

JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)

NORTH SINAI DEVELOPMENT ORGANIZATION
MINISTRY OF WATER RESOURCES AND IRRIGATION
THE ARAB REPUBLIC OF EGYPT

THE NORTH SINAI INTEGRATED RURAL DEVELOPMENT PROJECT (PHASE III)
(DETAILED DESIGN STUDY)

VOLUME II : TENDER DOCUMENT OF PACKAGE 1
(KM 86.500 TO KM 108.466)

(VOL. II-2 : TENDER DRAWINGS, A3 SIZE)

OCTOBER, 2000

SANYU CONSULTANTS INC.
PACIFIC CONSULTANTS INTERNATIONAL

JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)

NORTH SINAI DEVELOPMENT ORGANIZATION
MINISTRY OF WATER RESOURCES AND IRRIGATION
THE ARAB REPUBLIC OF EGYPT

THE NORTH SINAI INTEGRATED RURAL DEVELOPMENT PROJECT (PHASE III)
(DETAILED DESIGN STUDY)

VOLUME II : TENDER DOCUMENT OF PACKAGE 1
(KM 86.500 TO KM 108.466)

(VOL. II-2 : TENDER DRAWINGS, A3 SIZE)

OCTOBER, 2000

SANYU CONSULTANTS INC.
PACIFIC CONSULTANTS INTERNATIONAL

LIST OF DRAWINGS FOR FIRST PACKAGE

CATEGORY	DWG No.	TITTLE OF DRAWINGS	CATEGORY	DWG No.	TITTLE OF DRAWINGS		
1. GENERAL	GNL-101	SYMBOLS AND GENERAL NOTES		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)		
2. CONVEYANCE CANAL	CCL-101 – 109	PLAN AND PROFILE (1/9) – (9/9)	3. SPILLWAY SYSTEM	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 – DEATAL OF JOINTS		SPW-126	DIKE – PLAN AND PROFILE		
	CCL-167	BOX CULVERT – REINFORVEMENTS		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					

SYMBOLS

B, b	WIDTH
BC, B.C.	BEGINNING OF CURVATURE
BP	BEGINNING POINT
℄	CENTERLINE
CM, cm	CENTIMETER
Cj, CJ	CONSTRUCTION JOINT
Contr. jt, CONTR. JT	CONTRACTION JOINT
CL	CURVE LENGTH
D22	DEFORMED BAR DIA. 22 mm
DWG., Dwg.	DRAWING
DIA., dia.	DIAMETER
EC, E.C.	END OF CURVATURE
EL.	ELEVATION
EP	END POINT
Exp. jt, EXP. JT	EXPANSION JOINT
H.W.L.	HIGH WATER LEVEL
IA	INTERSECTIONAL ANGLE
KM, km	KILOMETER
L	LENGTH
M, m	METER
Max., MAX.	MAXIMUM
Min., MIN.	MINIMUM
N, n	NUMBER
IP, I.P.	POINT OF INTERSECTION
PL	STEEL PLATE
P.V.C.	POLYVINYL CHLORIDE PIPE
R	RADIUS OF CURVATURE
R.C., RC	REINFORCED CONCRETE
S.L., SL	SECOND LENGTH
SP	MIDDLE POINT OF CURVATURE
T, t	THICKNESS
T.L., TL	TANGENT LENGTH
W.L.	WATER LEVEL
W.S.	WATER SURFACE
φ	DIAMETER
15 D22	15 (NUMBER OF REINFORCEMENT)- DEFORMED BAR DIA. 22 mm
5 D22/m	5 (NUMBER OF REINFORCEMENT PER METER) - DEFORMED BAR DIA. 22 mm

