

CHAPTER 6 OVERALL CONSTRUCTION PLANNING

6.1 Outline of Construction Methods

Construction methods of the project will be implemented dividing into five tenders including procurement of operation and maintenance equipment. All tenders shall be executed by public open tender method. Each tenders will be executed by the following manners.

Table 6.1-1 Tender Summary

Category	Tender Package	Facility	Remarks
1.Construction works	No.1 Package	-Open canal and box culvert sections -Two routes of access road -Related appurtenant facilities	Local tender by NSDO
	No.2 Package	-No.7 Pumping Station and pipeline -One route of access road -Sand settling basin, discharge tank and surge tanks -Related appurtenant facilities	International tender by NSDO
	No.3 Package	-Open canal section	Local tender by NSDO
	No.4 Package	-Main substation and building	Local tender by REA
2.Procurement of OM Equipment	No.5 Package	-Operation and maintenance Equipment	Local tender by NSDO

6.2 Construction Schedule for Each Packages

Construction schedule of each packages can be summarized as following table and detailed schedules for each tenders are tabulated in the Table 6.2-2, -3, -4 and -5, respectively.

Table 6.2-1 Construction Schedule

Package	2000	2001	2002	2003	2004	2005
No.1 contract			██████████	██████████	██████████	██████████
No.2 contract		██████████	██████████	██████████	██████████	██████████
No.3 contract			██████████	██████████	██████████	██████████
No.4 contract				██████████	██████████	██████████
No.5 tender					██████████	██████████

Table 6.2-2 Construction Schedule of Package I Contract

Description	1 st year				2 nd year				3 rd year				4 th year			
	1 st	2 nd	3 rd	4 th	1 st	2 nd	3 rd	4 th	1 st	2 nd	3 rd	4 th	1 st	2 nd	3 rd	4 th
1. Temporary works																
1.1 Office / workshop																
1.2 Access roads																
2. Access road																
2.1 No.1 Access road																
2.2 No.2 Access road																
3.No.1 Open canal																
3.1 Earth works																
3.2 Concrete lining																
3.3 Asphalt pavement																
4. Box culvert																
4.1 Earth works																
4.2 Concrete placing																
4.3 Asphalt pavement																
5.No.2 Open canal																
5.1 Earth works																
5.2 Concrete lining																
5.3 Asphalt pavement																
6. Spillway																
6.1 Earth works																
6.2 Dyke embankment																
6.3 Concrete placing																
6.4 Gate installation																
7. Appurtenant facilities																
7.1 Bridges																
7.2 Sand settling pits																

Table 6.2-3 Construction Schedule of Package 2 Contract

Description	1 st year				2 nd year				3 rd year				4 th year			
	1 st	2 nd	3 rd	4 th	1 st	2 nd	3 rd	4 th	1 st	2 nd	3 rd	4 th	1 st	2 nd	3 rd	4 th
1. Temporary works																
1.1 Office / workshop		█														
1.2 Access roads		█														
1.3 Dewatering		█														
1.4 Power supply			█													
2. Access road																
2.1 No.3 Access road			█													
3. Sand settling basin																
3.1 Earth works				█												
3.2 Concrete placing																
3.3 Gate installation																
4. No.7 pumping station																
4.1 Excavation																
4.2 Backfill																
4.3 Concrete placing																
4.4 Main pump																
4.5 Electric equipment																
4.6 Building works																
4.7 Appurtenant equip.																
5. Pressured pipeline																
5.1 Earth works																
5.2 Pipe supply / install																
5.3 One-way surge tank																
5.4 Valves / fittings																
6. Discharge tank																
6.1 Earth works																
6.2 Concrete placing																
7. Land scape																

CHAPTER Table 6.2-4 Construction Schedule of Package 3 Contract

Description	1 st year				2 nd year				3 year				4 year				
	1 st	2 nd	3 rd	4 th	1 st	2 nd	3 rd	4 th	1 st	2 nd	3 rd	4 th	1 st	2 nd	3 rd	4 th	
1. Temporary works																	
1.1 Office / workshop		—															
1.2 Access road		—															
2. No.3 open canal																	
2.1 Earth works																	
2.2 Concrete lining																	
2.3 Asphalt pavement																	
3. Appurtenant facilities																	
3.1 Bridges																	
3.2 Sand settling pits																	

Table 6.2-5 Construction Schedule of Package 4 Contract

Description	1 st year				2 nd year				3 rd year				Note
	1 st	2 nd	3 rd	4 th	1 st	2 nd	3 rd	4 th	1 st	2 nd	3 rd	4 th	
1. Temporary works													
1.1 Office / workshop	■												
1.2 Access road	■												
2. Earth works													
2.1 Excavation	■												
2.2 Backfill		■											
3. Building works													
3.1 Substation					■	■	■	■					
3.2 Administration						■	■						
4. Substation equipment													
4.1 Manufacturing					■	■	■	■					
4.2 Transportation						■	■						
4.3 Installation							■	■					
4.4 Testing /commission						■	■	■			■	■	
5. Transmission line													
5.1 Equipment supply		■	■										
5.2 Tower / civil works						■	■	■					
5.3 Cable installation									■	■	■	■	

CHAPTER 7 CONSULTING SERVICES

7.1 Scope of Works

Project management including construction supervision of Package 2 contract will be carried out by the NSDO and MED with assistance of international consultants. The scope of works for consulting services are mainly review of tender documents, pre-qualification, tender evaluation, construction supervision and tender management of Package 2. Detailed scope of works are described in ANNEX 1 as per attached.

7.2 Consulting Fees and Assignment Schedule

Assignment schedules based on the project implementation schedules are illustrated in the Table 7.2-1. Required costs of both foreign and local currencies is tabulated in the Table 7.2-2.

