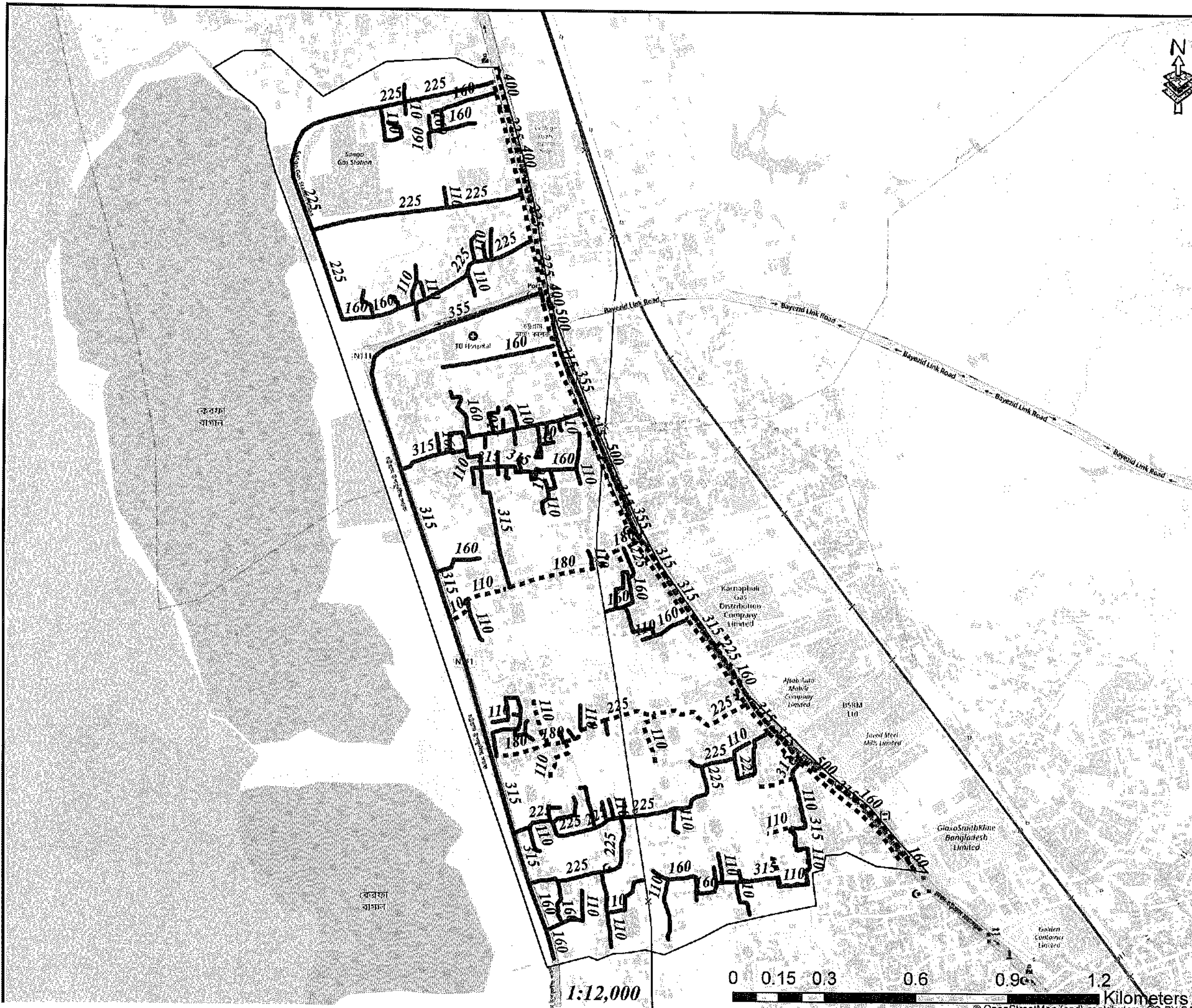
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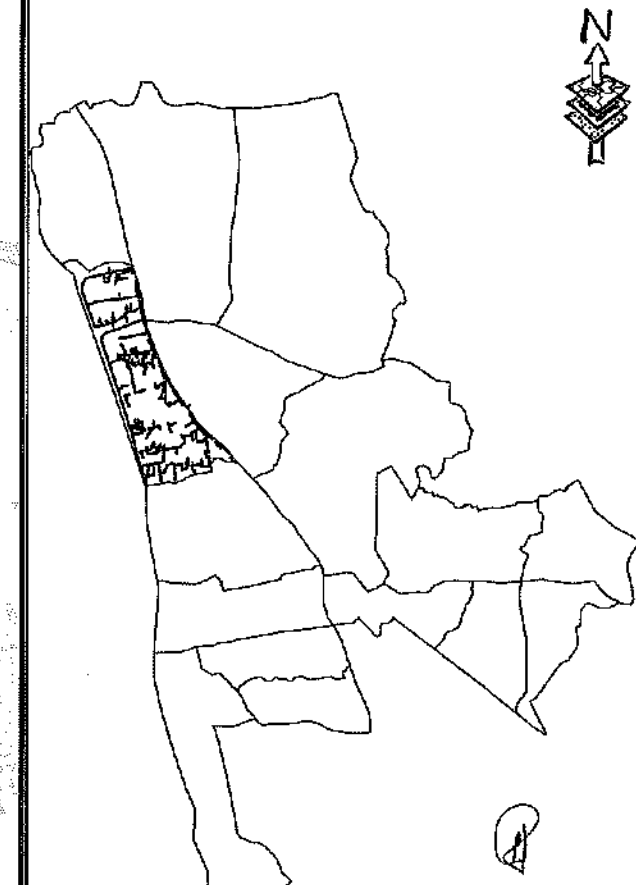




Legend

- Existing Pipes (mm)
- New Pipes (mm)
- Replace Pipes (mm)
- DMA Boundary

DMA Location of Sector 02



CONCEPTUAL DRAWING

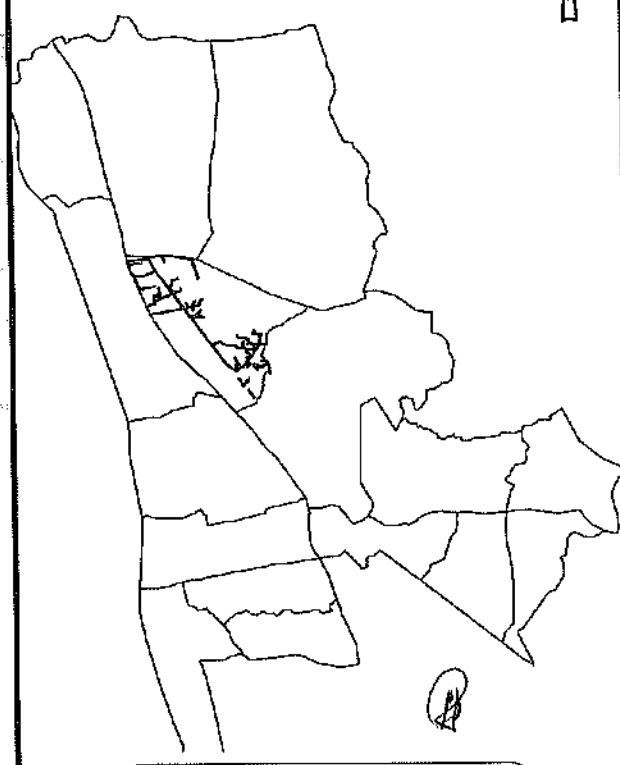
WUSA	CHATTOGRAM WATER SUPPLY & SEWERAGE AUTHORITY (CWASA)
PROJECT	CHATTOGRAM WATER SUPPLY IMPROVEMENT PROJECT (CWSIP)
PACKAGE	CWSIP/W1 - LOT 1 Design, Construction, Supply, Installation, Testing & Commissioning for System Improvement and DMA Formation of Mohara Water Supply System
IDA CREDIT NO.	7875-BD & 7874-BD
TITLE	DMA PIPES - 201B
DRAWING No.	CWSIP/W1/L1/DN - 003



Legend

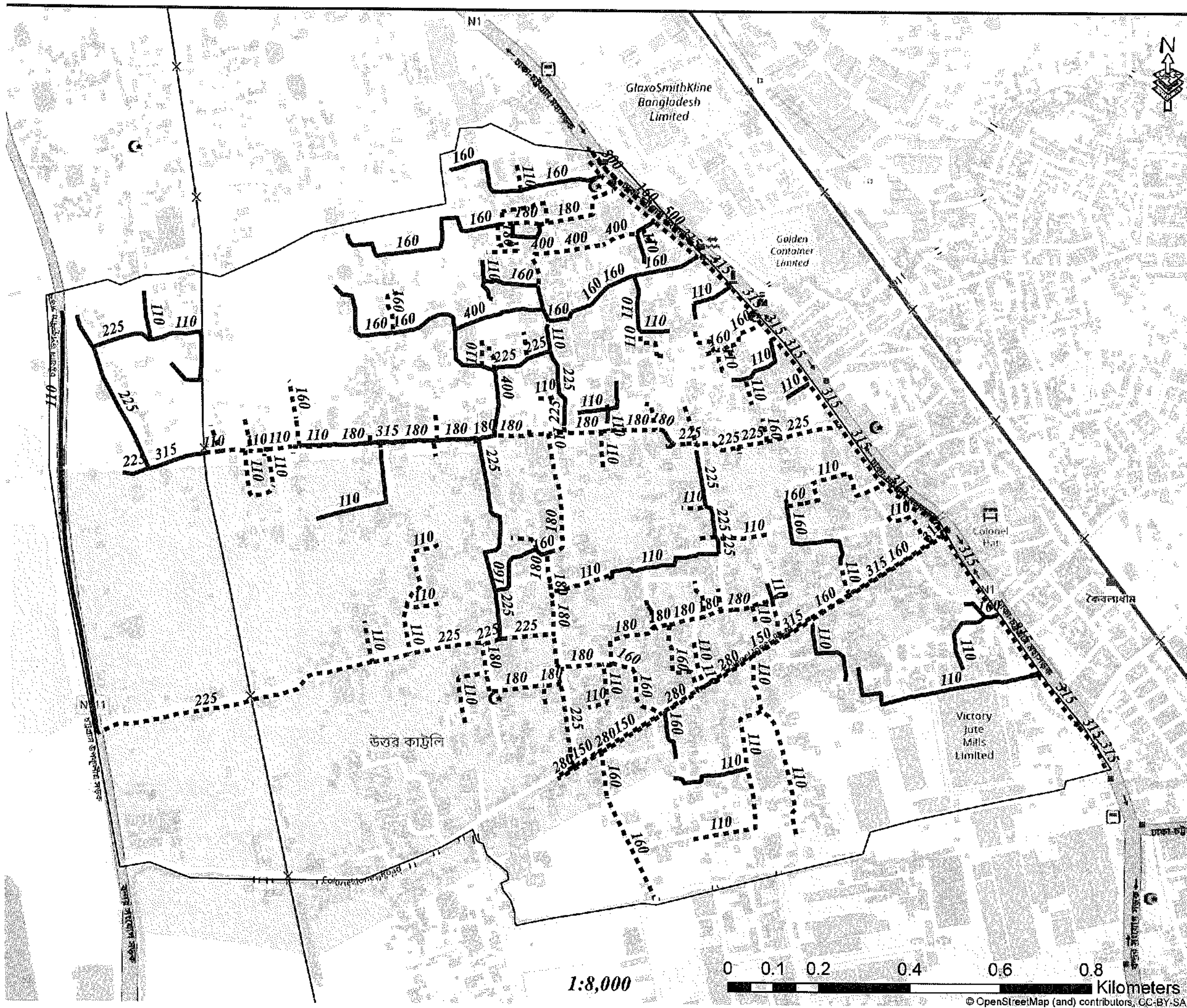
- Existing Pipes (mm)
- New Pipes (mm)
- Replace Pipes (mm)
- DMA Boundary

DMA Location of Sector 02



CONCEPTUAL DRAWING

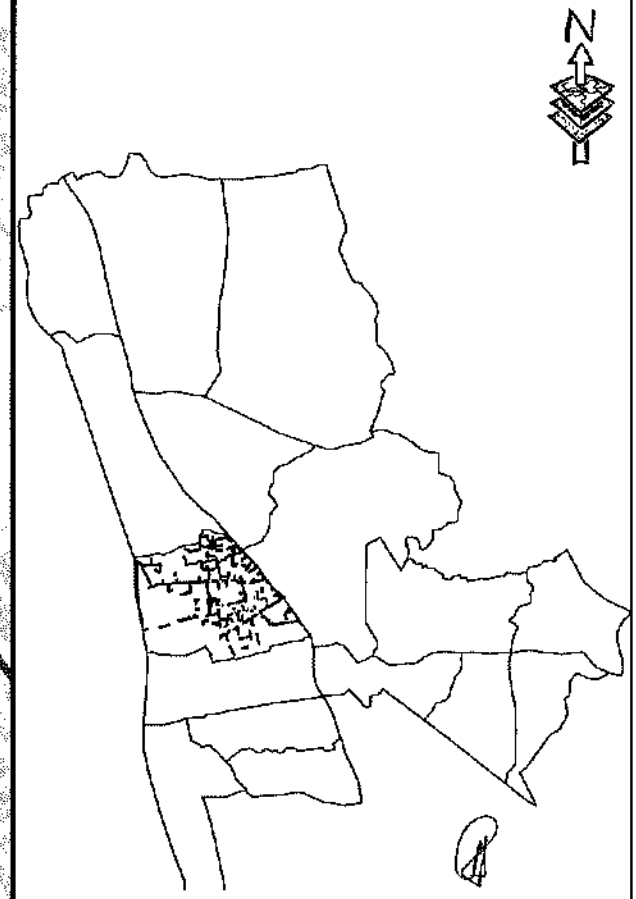
 CHATTOGRAM WATER SUPPLY & SEWERAGE AUTHORITY (CWASA)	
PROJECT	CHATTOGRAM WATER SUPPLY IMPROVEMENT PROJECT (CWSIP)
PACKAGE	CWSIP/M1 - LOT 1 Design, Construction, Supply, Installation, Testing & Commissioning for System Improvement and DMA Formation of Mohara Water Supply System
IDA CREDIT NO.	7675-BD & 7674-BD
TITLE	DMA PIPES - 202C
DRAWING No.	CWSIPL/W111/DM-004



