

Chapter 1 Present facilities, equipment and natural condition

1.1 The Canal

The Suez Canal is a waterway of 162.25km in length, which bridges the Mediterranean Sea and the Red Sea. North and South Approaches are set at both ends of the Canal. Timsah Lake, the Great Bitter Lake and the Little Bitter Lake are situated along the Canal. Layout of the Canal is shown in Figure 1.1.1.

Table 1.1.1 Outline of the Suez Canal

Overall length	190.250km
From Port Said to Port Tewfic	162.250km
From Port Said to Ismailia	78.500km
From Ismailia to Port Tewfic	83.750km
From the fairway buoy to Port Said lighthouse	19.500km
From the waiting area to the southern entrance	15.000km
The length of doubled parts	78.000km
Width at water level (North/South)	345/280m
Width between buoys (North/South)	210/180m
Maximum permissible draught for ships	58ft
Cross section area (North/South)	4,500/3,900m ²
Being increased	4,700/4,000m ²
Permissible speed for tankers group	11-15km/hr
for other vessels	13-16km/hr

Source) SCA

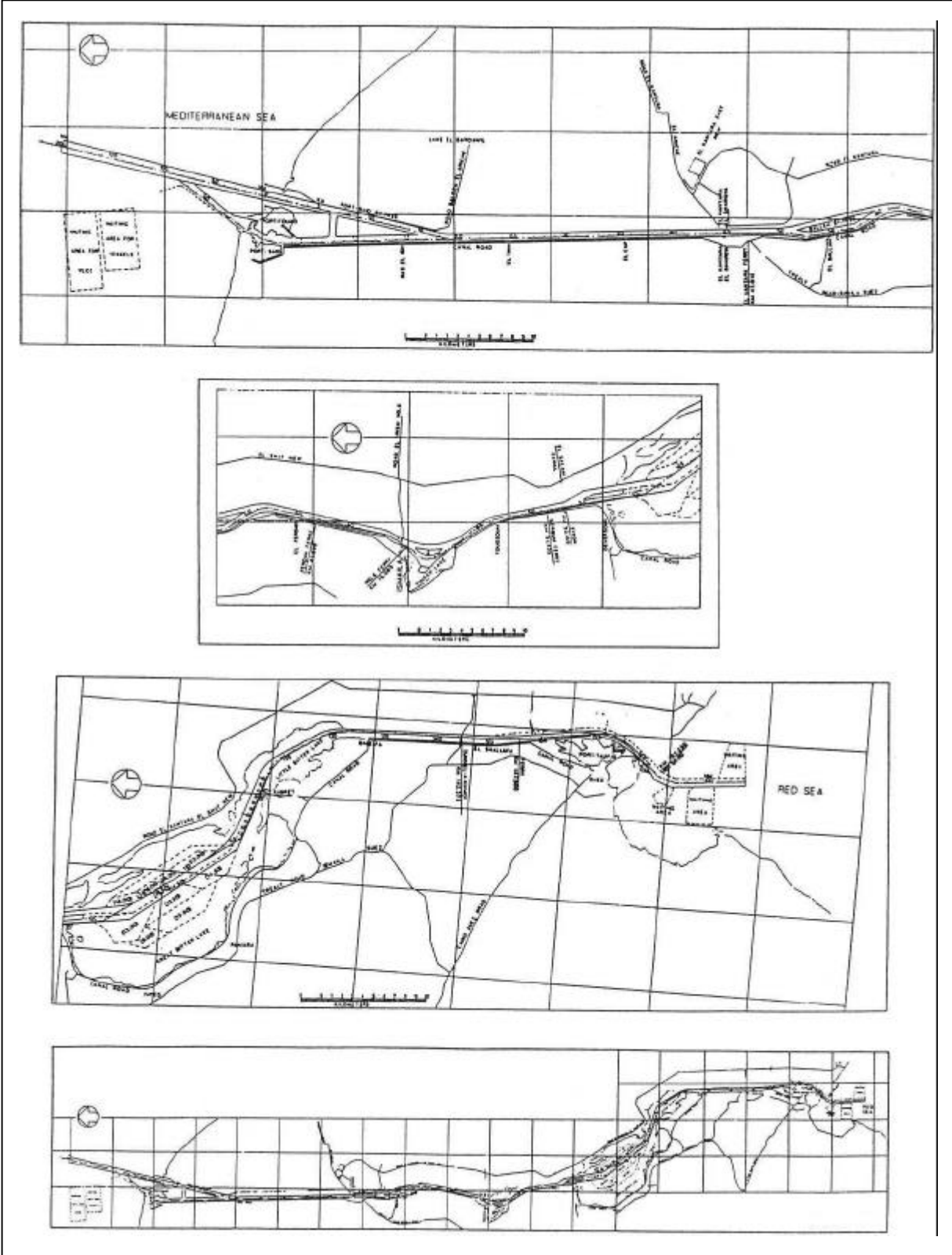
Table 1.1.2 Historical Progress of the Suez Canal

Item	1869	1956	1962	1980	1994	1996	2000
Overall Length (km)	164	175	175	190.25	190.25	190.25	190.25
Doubled Parts (km)	-	29	29	78	78	78	78
Width at 11m depth (m)	-	60	90	160	210/180	210/180	210/200
Water Depth (m)	10	14	15.5	19.5	20.5	21	21
Max. Draft of Ship (feet)	22	35	38	53	56	58	58
Cross Section Area (m ²)	304	1,100	1,800	3,600	4,300 /3,800	4,500 /3,900	4,500 /4,100
Max. Tonnage (DWT)	5,000	30,000	80,000	150,000	180,000	185,000	195,000