Table 7.2-2 Cost of Consulting Services for Construction Supervision

1. Foreign Currency Component

1.1 Remuneration		
Foreign consultant :	156 man-months x 20,000 \$/mm =	\$ 3,120,000
Local consultant :	194 man-months x 4,000 \$/mm =	\$ 770,000
	<u>Sub-total</u>	<u>\$ 3,890,000</u>
1.2 International travel expenses		
18 round trips x 7,500 \$/trip =		<u>\$ 135,000</u>
1.3 Other costs		
Lump-sum		<u>\$ 400,000</u>
1.4 Contingencies (10%)		<u>\$ 442,000</u>
	<u>Total</u>	<u>\$ 4,867,000</u>

2. Local Currency Components

2.1 Per-diem		
Foreign consultant :	156 man-month x (150 LE/day x 30 days) =	LE 702,000
Local consultant :	194 man-month x (100 LE/day x 30 days) =	LE 582,000
	<u>Sub-total</u>	<u>LE 1,284,000</u>
2.2 Lodging Accommodation		
Foreign consultant :	12 man-month x (300 LE/day x 30 days) =	<u>LE 108,000</u>
2.3 Local Administrative staff		
Five (5) staff x 56 months x LE 3,000 =		<u>LE 840,000</u>

2.4 Office consumable and communications costs 56 months x 10,000 LE/month =	<u>LE 560,000</u>
2.5 Local transportation charges 8 months x 15,000 LE/month =	<u>LE 120,000</u>
2.6 Printing and Reports	
Technical reports : 6 kinds x 20,000 LE/kind =	LE 120,000
Monthly report : 48 months x 1,000 LE/month =	LE 48,000
Other reports	LE 12,000
<u>Sub-total</u>	<u>LE 180,000</u>
2.7 Contingencies Lump-sum (10%) :	<u>LE 309,000</u>
<u>Total</u>	<u>LE 3,401,000</u>

Table 7.2-1 Assignment Schedule of Construction Supervision for Contract of El Salaam No.7 Pumping Station

Expertise	Pre-construction Stage			Construction Stage												Man-Month		
	1-4	5-8	9-12	First Year			Second Year			Third Year			Fourth Year			F.C.	L.C.	
				1-4	5-8	9-12	1-4	5-8	9-12	1-4	5-8	9-12	1-4	5-8	9-12			
1. Team Leader / Civil Engineer																	56	
2. Co-Leader / Office Engineer																		56
3. Civil work Supervisor																	48	
4. Civil work Inspector																		48
5. Pipe Welding Expert																	8	
6. Pipeline Supervisor																		36
7. Mechanical Engineer																	12	
8. Mechanical Work Inspector																		18
9. Electrical Engineer																	12	
10. Cathodic Protection Expert																	8	
11. Building work Supervisor																		12
12. Tender Specialist																	4	
13. O/M Expert																	8	
14. Contract Administrator																		12
TOTAL																	156	182

Note : F.C. : Foreign (Expatriate) Consultant, L.C. : Local (Egyptian) Consultant

CHAPTER 8 MAPS AND DRAWINGS

8.1 Project Location Map

The project location map as per attached the next page of the covering paper of the reports.

8.2 Demarcation of Each Tender

Station number and demarcation of each tenders are summarized as following Table 8.2-1.

Table 8.2-1 Demarcation of each Tender

Tender	Station number	Major facilities	Quantity
No.1 package	KM86.50-KM108.47	-No.1 open canal section -No.1 box culvert section -No.2 open canal section -No.1 access road -No.2 access road -Spillway	7.80km 7.50km 6.67km 1.00km 2.80km 1 unit
No.2 package	KM108.48-KM118.56	-Sand settling basin -No.7 pumping station, building, equipment supply/installation -Delivery pressured pipelines -Discharge tank -No.3 access road	0.38km 0.20km 9.35km 0.20km 5.06km
No.3 package	KM118.56-KM132.50	-No.3 open canal	13.90km
No.4 package	At near KM109.00	-Main substation -Administration building	1 lot 1 lot
No.5 package	(Procurement of OM equipment)	-OM heavy equipment -4WD vehicles -VHF	1 lot 4 units 1 lot

8.3 List of Tender Drawings

List of tender drawings can be tabulated by each package in the following Table 8.3-1.

Table 8.3-1 List of Drawings for Package I (1/5)