Legend

- Existing Pipes (mm)
- New Pipes (mm)
- Replace Pipes (mm)
- DMA Boundary

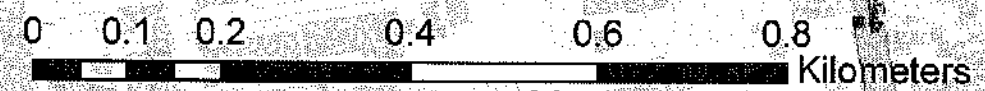
DMA Location of Sector 02

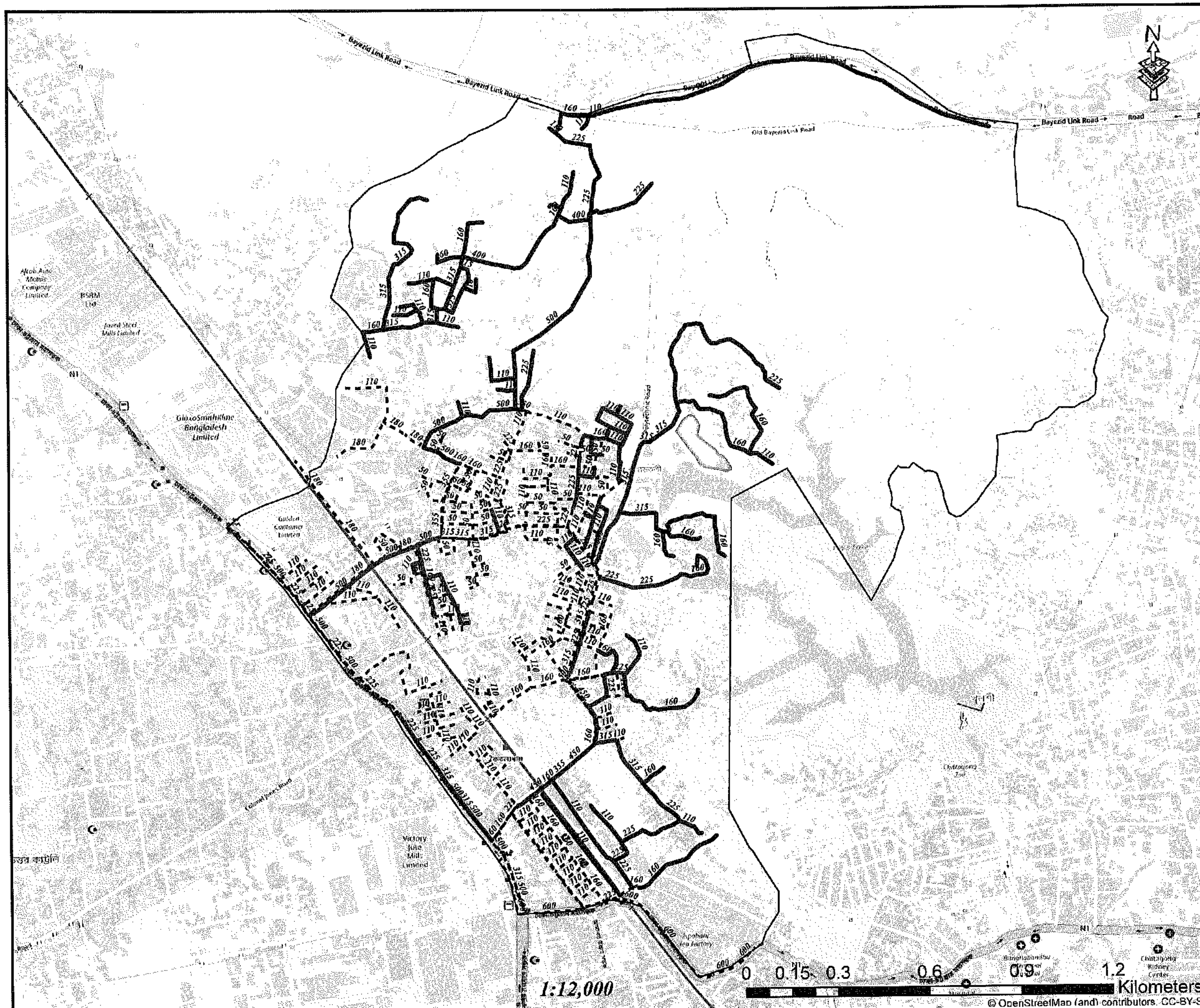


CONCEPTUAL DRAWING

 CHATTOGRAM WATER SUPPLY & SEWERAGE AUTHORITY (CWASA)	
PROJECT	CHATTOGRAM WATER SUPPLY IMPROVEMENT PROJECT (CWSIP)
PACKAGE	CWSIPW1 - LOT 1 Design, Construction, Supply, Installation, Testing & Commissioning for System Improvement and DMA Formation of Mohara Water Supply System
IDA CREDIT NO.	7875-BD & 7874- BD
TITLE	DMA PIPES - 203
DRAWING No.	CWSIPL / WH11 / DM - 005

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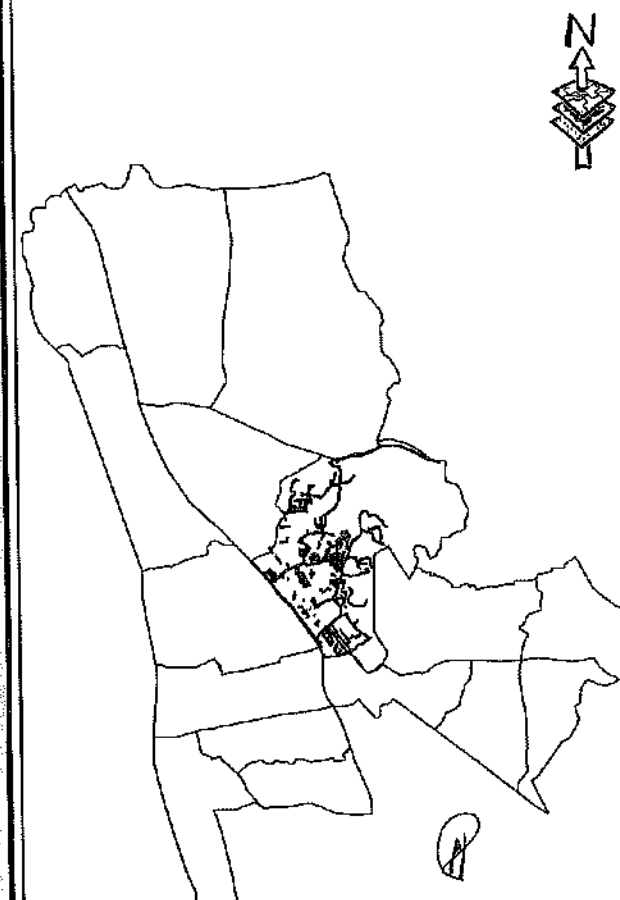




Legend

- Existing Pipes (mm)
- New Pipes (mm)
- Replace Pipes (mm)
- DMA Boundary

DMA Location of Sector 02



CONCEPTUAL DRAWING



CHATTOGRAM WATER SUPPLY & SEWERAGE AUTHORITY (CWASA)

PROJECT CHATTOGRAM WATER SUPPLY IMPROVEMENT PROJECT (CWSIP)

PACKAGE CWSIP/W1 - LOT 1
Design, Construction, Supply, Installation, Testing & Commissioning for System Improvement and DMA Formation of Mohara Water Supply System

IDA CREDIT NO: 7675-BD & 7674-BD

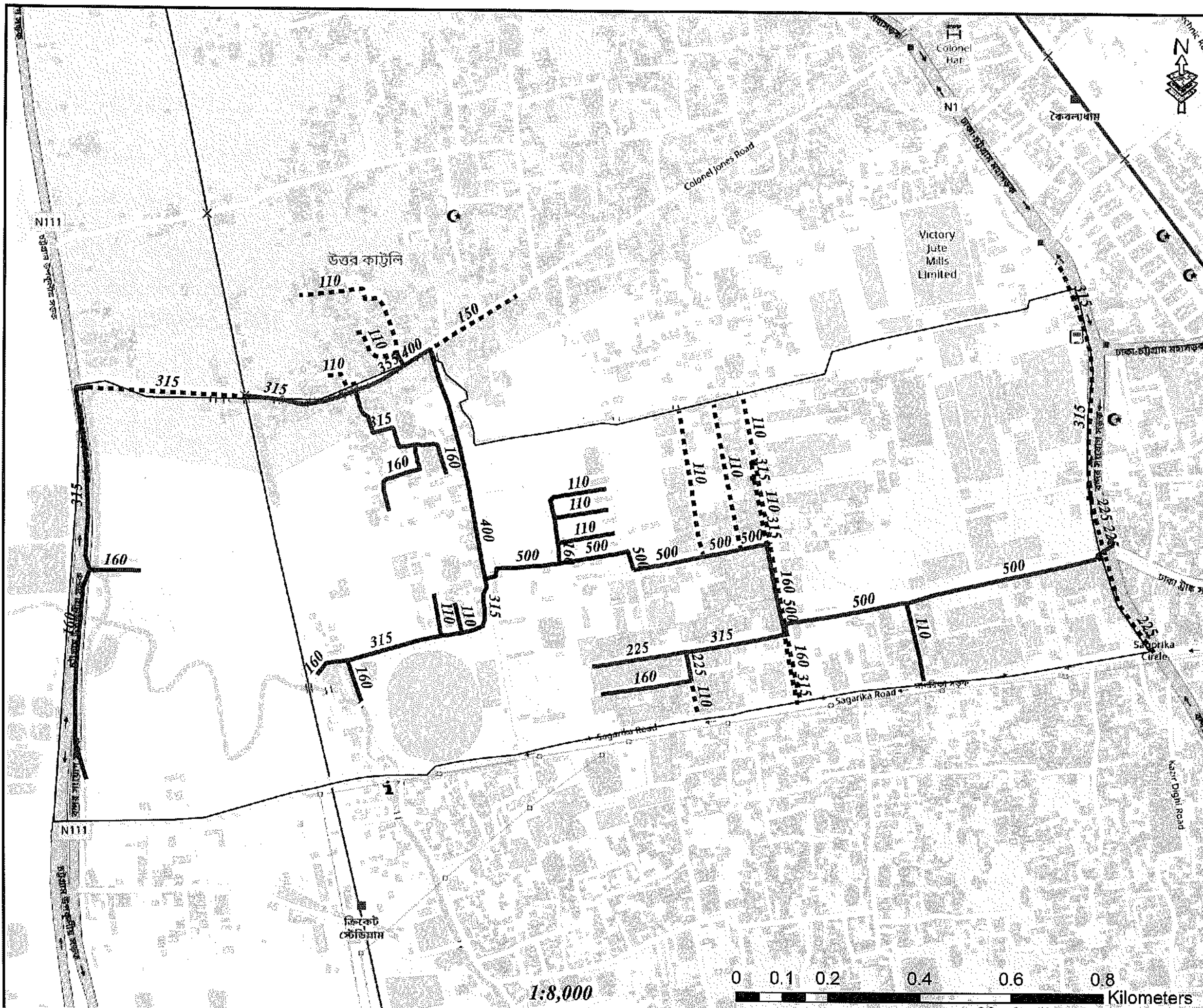
TITLE DMA PIPES - 204

DRAWING No: CWSIP/W1/DM-006

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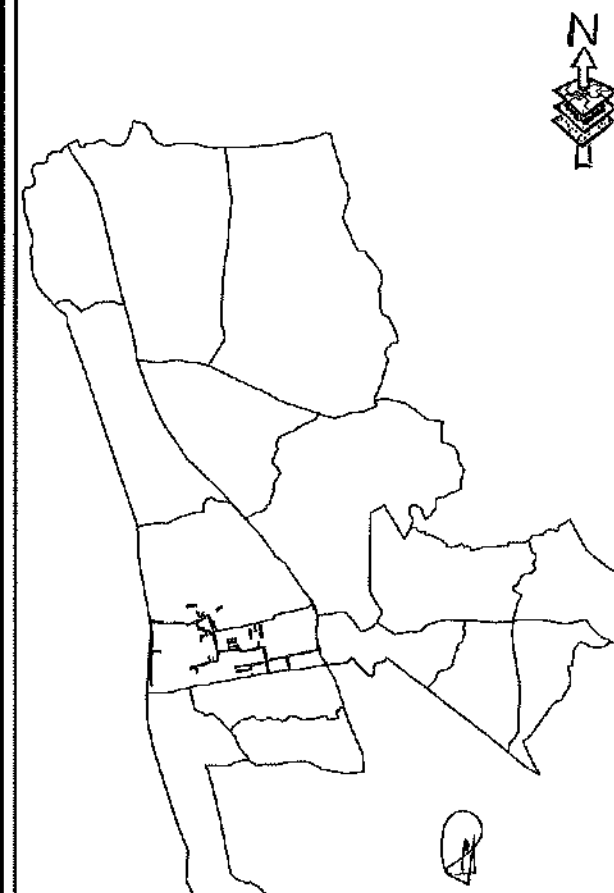
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Legend