Source) "Yearly Report 1999", SCA

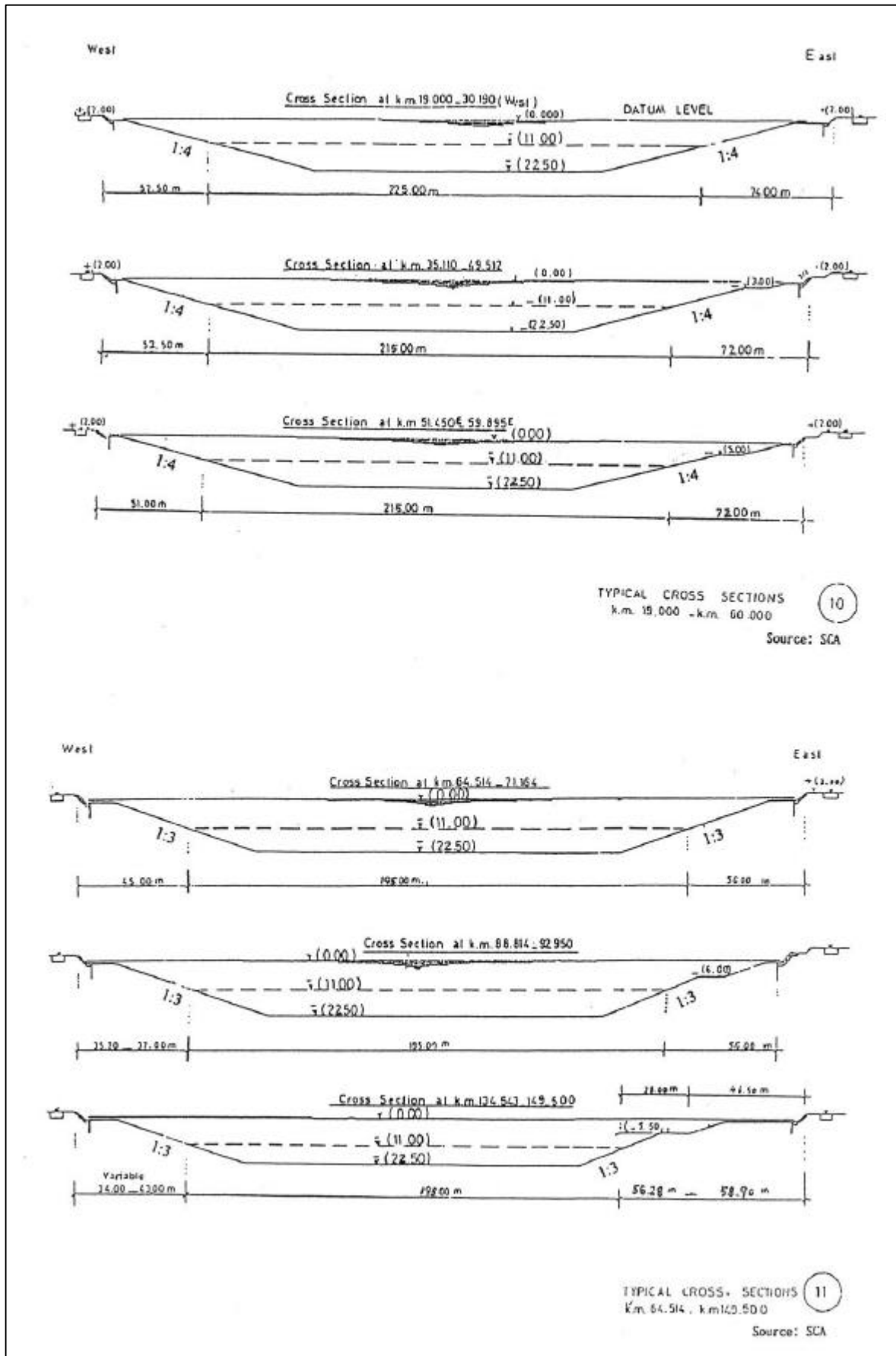
1.1.1 Cross section and Depth of the Canal

Cross section and depth of different parts of the Canal is shown in Figure 1.1.2 (1) and (2), Table 1.1.3 (1) and (2). The depth of the main channel, including the eastern branches of the by-pass sections, will be 22.5m (permissible ship draught is 62ft) in 2001, while that of the western branches is 15.5m (partially 14.5m). The Canal cross sections are trapezoidal in shape, having side slopes of 4/1 in the northern part up to Km.61.00 and 3/1 in the southern part.