CATEGORY	DWG No.	TITLE OF DRAWINGS	CATEGORY	DWG No.	TITLE OF DRAWINGS	
1. GENERAL	GNL-101	SYMBOLS AND GENERAL NOTES	3. SPILLWAY SYSTEM	SPW-101	SPILLWAY - GENERAL PLAN	
	GNL-102	THE SITE PLAN		SPW-102	SPILLWAY - PLAN	
	GNL-103	CONVEYANCE CANAL ROUTE MAP		SPW-103 - 105	SPILLWAY - SECTIONS (1/3) - (3/3)	
	CCL-101 - 109	PLAN AND PROFILE (1/9) - (9/9)		SPW-106 - 108	SPILLWAY - REINFORCEMENTS (1/3) - (3/3)	
	CCL-110 - 126	No.1 OPEN CANAL - CROSS SECTIONS (1/17) - (17/17)		SPW-109	SPILLWAY - O/M ROADS ALONG SPILLWAY - PLAN	
	CCL-127 - 142	BOX CULVERT - CROSS SECTIONS (1/16) - (16/16)		SPW-110	SPILLWAY - RADIAL GATE AND GANTRY - GENERAL ARRANGEMENT	
	CCL-143 - 156	No.2 OPEN CANAL - CROSS SECTIONS (1/14) - (14/14)		SPW-111	SPILLWAY - STOP LOGS	
	CCL-157	OPEN CANAL - TYPICAL SECTION (CUT SECTION)		SPW-112	OUTLET CHANNEL - PLAN AND PROFILE	
	CCL-158	OPEN CANAL - TYPICAL SECTION (FILL SECTION)		SPW-113 - 117	OUTLET CHANNEL - CROSS SECTIONS (1/5) - (5/5)	
	CCL-159	OPEN CANAL - CONCRETE LINED SECTION - TYPICAL PLAN AND SECTION		SPW-118 - 119	OUTLET CHANNEL - TYPICAL SECTIONS (1/2) - (2/2)	
	CCL-160	OPEN CANAL - SETTLING BOX - PLAN AND SECTIONS		SPW-120	OUTLET CHANNEL - DISCHARGE CANAL - PROFILE AND SECTION OF FLUME	
	CCL-161	OPEN CANAL - OPEN TRANSITION(1) - PLAN AND SECTIONS		SPW-121	DISCHARGE CANAL - BOX CULVERT - PLAN AND SECTIONS	
	CCL-162	OPEN CANAL - OPEN TRANSITION(2) - PLAN AND SECTIONS		SPW-122	DISCHARGE CANAL - REINFORCEMENTS	
	CCL-163	OPEN CANAL - OPEN TRANSITION(3) - PLAN AND SECTIONS		SPW-123	CHUTE AND STILLING BASIN - PROFILE AND SECTIONS	
	CCL-164	BOX CULVERT - ARRANGEMENT OF CONDUIT JOINTS		SPW-124	CHUTE AND STILLING BASIN - SECTIONS	
	CCL-165	BOX CULVERT - TYPICAL SECTIONS		SPW-125	RIPRAP CANAL - PROFILE AND SECTION	
	CCL-166	BOX CULVERT - DETAIL OF JOINTS		SPW-126	DIKE - PLAN AND PROFILE	
	CCL-167	BOX CULVERT - REINFORCEMENTS		SPW-127 - 132	DIKE - CROSS SECTION (1/6) - (6/6)	
	CCL-168	BOX CULVERT - INLET AND OUTLET - PLAN AND SECTION		SPW-133	DIKE - TYPICAL SECTION	
CCL-169	BOX CULVERT - INLET AND OUTLET - SECTIONS	SPW-134	EMERGENCY SPILLWAY - GENERAL PLAN AND SECTIONS			
CCL-170	BOX CULVERT - INLET AND OUTLET - REINFORCEMENTS	SPW-135	EMERGENCY SPILLWAY - PLAN			
CCL-171	BOX CULVERT - INLET - SAFETY RACK	SPW-136 - 137	EMERGENCY SPILLWAY - SECTIONS (1/2) - (2/2)			
CCL-172	BOX CULVERT - INLET AND OUTLET - STOP LOGS	SPW-138 - 139	EMERGENCY SPILLWAY - REINFORCEMENTS (1/2) - (2/2)			
CCL-173	BOX CULVERT - OPENING (1) - PLAN AND SECTION	SPW-140	BRIDGE DECK - PLAN AND SECTIONS			
CCL-174	BOX CULVERT - OPENING (1) - SECTIONS	SPW-141	BRIDGE DECK - REINFORCEMENTS			
CCL-175	BOX CULVERT - OPENING (1) - REINFORCEMENTS	OMR-101	No.1 ACCESS ROAD - PLAN AND PROFILE			
CCL-176	BOX CULVERT - OPENINGS (2)-(8) - PLAN AND SECTION	OMR-102	No.1 ACCESS ROAD - TYPICAL CROSS SECTION			
CCL-177	BOX CULVERT - OPENINGS (2)-(8) - SECTIONS	OMR-103 - 104	No.1 ACCESS ROAD - CROSS SECTIONS (1/2) - (2/2)			
CCL-178	BOX CULVERT - OPENINGS (2)-(8) - REINFORCEMENTS	OMR-105 - 106	No.2 ACCESS ROAD - PLAN AND PROFILE (1/2) - (2/2)			
CCL-179	BOX CULVERT - OPENINGS - STOP LOGS	OMR-107	No.2 ACCESS ROAD - TYPICAL CROSS SECTION			
CCL-180	No.1 BRIDGE - GENERAL PLAN AND ELEVATION	OMR-108 - 115	No.2 ACCESS ROAD - CROSS SECTIONS (1/8) - (8/8)			
CCL-181	No.1 BRIDGE - DETAILED PLAN AND ELEVATION					
CCL-182	No.1 BRIDGE - DETAILED SECTIONS					
CCL-183	No.1 BRIDGE - INFRASTRUCTURE REINFORCEMENTS					
CCL-184	No.1 BRIDGE - SUPERSTRUCTURE REINFORCEMENTS					
CCL-185	No.2 BRIDGE - GENERAL PLAN AND ELEVATION					
CCL-186	No.2 BRIDGE - DETAILED PLAN AND ELEVATION					
CCL-187	No.2 BRIDGE - DETAILED SECTIONS					
CCL-188	No.2 BRIDGE - INFRASTRUCTURE REINFORCEMENTS					
CCL-189	No.2 BRIDGE - SUPERSTRUCTURE REINFORCEMENTS					
CCL-190	DETAILS - STAIRWAY AND STAFF GAUGE					
CCL-191	DETAILS - NET FENCE, LADDER RUNG, HANDRAIL AND KILOMETER SIGN					
2. CONVEYANCE CANAL			4. ACCESS ROAD			

Table 8.3-1 List of Drawings for Package II (2/5)