- Existing Pipes (mm)
- New Pipes (mm)
- Replace Pipes (mm)
- DMA Boundary

DMA Location of Sector 02



CONCEPTUAL DRAWING



CHATTOGRAM WATER SUPPLY & SEWERAGE AUTHORITY
(CWASA)

PROJECT CHATTOGRAM WATER SUPPLY IMPROVEMENT PROJECT (CWSIP)

PACKAGE CWSIP/W1 - LOT 1
Design, Construction, Supply, Installation, Testing & Commissioning for System Improvement and DMA Formation of Mohara Water Supply System

IDA CREDIT NO: 7875-BD & 7874-BD

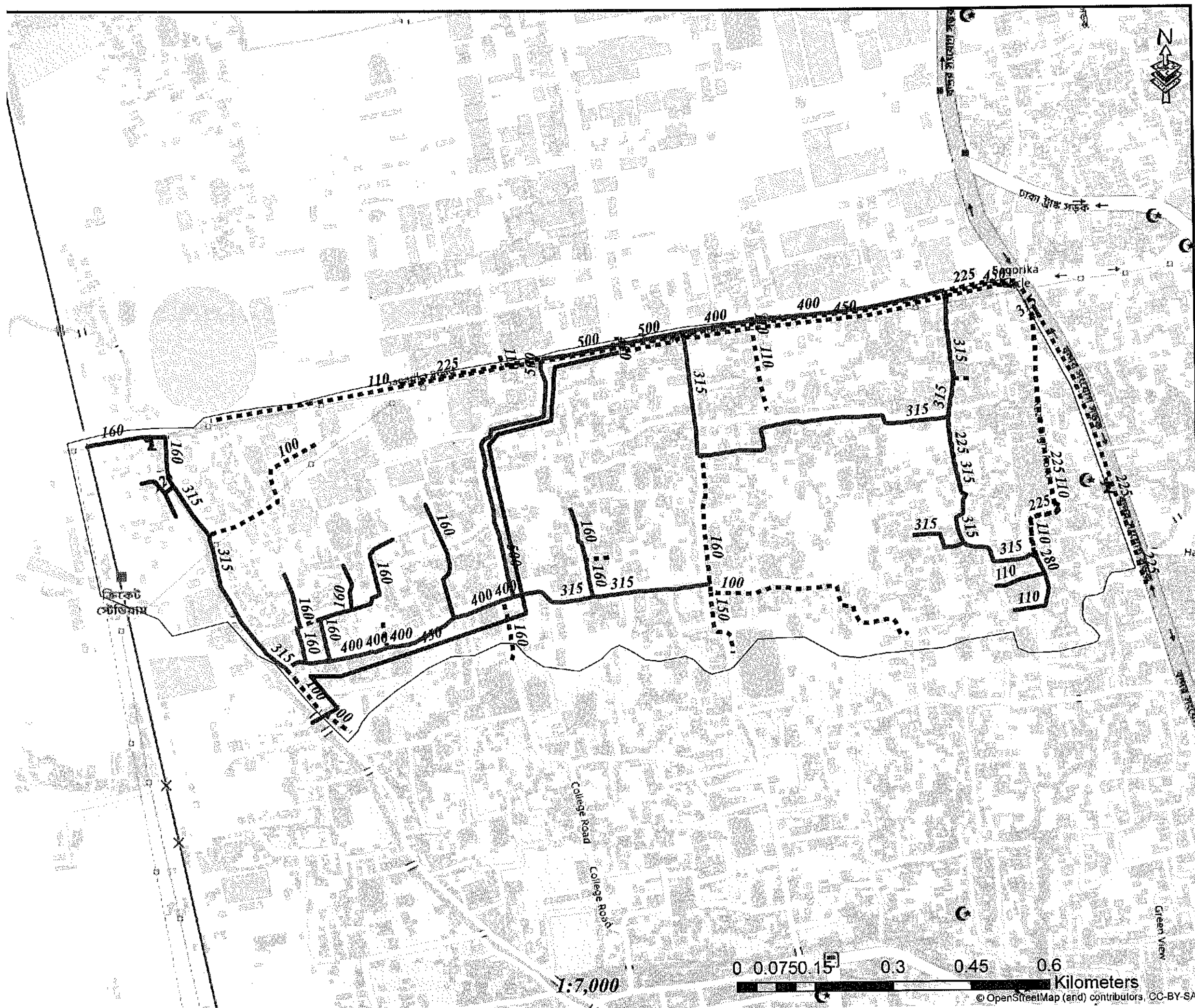
TITLE DMA PIPES - 205

DRAWING No: CWSIP/W1/W1.1/DMA-007

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0 0.1 0.2 0.4 0.6 0.8 Kilometers

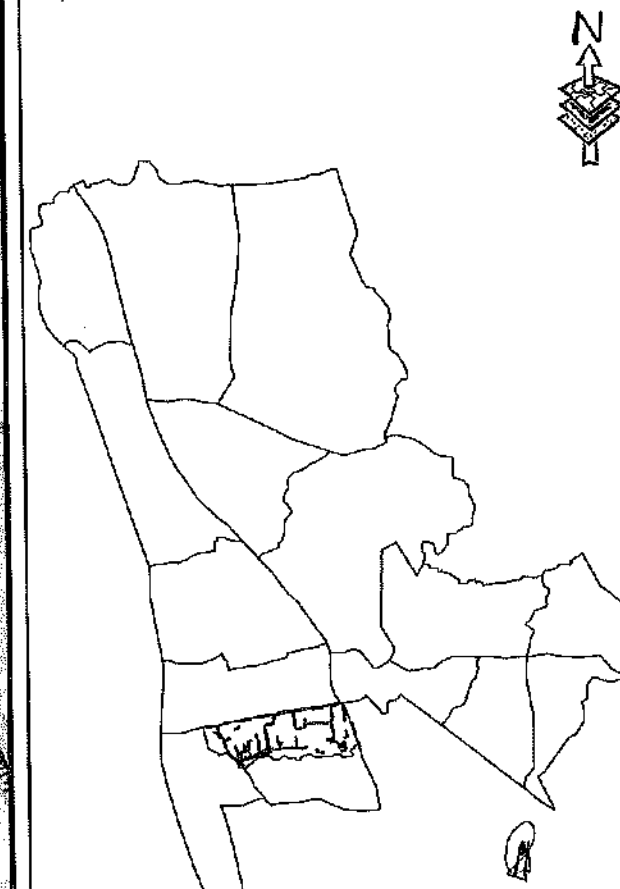
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Legend

- Existing Pipes (mm)
- New Pipes (mm)
- Replace Pipes (mm)
- DMA Boundary

DMA Location of Sector 02

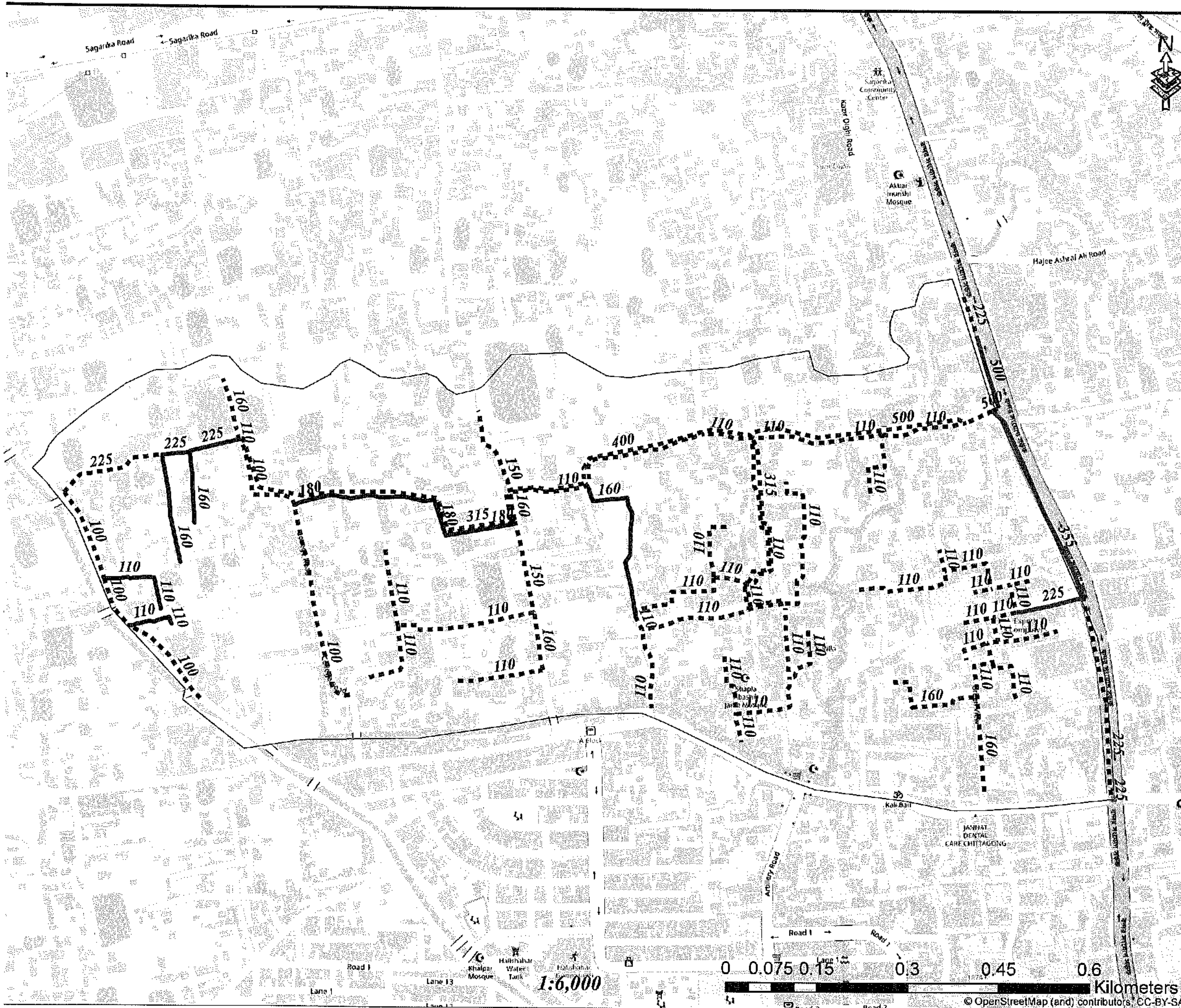


CONCEPTUAL DRAWING



CHATTOGRAM WATER SUPPLY & SEWERAGE AUTHORITY
(CWASA)

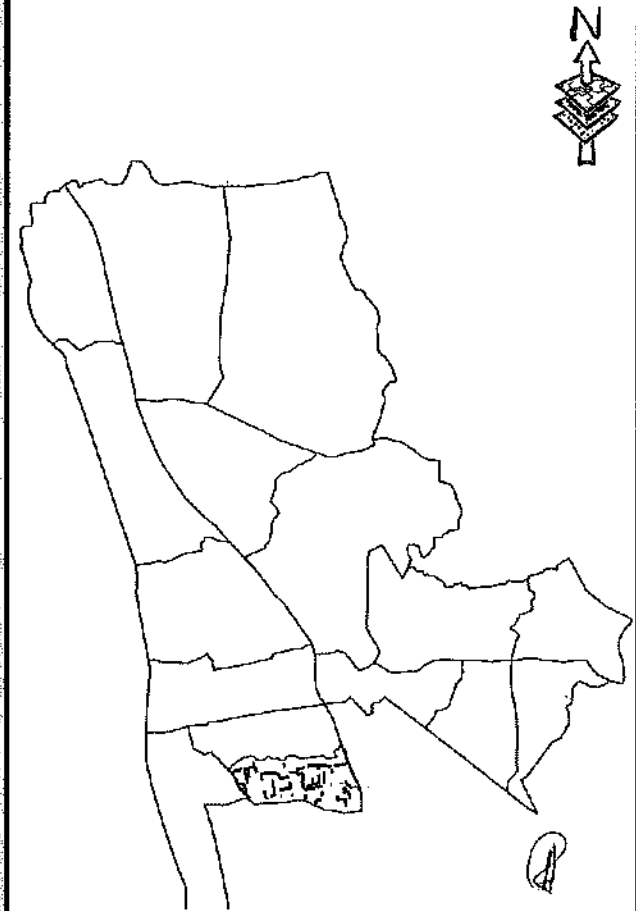
PROJECT	CHATTOGRAM WATER SUPPLY IMPROVEMENT PROJECT (CWSIP)
PACKAGE	CWSIP/W1 - LOT 1 Design, Construction, Supply, Installation, Testing & Commissioning for System Improvement and DMA Formation of Mohara Water Supply System
IDA CREDIT NO.	7675-BD & 7674-BD
TITLE	DMA PIPES - 206
DRAWING No.	CWSIP/W1/L1/D1M - 009



