

**ROYAL IRRIGATION DEPARTMENT  
MINISTRY OF AGRICULTURE AND COOPERATIVES  
KINGDOM OF THAILAND**

**THE BANG PAKONG DIVERSION DAM PROJECT**

**BIDDING DOCUMENTS**

**VOLUME IV : CONTRACT DRAWINGS**

**(Part-1 Main Works)**

**NOVEMBER 1993**

**Prepared by :**

**JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)**

**SANYU CONSULTANTS INC.**

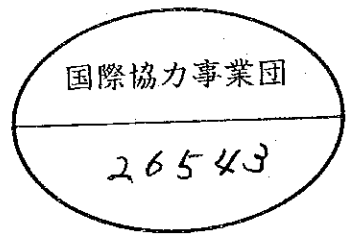
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DWG NO.	TITLE
<b>GENERAL</b>	
GNL - 1001	SYMBOLS AND GENERAL NOTES
GNL - 1002	LOCATION MAP
GNL - 1003	THE SITE PLAN
<b>DIVERSION CANAL</b>	
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DCN - 1002	PLAN & PROFILE
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DCN - 1004	CROSS SECTIONS (1/7)
DCN - 1005	CROSS SECTIONS (2/7)
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DDM - 1007	P <sub>1</sub> & P <sub>6</sub> APRON REINFORCEMENT
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DDM - 1009	Ⓐ APRON REINFORCEMENT
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DDM - 1012	Ⓓ APRON REINFORCEMENT
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DDM - 1048	HANDRAIL - DETAILS
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DDM - 1051	O/M BRIDGE - EXPANSION JOINT
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DWG NO.	TITLE
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THE KINGDOM OF THAILAND ROYAL IRRIGATION DEPARTMENT	
THE BANG PAKONG DIVERSION DAM PROJECT	
BANG PAKONG DIVERSION DAM	
LIST OF DRAWINGS (1/3)	
JAPAN INTERNATIONAL COOPERATION AGENCY (JICA) SANYU CONSULTANTS INC.	
DESIGNED	
TRACED	
CHECKED	
APPROVED	
DRAWING NO.	

DWG NO.	TITLE
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CDM - 1002	PROFILE
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ROD - 1007	TYPICAL SECTION
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RBG - 1006	SIDE WALK & DRAIN
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RBG - 1013	(P <sub>3</sub> ) & (P <sub>4</sub> ) & (P <sub>5</sub> ) PIER STRUCTURE
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RBG - 1015	(P <sub>1</sub> ) & (P <sub>2</sub> ) PIER REINFORCEMENT (2/2)
RBG - 1016	(P <sub>2</sub> ) & (P <sub>6</sub> ) PIER REINFORCEMENT (1/2)
RBG - 1017	(P <sub>2</sub> ) & (P <sub>6</sub> ) PIER REINFORCEMENT (2/2)
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PST - 1016	SUCTION SUMP STRUCTURE (3/3)
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PST - 1018	SUCTION SUMP REINFORCEMENT (2/6)
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PST - 1020	SUCTION SUMP REINFORCEMENT (4/6)
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DWG NO.	TITLE
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THE KINGDOM OF THAILAND ROYAL IRRIGATION DEPARTMENT	
THE BANG PAKONG DIVERSION DAM PROJECT	
BANG PAKONG DIVERSION DAM	
LIST OF DRAWINGS (2/3)	
JAPAN INTERNATIONAL COOPERATION AGENCY (JICA) SANYU CONSULTANTS INC.	
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DRAWING NO.	

DWG NO.	TITLE
<b>PUMPING STATION</b>	
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CEF-1004	SINGLE LINE DIAGRAM OF DIVERSION DAM
CEF-1005	SINGLE LINE DIAGRAM OF PUMPING STATION
CEF-1006	DATA FLOW DIAGRAM
CEF-1007	SYSTEM COMPONENTS
CEF-1008	WIRING OF CONTROL SYSTEM
CEF-1009	OUTSIDE VIEW OF EQUIPMENTS (1/5)
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DWG NO.	TITLE
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CEF-1020	NO. 2 SUBSTATION OPERATING CONSOLE PANEL
CEF-1021	PLAN OF BAN SANG STATION
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THE KINGDOM OF THAILAND ROYAL IRRIGATION DEPARTMENT <b>THE BANG PAKONG DIVERSION DAM PROJECT</b>	
<b>BANG PAKONG DIVERSION DAM</b> <b>LIST OF DRAWINGS (3/3)</b>	
JAPAN INTERNATIONAL COOPERATION AGENCY (JICA) SANYU CONSULTANTS INC.	
DESIGNED	
TRACED	
CHECKED	
APPROVED	
DRAWING NO.	