CATEGORY	DWG No.	TITLE OF DRAWINGS	CATEGORY	DWG No.	TITLE OF DRAWINGS
1. GENERAL	GNL-201	SYMBOLS AND GENERAL NOTES		PSB-201	GENERAL NOTES
	GNL-202	THE SITE PLAN		PSB-202	DOORS, WINDOWS AND FINISHING SCHEDULE
	GNL-203	PLAN OF No.7 PUMPING STATION		PSB-203	GROUND FLOOR PLAN (EL.+13.7m)
	SSB-201	GENERAL PLAN AND PROFILE		PSB-204	FIRST FLOOR PLAN (EL.+19.5m)
	SSB-202	DETAILED JUNCTION SECTION		PSB-205 - 206	ROOF PLAN (EL.+23.30m), (EL.+34.925m)
	SSB-203	DETAILED GATE SECTION		PSB-207 - 208	ELEVATIONS (1/2) - (2/2)
	SSB-204	GENERAL ARRANGEMENT OF ROLLER GATE		PSB-209	SECTIONS
	SSB-205	DETAILED O/M BRIDGE		PSB-210 - 211	STANDARD DETAILS (1/2) - (2/2)
	SSB-206 - 207	GATE SECTION-REINFORCEMENTS (1/2) - (2/2)		PSB-212 - 213	DETAILS (1/2) - (2/2)
	SSB-208	DETAILED PLAN AND PROFILE		PSB-214 - 215	GENERAL NOTES (1/2) - (2/2)
2. SAND SETTLING BASIN	SSB-209	DETAILED SECTIONS	4. No.7 PUMPING STATION (BUILDING WORKS)	PSB-216	COLUMN ARRANGEMENT PLAN
	SSB-210 - 212	REINFORCEMENTS (1/3) - (3/3)		PSB-217 - 219	FRAMING PLAN (1/3) - (3/3)
	SSB-213 - 215	CROSS SECTIONS (1/3) - (3/3)		PSB-220	ROOF FRAMING PLAN
	PSC-201	PLAN		PSB-221 - 223	FRAMING ELEVATION (1/3) - (3/3)
	PSC-202	PROFILE & CROSS SECTION		PSB-224 - 225	RC MEMBER SCHEDULE (1/2) - (2/2)
	PSC-203 - 209	SUCTION SUMP STRUCTURE (1/7) - (7/7)		PSB-226	STRUCTURAL STEEL MEMBER SCHEDULE
	PSC-210	STOREGE ROOM DETAILS		PSB-227 - 229	STRUCTURAL STEEL DETAILS (1/3) - (3/3)
	PSC-211 - 214	STAIRCASE DETAILS (1/4) - (4/4)		PSB-230 - 232	RC STRUCTURAL DETAILS (1/3) - (3/3)
	PSC-215	BRICK WALL DETAILS		PSB-233 - 237	LIGHTING AND SOCKET OUTLET INSTALLATION SCHEDULE (1/5) - (5/5)
	PSC-216	VENTILATION DETAILS		PSB-238	GENERAL NOTES FOR VAC AND PLUMBING SYSTEM
3. No.7 PUMPING STATION (CIVIL WORKS)	PSC-217 - 218	INTAKE-REINFORCEMENTS (1/2) - (2/2)		PSB-239	DIAGRAM FOR WATER SUPPLY SYSTEM
	PSC-219	EXCAVATION PLAN OF SUCTION SUMP		PSB-240	PLUMBING SYSTEM, EXTERIOR PIPING PLAN
	PSC-220 - 221	FLAMING PLAN OF PUMP ROOM (1/2) - (2/2)		PSB-241	VENTILATION AND AIR CONDITIONING SYSTEM, GROUND FLOOR PLAN
	PSC-222 - 223	FLAMING ELEVATION OF PUMP ROOM (1/2) - (2/2)		PSB-242	VENTILATION AND AIR CONDITIONING SYSTEM, GROUND FIRST PLAN
	PSC-224 - 231	PUMP ROOM-REINFORCEMENTS (1/8) - (8/8)			
	PSC-232	THRUST BLOCK			
	PSC-233 - 234	VALVE CHAMBER STRUCTURE (1/2) - (2/2)			
	PSC-235 - 236	VALVE CHAMBER-REINFORCEMENTS (1/2) - (2/2)			
	PSC-237	FLOW METER CHAMBER STRUCTURE			
	PSC-238	FLOW METER CHAMBE-REINFORCEMENTS			
	PSC-239 - 241	PIT COVER DETAILS (1/3) - (3/3)			
	PSC-242	MISCELLANEOUS STEEL DETAILS			
	PSC-243- 245	CROSS SECTIONS (1/3) - (3/3)			

Table 8.3-1 List of Drawings for Package II (3/5)