Legend

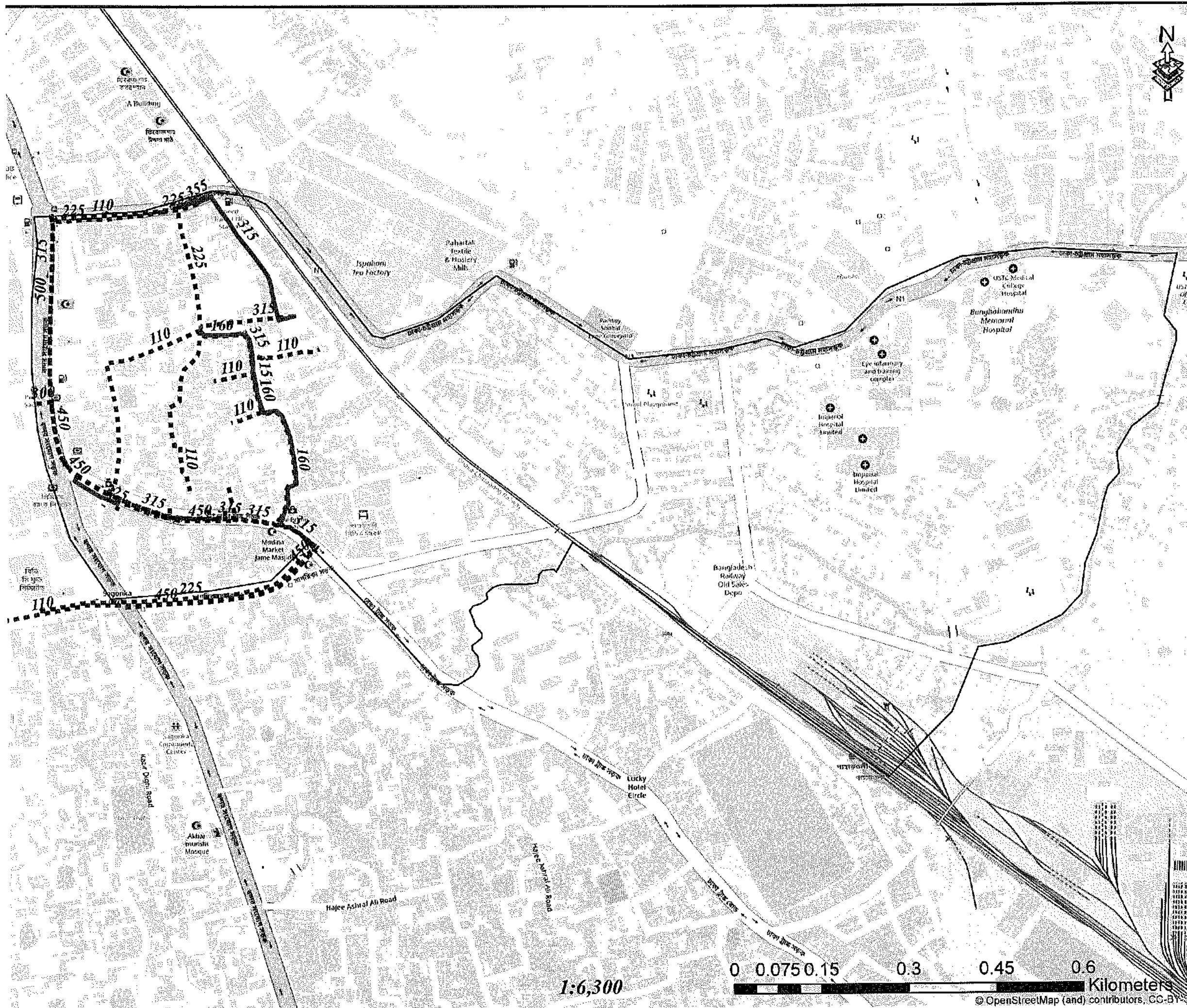
- Existing Pipes (mm)
- New Pipes (mm)
- Replace Pipes (mm)
- DMA Boundary

DMA Location of Sector 02



CONCEPTUAL DRAWING

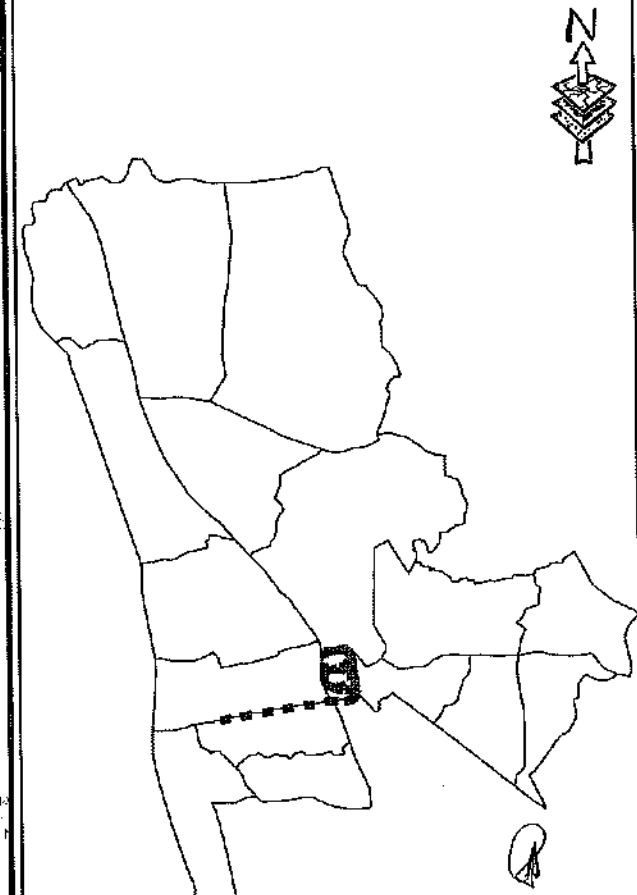
WASA	CHATTOGRAM WATER SUPPLY & SEWERAGE AUTHORITY (CWASA)
PROJECT	CHATTOGRAM WATER SUPPLY IMPROVEMENT PROJECT (CWSIP)
PACKAGE	CWSIP/W1 - LOT 1 Design, Construction, Supply, Installation, Testing & Commissioning for System Improvement and DMA Formation of Mohara Water Supply System
IDA CREDIT NO.	7675-BD & 7674-BD
TITLE	DMA PIPES - 207
DRAWING No.	CWSIP/W1/L1/DM - 008



Legend

- Existing Pipes (mm)
- New Pipes (mm)
- Replace Pipes (mm)
- DMA Boundary

DMA Location of Sector 02



CONCEPTUAL DRAWING



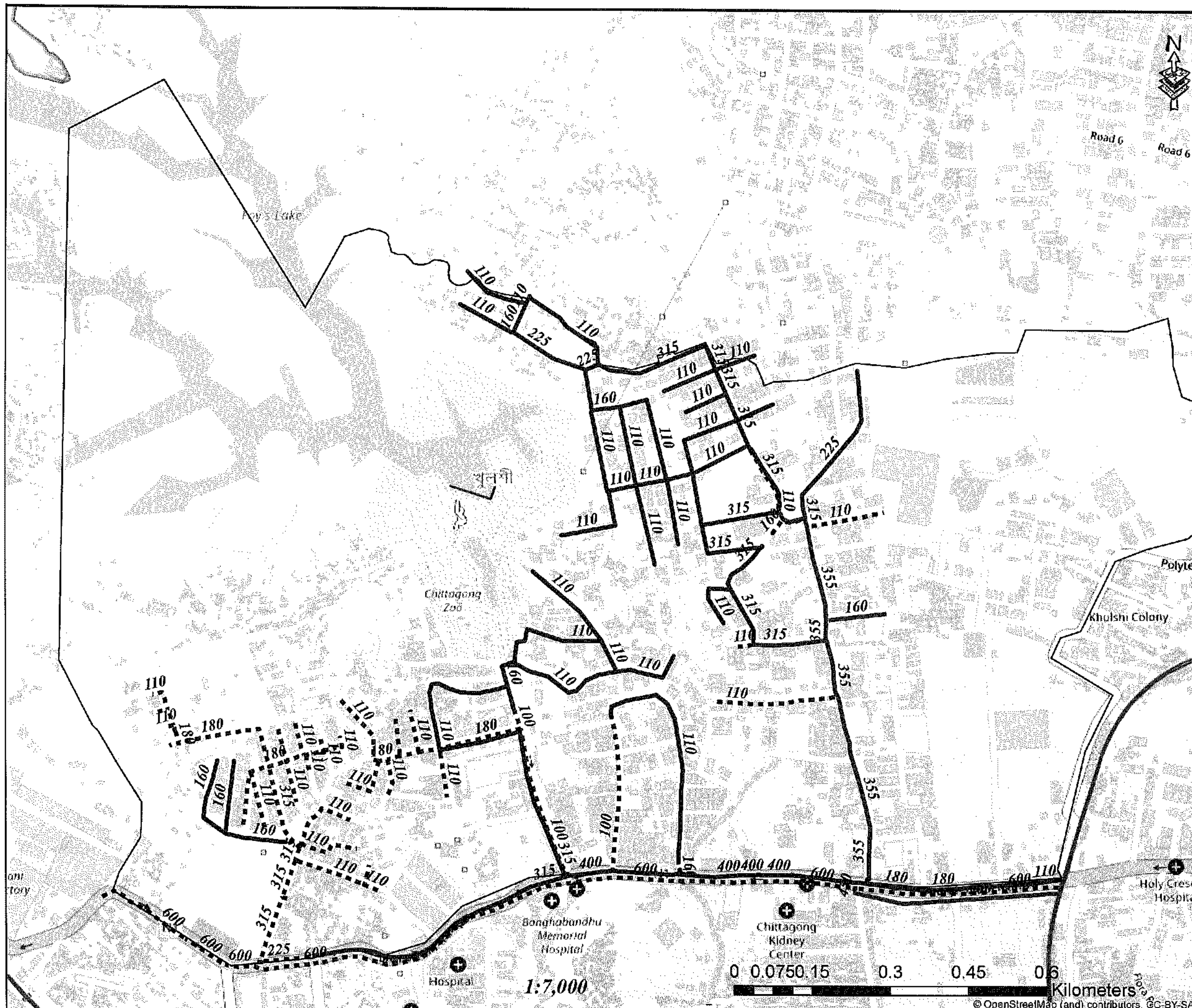
CHATTOGRAM WATER SUPPLY & SEWERAGE AUTHORITY (CWASA)

PROJECT	CHATTOGRAM WATER SUPPLY IMPROVEMENT PROJECT (CWSIP)
PACKAGE	CWSIPW1 - LOT 1 Design, Construction, Supply, Installation, Testing & Commissioning for System Improvement and DMA Formation of Mahara Water Supply System
IDA CREDIT NO.	7675-BD & 7674-BD
TITLE	DMA PIPES - 208
DRAWING No.	CWSIP1/W1/L1/D1 - 010

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0 0.075 0.15 0.3 0.45 0.6 Kilometers

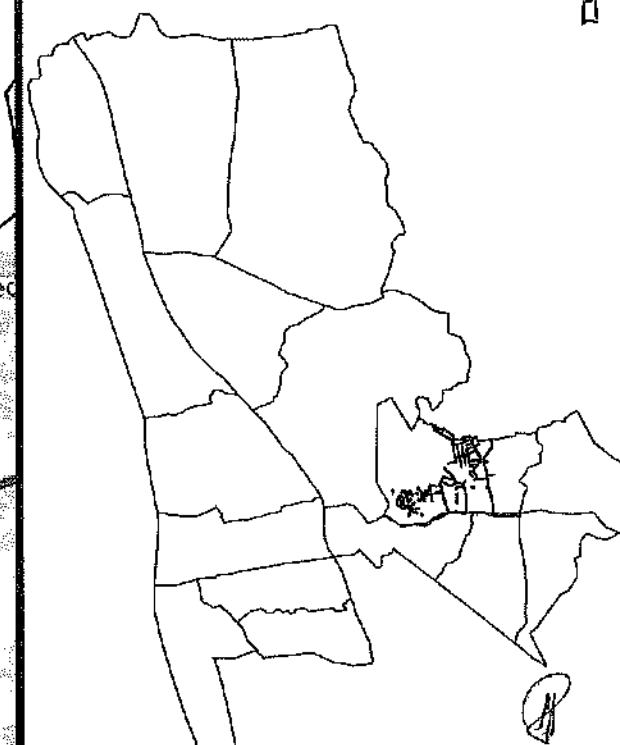
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Legend