## **GENERAL**



**ABBREVIATIONS**

b, B	Width
B. C.	Beginning of Curve
CL	Center Line
Cm, CM	Centimeter
Cj, CJ	Construction Joint
CONTR. JT	Contraction Joint
CL	Curve Length
D/S	Downstream
DWG.	Drawing
DIA.	Diameter
E.C.	End of Curve
EL.	Elevation
EXP. JT	Expansion Joint
H. H. W. L.	Highest High Water Level (Sea Level)
H. W. L.	High Water Level (Sea Level)
IA, Δ	Deflection Angle
JIS	Japanese Industrial Standard
Kg, KG	Kilogram
Kg/cm <sup>2</sup>	Kilogram Per Square Centimeter
Kg/m <sup>2</sup>	Kilogram Per Square Meter
Kg/m <sup>3</sup>	Kilogram Per Cubic Meter
Kg/No.	Kilogram Per Number
Km/KM	Kilometer
L	Length
L. L. W. L.	Lowest Low Water Level (Sea Level)
L. W. L.	Low Water Level (Sea Level)
mm, MM	Millimeter
Max., MAX	Maximum
Max. W. L.	Maximum Water Level
Min., MIN	Minimum
Min. O.L.	Minimum Operating Level
n, N	Number
N. W. L.	Normal Water Level
P. C. PILE	Prestressed Concrete Pile
P. I., PI	Point of Intersection
P. V. C. PIPE	Polyvinyl Chloride Pipe
R	Radius of Curvature
REINF.	Reinforcement
RID	Royal Irrigation Department
R. C. PIPE	Reinforced Concrete Pipe
U/S	Upstream
STA.	Station
SYMM.	Symmetrical
S. L.	Sine Length
t	Thickness
T. L.	Tangent Length
TIS	Thai Industrial Standard
W/O	Without
W	With
φ	Diameter

**GENERAL NOTES**

- All dimensions are in millimeters and elevations (above m.s.l.) are in meters, unless otherwise shown.
- 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 the works.
- In case of any details being not mentioned or not shown in the drawings or in case of any discrepancy, defective description, error, omission or ambiguity between or in any of the drawings, it is the Contractor's responsibility to correct and/or adjust the relevant drawing (s) and to obtain the Employer's approval.
- The pay lines shown on the drawings are the outside limits to which measurement, for payment, of excavation and backfill will be made. Measurement for payment will in all cases be made to the pay lines regardless of whether the limits of the actual excavation fall inside or outside the pay lines.
- Compressive strength of concrete at 28 days shall be as follows.
 

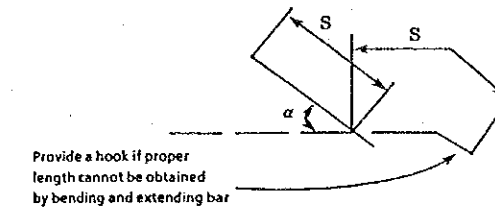
P.C. Pile	≧ 500 kg/cm <sup>2</sup>
P.C. Box Girder	≧ 400 kg/cm <sup>2</sup>
Reinforced Concrete	≧ 210 kg/cm <sup>2</sup>
Plain Concrete	≧ 180 kg/cm <sup>2</sup>
Lean Concrete	≧ 135 kg/cm <sup>2</sup>
- Concrete thickness shall vary uniformly between dimensions shown.
- Chamfer all exposed edges 2 cm unless otherwise indicated.
- Ultimate tensile stresses of reinforcing steel conform to the requirement of Thai Industrial Standard designation SR 24 (fy = 2400 kg/cm<sup>2</sup>) for structural grade plain round bar and SD 30 (fy = 3000 kg/cm<sup>2</sup>) for intermediate grade deformed bar. Unless otherwise shown, reinforcement shall be deformed bar.
- Unless otherwise shown, the minimum length of lap for splicing parallel bars shall be as given in Table A. When reinforcing bars of different size are to be spliced, the lap length shall be governed by the smaller diameter bar. The minimum lap requirement "S" for non-parallel bars shall be as given in Table B.