CATEGORY	DWG No.	TITLE OF DRAWINGS	CATEGORY	DWG No.	TITLE OF DRAWINGS
5. No.7 PUMPING STATION (MECHANICAL EQUIPMENT)	PSM-201	NEAT LINE OF SUCTION PIPE	7.DELIVERY PRESSURED PIPELINE	DPP-201 - 204	PLAN AND PROFILE OF PIPELINE (1/4) - (4/4)
	PSM-202 - 203	PIPING DIAGRAM, (WATER) - (OIL)		DPP-205 - 208	PLAN AND PROFILE OF OIM ROAD (1/4) - (4/4)
	PSM-204	GENERAL ARRANGEMENT OF DISCHARGE HEADER		DPP-209 - 228	CROSS SECTIONS OF PIPELINE (1/20) - (20/20)
	PSM-205	GENERAL ARRANGEMENT OF OVERHEAD TRAVELLING CRANE		DPP-229	TYPICAL CROSS SECTION OF PIPELINE AND OIM ROAD
	PSM-206	GENERAL ARRANGEMENT OF PUMP DISCHARGE VALVE, ISOLATING VALVE AND VALVE OPERATING SYSTEMS		DPP-230	LAYOUT PLAN OF SURGE TANK No.1
	PSM-207	GENERAL ARRANGEMENT OF PIPELINE VALVE		DPP-231	PLAN AND SECTION OF SURGE TANK No.1
	PSM-208	GENERAL ARRANGEMENT OF BULKHEAD GATE		DPP-232	SECTIONS AND DETAILS OF SURGE TANK No.1
	PSM-209	GENERAL ARRANGEMENT OF STOP LOGS		DPP-233 - 236	SURGE TANK No.1-REINFORCEMENTS (1/4) - (4/4)
	PSM-210	GENERAL ARRANGEMENT OF FIXED TRASH SCREEN AND TRASH CAR		DPP-237	CROSS SECTION OF SURGE TANK No.1
	PSM-211	GENERAL ARRANGEMENT OF GANTRY CRANE		DPP-238	LAYOUT PLAN OF SURGE TANK No.2
	PSM-212	GENERAL ARRANGEMENT OF FLOW METER		DPP-239	PLAN AND SECTIONS OF SURGE TANK No.2
	PSE-201	GENERAL NOTES		DPP-240 - 241	SURGE TANK No.2-REINFORCEMENTS (1/2) - (2/2)
	PSE-202	PUMP UNIT POWER SUPPLY SINGLE LINE DIAGRAM		DPP-242	CROSS SECTION OF SURGE TANK No.2
	PSE-203	380V LOAD CENTER AND MAIN PUMP AUX. MORTOR CONTROL CENTER (MCC) SINGLE LINE DIAGRAM		DPP-243	MISCELLANEOUS WORKS OF No.1 AND No.2 SURGE TANKS
	PSE-204	MAIN PUMP COMMON AUX. MOTOR CONTROL CENTER SINGLE LINE DIAGRAM		DPP-244	PLAN AND SECTION OF BLOW OFF No.1
	PSE-205	EQUIPMENT LAYOUT AND POWER CABLING PLAN		DPP-245	PLAN AND SECTION OF BLOW OFF No.2
	PSE-206	MAIN PUMP UNIT PROTECTION SYSTEM AND OPERATION BLOCK DIAGRAM		DPP-246	PLAN AND SECTION OF BLOW OFF No.3
	PSE-207	MAIN MOTOR, MAIN MOTOR CONTROL, DC SOURCE, GENERATOR CONTROL PANEL OUTLINE		DPP-247 - 248	PLAN AND SECTIONS OF BLOW OFFS No.1, No.2 and No.3 (1/2) - (2/2)
	PSE-208	CENTRAL CONTROL ROOM EQUIPMENT LAYOUT PLAN		DPP-249 - 251	BLOW OFFS No.1, No.2 and No.3-REINFORCEMENTS (1/3) - (3/3)
	PSE-209	MAIN PUMP SYSTEM CRT DISPLAY AND DATA ACQUISITION PLAN		DPP-252	CROSS SECTIONS OF BLOW OFFS No.1, No.2 and No.3
PSE-210	DC POWER SOURCE AND UPS SINGLE LINE DIAGRAM	DPP-253	PLAN AND SECTIONS OF AIR VALVES		
PSE-211	EMERGENCY DIESEL GENERATOR	DPP-254	AIR VALVES-REINFORCEMENTS		
PSE-212	EMERGENCY GENERATOR LAYOUT PLAN	DPP-255	DETAILS OF PIPE ALIGNMENT		
PSE-213	POWER SUPPLY SYSTEM CENTRAL DIAGRAM	DPP-256	DETAILS OF PIPE SPECIALS		
PSE-214	AUXILIARY SUBSTATION SINGLE LINE DIAGRAM	DPP-257 - 258	DETAILS OF CATHODIC PROTECTION SYSTEM (1/2) - (2/2)		
PSE-215	AUXILIARY SUBSTATION PANEL COMPOSITION	DPP-259	DETAIL OF CONCRETE COLUMN		
PSE-216	AUXILIARY SUBSTATION PANEL LAYOUT AND CABLING PLAN	DST-201	GENERAL PLAN AND PROFILE		
PSE-217	AUXILIARY SUBSTATION CABLE TRUNKING SYSTEM PLAN	DST-202	DETAILED PLAN, PROFILE AND SECTIONS		
PSE-218	AUXILIARY SUBSTATION EARTH LINK PLAN	DST-203	DISCHARGE TANK-REINFORCEMENT		
PSE-219	AUXILIARY SUBSTATION 11KV MAIN FEEDER CABLE PLAN	DST-204 - 205	CROSS SECTIONS (1/2) - (2/2)		
			8.DISCHARGE TANK	OMR-201 - 202	No.3 ACCESS ROAD - PLAN AND PROFILE (1/2) - (2/2)
			9.ACCESS ROAD	OMR-203	No.3 ACCESS ROAD - TYPICAL CROSS SECTION
				OMR 204 - 211	No.3 ACCESS ROAD - CROSS SECTIONS (1/8) - (8/8)

Table 8.3-1 List of Drawings for Package III (4/5)

CATEGORY	DWG No.	TITTLE OF DRAWINGS
1. GENERAL	GNL-301	SYMBOLS AND GENERAL NOTES
	GNL-302	THE SITE PLAN
	GNL-303	CONVEYANCE CANAL ROUTE MAP
2. CONVEYANCE CANAL	CCL-301 – 306	PLAN AND PROFILE (1/6) – (6/6)
	CCL-307 – 335	CROSS SECTIONS (1/29) – (29/29)
	CCL-336	TYPICAL SECTION (CUT SECTION)
	CCL-337	TYPICAL SECTION (FILL SECTION)
	CCL-338	CONCRETE LINED SECTION – TYPICAL PLAN AND SECTION
	CCL-339	SETTLING BOX – PLAN AND SECTIONS
	CCL-340	BRIDGE – GENERAL PLAN AND ELEVATION
	CCL-341	BRIDGE – DETAILED PLAN AND ELEVATION
	CCL-342	BRIDGE – DETAILED SECTIONS
	CCL-343	BRIDGE – INFRASTRUCTURE REINFORCEMENT
	CCL-344	BRIDGE – SUPERSTRUCTURE REINFORCEMENT
	CCL-345	DETAILS – STAIRWAY, STAFF GAUGE, LADDER RUNG AND KILOMETER SIGN

Table 8.3-1 List of Drawings for Package IV (5/5)