- Existing Pipes (mm)
- New Pipes (mm)
- Replace Pipes (mm)
- DMA Boundary

DMA Location of Sector 02

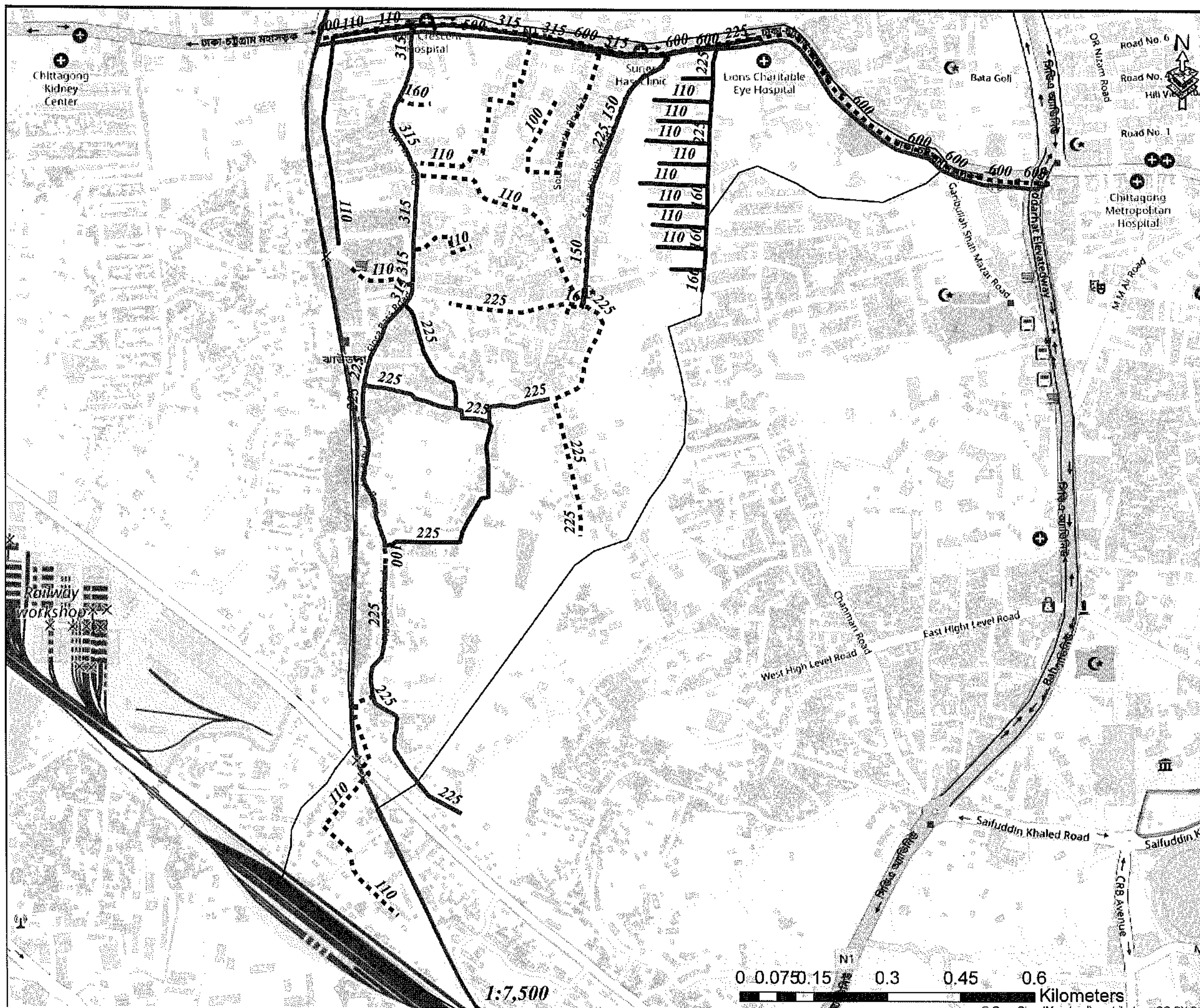


CONCEPTUAL DRAWING



CHITTAGRAM WATER SUPPLY & SEWERAGE AUTHORITY (CWASA)

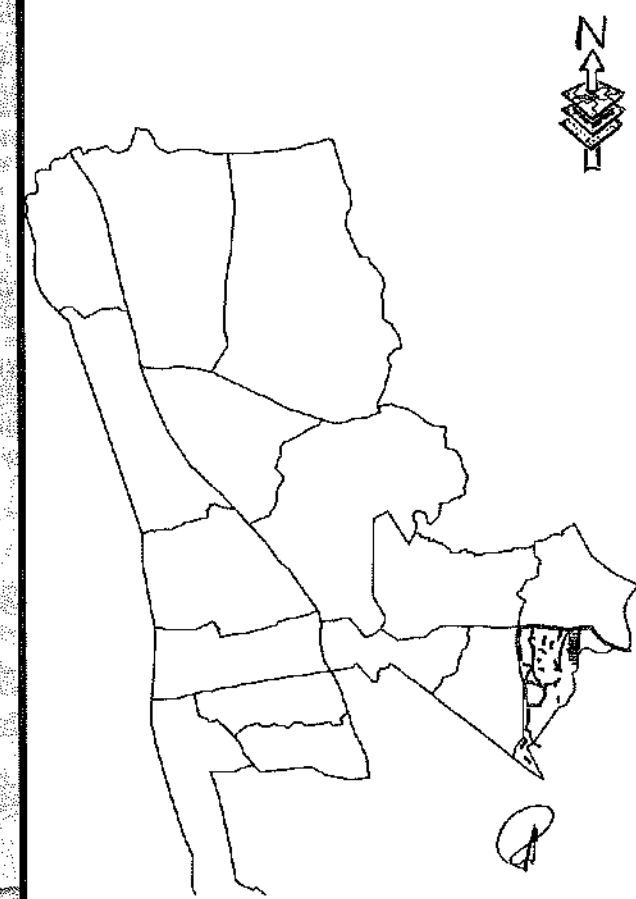
PROJECT	CHITTAGRAM WATER SUPPLY IMPROVEMENT PROJECT (CWSIP)
PACKAGE	CWSIP/W1 - LOT 1 Design, Construction, Supply, Installation, Testing & Commissioning for System Improvement and DMA Formation of Mohara Water Supply System
IDA CREDIT NO.	7675-BD & 7674-BD
TITLE	DMA PIPES - 208
DRAWING No.	CWSIP/W1/L1/DMA-011



Legend

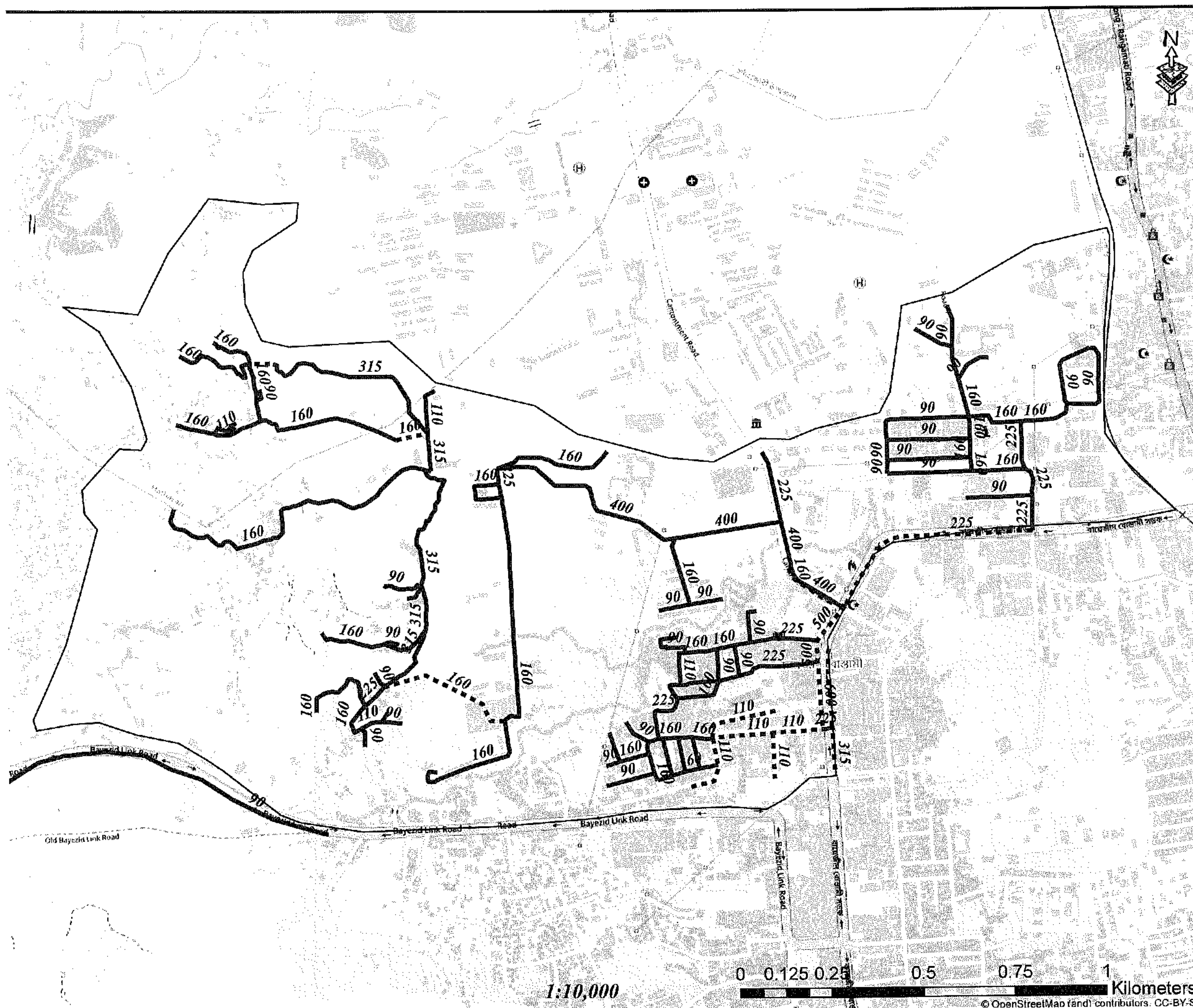
- Existing Pipes (mm)
- New Pipes (mm)
- Replace Pipes (mm)
- DMA Boundary

DMA Location of Sector 02



CONCEPTUAL DRAWING

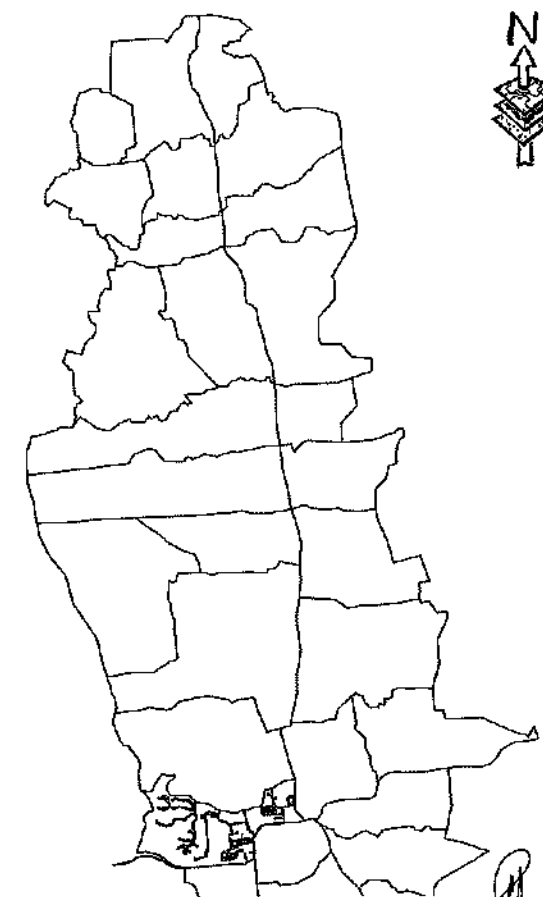
 CHATTOTGRAM WATER SUPPLY & SEWERAGE AUTHORITY (CWASA)	
PROJECT	CHATTOTGRAM WATER SUPPLY IMPROVEMENT PROJECT (CWSIP)
PACKAGE	CWSIP/WT - LOT 1 Design, Construction, Supply, Installation, Testing & Commissioning for System Improvement and DMA Formation of Mohara Water Supply System
IDA CREDIT NO.	7875-BD & 7874- BD
TITLE	DMA PIPE8 - 212
DRAWING No.	CWSIP/WT/DM - 013



Legend

- Existing Pipes (mm)
- New Pipes (mm)
- Replace Pipes (mm)
- DMA Boundary

DMA Location of Sector 03



CONCEPTUAL DRAWING



CHATTOGRAM WATER SUPPLY & SEWERAGE AUTHORITY
(CWASA)

PROJECT CHATTOGRAM WATER SUPPLY IMPROVEMENT PROJECT (CWSIP)

PACKAGE CWSIP/W1 - LOT 1
Design, Construction, Supply, Installation, Testing & Commissioning for System Improvement and DMA Formation of Mohura Water Supply System