**TABLE A LENGTH OF LAPPED SPLICE "L"**

Bar Dia.	L	Bar Dia.	L
10 min	35 cm	25 min	110 min
12 min	45 cm	28 min	140 min
16 min	55 cm		
20 min	65 cm		

**TABLE B LENGTH OF SPLICE "S" FOR NON-PARALLEL BARS**

Angle α	S	Angle α	S
0° to 10°	0.5 L	50° to 65°	0.8 L
10° to 30°	0.6 L	65° to 80°	0.9 L
30° to 50°	0.7 L	80° to 90°	1.0 L

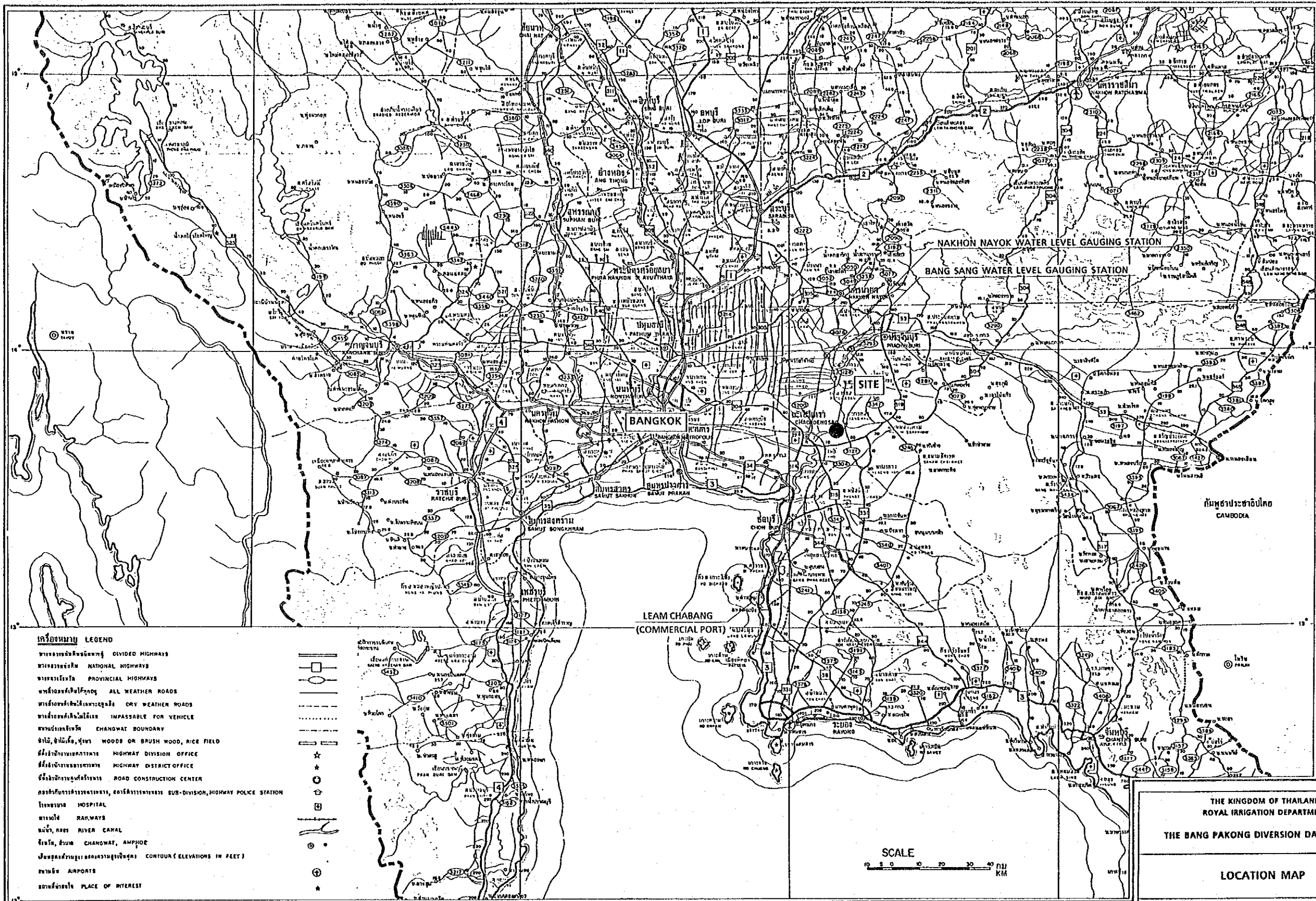


- Bar supports, spacers and other accessories are not shown on the drawings such accessories shall be shown on the shop drawings to be provided by the Contractor for the approval of the Employer.
- Unless otherwise shown, the cover of concrete to the main reinforcement shall be 6 cm.
- Use 10 bar diameter radii for bends of main reinforcement.
- Dimensions and locations of blockouts shown on the drawings are tentative and may be modified by the Contractor, subject to the approval of the Employer.
- Locations of all construction joints shall be shown on the shop drawings for the approval of the Employer.
- For the drawings of the control house, see the Contract Drawings (Part-2 Building Works).