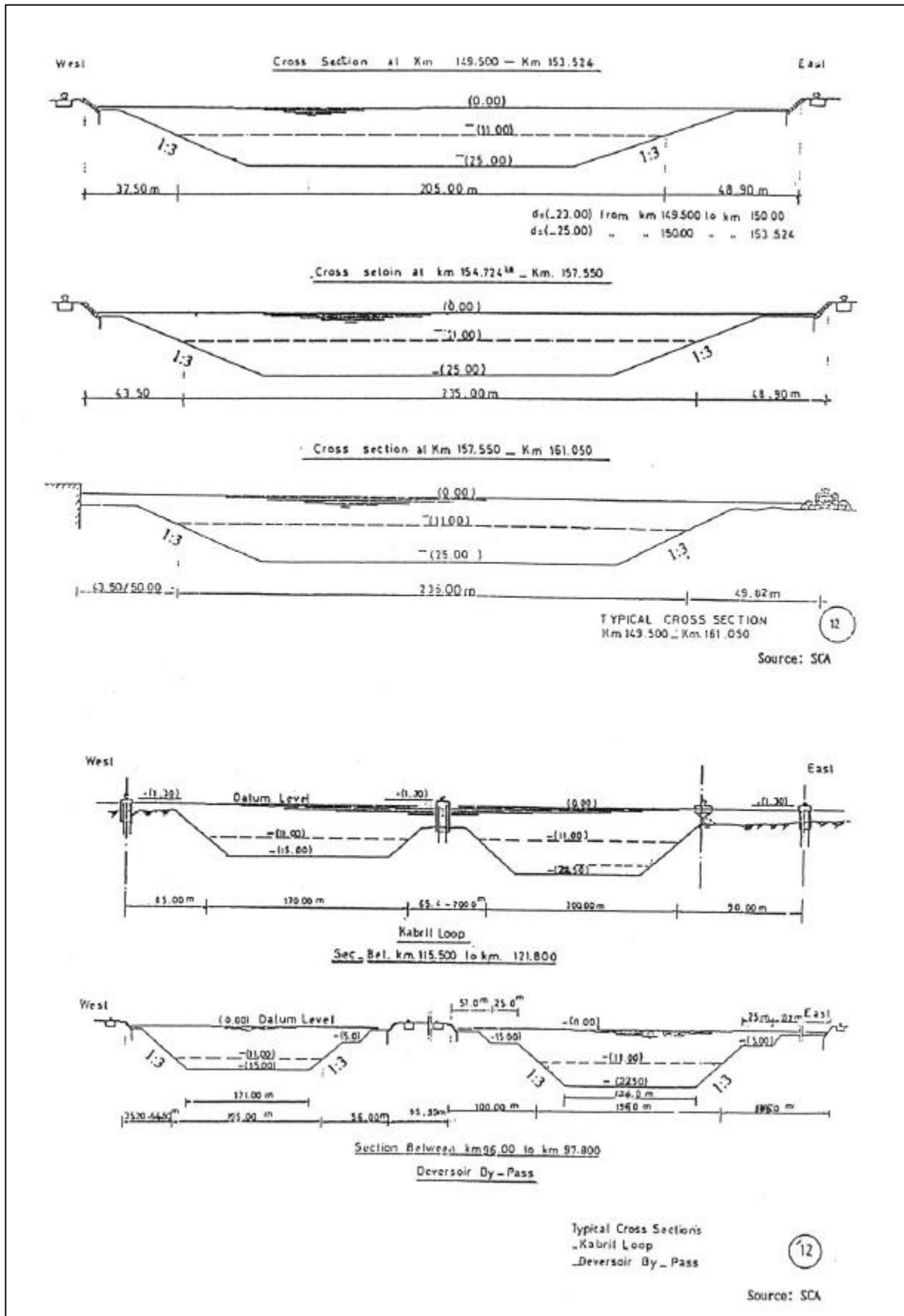
Source) SCA

Figure 1.1.1 Layout of the Suez Canal



Source) SCA

Figure 1.1.2 (1) Cross Sections



Source) SCA

Figure 1.1.2 (2) Cross Sections

**Table 1.1.3 (1) Depth of the Canal
(Main Canal and Bitter Lake East Channel)**

Kilometric position		Designation of different parts of the Canal	Theoretical depth (m)	Remarks
From Km.	To Km.			
2.400 E	3.400 E*	Junction	22.5	East Port Said Branch
3.400 E	15.190 E	Straight line	22.5	East Port Said Branch
15.190 E	15.540 E	Junction	22.5	East Port Said Branch
17.000	19.000	Southern entrance to Port Said by-Passes	22.5	
19.000	30.430	Straight line	22.5	
30.430	32.350	Northern approach to encoche (siding)	22.5	
32.350	32.950	East encoche of Km. 32(siding of Km32)	22.5	
32.950	35.110	Southern approach to encoche (siding)	22.5	
35.110	49.512	Straight line	22.5	
49.512	51.477	Northern approach to Ballah Loop	22.5	
51.449 E	51.785 E	Curve of Km. 51 East	22.5	
51.785 E	59.943 E	Straight line	22.5	
60.308	60.333	Curve of Km. 61	22.5	
60.333	63.419	Curve of Km. 61	22.5	
63.419	64.514	Approach to curve	22.5	
64.514	71.164	Straight line	22.5	
71.164	71.964	Approach to curve	22.5	
71.964	75.311	" S " Curves	22.5	
75.311	76.033	Straight line	22.5	
76.033	76.519	Straight line	22.5	East timsah By - Pass
76.519	78.900 E	Curve of Timsah	22.5	East timsah By - Pass
78.900 E	80.949 E	Encoche of Km. 80 (East)	22.5	East timsah By - Pass
80.949 E	81.692 E	Curve of Timsah	22.5	
81.000	82.000	Junction	22.5	
82.000	85.027	Straight line	22.5	
85.027	87.414	Curve of Km. 85	22.5	
87.414	88.814	Approach to Curve	22.5	
88.814	92.950	Straight line	22.5	
92.950	93.050	Junction to Syphons zone	22.5	
93.050	93.446	Syphons Zone	22.5	
93.446	95.000	Junction to Deversoir by-pass	22.5	
95.000	95.250	Junction to East Branch	22.5	Deversoir East branch
95.250	96.000	Junction to East Branch	22.5	Deversoir East branch
96.000 E	100.666 E	Straight line	22.5	Deversoir East branch
100.666 E	102.600 E	Straight line	22.5	Deversoir East branch
102.600	105.030	Curve	22.5	Bitter Lakes East Channel
105.030	112.860 E	Main Channel (straight line)	22.5	Bitter Lakes East Channel
112.860 E	114.200	Junction	22.5	Bitter Lakes East Channel
114.200	114.957	Junction With Kabrit-Loop	22.5	Bitter Lakes East Channel
114.957	115.320 E	Junction	22.5	Kabrit Loop East Channel
115.320 E	121.937 E	Straight line	22.5	Kabrit Loop East Channel
121.937 E	122.100 E	Beginning of Km. 122 Curve	22.5	Kabrit Loop East Channel
122.100	125.507	Curve of Km. 122	22.5	
125.507	129.499	Straight Line	22.5	
129.499	131.975	Curve of Km. 130	22.5	
131.975	133.175	Approach to curve	22.5	
133.175	144.714	Straight line	22.5	
144.714	147.146	Encoche of Km.146(siding of Km.146)	22.5	
147.146	149.500	Straight line	22.5	
149.500	153.524	Straight line	25.0	
153.524	154.724	Approach to curve	25.0	
154.724	155.724	Curve of Km. 154	25.0	
155.724	156.274	Straight line	25.0	
156.274	159.998	Curve of Km. 157	25.0	
159.998	161.050	Straight line	25.0	
161.050	162.250	Southern approach of the Canal	25.0	

Notes) 1. Origin Point of KM is axis of Port Said Lighthouse.

2. (E*) means east kilometer base line.

Source) SCA

**Table 1.1.3 (2) Depth of the Canal
(Canal West Branches and Bitter Lake West Channel)**

Kilometric position		Designation of different parts of the Canal	Theoretical depth (m)	Remarks
From Km.	To Km.			
0.000	1.450	Ismailia Basin	15.5	Port
1.450	3.650	Basins For Coal & Fuel oil vessels	15.5	port
3.729	4.890	Junction (1)	15.5	Port Said West Branch
4.890	6.000	Junction (2)	15.5	Port Said West Branch
6.000	16.500	Straight line	15.5	Port Said West Branch
16.500	16.663	Straight line	15.50 - 19.00	Port Said West Branch
16.663	17.000	Junction (siding of Km. 17.00)	19.0	
51.477	51.800	Straight line (siding of Km. 51.00)	18.5	West Branch Ballah Loop
51.800	52.054	Straight line	15.5	West Branch Ballah Loop
52.054	53.298	Curve Km. 53	15.5	West Branch Ballah Loop
53.298	54.098	Approach to curve	15.5	West Branch Ballah Loop
54.098	56.397	Straight line	15.5	West Branch Ballah Loop
56.397	56.871	Approach to curve Km. 57	15.5	West Branch Ballah Loop
56.871	58.797	Curve of Km. 57	15.5	West Branch Ballah Loop
58.797	59.269	Approach to curve	15.5	West Branch Ballah Loop
59.269	59.900	Straight line	15.5	West Branch Ballah Loop
59.900	60.308	Straight line(siding of Km.60.000)	18.5	West Branch Ballah Loop
76.033	77.371	Curve (Centre on West Bank)	15.5	West Branch Timsah Lake
77.371	77.672	Junction	15.5	West Branch Timsah Lake
77.672	77.912	Junction	15.5	West Branch Timsah Lake
77.912	79.800	Curve of Like Timsah (centre on East Bank)	15.5	West Branch Timsah Lake
79.800	81.000	Straight line(siding of Km.80.000)	19.0	West Branch Timsah Lake
95.000	95.500	Junction to West Branch (siding of Km.95.000)	18.0	Deversoir West Branch
95.500	100.200	Straight line	15.0	Deversoir West Branch
100.200	101.050	Junction	14.5	Deversoir West Branch
101.050	103.759	Straight line	14.5	Bitter Lake West Channel
103.759	(103.957W)	Junction	14.5	Bitter Lake West Channel
104.160	114.200	West Channel	14.5	Bitter Lake West Channel
114.200	115.603	Junction	15.0	Kabrit Loop West Branch
115.603	122.100	Straight line	15.0	Kabrit Loop West Branch

Notes) 1. Origin Point of KM is axis of Port Said Lighthouse.

2. (E*) means east kilometer base line.

Source) SCA

1.1.2 By-passes and Loop

The Canal is provided with five by-passes of which plans are shown in Figure 1.1.3 (1), (2) and (3).

