SECTION 4 : EXECUTION OF SEWAGE AND WATER PROJECTS :

SEWAGE PROJECTS

SECTION 4-1 : Doura II Pumping Station and Duplicate West Trunk Sewer

CODE	DESCRIPTION	QTY
13-02-00001	Excution of the Doura II pumping station which is designed to lift combined sewage flows from the new duplicate west trunk sewer through triple rising mains into the kerkh sewage treatment works the works includes the folloing units Doura II Pumping station inlet distribution chamber Three screen chamber with mecanically raked screen and conveyors main pump building housing, nine sewage pump sets and incorporating wet well , dry well , motor room with service room valve chamber on outgoing rising mains High voltage switch gear and transformer building stand -by generators with diesel storage tanks siteroadworks fencing and seivvces Duplicate West Trunk Sewer the works comprise the complete construction of a pvc-lined in-situ concrete trunk sewer including Manholes , varying from 2.8m dia to 3.6m dia total length 7.3 km approximately triple 1.6 m dia .ductile iron rising mains total length 4.5 km approximately . the scope of the work for the comelete construction of the works as detaild in the specification , bills of quantities and drawings which can be obtained from amanat Bagdad.	

SECTION 4-2 KERKH SEWAGE TREATMENT WORKS/ STREAM 7

CODE NO	DESCRIPTION	QTY
13-02-00002	excution of stream 7 (second extention) in KERKH sewage	
	treatment plant . The scope of the work for the complete	
	construction of the works as detailed in the specification,bills	
	of quantities and drawings which can be obtained from Amanat	
	Baghdad including the Mechanical and Electrical equipment ,	
	testing and commissioning the plant and maintenance of the	
	work for the period stated in the conditions of the work .	
	The work comprise stream 7 for sewage and sludge treatment ,	
	storm tanks,effluent puping station and out fall culvert.	
	the following units are included :	
	1- Inlet channels and pre- aeration	
	2- Detritors	2
	3- primary settlement tanks and distribution chamber	4
	4- Aeration tanks.	(24 pockets)
	5- Final settlement tanks and distribution chamber.	4
	6- Return activated sludge pumping station.	
	7- Chlorination building .	
	8-Channels and cluverts,pipelinesinUPVC,GRPand ductilel Iron	
	9- Effluent pumping station .	
	10-Outfall culvert (2.8 km)apron .	
	11-Storm tanks .	
	12-Raw and thickened sludge pumping stations.	
	13-Sludge thickening tanks	2

14-Modifications to existing sludge lagoons.

15-Site drainage pumping station and pipeline .

16-wash water pumping station(equipment only)work shops etc .

17-Electricits sub station and stand by generator buldings 3

18-Site water drainage service .

19-Site roads , foot paths, embankments. Lands caping etc

20-Site lighting, telephone and telementry system.

SECTION 4-3 :EXECUTION OF SEWAGE NET WORK IN KAMALIYA DISTRICT IN BAGHDAD

CODE NO.	DISCERPITION
13-02-00003	it is one of the mostly densely populated areas of more than 100000 inhabitants and it is noted
	that those people are of limited income community .
	The Project will help in solving the problems of repeatedly flooded
	Septictanks and reduce the hazards of infectious diseases .
	The Project includes :
	7 PUMPING STATIONS WITH DISCHARGE 300L/SEC INCLUDING 3 PUMPS FOR EACH STATION WITH THE FOLLOWING SPEC.
	Q: 300L/SEC , H:15 M , SPEED: 980 RPM , POWER:120KW
	6 PUMPING STATIONS WITH DISCHARGE 600L/SEC INCLUDING 3 PUMPS FOR EACH STATION WITH THE FOLLOWING SPEC.
	Q: 150L/SEC , H:15 M , SPEED: 980 RPM , POWER: 60KW
	REQUIREMENTS OF ISO 2531 AND SHALL BE SUITABLE TO BE USED IN SEWAGE NETWORKS FULL DETAILS CAN BE OBTAINED FROM THE DRAWING AND BILL OF QUENTITIES .
	Sewage treatment compact unit flow 10000m/day 9
	population 50000