GENERAL NOTES

1. ALL DIMENSIONS AND ELEVATIONS ARE IN METERS, UNLESS OTHERWISE SHOWN.
2. DURING THE CONTRACT PERIOD, IT IS THE CONTRACTOR'S DUTY TO CHECK THE CORRECTNESS OF ALL THE RELEVANT LOCATIONS, DIMENSIONS, ELEVATIONS AND OTHER DATA AS PROVIDED BY THE DRAWINGS AND SPECIFICATIONS BEFORE THE IMPLEMENTATION OF EACH WORK.
3. THE DESIGN LINES SHOWN IN THE DRAWINGS ARE LINES WITHIN WHICH NO EXCAVATED MATERIALS OF ANY KIND AND NO TIMBERING SHALL BE PERMITTED TO REMAIN.
4. COMPRESSIVE STRENGTH OF CONCRETE AT 28 DAY SHALL BE AS FOLLOWS :

1) LINING CONCRETE	225 kg/cm ²
2) REINFORCED CONCRETE	275 kg/cm ²
3) PLAIN CONCRETE	180 kg/cm ²
5. CONCRETE THICKNESS SHALL VARY UNIFORMLY BETWEEN DIMENSIONS SHOWN.
6. CHAMFER ALL EXPOSED EDGES 2 cm, UNLESS OTHERWISE INDICATED.
7. UNLESS OTHERWISE INDICATED, REINFORCEMENT SHALL BE DEFORMED BAR OF STEEL 52.
8. THE MINIMUM LENGTH OF LAP FOR SPLICING PARALLEL BARS SHALL BE AS GIVEN IN TABLE A.

TABLE A LENGTH OF LAPPED SPLICE "L"

BAR DIA.	L (cm)	BAR DIA.	L (cm)
D10	0.59	D22	1.29
D13	0.76	D25	1.46
D16	0.94	D28	1.64
D19	1.11	D32	1.87

- WHEN REINFORCEMENTS OF DIFFERENT SIZE ARE TO BE SPLICED, THE LENGTH OF LAP SHALL BE GOVERNED BY THE SMALLER DIAMETER BAR.
- EMBEDMENT LENGTH OF REINFORCEMENT SHALL BE MORE THAN 45 BAR DIAMETERS.
9. UNLESS OTHERWISE SHOWN, THE COVER OF CONCRETE TO THE MAIN REINFORCEMENT (DISTANCE BETWEEN FACE OF CONCRETE AND CENTERLINE OF THE NEAREST MAIN REINFORCEMENT) SHALL BE 6 cm FOR SLABS AND 7 cm FOR BEAMS.
 10. USE 10 BAR DIAMETER RADII FOR 90° BEND OF MAIN REINFORCEMENT.
 11. DIMENSIONS AND LOCATIONS OF BLOCKOUT SHOWN ON THE DRAWINGS ARE TENTATIVE AND MAY BE MODIFIED. BLOCKOUT CONCRETE, FOR PAYMENT, WILL BE MEASURED AS A PART OF THE ADJACENT CONCRETE.
 12. TREE PLANTATION SHALL BE CARRIED OUT ON BOTH SIDES OF O/M ROADS AND THE NEAREST BERMS TO THE O/M ROADS IN CUT AND FILL SECTIONS ALONG No.1 AND No.2 OPEN CANAL SECTIONS. FOR BOX CULVERT SECTION, TREE PLANTATION SHALL BE CARRIED OUT ONLY ON BOTH SIDES OF O/M ROAD. THE CONTRACTOR SHALL DESIGN THE DRIP IRRIGATION SYSTEMS NECESSARY FOR IRRIGATION OF PLANTED TREES AND INSTALL THE DRIP IRRIGATION SYSTEMS APPROVED BY THE EMPLOYER.
 13. UNLESS OTHERWISE INDICATED, STONE PITCHING SHALL BE STONE PITCHING WITH MORTAR CAULKING.