(1) Port Said By-Pass

This by-pass starts at Km.17.00 and extends north to join the existing Port Said roadstead at Hm.94.90 and continues till Hm.195. It is fitted with bollards on the Western side, spaced every 100 meters.

(2) Ballah Loop

Between Km.51 and Km.61, the Canal is doubled in the East by a branch. The zone comprising the 2 branches of the Canal limited by the North and South ends where the 2 branches meet is called "Ballah Loop". The length of the East Branch is 8.490 Km.

	West Branch	East Branch
- Kilometric marking of North end	51.477	51.449 E
- Kilometric marking of South end	60.333	59.943 E

In the West branch, 15 mooring berths are situated on the Eastern bank.

(3) Timsah By-Pass

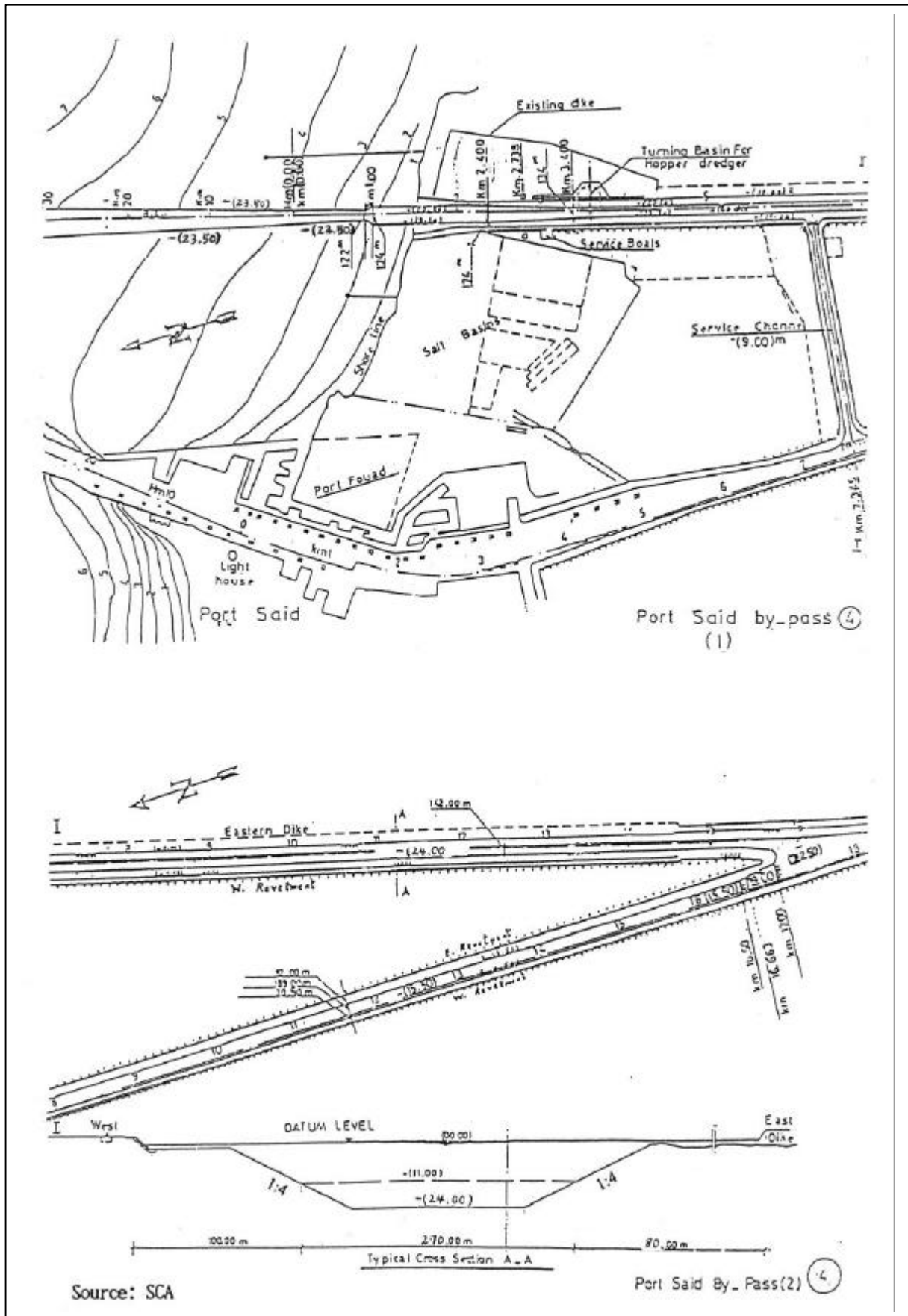
This by-pass situates between Km. 76.580 and Km 81.700 E. The length is 5.110 Km, counted at right angle from Km. 76.578 to Km. 81.700. The by-pass is used by Northbound and Southbound vessels.

(4) Deversoir By-Pass

This branch begins at Km.95.000 and joins the main East channel in the Great Bitter Lake at Km.104.160. The length is 9.160 km.