B.O.D equal or less than 10P.P.M
S.S equil or less than 5 P.P.M
Po 4 equal or less than 1 P.P.M
including
Suitable lifting pump station
Automatic screen and Grit Removal
Sludge treatmant eguipmant

WATER PROJECTS

SECTION 4-4: WATER TREATMENT PLANT

15 MGD - 1

CODE	DESCRIPTION	QTY
13-02-00004	1- DISTRIBUTION TANK B1980	

SOURCE OF THE RAW WATER WILL BE FROM THE NET WORK , THIS TANK WILL RECEIVE WATER AND DISTRIBUTE IT BY GRAVITY TO THE CLARIFIERS

2- LAMELLA CLARIFIER TANK (CONCRETE TANK) :-

- MAXIMUM SURFACE LOAD 1.0 m/h .
- AUTOMATICALY DESLUDGING VALVES .
- MECHANICAL RAPID MEXERS FOR THE COAQULANT, AND HYDRULIC FLOCCULATION .

- OVER FLOW PIPE .

3- STORAGE TANK (CONCRETE TANK) :-

CAPACITY OF THE TANK 400 m3 WHICH INCLUDES :-

- MAIN VALVES BETWEEN THE CLARIFIER AND THE S.TANK AND BETWEEN THE S.TANK AND THE FILTER PUMPS ,

* OVER FLOW PIPE
* DRAINAGE VALVES
* LOW AND HIGH LEVEL FLOAT SWITCHES

* LEVEL INDICATER
* THE TANK IS DIVIDED IN TWO PARTS FOR MAINTENANCE CASE

4- FILTERS PUMP STATION

THIS STATION CONTAINES :-

1- (5) PUMPS (3 DUTY + 2 STANDBY) CAPACITY OF EACH PUMP IS 1000 m3/h H = 40 m , HORIZENTAL , SPLITE CASE TYPE , ALL THESE PUMPS CONNECTED TO THE STORAGE TANK BY SUCTION PIPE ITS DIMATER DEPENDS ON THE SPECIFICATION OF THE PUMP .

2- SUCTION VALVE AND PIPES FOR EACH PUMP .

3- DELIVERY NON – RETURN , VENTING , VALVES , FITTINGS AND PIPES .

4- MANUMETER FOR EACH PUMP .

5- TWO DELEVERY COLLECTOR PIPES CONNECTED THROUGH BY PASS VALVE .

6- TWO MAIN BUTTER FLY ELECTRICAL VALVES .

7- ALL THE EQUIPMENTS FOR THE FILTER PUMPS .

8- OVER HEAD ELECTRICAL CRANE CAPACITY 5 TON WITH I BEAMS ,
BRIDGE , AND ALL THE ACCESSORIES .

9- ELCTRICAL BOARD WITH MAIN CIRCUIT BREAKERS , SOFT START – STOP STARTERS CAPACITY 200 KW .

15 MGD - 2

CODE	DESCRIPTION	QTY

5- PRESSURE FILTERS STATION :-
THIS STATION WILL INCLUDES THE FOLLOWING :-

1- CAPACITY OF EACH UNIT 200 m3/h , FLOW RATE 8 m3/m2/h , OPERATING PRESSURE 5 bar , TESTING PRESSURE 10bar DISHEND THICNESS 18 m m .

2- MEDIA OF THE FILTER 3 LAYERS AS BELOW :-

* FIRST LAYER 10 cm HEIGHT SIZE 3.15 mm – 5.6 mm

* SECAND LAYER 15 cm HEIGHT SIZE 2 mm - 3.15 mm

*THIRD LAYER APROXIMATLY 75 cm SIZE 0.8 – 1.25 mm

3- FILTER UNIT WILL BE INCLUDED THE FOLLOWING VALVES , INLET , OUTLET , DRAINAGE , RELIFE , OUTLET OF BACK WASHING , INLET OF BACK WASHING FOR BOTH WATER AND AIR .