IDA CREDIT NO. 7675-BD & 7674-BD

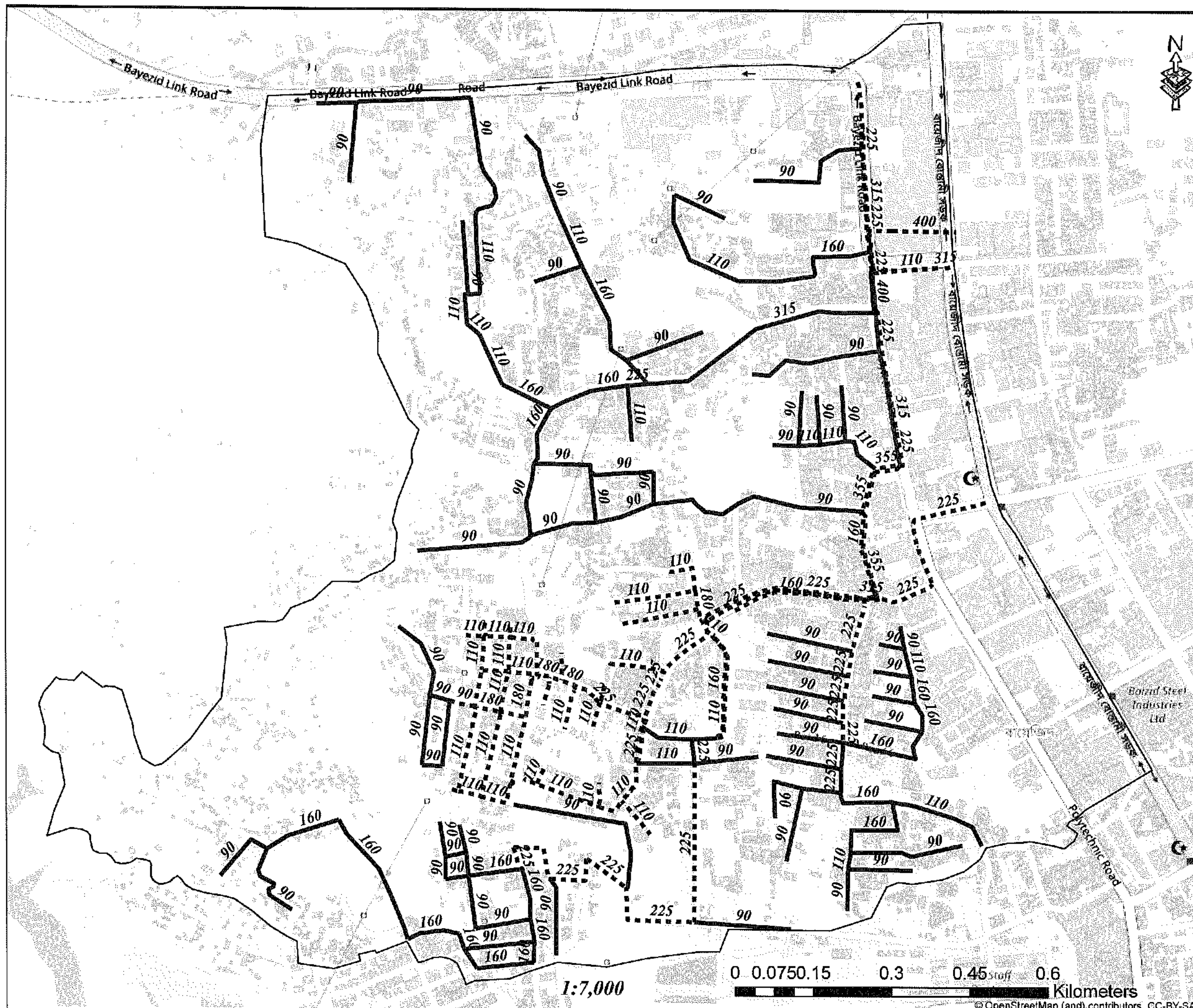
TITLE DMA PIPES - 303B

DRAWING No. CWSIP/W1L1/DM - 014

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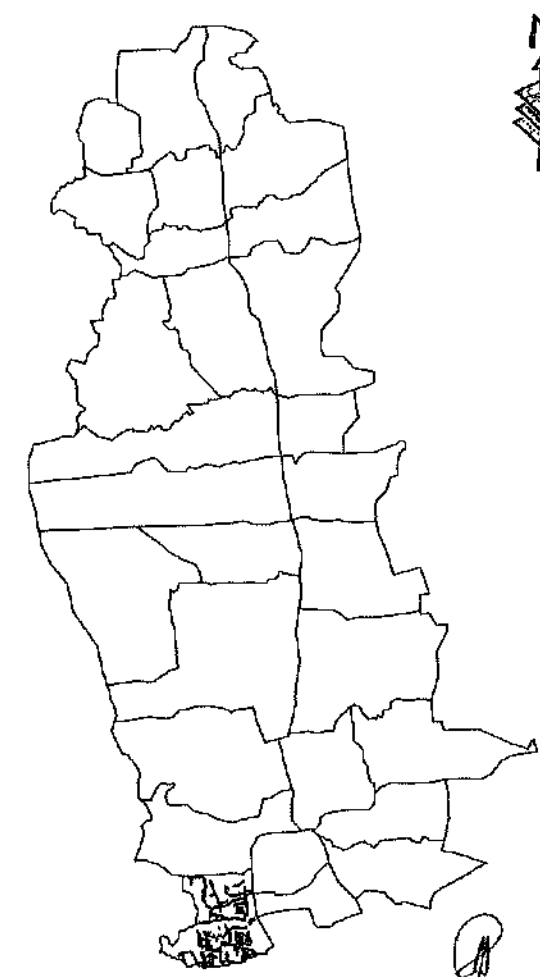
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Legend

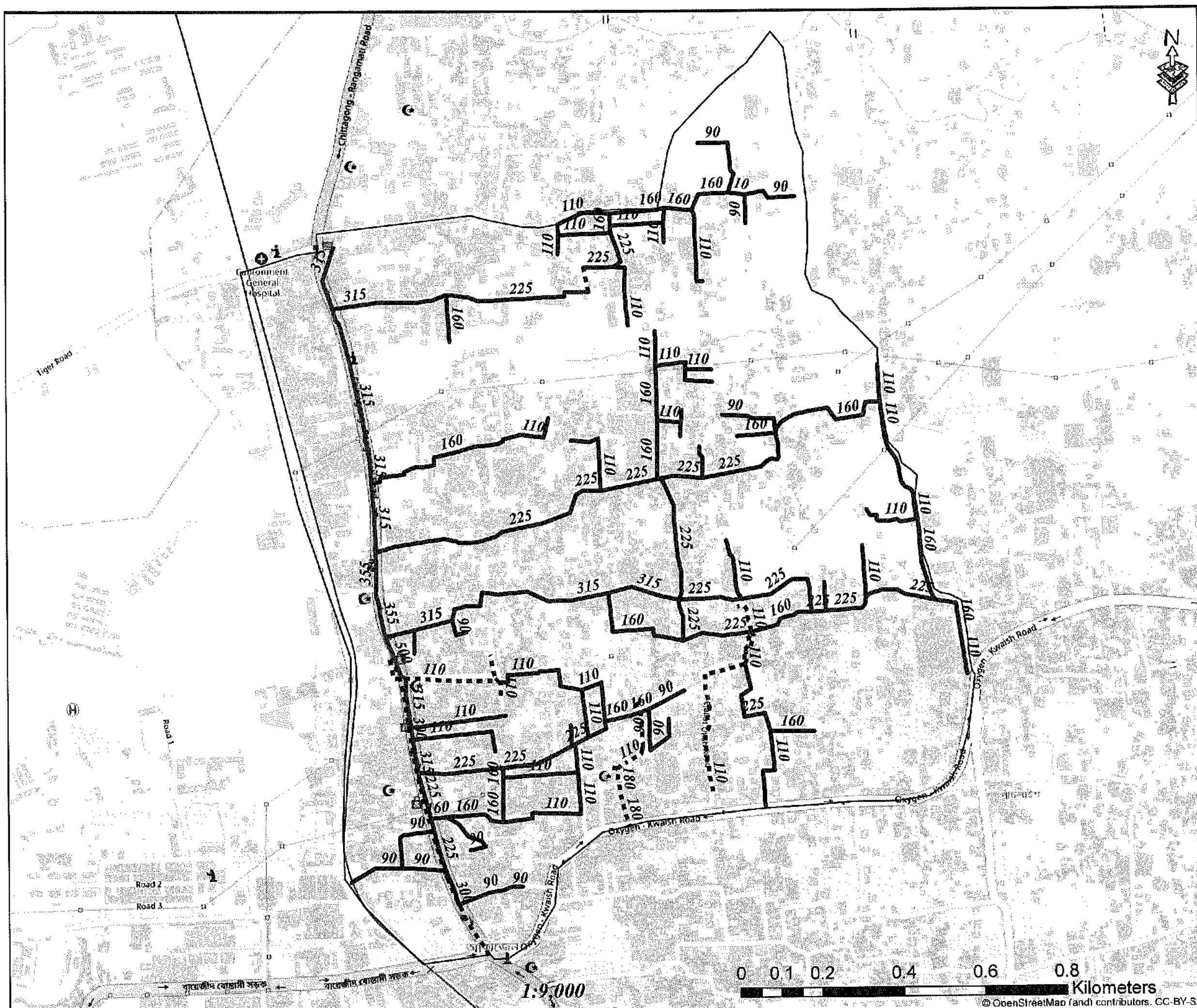
- Existing Pipes (mm)
- New Pipes (mm)
- Replace Pipes (mm)
- DMA Boundary

DMA Location of Sector 03



CONCEPTUAL DRAWING

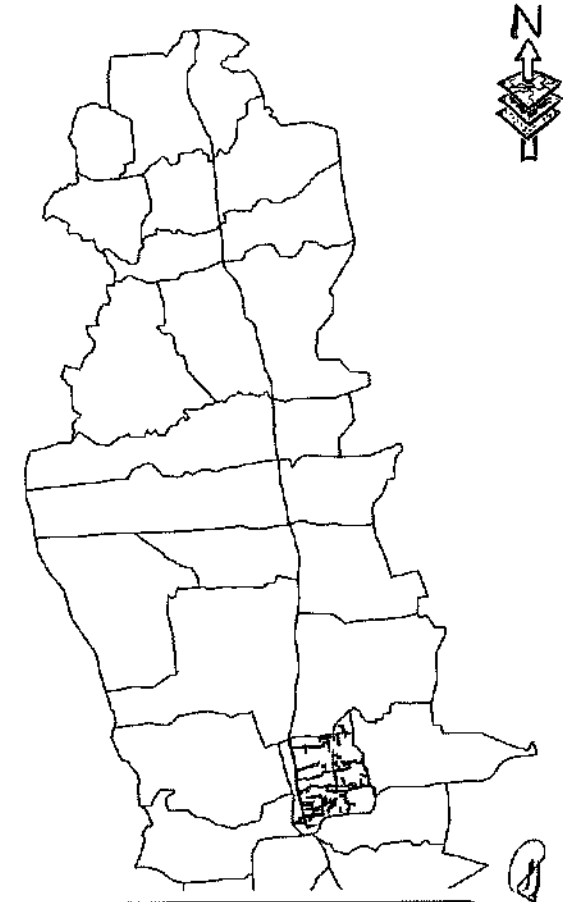
 CHATTOGRAM WATER SUPPLY & SEWERAGE AUTHORITY (CWASA)	
PROJECT	CHATTOGRAM WATER SUPPLY IMPROVEMENT PROJECT (CWSIP)
PACKAGE	CWSIPW1 - LOT 1 Design, Construction, Supply, Installation, Testing & Commissioning for System Improvement and DMA Formation of Mohara Water Supply System
DMA CREDIT NO.	7675-BD & 7674-BD
TITLE	DMA PIPES - 303C
DRAWING NO.	CWSIP/W1/DM-016



Legend

- Existing Pipes (mm)
- New Pipes (mm)
- Replace Pipes (mm)
- DMA Boundary

DMA Location of Sector 03



CONCEPTUAL DRAWING



CHATTOGRAM WATER SUPPLY & SEWERAGE AUTHORITY (CWASA)

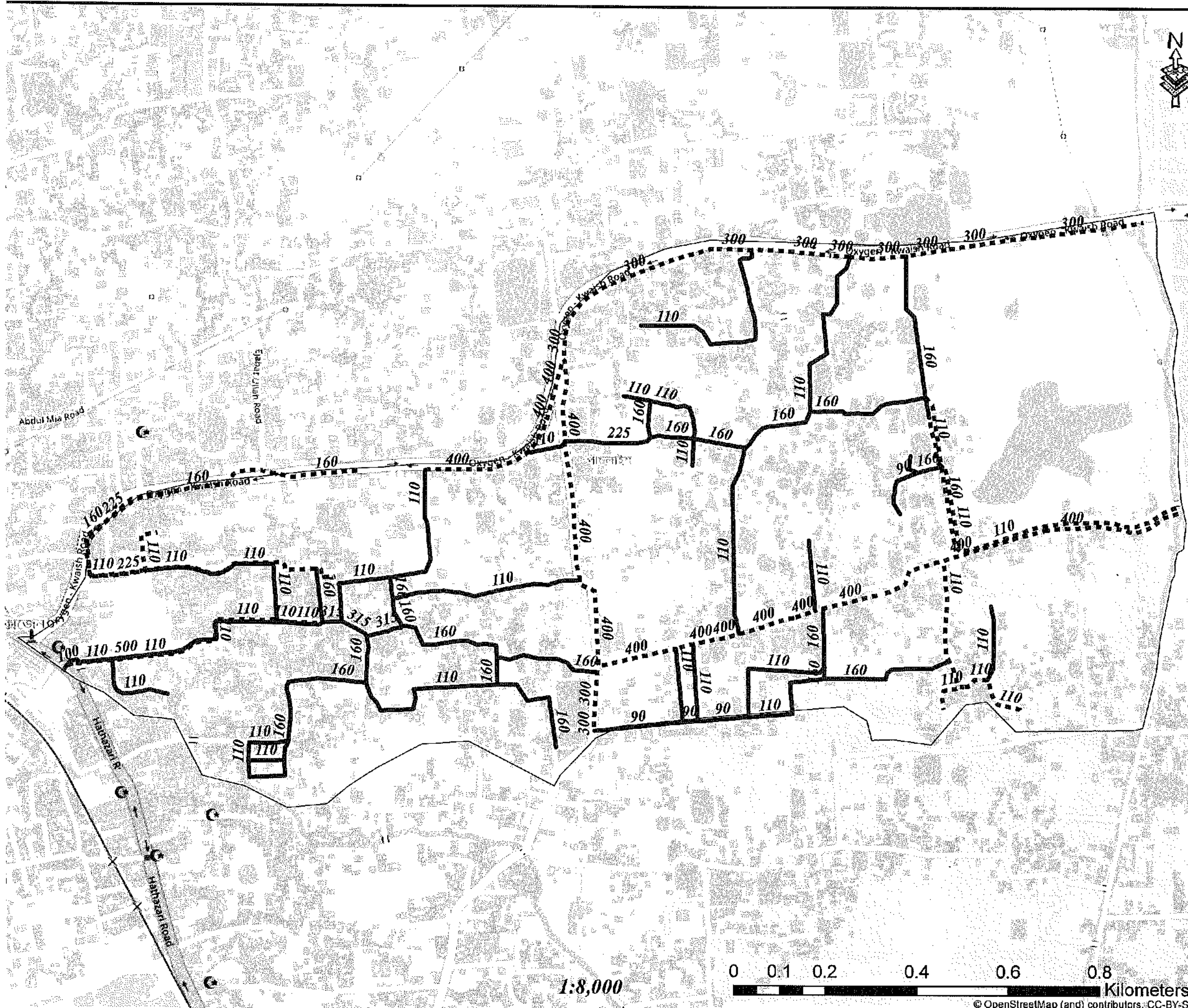
PROJECT CHATTOGRAM WATER SUPPLY IMPROVEMENT PROJECT (CWSIP)