CATEGORY	DWG No.	TITTLE OF DRAWINGS
1. GENERAL	GNL-401	THE SITE PLAN
2. SUBSTATION EQUIPMENT	SSE-401	POWER SUPPLY GENERAL DIAGRAM
	SSE-402	SINGLE LINE DIAGRAM
	SSE-403	LAYOUT PLAN
	SSE-404	TYPICAL SECTIONS
	SSE-405	EARTHING PLAN-1 (EARTH GRID)
	SSE-406	EARTHING PLAN-2 (INDOOR)
	SSE-407	CONTROL SYSTEM
	SSE-408	CONTROL CABLE SCHEDULE-1
	SSE-409	CONTROL CABLE SCHEDULE-2
	SSE-410	11 kv MAIN FEEDER CABLE PLAN
	SSE-411	AUXILIARY SUBSTATION MANHOLE SCHEDULE-1
	SSE-412	AUXILIARY SUBSTATION MANHOLE SCHEDULE-2
3. SUBSTATION BUILDING WORKS	SBW-401	MAIN SUBSTATION & ADMINISTRATION BUILDING-GENERAL NOTES
	SBW-402	MAIN SUBSTATION & ADMINISTRATION BUILDING-DOOR, WINDOWS AND FINISHING SCHEDULE
	SBW-403	ADMINISTRATION BUILDING-GROUND FLOOR AND ROOF PLANS
	SBW-404	MAIN SUBSTATION-GROUND FLOOR AND ROOF PLANS
	SBW-405	ADMINISTRATION BUILDING-ELEVATIONS
	SBW-406	MAIN SUBSTATION-ELEVATIONS
	SBW-407	MAIN SUBSTATION & ADMINISTRATION BUILDING-SECTIONS
	SBW-408 – 409	MAIN SUBSTATION & ADMINISTRATION BUILDING-STANDARD DETAILS (1/2) – (2/2)
	SBW-410	ADMINISTRATION BUILDING-DETAIL
	SBW-411	MAIN SUBSTATION & ADMINISTRATION BUILDING-GENERAL NOTES
	SBW-412	ADMINISTRATION BUILDING-FRAMING PLAN AND ELEVATION
	SBW-413	ADMINISTRATION BUILDING-MEMBER SCHEDULE
	SBW-414	ADMINISTRATION BUILDING-MISC. DETAIL OF GROUND FLOOR
	SBW-415	MAIN SUBSTATION-FRAMING PLAN
	SBW-416	MAIN SUBSTATION-FRAMING ELEVATION
	SBW-417	MAIN SUBSTATION-MEMBER SCHEDULE
	SBW-418 – 419	MAIN SUBSTATION-MISC. DETAIL OF GROUND FLOOR (1/2) – (2/2)
	SBW-420	ADMINISTRATION BUILDING-LIGHTING AND SOCKET OUTLET INSTALLATION SCHEDULE
	SBW-421	MAIN SUBSTATION-LIGHTING AND SOCKET OUTLET INSTALLATION SCHEDULE
	SBW-422	MAIN SUBSTATION & ADMINISTRATION BUILDING-GENERAL NOTES FOR VAC AND PLUMBING SYSTEM
	SBW-423	MAIN SUBSTATION & ADMINISTRATION BUILDING-DIAGRAM FOR WATER SUPPLY SYSTEM
	SBW-424	MAIN SUBSTATION & ADMINISTRATION BUILDING-PLUMBING SYSTEM, EXTERIOR PIPING
	SBW-425	ADMINISTRATION BUILDING-VENTILATION AND AIR CONDITIONING SYSTEM (GROUND FLOOR)
	SBW-426	MAIN SUBSTATION-VENTILATION AND AIR CONDITIONING SYSTEM (GROUND FLOOR)

ANNEX-1

TERMS OF REFERENCE FOR CONSULTING SERVICES FOR CONSTRUCTION SUPERVISION OF EL SALAAM NO.7 PUMPING STATION

1. Background Information

The socio-economic development of Egypt has been greatly dependent on the development of its agricultural sector. In order to achieve better food security and contribute more to the economic development of the country whose population is growing at a rate of more than two percent, the development of agriculture, especially horizontal expansion of farm land, is particularly important. Because, 99 percent of population concentrate in the Delta area and along Nile river area. There are no room more expansion of farm land in these area.

The Nile river is the main source of irrigation water. Given limited water resources, the MWRI is making every endeavor to increase the rate of growth in agriculture through the improvement of water use in the existing irrigation systems and effective recycling of water usage.

The expansion of the El Shikh Gaber El Sabah Canal lower reach of the Suez Canal siphon is urged to make the Nile water available for use in North Sinai. Under the situation, the Government of Egypt (GOE) gives high priority to reclamation and cultivation of 400,000 feddans in the northern part of Sinai with broad objectives of ensuring food security for rapidly growing population and generation of rural employment.

In line with the policies of the national plan, the North Sinai Integrated Rural Development Project has proposed to develop the new land of 135,000 feddans as a part of the development plan for agriculture. Development plans will be implemented in an integrated manners so as to establish new rural community in North Sinai. This development plan has also proposed to implement the settlement plan with construction of social infrastructure, and to develop small scale industries related to agriculture which will provide opportunities for the private sector to contribute employment.

Through series of discussion meetings and official requests from the GOE, NSDO has been finally decided to implement project with two stage development approaches, such as stage I area covers 85,000 feddans under the geographic elevation of below 90m and stage II area of 50,000 feddans between 90m and 110m elevation, respectively. Development policy of the overall project implementation, however, was changed to involve private sectors for project implementation and post project management in the stage II area instead of stage I area which will be implemented by the government initiatives.

2. The Project

The Contract in the Project is composed of the following components :

(1) Sand settling basin

- Length : 375 m including connection canal (85m for basin)
- Width : 36 m with two settling basins
- Depth : 4.5 m
- Design settling volume : 2,700 m³

(2) El Salaam No.7 Pumping Station

- Pump type : Vertical shaft single suction centrifugal 10.827 m³/sec x 99.6m total lifting with 4units
- Man motor : Vertical shaft synchronous totally closed with 4units
- Suction sump and pump room : 36m x 20m
- Pump house : 2,100 m²

(3) Delivery Pressured Pipeline

- Steel pipe : diameter 2,400mm x thickness 22mm x length 9,450m x 3 rows
- Surge tank : capacity 300 m³ x 3 units and capacity 22.4 m³ x 3 units

(4) Discharge Tank

- Length : 200m including connection canal
- Width : 7.50m x 3 spans

(5) No.3 Access Road

- Length : 5,060 m
- Width : 14.0 m

3. Implementation of the Project

The Project implementation shall be divided into 4 package contracts, i.e. this subject contract will be executed by international tendering method and others, two conveyance canal contracts and one substation contract will be carried out by local tender method.