4- INLET AND OUTLET MANUMETER .

5- MAINTENANSE MANHUALES TWO IN THE UPPER PART AND TWO IN THE LOWER PART OF THE FILTER .

6- THE FILTER WILL BE SKID MOUNTED .

7- PAINTING OF THE INTERNAL AND EXTERNAL SURFACES WILL BE ACCORDING TO THE WORLD STANDARD SPECIFICATION .

8- THE TOTAL NUMBER OF THE PRESSURE FILTERS TO BE 16FILTERS DIVIDED IN TWO ROWS THERE ARE TWO MAIN VALVES FOR EACH ROW ONE FOR THE INLET AND THE OTHER FOR THE OUT LET .

9- FILTERD WATER FOR BOTH GROUBS CONNECTED IN ONE MAIN COLLECTOR PIPE .

10- MAIN BUTTERFLY ELECTRICALLY OPERATED VALVE .

6- ALUMINUM SULPHATE SYSTEM

THIS SYSTEM INCLUDES THE FOLLOWING :-

a- PREPARATION AND SATURATION TANKS :-

- 3 – TANKS WITH CAPACITY 30 m3/PER TANK , MATERIAL OF THE TANK ANTICORROSIVE FOR ALUMINUM – SULPHATE .

- THE TANKS WILL BE SUPPLIED WITH SERVICE WATER FROM THE OUTLET FILTED WATER LINE .

- LADDER AND WALK WAY AROUNDTHE TANK .

- ELECTRICAL OVER HEAD CRANE WITH CAPACITY 500 Kg .

- ELECTRICAL MIXER FOR EACH TANK MANUFACTURED FROM STAINLESS – STEEL AND S – STEEL BASKET CAPACITY 1000 Kg AT THE UPPER PART OF THE TANK .

- ALUMINUM SULPHATE TANKS INCLUDE ALL THE FOLLOWING :-

* INLET , OUTLET , DRAINAGE , OVER FLOW VALVES .

* LEVEL INDICATORS .

* METALIC STRACTURE WITH COVER .

* B1788B1811 LIGHTING .

b- ALUMINUM SULPHATE DOSING PUMPS AS BELOW :

- NUMBER OF THE PUMPS THREE PUMPS WITH CAPACITY 3000 L/h HEAD 50 m FOR EACH PUMP .

C- ALUMINUM SULPHATE SYSTEM INCLUDES ALL THE UPVC PIPES ,

VALVES , FITTINGS , PULSATER DAMPNER , MANUMETERS , TWO

ADJUSTABLE FLOWMETER , TWO MAIN DISCHARGE PIPES WHICH

MUST BE CONNECTED TO THE INJECTION POINTS OF+B1846 THE

FLOCCULATION TANK .

15 MGD - 3

CODE	DESCRIPTION	QTY

7- CHLORINATION STATION

CHLORINE GAS WILL BE USED FOR THE DISINFECTION SO IT SHALL BE INJECTED AT THE STORAGE TANK AND THE INLET OF THE LAMELLA TANK AS PRE – CHLORINATION AND ALSO WILL BE INJECTED AT THE OUTLET OF THE PRESSURE FILTERS AS POST – CHLORINATION , THIS STATION INCLUDES THE FOLLOWING :-

- 3 CHLORINATORS CAPACITY 15 Kg/h FOR EACH UNIT .

- 3 INJECTERS .

- 1 CHANGE OVER DEVICE .

- 1 LEAK DETECTOR .

- 2 HEADERS WITH ALL THE INLET AND OUTLET VALVES .