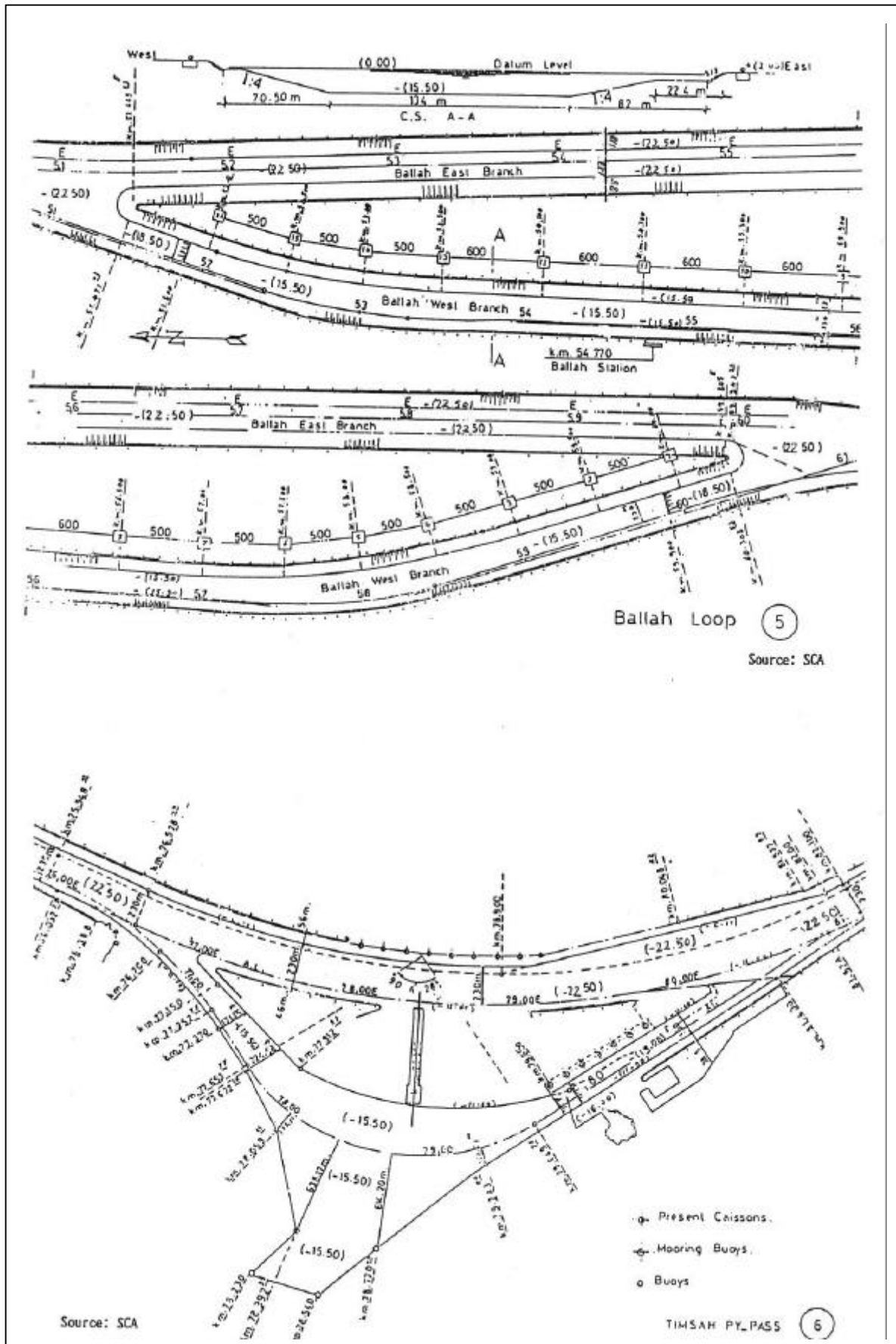
(5) Kabrit By-Pass

The By-Pass begins at Km.114.957 and ends at Km.122.100. The by-pass is separated from west branch by a submerged island at a depth between 2 and 6 meters. The width of the island varies between 200 meters in the North and 65.4 meters in the South.



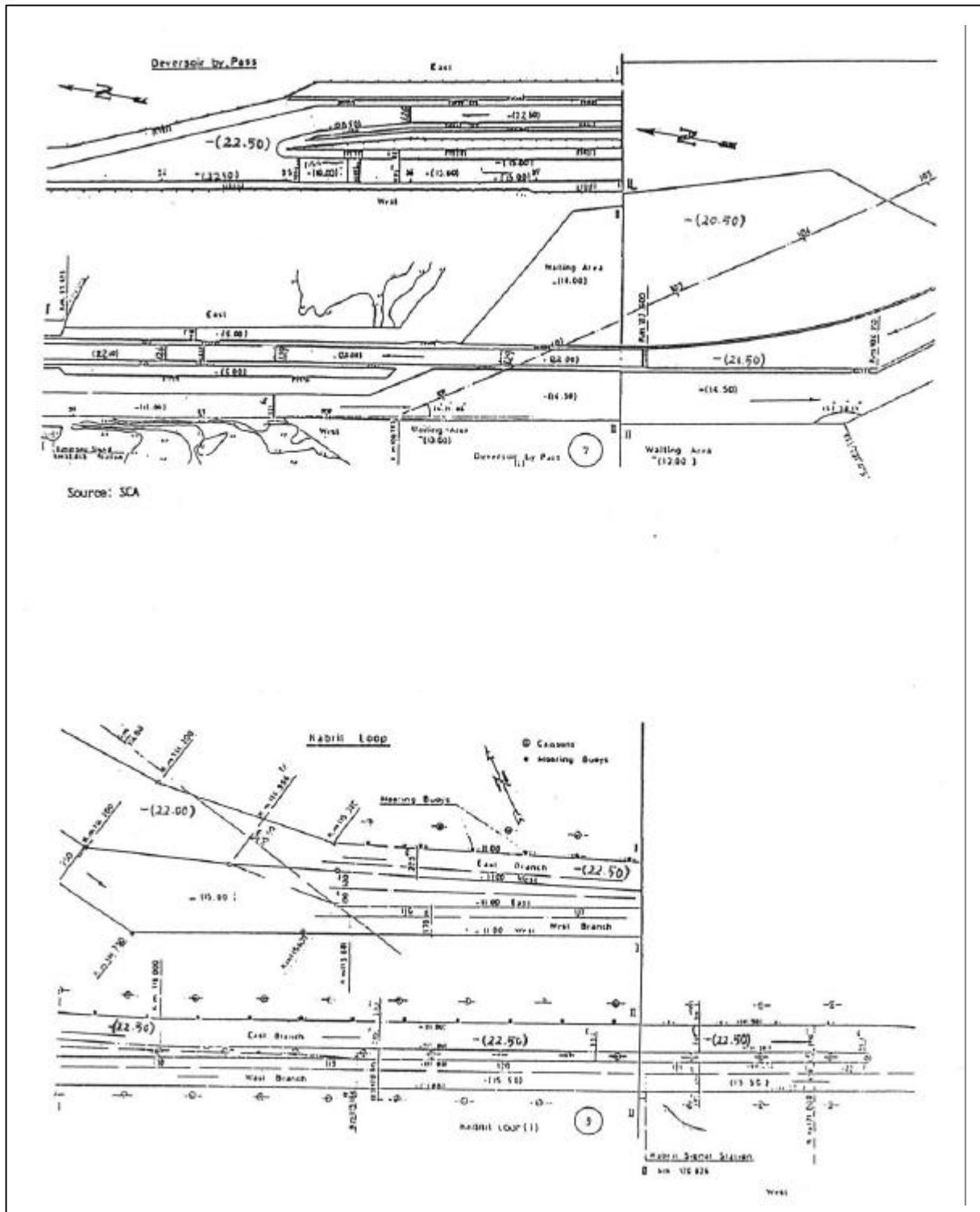
Source) SCA

Figure 1.1.3 (1) Layout of Port Said By-Pass



Source) SCA

Figure 1.1.3 (2) Layout of Ballah Loop and Timsah By-Pass



Source) SCA

Figure 1.1.3 (3) Layout of Deversoir By-Pass and Kabrit By-Pass

1.1.3 Bends in the Canal

The bends in the navigable channel have the following characteristics:

- Radius of navigation line = 5000 meters.
- Width of channel at 11.00 meters depth = 225 - 245 meters.
- Width of channel at 21.00 meters depth. North of Km. 61.000 (side slopes 4/1) = 165 meters.
- Width of channel at 21.00 meters depth, South of Km. 61.000 (side slopes 3/1) = 165 meters.
- At the two ends of bends, there is usually a funnel made to allow increasing the width of the channel from the width of the straight part to the width of the curves.
- Location of beginning and end of each bend are included in the following table :

Table 1.1.4 Location of Bends in the Canal

Canal Bends	Kilometric indication of beginning point	Kilometric indication of end point
Km.51	Km.49.510	Km.51.480W Km.51.790E
Km.53	Km.52.050	Km.53.520
Km.57	Km.56.870	Km.58.800
Km.61	Km.60.310W Km.59.940E	Km.63.300
S' curves	Km.71.960	Km.75.300
Timsah curve	Km.76.520	Km.81.700 E
Km.85	Km.85.030	Km.87.400
Km.103	Km.102.600	Km.105.30
Km.122	Km.121.940E Km.122.500W	Km.125.510
Km.130	Km.129.500	Km.131.980
Km.146	Km.145.500	Km.146.330
Km.154	Km.154.700	Km.155.720
Km.157	Km.156.280	Km.160.000

Note) At the approaches of the by-passes, bends are made with radius more than 5,000 meters.