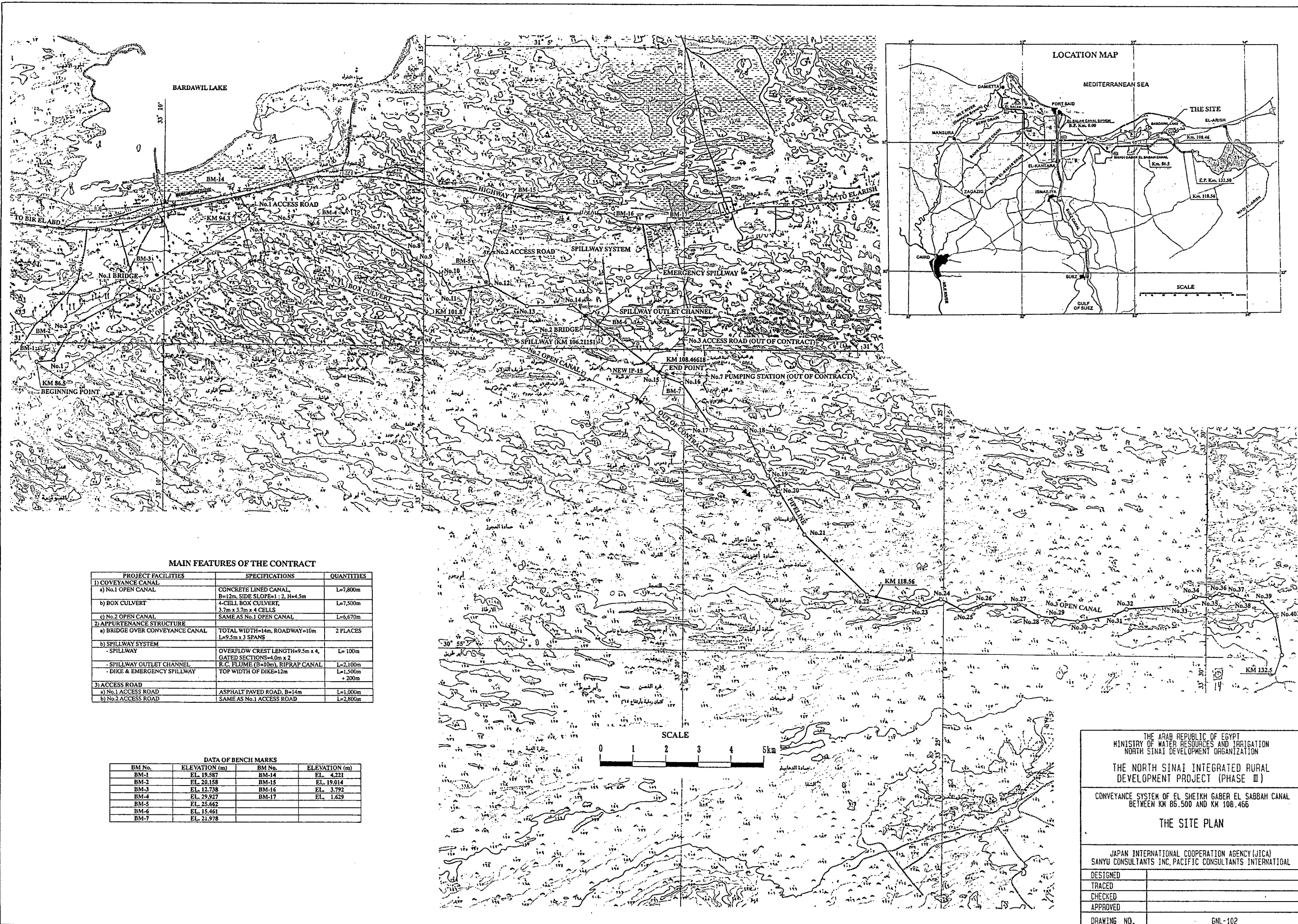
THE ARAB REPUBLIC OF EGYPT
 MINISTRY OF WATER RESOURCES AND IRRIGATION
 NORTH SINAI DEVELOPMENT ORGANIZATION
 THE NORTH SINAI INTEGRATED RURAL
 DEVELOPMENT PROJECT (PHASE III)