- 50 FLEXIBLE PIPES BETWEEN THE CYLINDERS AND THE HEADERS (5 DUTY + 45 SPARES) .

- 3 PRV .(1 DUTY + 2 STAND BY)

- 3 CATCH POT .

- WATER AND GAS MANUMETERS .

- 3 BOOSTING PUMPS CAPACITY 10 m3/h , H = 80 m FOR EACH WITH ALL THE PIPES , VALVES , NON – RETURN VALVES , FITTINGS .

- ALL THE FITTINGS , PIPES , VALVES , INJECTION POINTS .

8- AIR BLOWER SYSTEM

THE SYSTEM INCLUDES THE FOLLOWING :-

-3 – AIR BLOWERS . THE REQUIRED FLOW RATE WILL BE 60 m3/ m2 /H DURING THE SQUENCE OF BACK WASHING THE FILTER WITH AIR BLOWER .

- ALL THE VALVES FOR THE INLET , OUTLET , NON – RETURN , INLET FOR EACH FILTER , PIPES , MANUMETERS , FITTINGS .

9- BACK WASHING WATER

THE REQUIRED FLOW RATE FOR THE BACK WASHING WITH WATER MUST BE 30 m3/ m2 /h THIS CAN BE CREATED MAINLEY THROUGH BRANCH FROM THE MAIN FILTERD WATER AND BY USING HORIZONTEL PUMPS (AS OPTION) .

10- GENERATOR STATION

- 1 STAND BYE GENERATOR 11 KV , 1000 RPM , 50 HZ .

- CAPACITY 1250 KVA (PRIME) .

- INCLUDE ALL ACCESSORIES , WATER COOLING SYSTEM RADIATORS , OIL LUBRICATION PUMPS , FUEL TANKS FOR 48 HOURS DUTY , UPS CHARGER AND BATTERIES .

- WITH ITS ELECTRICAL SWITCH BOARD CONSIST OF CIRCUITS

BREAKERS , AND SERVICES SWITCH BOARD .

15 MGD - 4

11-ELECTRICITY POWER

SPECIFICATIONS OF THE EQUIPMENTS WHICH REQUIRED FOR WTP WILL BE AS BELOW :-

a- HIGH TENTION BOARD

- 2 INCOMING FEEDERS + ONE BUS – COUPLERS (11 KV , 630 A) .

- 2 OUT GOING (11 KV , 630 A) TO THE TRANSFORMERS .

- 1 CB FOR GENERATING DIESEL (1250 KVA)

b- 2 TRANSFORMERS (11 KV/0.4 KV) CAPACITY OF EACH ONE 2 MVA .

c- LOW TENTION BOARD (400 V , 50 c/s) INCLUDES THE FOLLOWING :-

- 2 MAIN CIRCUIT BREAKERS (400 V , 2000 A , 50 c/h) .

- 1 BUS – COUPLERS (400 V , 2000 A , 50 c/h) .

- 8 CIRCUIT BREAKER (630A) (5 CB FOR 200 KW STARTARS + 3 SPARES)

- 5 CIRCUIT BREAKER (250A)

- 3 CIRCUIT BREAKER (50A)

d- SOFT STARTERS , BOARDS

- 6 SOFT START – STOP STARTERS (200 KW) .

- 1 BOARD INVOLVES THREE STARTERS FOR THE AIR BLOWERS ACCORDING TO THE BLOWERS SPECIFICATIONS .

- 1 BOARD FOR ALL THE UXILLARY EQUIPMENTS LIKE OVER HEAD CRANE , FLOCCULATORS , ELECTRICAL VALVES , LIGHTINGS , MIXERS , VENTELATORS , AIR CONDITIONERS , FLOWMETERS .

- 1 BOARD FOR THE CHLORINATION STATION WHICH INVOLVES

3-STARTERS FOR THE BOOSTING PUMPS , AND ALL OTHER

ACCESSORIES .