Source) Rules of Navigation, 1995, SCA

1.1.4 Lakes

(1) Lake Timsah

Lake Timsah extends from Km. 76.500 to Km. 80.520. In the presence of the Timsah by-pass, Lake Timsah is used mainly as an anchorage area.

(2) Great Bitter Lake

There are 2 dredged channels in G.B.L. The East is the main channel about 406 meters

wide at 11.00 meters depth and dredged to 22.50 meters for Northbound vessels. The West channel 250 meters wide at 11.00 meters depth dredged to 14.50 meters depth for Southbound vessels. These channels divide the Great Bitter Lake into two anchorage areas:

- One to the East for the Northbound convoy
- One to the West for the Southbound convoy

1.1.5 Waiting areas

(1) Port Said

Incoming vessels have two anchorage areas:

Northern Area is comprised of two zones; Zone One is for vessels with draught over 42 ft (12.8 m), of which center lies on NNW 6.7 miles (12.4 km) off the Fairway Buoy. Zone Two is comprised of designated anchorages V1 to V8 for VLCCs, 4th generation container ships, 3rd generation container ships and vessels over 39 ft (11.9 m) draught up to 42 ft (12.8 m) lies on NW 3.7 miles (6.8 km) off the Fairway Buoy.

Southern area for all other vessels lies southward of Zone two, of which center on MNW 2.1 miles (3.9 km) off the Fairway Buoy, and is comprised of designated anchorages C1 to C5.

Two areas for trans-shipment anchorages have been designated, A, for vessels over 60 ft (18.3 m) draught, on NE 7¾ miles (14.3 km) off the Fairway Buoy, and B, for vessels up to 60 ft (18.3 m) draught, on NE 5 ¾ miles (10.5 km) off the Fairway Buoy. Those areas are shown on the chart (234, UK).

(2) Port of Suez

Anchorage for Deep-draught Vessels (all N-bound deep-draught vessels, in excess of 11.6 m draught, including VLCCs, bulk carriers and third generation container ships, awaiting a pilot) is in the area SSE of Conry Rock (29° 48' N, 32° 34' E), which is marked to the E by light-buoy L, moored 5 miles SE of the rock. Designated anchorage V1 to V9 inclusive are shown on the chart (2098, UK).

Designated anchorages 1 to 29 of the waiting area for all other N-bound vessels awaiting a pilot is N of Conry Rock which is shown on the chart (2098, UK) and bounded on the N and E by light buoys A, B, C, D, N and M.

Two areas for trans-shipment anchorages have been designated, A, 6½ miles SE and B, 12 miles SSE of Conry Rock Light-float, as shown on the chart (2098, UK).

(3) Waiting areas in the Canal

Lake Timsah:

Three anchorages (1 to 3) which depths are 15.5 m lie at W-ward of W-branch channel of the lake, in addition, the other three anchorages (4 to 6) for smaller vessels lie further

W-ward of the above. Those anchorages are shown on the chart (233,UK).

Great Bitter Lake:

The waiting areas, E1 to E4 and W1 to W5 mainly for S-bound vessels, lie to the outer sides of E and W branches of the lake, which are bounded by lighted buoys respectively. The details can be seen on the chart (233, UK).

El Kabrit East Branch:

Three berths are available for emergency use.

1.1.6 Breakwaters and revetments

The west approach channel at Port Said is protected by two breakwaters:

- The western breakwater protecting the west approach channel is situated to the west of the channel and extends from land boundary till Hm. 73 with a submerged part from Hm.50. This part is marked by cigar shaped unlit buoys.
- The eastern breakwater extends from land boundary till Hm. 21.2 and has an occulting red light at its northern end.

The east approach channel at Port Said is protected by two breakwaters:

- The eastern extends for 2Km from the land boundary, and the Western extends for 0.53 Km from the land boundary. Each breakwater has a small fixed white light on its end.

Both sides of the Canal are protected with different types of revetment depending on the surrounding conditions (soil properties, tide, current, etc.).

1.1.7 Buoyage system in the Canal

The navigable channel is marked by pairs of light buoys. All buoys in the Canal and its approaches are fitted with radar reflectors.

- On the east side: Green buoys showing Green light.
- On the west side: Red buoys showing Red light.
- Distance between each pair: In the straight parts: 1.5km (north section)
1.0km (south section)
In the curves: less than 1.0km

1.2 Facilities and equipment of SCA

1.2.1 Shipyards

(1) Port Said Shipyard

Port Said Shipyard has more than 90 years of experience in ship repair and more than 40 years in shipbuilding. Main activities of the shipyard are as follows:

- Ship repairs for different ships and floating units.
- Shipbuilding of different type of vessels such as ships, tugs, etc.
- General engineering works and manufacturing of spare parts.
- Salvage works and under water welding and cutting operations.

Main facilities of the shipyard are as follows:

- Building berth of 150m in length and 43m in width, arranged for building 2 vessels 12,000DWT each or one vessel 20,000DWT.
- Four floating docks of 5,000, 10,000, 17,000 and 25,000 tons lifting capacity.
- Floating cranes with 500 tons lifting capacity on the main hook.
- A total of 2,000m long repair quays and a repair area of 8,500m².
- Different workshops for carrying out the works required for the shipyard activities including shipbuilding, machine tools, foundry, carpentry, motors, pipes and electricity. These workshops are equipped with the most up-to-date CNC equipment (cutting machine and lathes).
- Marine salvage team provided with the most up-to-date diving , salvage and survey equipment to undertake the underwater operations such as damage identification, welding and cutting.
- Training center with total capacity of 800 trainees.

(2) Port Tawfic Shipyard

Main activities of the shipyard are as follows:

- Shipbuilding and repairs of medium and small size floating units.
- Manufacturing the fiberglass products particularly floating units up to 40m long.

Main facilities of the shipyard are as follows:

- Ship lift with 2,000 tons capacity having 5 lanes each of 100m long for shipbuilding and repair works.
- A factory for fiberglass products, considered to be the biggest of its kind in the region.
- Floating cranes having lifting capacities up to 500 tons on the main hook, and up to 1,400 tons on the boat davit.
- It is well equipped with workshops for shipbuilding, machine tools and electricity, etc.