CONVEYANCE SYSTEM OF EL SHEIKH GABER EL SABBABH CANAL
 BETWEEN KM 86.500 AND KM 108.466

SYMBOLS AND GENERAL NOTES

JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)
 SANYU CONSULTANTS INC, PACIFIC CONSULTANTS INTERNATIONAL

DESIGNED	
TRACED	
CHECKED	
APPROVED	
DRAWING NO.	GNL-101



MAIN FEATURES OF THE CONTRACT

PROJECT FACILITIES	SPECIFICATIONS	QUANTITIES
1) COVEYANCE CANAL		
a) No.1 OPEN CANAL	CONCRETE LINED CANAL, B=12m, SIDE SLOPE=1:2, H=4.5m	L=7,800m
b) BOX CULVERT	4-CELL BOX CULVERT, 3.7m x 3.7m x 4 CELLS	L=7,500m
c) No.2 OPEN CANAL	SAME AS No.1 OPEN CANAL	L=6,670m
2) APPURTENANCE STRUCTURE		
a) BRIDGE OVER COVEYANCE CANAL	TOTAL WIDTH=14m, ROADWAY=10m, L=9.5m x 3 SPANS	2 PLACES
b) SPILLWAY SYSTEM		
- SPILLWAY	OVERFLOW CREST LENGTH=9.5m x 4, GATED SECTIONS=4.0m x 2	L=100m
- SPILLWAY OUTLET CHANNEL	R.C. FLUME (B=10m), RIPRAP CANAL	L=2,100m
- DIKE & EMERGENCY SPILLWAY	TOP WIDTH OF DIKE=12m	L=1,500m + 200m
3) ACCESS ROAD		
a) No.1 ACCESS ROAD	ASPHALT PAVED ROAD, B=14m	L=1,000m
b) No.2 ACCESS ROAD	SAME AS No.1 ACCESS ROAD	L=2,800m

DATA OF BENCH MARKS

BM No.	ELEVATION (m)	BM No.	ELEVATION (m)
BM-1	EL. 19.587	BM-14	EL. 4.221
BM-2	EL. 20.158	BM-15	EL. 19.014
BM-3	EL. 12.738	BM-16	EL. 3.792
BM-4	EL. 29.927	BM-17	EL. 1.629
BM-5	EL. 25.662		
BM-6	EL. 15.461		
BM-7	EL. 21.978		