- 1 BOARD FOR THE ALUMINUM SULPHATE SYSTEM WHICH INCLUDES :-

* STARTERS FOR THE MIXERS .

* STARTERS FOR THE DOSING PUMPS .

* STARTER FOR THE OVER HEAD CRANE B1920AND ALL OTHER ACCESSORIES

*** GENERAL NOTES :-**

1- ALL THE BOARD INCLUDE ALL PROTECTIONS AND INTERLOCKS SUCH AS UNDER VOLTAGE , SHORT CIRCUIT , OVER LOAD THERMOSTATE PROTECTION OF MOTORS ECT , METERS VOLTMETER , BULBS .

2- THE LOW VOLTAGE (STARTERS OF MOTORS) INCLUDE POWER FACTOR CORRECTION UNIT UP TO 0.94 .

3- RECALCULATE THE LOAD FOR BETTER DESIGN .

4- THE OFFER SHOULD INCLUDE ALL EQUIPMENT AND ACCESSORIES SUFFICIENT TO OPERATE THE PLANT PROPERLY .

5- GIVE AS OPTIONS IF THERE ARE BETTER OR MODERN EQUIPMENTS SUITABLE FOR PLANT .

6- RECHECK CALCULATION AND SPECIFICATIONS ACCORDING TO HIGH STANDARDS AND GIVE AS YOUR COMMENTS .

7- THE OFFER SHOULD INCLUDE INSTALATION AND ERECTION OF ALL BUILDINGS INCLUDING CONCRETE WORK .

8- SPARE PARTS FOR 2 YEARS OF OPERATION .

9- SUPPLIER RESPOSIBILITIES ARE :-

a- ERRECTION AND INSTULATION OF ALL THE EQUIPMENTS .

b- SUPPLYING AND INSTALLATION HOUSES FOR ALL THE STATIONS AND THE SYSTEMS .

10- THE OFFER INCLUDES ALL THE CABLES BETWEEN THE ELECTRICAL EQUIPMENTS .

11- THE OFFER INCLUDES ALL THE INTER CONNECTION PIPES BETWEEN ALL THE STATIONS.B1906

SECTION4-5: WATER TREATMENT PLANT

5 MGD - 1

CODE	DESCRIPTION	QTY
13-02-00005	1- DISTRIBUTION TANK (CONCRETE TANK)	

SOURCE OF THE RAW WATER WILL BE FROM THE NET WORK , THIS TANK WILL RECEIVE WATER AND DISTRIBUTE IT BY GRAVITY TO THE CLARIFIERS

2- LAMELLA CLARIFIER TANK (CONCRETE TANK) :-

- MAXIMUM SURFACE LOAD 1.0 m/h .
- AUTOMATICALY DESLUDGING VALVES .
- MECHANICAL RAPID MEXERS FOR THE COAQULANT , AND HYDRULIC FLOCCULATION .

- OVER FLOW PIPE .

3- STORAGE TANK (CONCRETE TANK) :-

CAPACITY OF THE TANK 200 m3 WHICH INCLUDES :-

- MAIN VALVES BETWEEN THE CLARIFIER AND THE S.TANK AND BETWEEN THE S.TANK AND THE FILTER PUMPS ,

* OVER FLOW PIPE
* DRAINAGE VALVES
* LOW AND HIGH LEVEL FLOAT SWITCHES

* LEVEL INDICATER
* THE TANK IS DIVIDED IN TWO PARTS FOR MAINTENANCE CASE

4+B2020- FILTERS PUMP STATION

THIS STATION CONTAINES :-

1- (3) PUMPS (2 DUTY + 1 STANDBY) CAPACITY OF EACH PUMP IS 600 m3/h H = 40 m , HORIZENTAL , SPLITE CASE TYPE , ALL THESE PUMPS CONNECTED TO THE STORAGE TANK BY SUCTION PIPE ITS DIMATER DEPENDS ON THE SPECIFICATION OF THE PUMP .