1.2.2 Dredgers

- Widening and deepening of the Canal is proceeding step by step using the SCA dredgers from draught 58ft. to 62ft. (Planned to be completed by the end of year 2000)

- Working in the East Port Said development project, the dredgers have removed about 5.9 million m³ of dredged soil as of the end of 1999.

- During 1999, the SCA fleet of dredgers removed 32.3 million m³ of dredged soil.

- This fleet encompasses the different kinds of dredgers required for dredging operations in the different kind of soil.

Table 1.2.1 Dredgers of SCA

Name / Type	Dimensions L/B/D/d (m)	Dredging Depth (m)	D/P Power	Cutter Power	Hopper /Bucket Capacity (m ³)	Year Built	Total Installed Power (HP)	Ship Yard	SUC /DEL (m m)
MASHOUR / CS	140.3/22.4 /7.5/4.95	35 max. at 50 deg	2/5400kw +LAD.P 2400kw	2/1200kw		1996	Abt. 30,000	I.H.C. Holland	1000 /900
OBOOR PORT SAID / TH	116.3/20.8 /10.5/8.5	30 max.	2/1200kw	2/750HP	6,557	1984	18,100	M.H.I. Japan	950 /915
SALAH EL-DIN ELAYOBY / TH	119.91/19.6 10.5/9.2	30 max with extension	2/5000HP		6,328	1977	15,500	M.H.I. Japan	1040 /915
AL-SEDIEK / CS	121.32/21 5.3/4.5	25.00	2/5000HP +LAD.P 1540kw	2/800kw		1980	19,070	M.H.I. Japan	1000 /850
AL- KHATTAB / CS	121.32/21 5.3/4.5	25.00	2/5000HP +LAD.P 1540kw	2/800kw		1980	19,070	M.H.I. Japan	1000 /850
TAREK- IBEN ZEYAD / CS	117.3/18 5.3/4.3	30.00	2/5000HP +LAD.P 1450kw	2/700kw		1977	16,770	M.H.I. Japan	950 /850
MAHMOUD YONES / CS	102.3/15 5/3	25.50	5000HP	2/750HP		1978	9,630	P.S. Shipyards SCA	850 /750
SAMY HARRAZ / SUC.	47.2/11 3.6/2.4		2500HP			1980	4,048	I.H.C. Holland	700 /600
NEFERTITY / CS	15/5.55 2.11/1.05	8	350HP	HYD 100HP		1968	545	Timsah SCA	350 /350
MINA No.2 / BL	61.3/12.06 3.65/2.4	24.65		Bucket Chain 4/137.5	550 /750 Lt.	1973	1,393	P.S. Shipyards SCA	
BARAKAT / BWS	59.7/14 3.2/2	20	1/3300HP	HYD. 1/600HP		1993	6,415	P.S. Shipyards SCA	560 /600

Notes) CS=cutter suction, TH=trailing hopper, BL=bucket, BWS=bucket wheel suction, SUC=suction, DEL=delivery

Source) "Yearly Report 1999", SCA

1.2.3 Tugs

SCA owns a fleet of 35 multi type tugs, ranging from 1,600HP to 16,000HP used for towing, salvage, firefighting and berthing of ships.

(1) Ocean-going multipurpose tugs "BARAKI1 and EZZAT ADEL"

- The most powerful in the Middle East with continuous bollard pull rated 160 tons
- Length: 69.2m, beam: 15.5m, depth: 7.4m, draught: 6.4m
- Total dead weight capacity: 2,320 tons, Deck area: 434m² with a strength of 15t/m²
- Four diesel engines: 3,990HP each at 600 rpm, Marine range: 6,000 miles and speed: 17.5 kts
- Equipped with two fire fighting pumps delivering 3,600 m³/hr for each and two water monitors remotely controlled from the wheel house (150m height above sea level and 193m trajectory)
- Equipped with a 200 m³ tank, so they can participate in antipollution and lightering operations
- They carried out many successful towing operations in the high sea for oilrigs, floating docks, ships, barges and oil derricks

(2) Lightering vessels "NAGDA1 and NAGDA2"

- These vessels are used for lightering, bunkering, water supply and carrying containers
- Oil carrying capacity: 3,045 tons, fresh water capacity: 1,000 tons
- Length: 87m, beam: 15.5m, depth: 4m
- Container carrying capacity: 56 TEUs
- Deadweight: 3,320 tons
- Two engines 1,125 HP each at 1,000 rpm, speed: 10 kts

(3) Salvage and firefighting tug "SALAM5"

- Modern, newly built and fully equipped tug
- Used for salvage, firefighting, mooring large tankers and other services
- The tug is highly maneuverable for operations in harbors and escorting
- Equipped with 5,000 HP diesel engine and Voith-Schnider propeller

(4) Other tugs

The other tugs are used as salvage, escort and firefighting units at the Suez Canal. They are also used for berthing ships at the waiting areas and harbors.

1.2.4 Floating Docks

There are five floating docks at the Canal. Four floating docks (ATAKA, EID EL NASR, EL SALAM and floating dock of 5,000 tons) belong to Port Said Shipyard of SCA.

(1) ATAKA

- Lifting capacity: 17,000 tons
- Length overall: 182.5m, clear breadth: 48m
- Lifting Time: 170 minutes
- Equipped with two tower cranes capacity 17 tons each
- Year of Built: 1986, renewed and developed 2000

(2) EID EL NASR

- Lifting capacity: 25,000 tons
- Length overall: 220m, length of pontoon: 210m
- Breadth overall: 44m, clear breadth: 36m
- Lifting Time: 170 minutes
- Equipped with two dock cranes capacity 12 tons and 7.5 tons
- Year of Built: 1960, the dock was lifted for repair on 18/12/1999 by the floating dock "ATAKA" at Port Said Shipyard.

(3) EL SALAM

- Lifting capacity: 10,000 tons
- Length overall: 185m, length of pontoon: 170m
- Breadth overall: 36.6m, clear breadth: 28m
- Lifting Time: 150 minutes
- Equipped with two dock cranes capacity 10 tons each
- Year of Built: 1979

(4) Floating dock of 5,000 tons (no name)

- Lifting capacity: 5,000 tons
- Length overall: 120m, length of pontoon: 106m
- Breadth overall: 29.2m, clear breadth: 21m
- Lifting Time: 90 minutes
- Equipped with two dock cranes capacity 6 tons each
- Year of Built: 1950, renewed 2000

(5) SOMS (temporarily name)

- Owner: Suez Odense Marine Services, a joint venture between SCA and Odense Steel Shipyard Ltd., a member of the A.P. Moller Group (Denmark)
- Lifting Capacity: 55,000 tons
- Length overall: 302m, Breadth overall: 71.08m, Length of Pontoon: 270m
- Lifting Time: 120 minutes
- Equipped with 3 gantry cranes capacity 60 tons each, and 2 slewing cranes capacity 16 tons each
- Year of Built: 1977

1.3 Natural conditions of the Canal

1.3.1 Tides and Currents in SC

The SC is divided into three main sectors according to the nature of tide in each. The characteristics of each can be summarized as follows:

A -The Northern Sector:

This part is located between Port Said and the G.B.L.:

- (1) The height of tide at Port Said co-oscillates with the tide of the Mediterranean Sea with 0.50 meter extreme tidal range (Difference between highest and lowest levels) at Spring tides. This tidal range decreases gradually going South, to be about 0.20 meter at the entrance of Lake Timsah.
- (2) In this sector, the peak tidal current may reach 1.0 knot (in case of no wind).
- (3) Currents may be doubled by strong prevailing winds.
- (4) Peak currents occur about 50 minutes after predicted HW and LW at Port Said.
- (5) The duration and velocity of currents in this sector are greatly affected by the relative mean sea levels between the Mediterranean Sea, the Bitter Lakes and the Red Sea as follows:
 - a) In summer: between July and October, the mean sea level at Port Said is slightly higher than that of the Bitter Lakes. This difference (which reaches its maximum of about 0.20 meter in September), beside the great evaporation at the Bitter Lakes, causes the predominance of the Southward current in duration and velocity.
 - b) In winter: between December and May, the Mean sea level at the Bitter Lakes is slightly higher than that of Port Said. This difference which reaches its Maximum of about 0.30 meter in January, causes the predominance of the northward current in duration and velocity.

B -The Lakes (Timsah and Bitter Lakes):

- (1) The Lakes along the Canal have an important role in dampening the effects of sudden meteorological changes.
- (2) The Bitter Lakes with a surface of about 250 Km² reduce the vertical movement of the tide to a minimum between Km.100 and Km. 130.
- (3) The high spring tide range (MHWS) in G.B.L. may reach 0.25 meter.
- (4) The phase of the vertical tide in G.B.L. is about 3 hours later than that of Port Tewfik.
- (5) The vertical tide in Lake Timsah is almost in phase with the tide in G.B.L.

C -The Southern Region:

This part is located between Port of Suez and the Bitter Lakes:

- (1) The height of tide in Suez co-oscillates with the tides of the Red Sea with extreme tidal range of about 1.90 meters at Spring tides. This range decreases gradually going north till the Bitter Lakes entrance to be 0.15 meter at Genefa.
- (2) The tidal volume of the Bitter Lakes is very large compared to the tidal

volume of the southern section. Consequently, the currents are relatively strong and almost uniform between Port Tewfik and Genefa

- (3) In this region, the Northward current is called flood and the southward current is called ebb.
- (4) Peak currents occur about 50 minutes after predicted HW and LW at Port Tewfik.
- (5) At the entrance of the Canal, Km. 159, the flood tide starts at an average of 3 hours after the low water at Suez. The ebb tide 3 hours after high water in Suez.
- (6) Generally in summer, the duration of the ebb exceeds the average of 6 hours. In winter, the flood is the predominant. The ebb is prolonged by " strong northerly winds". The flood is prolonged by "strong southerly winds".
- (7) In this region, the average peak current is about 1.5 knots. In spring tides, currents may reach 2.5 knots.
- (8) The change of current occurs 5 to 10 minutes later on the bottom of the Canal, than on its surface.

1.3.2 Climate and weather

The Canal Zone is hot and humid in summer, and remains warm in winter. The weather is fairly stable over the zone. Rainfall is scarce along the whole area. The average temperature in summer (May to October) is 31°C to 37°C and in the others are 20°C to 28°C.

Winds are mainly gentle and it is rarely that strong gale is experienced. The general wind direction at 0800 in the morning is N (49%) followed by NW (20%) and NE (15%), and 1400 in the afternoon, the distribution is almost same i.e. N (51%) followed by NW (13%) and S (12%). Visibility is rather poor in the morning in summer, particularly. See Table 6.3.1 Climatic Table at Suez.

Table 1.3.1 Climatic Table

SUWEIS (29° 56' N, 32° 33' E) Height above MSL—10 m

Climatic Table compiled from 30 years' observations, 1941 to 1970

Month	Average pres- sure at MSL	Temperature				Average humidity		Average cloud cover		Precipitation		Wind distribution														Mean wind speed		No of days with wind 34 kts and over	No of days with vis > 2 km at 0800				
		Mean daily max. °C	Mean daily min. °C	Mean in each month		0800 %	1400 %	0800 Oktas	1400 mm	Average	No of days with 0.1 mm or more	0800 % frequency							1400 % frequency							0800	1400						
				Mean highest in each month °C	Mean lowest in each month °C							N	NE	E	SE	S	SW	W	NW	Calm	N	NE	E	SE	S					SW	W	NW	Calm
January	1018	20	9	23	6	75	45	3	3	1	28	9	7	9	10	7	5	13	12	24	8	3	10	11	8	14	4	3	5	0	0		
February	1016	21	10	26	6	70	41	2	3	1	28	12	5	8	11	3	5	17	11	24	3	3	9	22	9	12	5	3	5	0	0		
March	1015	24	12	32	8	71	35	2	5	1	34	8	4	6	6	5	2	24	11	38	5	2	8	20	6	16	4	5	0	1			
April	1013	28	15	33	11	68	32	2	0	⊕	44	6	4	5	8	2	1	23	7	41	5	2	6	20	8	10	2	5	5	0	0		
May	1012	33	18	38	14	66	29	3	0	⊕	53	7	1	2	7	2	1	23	4	57	6	1	2	13	5	1	12	3	5	0	0		
June	1010	35	21	42	18	69	29	1	0	⊕	61	7	1	2	2	1	1	21	4	68	8	1	1	7	1	1	12	1	5	6	0	0	
July	1007	37	23	41	20	73	31	1	0	0	68	8	0	1	0	0	0	18	5	65	11	0	1	9	1	0	11	2	4	5	0	0	
August	1008	36	23	40	21	75	33	1	0	0	69	6	1	0	0	0	0	21	3	68	10	1	1	4	1	0	13	2	4	6	0	0	
September	1011	34	21	38	18	76	36	1	0	0	71	5	0	1	1	0	0	18	4	75	7	0	1	2	0	1	13	1	4	6	0	0	
October	1014	31	19	36	16	76	39	1	3	1	54	9	1	2	2	1	1	25	5	58	10	0	3	9	2	1	11	6	4	4	0	0	
November	1016	27	16	32	11	76	45	2	5	1	44	9	2	5	3	2	2	25	8	49	7	2	3	9	4	4	15	7	3	4	0	0	
December	1018	22	11	26	7	74	47	3	5	1	33	15	4	5	4	1	3	16	19	39	12	3	6	14	4	3	14	5	3	4	0	1	
Means	1013	29	17	42*	58	72	37	2	24	6	49	8	2	4	5	2	2	20	8	51	8	2	4	12	4	3	13	3	4	5	0	2	
Totals	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
Extreme values	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
No of years' observations	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

*Mean of highest each year.
§Mean of lowest each year.

†Highest recorded temperature.
‡Lowest recorded temperature.

⊕Rare.
⊖All observations.