THE ARAB REPUBLIC OF EGYPT
 MINISTRY OF WATER RESOURCES AND IRRIGATION
 NORTH SINAI DEVELOPMENT ORGANIZATION

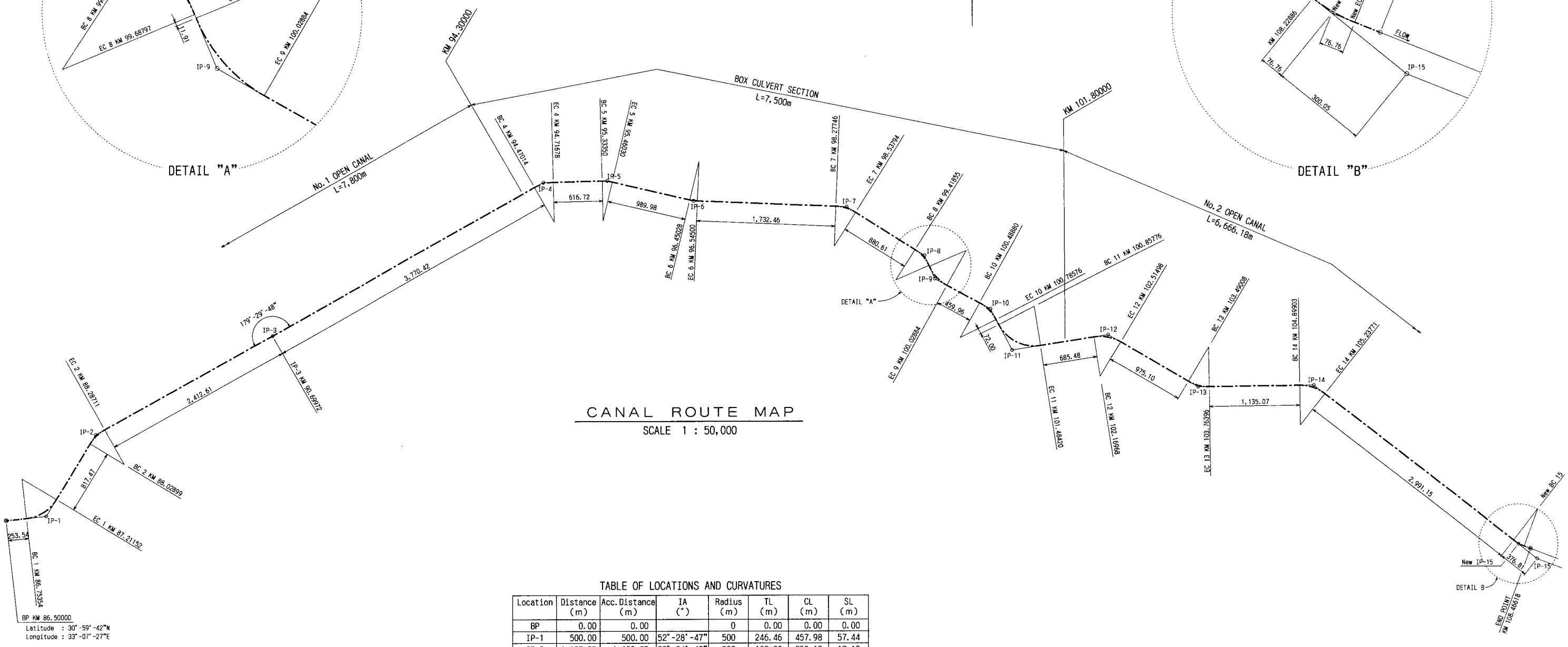
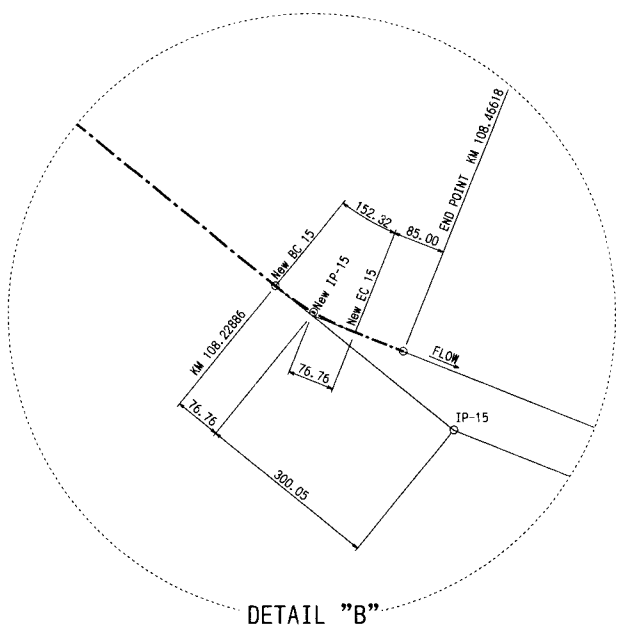
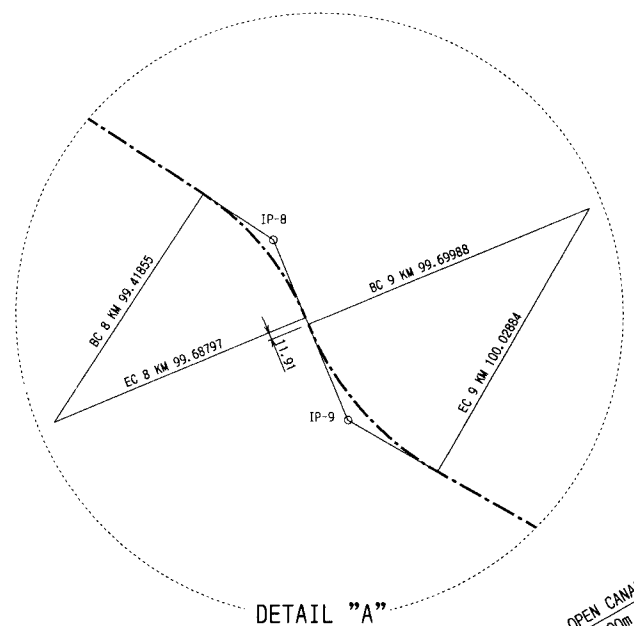
THE NORTH SINAI INTEGRATED RURAL DEVELOPMENT PROJECT (PHASE III)