2- SUCTION VALVE AND PIPES FOR EACH PUMP .

3- DELIVERY NON – RETURN , VENTING , VALVES .B2011 FITTINGS AND PIPES .

4- MANUMETER FOR EACH PUMP .

5- TWO DELEVERY COLLECTOR PIPES CONNECTED THROUGH BY PASS VALVE .

6- TWO MAIN BUTTER FLY ELECTRICAL VALVES .

7- ALL THE EQUIPMENTS FOR THE FILTER PUMPS .

8- OVER HEAD ELECTRICAL CRANE CAPACITY 2 TON WITH I BEAMS ,
BRIDGE , AND ALL THE ACCESSORIES .

9- ELCTRICAL BOARD WITH MAIN CIRCUIT BREAKERS , SOFT START – STOP STARTERS CAPACITY 132+B1982 KW .

5 MGD - 2

CODE	DESCRIPTION	QTY

5- PRESSURE FILTERS STATION :-
THIS STATION WILL INCLUDES THE FOLLOWING :-

1- CAPACITY OF EACH UNIT 200 m3/h , FLOW RATE 8 m3/m2/h , OPERATING PRESSURE 5 bar , TESTING PRESSURE 10bar+B1820 DISHEND THICNESS 18 m m .

2- MEDIA OF THE FILTER 3 LAYERS AS BELOW :-

* FIRST LAYER 10 cm HEIGHT SIZE 3.15 mm – 5.6 mm

* SECAND LAYER 15 cm HEIGHT SIZE 2 mm - 3.15 mm

* THIRD LAYER APROXIMATLY 75 cm SIZE 0.8 – 1.25 mm

3- FILTER UNIT WILL BE INCLUDED THE FOLLOWING VALVES , INLET , OUTLET , DRAINAGE , RELIFE , OUTLET OF BACK WASHING , INLET OF BACK WASHING FOR BOTH WATER AND AIR .

4- INLET AND OUTLET MANUMETER .

5- MAINTENANSE MANHUALES TWO IN THE UPPER PART AND TWO IN THE LOWER PART OF THE FILTER .

6- THE FILTER WILL BE SKID MOUNTED .

7- PAINTING OF THE INTERNAL AND EXTERNAL SURFACES WILL BE ACCORDING TO THE WORLD STANDARD SPECIFICATION .

8- THE TOTAL NUMBER OF THE PRESSURE FILTERS TO BE 6+B2051 FILTERS DIVIDED IN TWO ROWS THERE ARE TWO MAIN VALVES FOR EACH ROW ONE FOR THE INLET AND THE OTHER FOR THE OUT LET .

9- FILTERD WATER FOR BOTH GROUBS CONNECTED IN ONE MAIN COLLECTOR PIPE .

10- MAIN BUTTERFLY ELECTRICALLY OPERATED VALVE .

6- ALUMINUM SULPHATE SYSTEM

THIS SYSTEM INCLUDES THE FOLLOWING :-

a- PREPARATION AND SATURATION TANKS :-

- 3 – TANKS WITH CAPACITY 10 m3/PER TANK , MATERIAL OF THE TANK ANTICORROSIVE FOR ALUMINUM – SULPHATE .

- THE TANKS WILL BE SUPPLIED WITH SERVICE WATER FROM THE OUTLET FILTED WATER LINE .

- LADDER AND WALK WAY AROUNDTHE TANK .

- ELECTRICAL OVER HEAD CRANE WITH CAPACITY 500 Kg .

- ELECTRICAL MIXER FOR EACH TANK MANUFACTURED FROM STAINLESS – STEEL AND S – STEEL BASKET CAPACITY 500 Kg AT THE UPPER PART OF THE TANK .

- ALUMINUM SULPHATE TANKS INCLUDE ALL THE FOLLOWING :-

* INLET , OUTLET , DRAINAGE , OVER FLOW VALVES .