PACKAGE CWSIP/W1 - LOT 1
Design, Construction, Supply, Installation, Testing & Commissioning for System Improvement and DMA Formation of Mohara Water Supply System

IDA CREDIT NO. 7675-BD & 7674-BD

TITLE DMA PIPES - 304

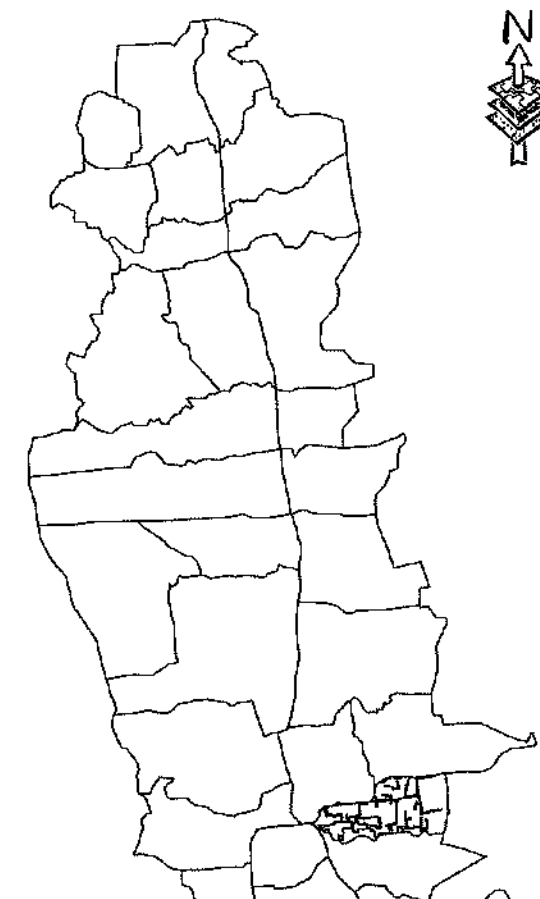
DRAWING No. CWSIP/W1/L1/DM-016



Legend

- Existing Pipes (mm)
- New Pipes (mm)
- Replace Pipes (mm)
- DMA Boundary

DMA Location of Sector 03



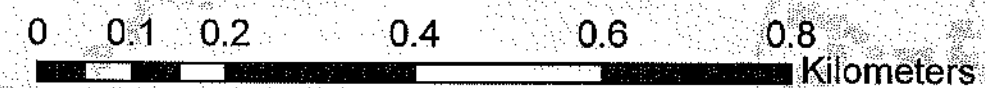
CONCEPTUAL DRAWING



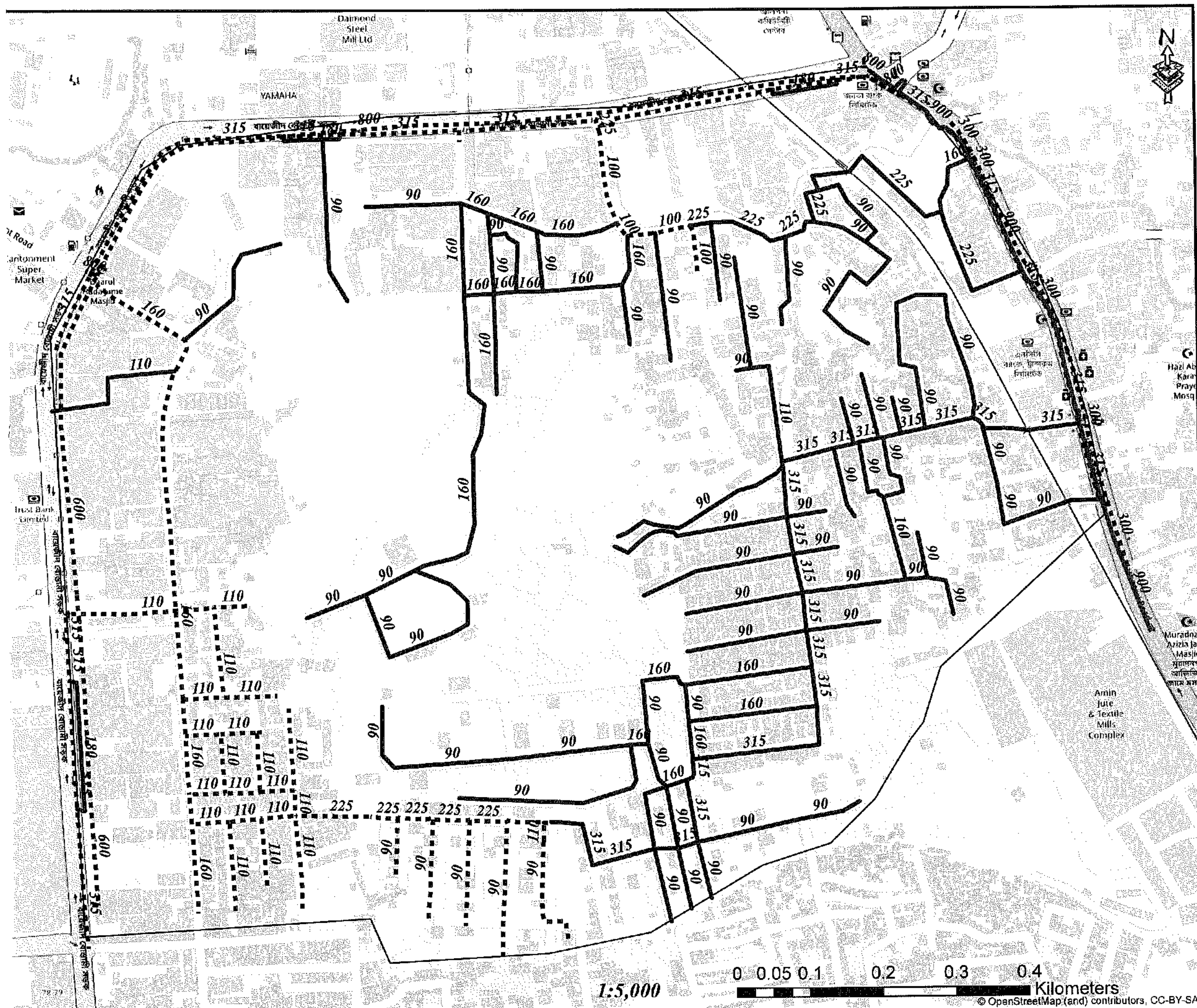
CHATTOGRAM WATER SUPPLY & SEWERAGE AUTHORITY (CWASA)

PROJECT	CHATTOGRAM WATER SUPPLY IMPROVEMENT PROJECT (CWSSIP)
PACKAGE	CWSSIPW1 - LOT 1 Design, Construction, Supply, Installation, Testing & Commissioning for System Improvement and DMA Formation of Mohara Water Supply System
DMA CREDIT NO.	7675-BD & 7674-BD
TITLE	DMA PIPES - 305
DRAWING No.	CWSSIP/W1/L1/DM - 017

1:8,000



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Legend

- Existing Pipes (mm)
- New Pipes (mm)
- Replace Pipes (mm)
- DMA Boundary

DMA Location of Sector 03



CONCEPTUAL DRAWING



CHATTOGRAM WATER SUPPLY & SEWERAGE AUTHORITY (CWASA)

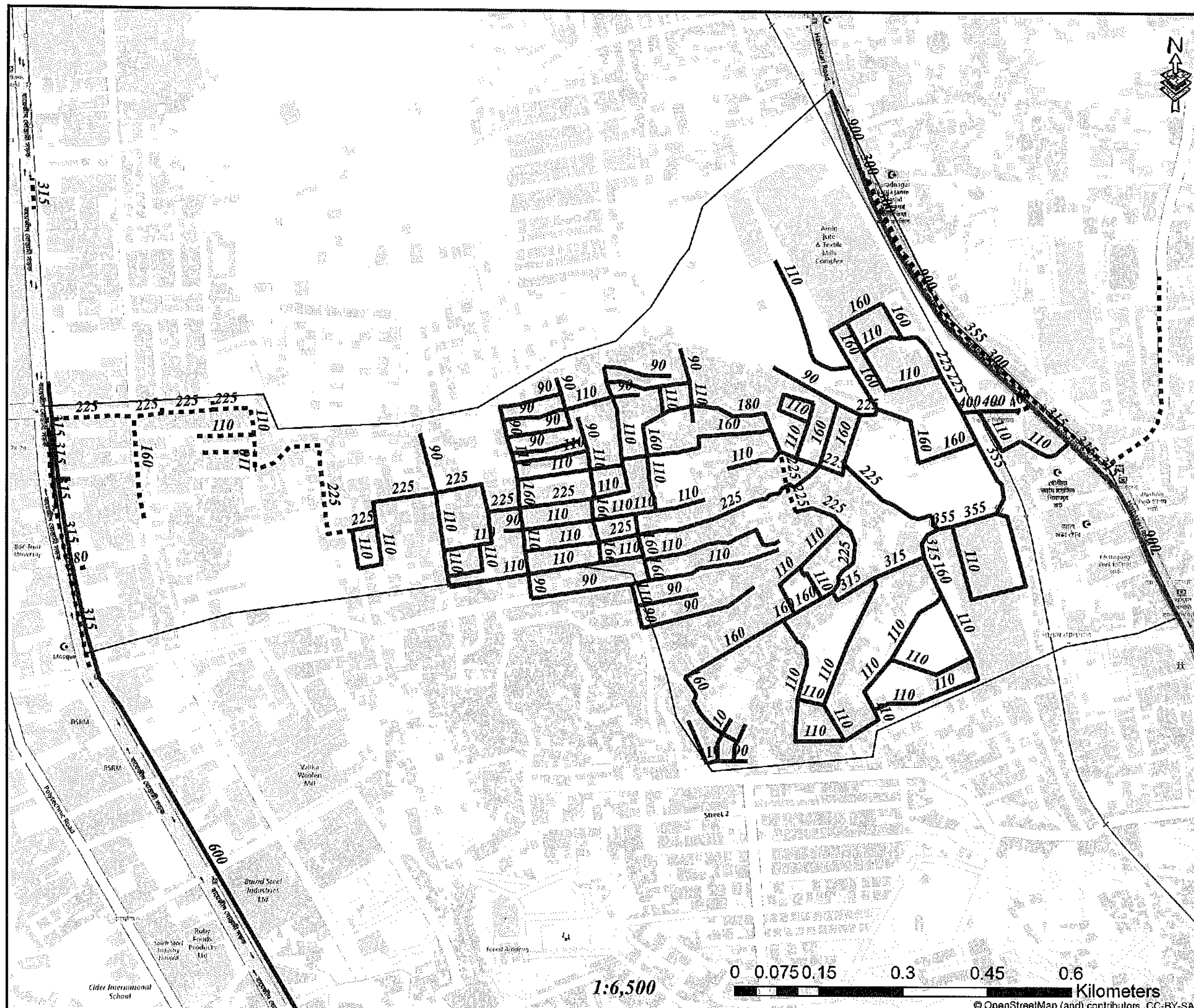
PROJECT CHATTOGRAM WATER SUPPLY IMPROVEMENT PROJECT (CWSIP)

PACKAGE CWSIP/W1 - LOT 1
Design, Construction, Supply, Installation, Testing & Commissioning for System Improvement and DMA Formation of Mohara Water Supply System