4. Engineering Services

NSDO intends to employ a firm of consulting engineers (hereinafter referred to as "Consultant") for the purpose of providing the construction supervisory services described hereafter. Such services to be provided by the Consultant shall be comprise of three parts as follows :

4.1 Pre-Construction Services

The Consultant shall provide assistance to NSDO in pre-qualification, tender evaluation, contract negotiation and administration for such period as may be necessary to perform for each of the above contracts. Such services shall include but not limited to the following :

- 1) Assistance to NSDO in evaluation of pre-qualification procedures and tender received in compliance with both the general and technical conditions stipulated in the tender document ;
- 2) Preparation of evaluation report for submission to NSDO presenting the results of evaluation, ranking the tenders in the order of merit, justifying the ranking and

- recommending the successful tenderer ;
- 3) Providing assistance to NSDO in preparation of the Contract Document with successful tenderers incorporating any and all amendments thereto agreed during negotiation in a form suitable for signing the Contract by the parties concerned ;

4.2 Construction Supervision Period

Consultant shall responsible for the supervision services of the construction works and for the administration of all the Contracts described above. For this purpose the consultant shall provide at the site, places of manufacture or elsewhere as may be necessary, the services of the qualified and experienced staff.

Such services shall include but not be limited to the following :

- 1) Interpreting all drawings and specifications as may be required to ensure compliance of the contractor with all provisions of the contract documents.
- 2) Establish and maintain lines of communication with NSDO and coordination procedures necessary to ensure orderly and unimpeded progress of the works.
- 3) Receive and catalog all vendor and contractor submittals of samples, drawings, instructions, certificates, manuals related documents and distribute as required.
- 4) Cooperation with NSDO and the contractors in matters relating to licenses, permits and similar matters which concern this Agreement.
- 5) Assisting the NSDO for the coordination with Egyptian Government agencies to solve the problem on traffic, public nuisance and others as may arise form construction.
- 6) Arranging periodic construction coordination meetings at the various sites to ensure that adequate progress is maintained by all contractors and to resolve any problems which may arise from or among the contractors.
- 7) Maintenance, as appropriate, at the site and/or at the main project office, record copies of contract, engineering drawings, codes and standards, survey records, work measurements, test logs, samples, revisions, variation order information, and related documents.
- 8) Maintenance of daily logs of each contractor's progress and performance, recording all unusual occurrences which may reflect on either the progress of performance, such as weather, fire, civil commotion, strikes, lack of materials, uncontrollable interference from exterior sources and other similar events.
- 9) Establishing field survey control , as required, in accordance with the construction contracts. Checking the contractor's layout to ensure that each successive phase of the contractor's work complies with the tolerances established by the contract documents and to ensure proper control of construction.
- 10) Conducting surveys, required for determination of actual quantities of work items accomplished by the contractors.
- 11) Reviewing all invoices presented by the contractors for payment, and approving or disapproving those invoices or portion of invoices, certifying that quantity, quality and cost of the materials, equipment, work performed and/or services listed therein comply with the terms of the construction contracts, and submitted to the NSDO with the recommendation for approval and payment.

- 12) Reviewing all claims presented by the contractors and making a written determination of the findings concerning the claims supported by such back-up data as may required. For all claims recommended for approval, variation orders shall be prepared by the Contractor if required.
- 13) Approval or Disapproval on the final “as-built” drawings, incorporating all the changes in the original plans to be provided by contractors.
- 14) Making a final inspection of the completed works and prepare certification for acceptance and final payment, when the works are satisfactorily completed.
- 15) Approval or disapproval on the revision of the drawings, prints and sketches to be submitted by the manufactures and contractors in order to ensure that the required data on dimension, space, size, arrangement method and related information shall satisfy the requirements of the contract documents.
- 16) Analysis of the construction schedules submitted by the contractors and specify alternatives in construction scheduling which will resolve possible conflicts in the work plans and schedule of these contractors.
- 17) Inspection and approval or disapproval on all construction and installation works performed by the contractor, the Consultants shall require the contractors to remove and/or correct all defective works.
- 18) Assisting the contractors in developing alternative methods to overcome unforeseen obstacles to performance or progress.
- 19) Revision of the contract drawings as required to reflect space and dimensional requirements of selected equipment offered in compliance with the intent of the contract documents.
- 20) Revision of the contract specifications when necessary for the proper guidance and coordination of selected material and equipment conforming to the contract documents.
- 21) Revision of the design alternatives provided by the contractors to resolve conflicts arising from latent conditions, the resolution of which will not appreciably change the design of a feature as reflected by the contract documents.
- 22) Revision, evaluation and take action on requests for variation in the construction plans and specifications, hereinafter referred to as the “Variations”, in accordance with the applicable construction contracts and the following procedures :
 - (a) Variations may be proposed by the contractors, the NSDO or the Consultant, but in all cases the proposed Variations shall be submitted to the Consultant for his consideration.
 - (b) The Consultant shall evaluate all proposed Variations and shall inform the NSDO of all pertinent details, including descriptive drawings and data, estimates of contract cost changes, and estimated effects on construction schedules. The Consultant shall also convey his opinion to the NSDO as to the obligations and responsibilities of each of the parties to the applicable contracts, and the benefits, adverse effects, and other practical consequences which may result from the variations.
 - (c) When, in the judgement of the Consultant, a Variation is necessary or helpful in the execution of the construction work by the contracts. The Consultant shall issue to the contractors a document, hereinafter referred to as a “Variation Proposal” which shall define the work, and where applicable, instruct the contractor to submit a detailed cost estimate, and establish the basis for payment, in accordance with the appropriate

construction contracts.