* LEVEL INDICATORS .

* METALIC STRACTURE WITH COVER .

* LIGHTING .

b- ALUMINUM SULPHATE DOSING PUMPS AS BELOW :

- NUMBER OF THE PUMPS THREE PUMPS WITH CAPACITY 1+B2079000 L/h HEAD 50 m FOR EACH PUMP .

C- ALUMINUM SULPHATE SYSTEM INCLUDES ALL THE UPVC PIPES ,

VALVES , FITTINGS , PULSATER DAMPNER , MANUMETERS , TWO

ADJUSTABLE FLOWMETER , TWO MAIN DISCHARGE PIPES WHICH

MUST BE CONNECTED TO THE INJECTION POINTS OF THE

FLOCCULATION TANK .

CODE	DESCRIPTION	QTY

7- CHLORINATION STATION

CHLORINE GAS WILL BE USED FOR THE DISINFECTION SO IT SHALL BE INJECTED AT THE STORAGE TANK AND THE INLET OF THE LAMELLA TANK AS PRE – CHLORINATION AND ALSO WILL BE INJECTED AT THE OUTLET OF THE PRESSURE FILTERS AS POST – CHLORINATION , THIS STATION INCLUDES THE FOLLOWING :-

- 3 CHLORINATORS CAPACITY 5 Kg/h FOR EACH UNIT .
- 3 INJECTERS .
- 1 CHANGE OVER DEVICE .
- 1 LEAK DETECTOR .
- 2 HEADERS WITH ALL THE INLET AND OUTLET VALVES .
- 50 FLEXIBLE PIPES BETWEEN THE CYLINDERS AND THE HEADERS (5 DUTY + 45 SPARES) .
- 3 PRV .(1 DUTY + 2 STAND BY)
- 3 CATCH POT .
- WATER AND GAS MANUMETERS .
- 3 BOOSTING PUMPS CAPACITY 4 m3/h , H = 80 m FOR EACH WITH ALL THE PIPES , VALVES , NON – RETURN VALVES , FITTINGS .
- ALL THE FITTINGS , PIPES , VALVES , INJECTION POINTS .

8- AIR BLOWER SYSTEM

THE SYSTEM INCLUDES THE FOLLOWING :-

-3 – AIR BLOWERS . THE REQUIRED FLOW RATE WILL BE 60 m3/ m2 /H DURING THE SQUENCE OF BACK WASHING THE FILTER WITH AIR BLOWER .

- ALL THE VALVES FOR THE INLET , OUTLET , NON – RETURN , INLET FOR EACH FILTER , PIPES , MANUMETERS , FITTINGS .

9- BACK WASHING WATER

THE REQUIRED FLOW RATE FOR THE BACK WASHING WITH WATER MUST BE 30 m3/ m2 /h THIS CAN BE CREATED MAINLEY THROUGH BRANCH FROM THE MAIN FILTERD WATER AND BY USING HORIZONTEL PUMPS (AS OPTION) .

10- GENERATOR STATION

- 1 STAND BYE GENERATOR 0.4 KV , 1000 RPM , 50 HZ .
- CAPACITY 360+B2116 KVA (PRIME) .
- INCLUDE ALL ACCESSORIES , WATER COOLING SYSTEM RADIATORS , OIL LUBRICATION PUMPS , FUEL TANKS FOR 48 HOURS DUTY , UPS CHARGER AND BATTERIES .
- WITH ITS ELECTRICAL SWITCH BOARD CONSIST OF CIRCUITS BREAKERS , AND SERVICES SWITCH BOARD .