CONVEYANCE SYSTEM OF EL SHEIKH GABER EL SABBABH CANAL
 BETWEEN KM 86.500 AND KM 108.466

THE SITE PLAN

JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)
 SANYU CONSULTANTS INC, PACIFIC CONSULTANTS INTERNATIONAL

DESIGNED	
TRACED	
CHECKED	
APPROVED	
DRAWING NO.	GNL-102



CANAL ROUTE MAP
SCALE 1 : 50,000

TABLE OF LOCATIONS AND CURVATURES

Location	Distance (m)	Acc. Distance (m)	IA (°)	Radius (m)	TL (m)	CL (m)	SL (m)
BP	0.00	0.00		0	0.00	0.00	0.00
IP-1	500.00	500.00	52°-28'-47"	500	246.46	457.98	57.44
IP-2	1,195.95	1,695.95	29°-34'-42"	500	132.00	258.12	17.13
IP-3	2,544.61	4,240.56	0°-30'-12"	0	0.00	0.00	0.00
IP-4	3,896.31	8,136.87	28°-15'-46"	500	125.88	246.64	15.60
IP-5	806.35	8,943.22	14°-31'-51"	500	63.74	126.80	4.05
IP-6	1,101.22	10,044.44	10°-51'-12"	500	47.50	94.72	2.25
IP-7	1,913.23	11,957.67	29°-50'-58"	500	133.27	260.48	17.46
IP-8	1,152.76	13,110.43	34°-18'-12"	450	138.88	269.42	20.94
IP-9	321.48	13,431.91	37°-41'-50"	500	170.69	328.96	28.33
IP-10	783.64	14,215.55	34°-01'-45"	500	153.00	296.96	22.89
IP-11	586.84	14,802.39	71°-47'-03"	500	361.83	626.44	117.19
IP-12	1,227.17	16,029.56	39°-34'-05"	500	179.85	345.30	31.36
IP-13	1,295.43	17,324.99	31°-23'-03"	500	140.47	273.88	19.36
IP-14	1,451.66	18,776.65	38°-48'-33"	500	176.12	338.68	30.11
New IP-15	3,244.03	22,020.68	17°-27'-17"	500	76.76	152.32	5.86
IP-15	300.05	22,320.73					

BP KM 86.50000
Latitude : 30°-59'-42"N
Longitude : 33°-07'-27"E

THE ARAB REPUBLIC OF EGYPT
MINISTRY OF WATER RESOURCES AND IRRIGATION
NORTH SINAI DEVELOPMENT ORGANIZATION

THE NORTH SINAI INTEGRATED RURAL DEVELOPMENT PROJECT (PHASE III)

CONVEYANCE SYSTEM OF EL SHEIKH GABER EL SABBABH CANAL BETWEEN KM 86.500 AND KM 108.466

CONVEYANCE CANAL ROUTE MAP

JAPAN INTERNATIONAL COOPERATION AGENCY(JICA)
SANYU CONSULTANTS INC, PACIFIC CONSULTANTS INTERNATIONAL

DESIGNED	
TRACED	
CHECKED	
APPROVED	
DRAWING NO.	GNL-103