- (d) Upon receipt of a Variation Proposal the contractor will provide the information required by the Consultant in a format which shall be established by the Consultant, hereinafter referred to as a "Draft Variation Order".
- (e) The Consultant shall evaluate all Draft Variation Order completed by the contractor and inform the NSDO of his evaluation.
- (f) The Consultant shall revise and amend the Draft variation Orders in accordance with the applicable construction contract provisions and appropriate comments from the NSDO. The Consultant shall then issue to the contractor the revised Draft Variation Order, hereinafter to as a "Variation Order" following written approval of the Variation Orders by the NSDO subject to the conditions of paragraphs (g) and (h) in the Item.
- (g) When, in the judgement of the Consultant, a proposed Variation is in the nature of an emergency, or if immediate execution of the Variation will prevent, or appreciably reduce, additional costs, damage to adjacent facilities, delays, in construction progress, hazardous conditions, or other effects adverse to the best interests of the Project or the NSDO, the Consultant shall issue appropriate.

Variation Order and instructions may be issued without prior request for a Variation, issuance of a Variation Proposal or completion of a Draft Variation Order, or without the prior written approval of the NSDO. However prior oral approval must be obtained from the NSDO. In such case the Consultant shall advise the NSDO of its actions as soon as possible. Payment due to contractor for performing the work of credit due to the NSDO shall be determined as provided in the applicable construction contracts.

- (h) In each submission of a proposed Draft Variation Order to the NSDO for approval the Consultant shall request action by the NSDO within a stated number of days.
- 23) Monitoring of the schedule and proposing alternatives scheduling and work plans which may be necessary to compensate for any critical lack in contractor's performance or for reason expressed by the NSDO.
 - 24) Applying a project monitoring system prepared by the Consultant and preparing periodic updated CPM networks or other appropriate form, incorporating among other things, cost and schedule of material delivery for each subproject. Preparation of reports required at various levels including, but not necessary limited to, those needed by the NSDO. Submit recommendations on physical accomplishment and budget control in order to adjust project cost overrun/underrun if necessary.
 - 25) Conducting field and laboratory tests required to ensure conformance of the construction works with the specifications and maintain records or reports on these tests.
 - 26) Assisting the NSDO to organize shop testing as needed for equipment and materials.
 - 27) Approval or disapproval on the quantity of all materials and equipment delivered to the project site in order to ensure necessary parts and manuals for operation and maintenance of equipment shall satisfy the contract documents.
 - 28) Assisting the designated personnel of the NSDO in the test operation which shall be conducted under the construction contracts by the manufactures or contractors in accordance with their contracts.
 - 29) Training on-the job the NSDO personnel assigned to work with the Consultant in inspection methods and techniques of construction, in contract administration, and test

operation of the Completed system.

30) Ensuring that the works are correctly maintained during the Maintenance Period and to supervise and approve any remedial work carried out by the contractor.

31) Carrying out a final inspection of the works and issuing the Maintenance Certificate.

4.3 Start-up Period

Upon approval of the Consultant to proceed to the Start-up Period, the Consultant shall provide services related to commissioning of the facilities accomplished. Such services shall include, but not be limited to the following :

- (1) Assistance to the designated personnel of the NSDO in the start-up of facilities to be provided by the manufactures or contractors in accordance with their contracts.
- (2) Preparation for and submission to the NSDO instruction manuals for operation and maintenance of all water supply facilities including all equipment in order to ensure that their personnel can perform good operation and maintenance work.

4.4 Duration of the Project

The tentative schedule set for the Project is approximately 48 months.

5 Reporting

The Consultant shall submit to the NSDO the following report :

(1) Review of Tender Documents

The Consultant shall review all tender documents related to the El Salaam No.7 Pumping Station and Delivery Pressured Pipelines.

(2) Pre-qualification Evaluation Report

Pre-qualification evaluation Report shall be submitted within 20days of receipt of copies of the Pre-qualification for the tender and all relevant documents related (5 copies).

(3) Tender Evaluation Report

Tender Evaluation Report shall be submitted within 30days of receipt of copies of the tender for the Contract and all relevant documents related (5 copies).

(4) Inception Report

Five copies of the Inception Report shall be submitted to the NSDO giving the updated construction schedule, Consultant's work plan and manning schedule, and recommendation

on construction progress of the works for the succeeding month and work plan for the following month together with any recommendation on work progress and project budget controls, relevant tables, maps, drawings shall be enclosed.

(5) Monthly Progress Report

Five copies of the Monthly Progress report shall be submitted to the NSDO fully informed in giving the status of progress of the works for succeeding month and work plan for the following month together with an recommendation on work progress and project budget controls. Relevant tables, maps, drawings shall be enclosed.

(6) Consultant Performance Report

The Consultant shall submit the Consultant Performance Report to the NSDO incorporating summary of work accomplishment, evaluation on commissioning of facilities. The report shall be submitted ten copies by the Consultant.

(7) Maintenance Report

Five copies of Maintenance Report shall be submitted within 30 days of the issuance of the Maintenance certificate. The Report shall :

describe and indicate the reason for any repairs or remedial work carried out during Maintenance Period, by the Contractor and by the NSDO or other agencies.

(a) In the event of repair or remedial works having been carried out by the NSDO or other agencies, assess the total cost of the work so executed to be set against payments due to the contractor.

Fully describe action taken to settle outstanding claims from or disputes with the contractor, if any, indicating to outcome if already settled or status if not settled.

Place on record any other matters relevant to the finalization of the contract.

(8) Operation and Maintenance Manuals

Five copies of instruction manuals for operation and maintenance of all water supply facilities including all equipment shall be submitted to the NSDO at the end of the start-up period.