5 MGD - 4

11-ELECTRICITY POWER

SPECIFICATIONS OF THE EQUIPMENTS WHICH REQUIRED FOR WTP WILL BE AS BELOW :-

a- HIGH TENTION BOARD

- 2 INCOMING FEEDERS + ONE BUS – COUPLERS (11 KV , 630 A) .
- 2 OUT GOING (11 KV , 630 A) TO THE TRANSFORMERS .

b- 2 TRANSFORMERS (11 KV/0.4 KV) CAPACITY OF EACH ONE 400kVA .

c- LOW TENTION BOARD (400 V , 50 c/s) INCLUDES THE FOLLOWING :-

- 2 MAIN CIRCUIT BREAKERS (400 V , 800 A , 50 c/h) .
- 1 MAIN CIRCUIT BREAKERS (400 V , 800 A , 50 c/h FOR GENERATOR) .
- 1 BUS – COUPLERS (400 V , 800 A , 50 c/h) .
- 5 CIRCUIT BREAKER (630A) (3 CB FOR 132 KW STARTARS + 2 SPARES)
- 5 CIRCUIT BREAKER (100A)
- 3 CIRCUIT BREAKER (50A)

d- SOFT STARTERS , BOARDS

- 5 SOFT START – STOP STARTERS (132 KW) .(2 STAND BY)

- 1 BOARD INVOLVES THREE STARTERS FOR THE AIR BLOWERS ACCORDING TO THE BLOWERS SPECIFICATIONS .

- 1 BOARD FOR ALL THE UXILLARY EQUIPMENTS LIKE OVER HEAD CRANE , FLOCCULATORS , ELECTRICAL VALVES , LIGHTINGS , MIXERS , VENTELATORS , AIR CONDITIONERS , FLOWMETERS .

- 1 BOARD FOR THE CHLORINATION STATION WHICH INVOLVES

3-STARTERS FOR THE BOOSTING PUMPS , AND ALL OTHER

ACCESSORIES .

- 1 BOARD FOR THE ALUMINUM SULPHATE SYSTEM WHICH INCLUDES :-

* STARTERS FOR THE MIXERS .

* STARTERS FOR THE DOSING PUMPS .

* STARTER FOR THE OVER HEAD CRANE +B2158AND ALL OTHER ACCESSORIES

5 MGD - 5

<u>* GENERAL NOTES :-</u>

1- ALL THE BOARD INCLUDE ALL PROTECTIONS AND INTERLOCKS SUCH AS UNDER VOLTAGE , SHORT CIRCUIT , OVER LOAD THERMOSTATE PROTECTION OF MOTORS ECT , METERS VOLTMETER , BULBS .

2- THE LOW VOLTAGE (STARTERS OF MOTORS) INCLUDE POWER FACTOR CORRECTION UNIT UP TO 0.9+B2177 .

3- RECALCULATE THE LOAD FOR BETTER DESIGN .

4- THE OFFER SHOULD INCLUDE ALL EQUIPMENT AND ACCESSORIES SUFFICIENT TO OPERATE THE PLANT PROPERLY .

5- GIVE AS OPTIONS IF THERE ARE BETTER OR MODERN EQUIPMENTS SUITABLE FOR PLANT .

6- RECHECK CALCULATION AND SPECIFICATIONS ACCORDING TO HIGH STANDARDS AND GIVE AS YOUR COMMENTS .

7- THE OFFER SHOULD INCLUDE INSTALATION AND ERECTION OF ALL BUILDINGS INCLUDING CONCRETE WORK .

8- SPARE PARTS FOR 2 YEARS OF OPERATION .

9- SUPPLIER RESPOSIBILITIES ARE :-

a- ERRECTION AND INSTULATION OF ALL THE EQUIPMENTS .

b- SUPPLYING AND INSTALLATION HOUSES FOR ALL THE STATIONS AND THE SYSTEMS .

10- THE OFFER INCLUDES ALL THE CABLES BETWEEN THE ELECTRICAL EQUIPMENTS .

11- THE OFFER INCLUDES ALL THE INTER CONNECTION PIPES BETWEEN ALL THE STATIONS.B2159