IDA CREDIT NO. 7675-BD & 7674-BD

TITLE DMA PIPES - 307

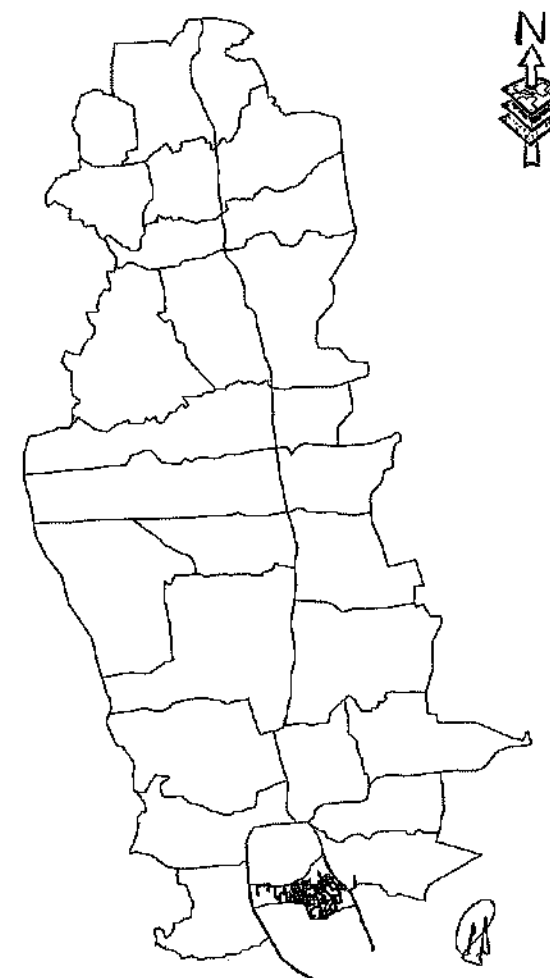
DRAWING No. CWSIP/W1/DM - 018



Legend

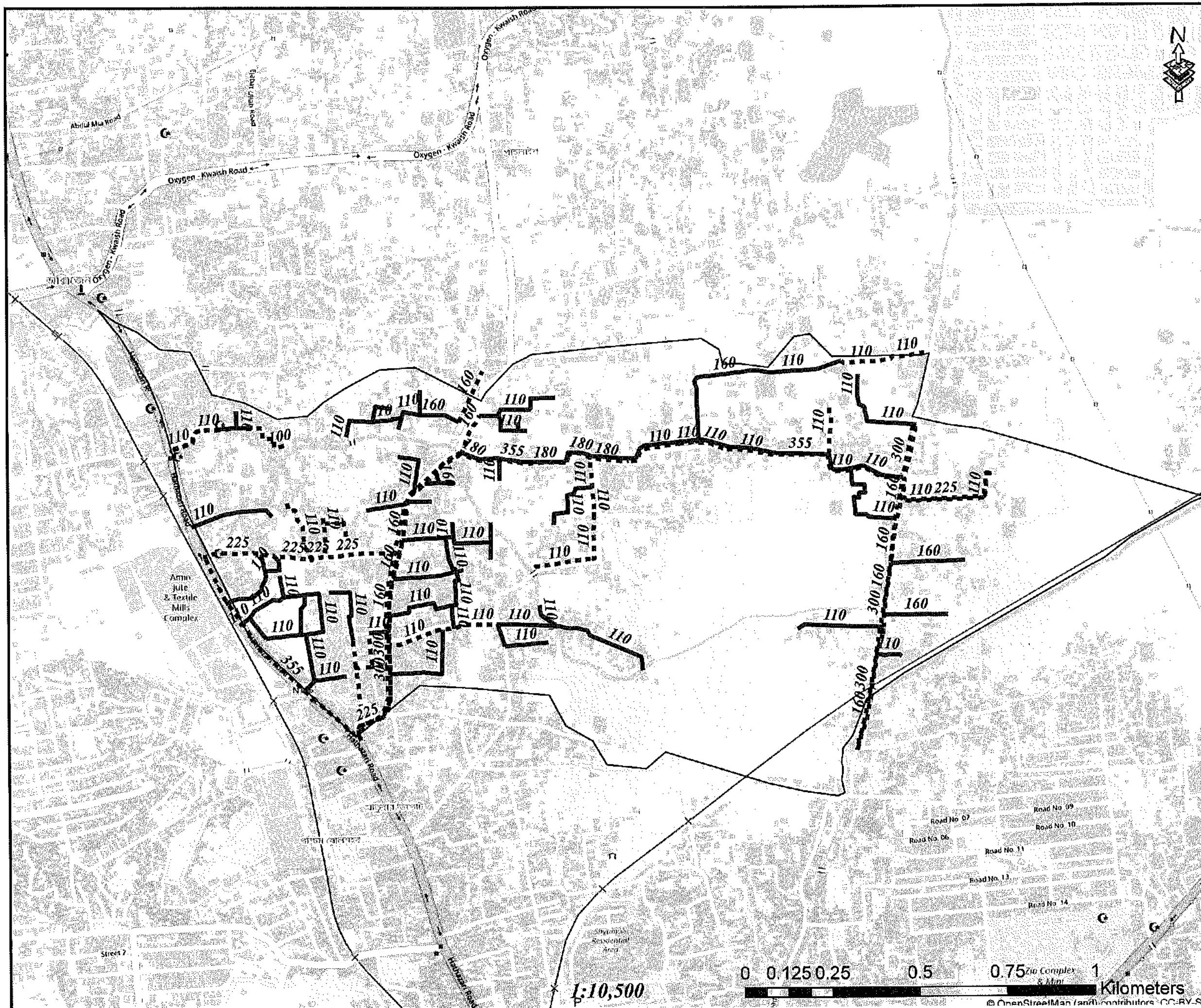
- Existing Pipes (mm)
- New Pipes (mm)
- Replace Pipes (mm)
- DMA Boundary

DMA Location of Sector 03



CONCEPTUAL DRAWING

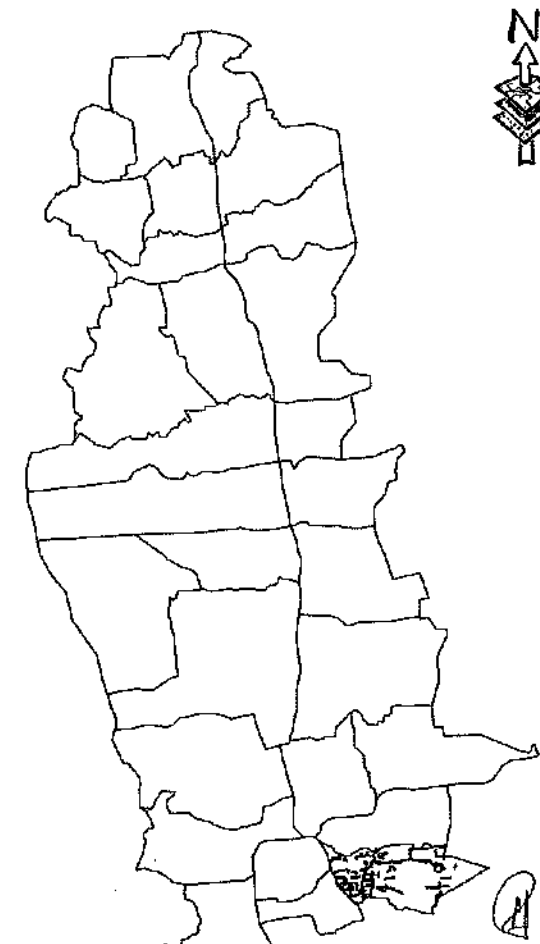
 CHATTOGRAM WATER SUPPLY & SEWERAGE AUTHORITY (CWASA)	
PROJECT	CHATTOGRAM WATER SUPPLY IMPROVEMENT PROJECT (CWSIP)
PACKAGE	CWSIP/PAV1 - LOT 1 Design, Construction, Supply, Installation, Testing & Commissioning for System Improvement and DMA Formation of Mohara Water Supply System
IDA CREDIT NO.	7875-BO & 7874-BO
TITLE	DMA PIPES - 308
DRAWING NO.	CWSIP/PAV1/DM - 019



Legend

- Existing Pipes (mm)
- New Pipes (mm)
- Replace Pipes (mm)
- DMA Boundary

DMA Location of Sector 03

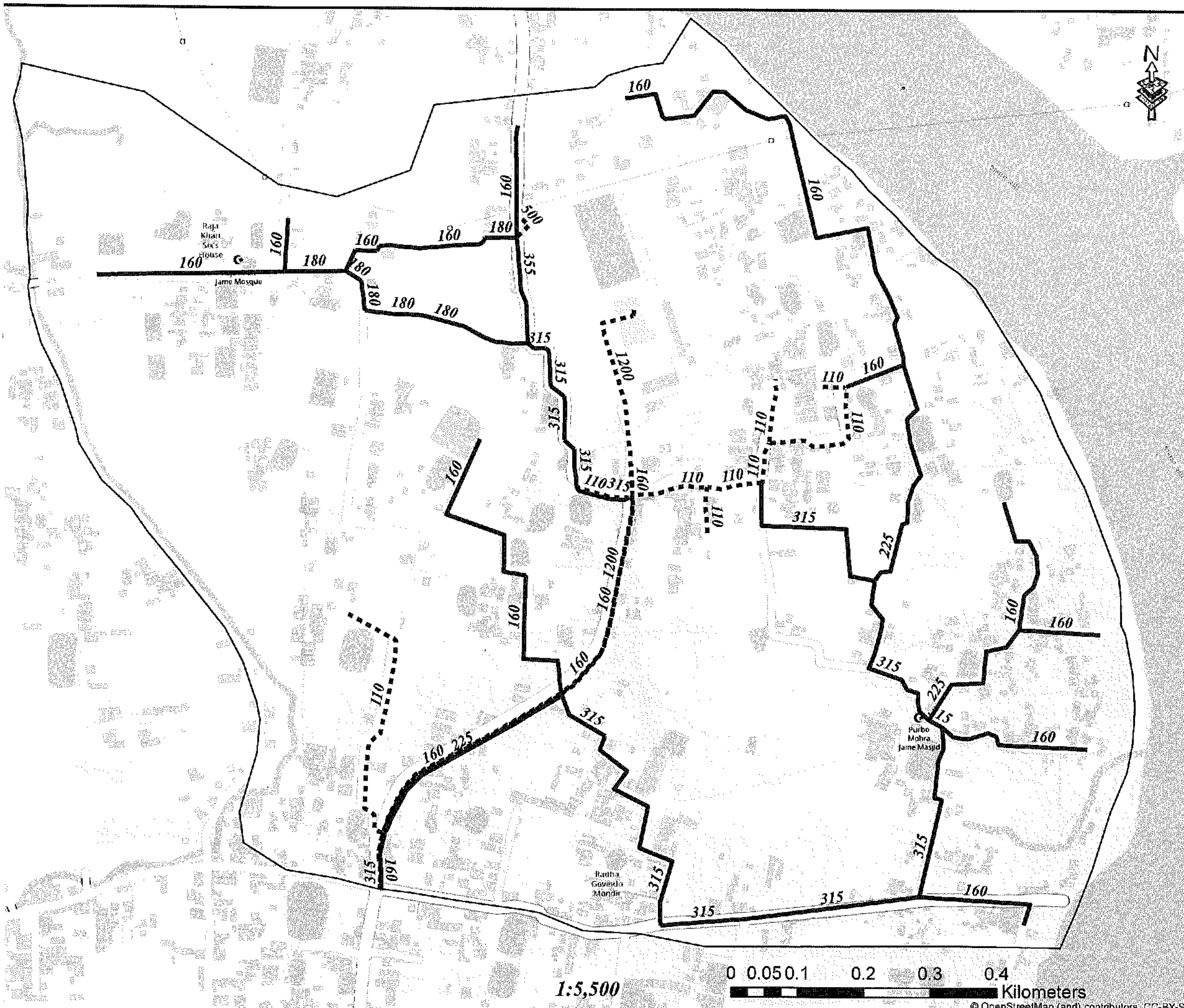


CONCEPTUAL DRAWING

 CHATTOGRAM WATER SUPPLY & SEWERAGE AUTHORITY (CWASA)	
PROJECT	CHATTOGRAM WATER SUPPLY IMPROVEMENT PROJECT (CWSIP)
PACKAGE	CWSIPW1 - LOT 1
	Design, Construction, Supply, Installation, Testing & Commissioning for System Improvement and DMA Formation of Mohara Water Supply System
IDA CREDIT NO.	7075-BD & 7074-BD
TITLE	DMA PIPES - 309
DRAWING NO.	CWSIP1/W111/DM-020

0 0.125 0.25 0.5 0.75 1 Kilometers

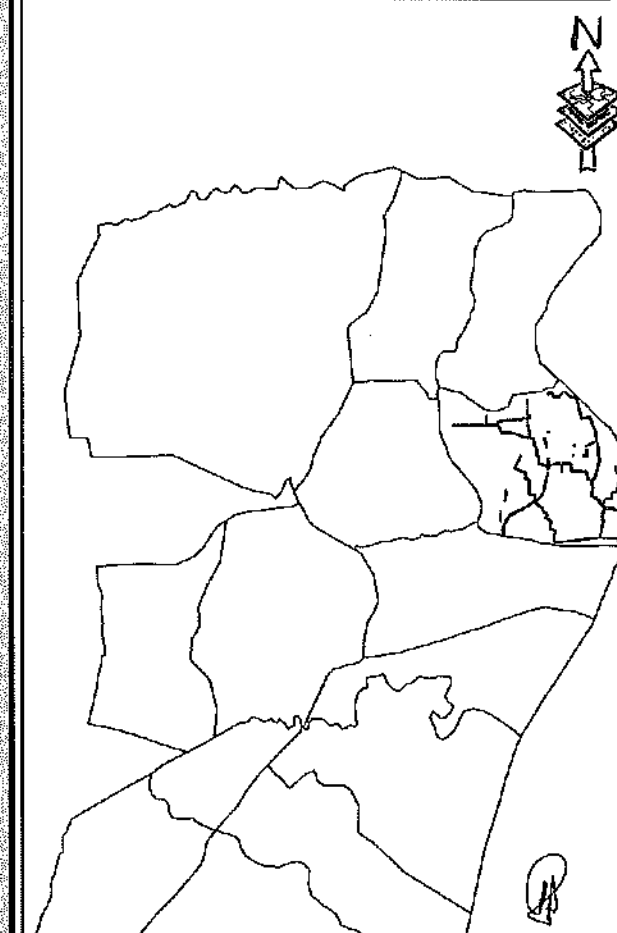
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Legend

- Existing Pipes (mm)
- New Pipes (mm)
- Replace Pipes (mm)
- DMA Boundary

DMA Location of Sector 04



CONCEPTUAL DRAWING



CHATTOGRAM WATER SUPPLY & SEWERAGE AUTHORITY (CWASA)

PROJECT CHATTOGRAM WATER SUPPLY IMPROVEMENT PROJECT (CWSIP)

PACKAGE CWSIPW1 - LOT 1
Design, Construction, Supply, Installation, Testing & Commissioning for System Improvement and DMA Formation of Mohara Water Supply System

IDA CREDIT NO. 7675-BD & 7674-BD

TITLE DMA PIPES - 401A

DRAWING NO. CWSIP/W1/L1/DM - 012

1:5,500

0 0.05 0.1 0.2 0.3 0.4 Kilometers

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