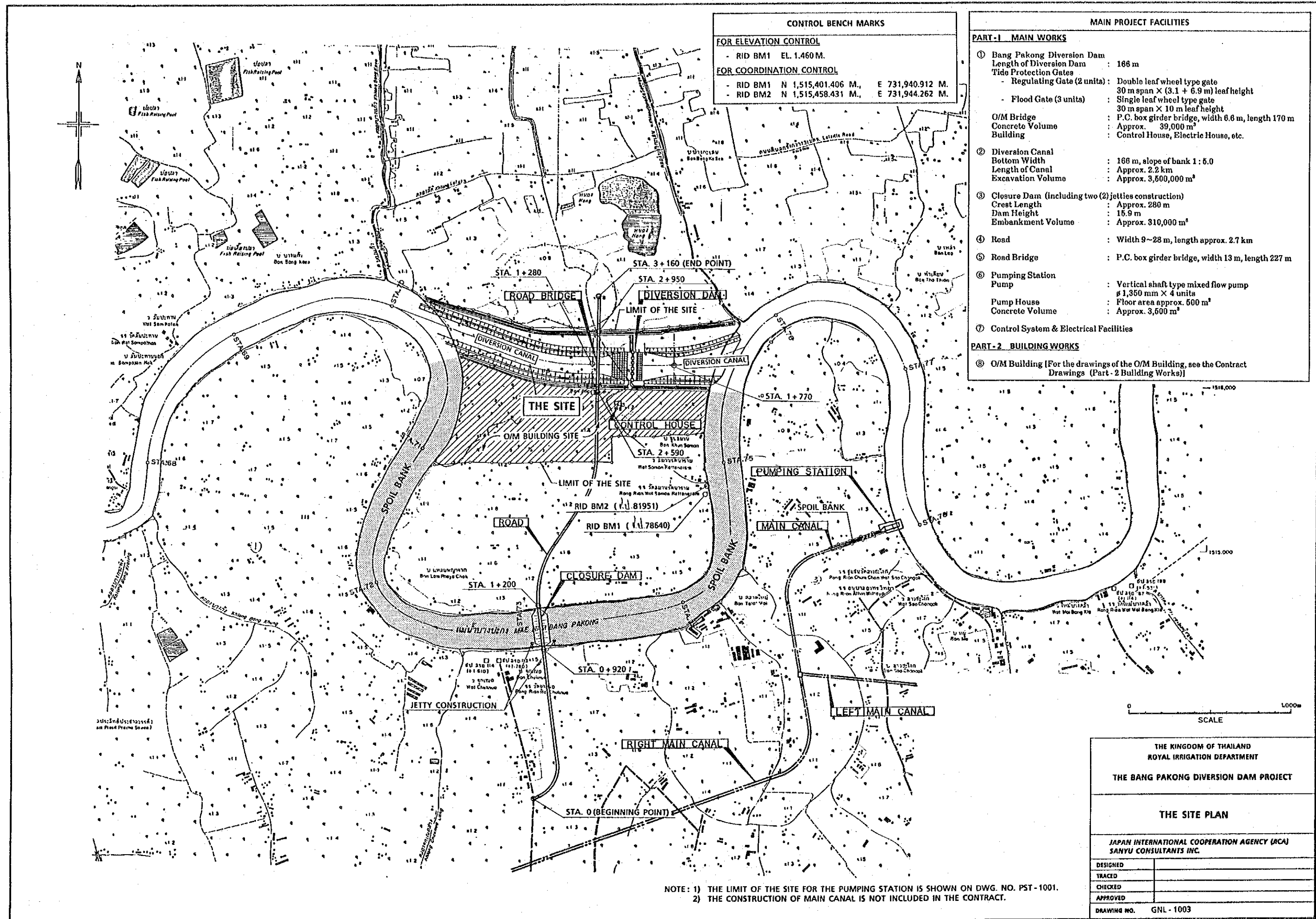
**LEGEND**

	Contour Line
	River or Existing Canal
	Building
	Road
	Track
	Center Line
	Drainage Ditch

THE KINGDOM OF THAILAND ROYAL IRRIGATION DEPARTMENT	
THE BANG PAKONG DIVERSION DAM PROJECT	
SYMBOLS AND GENERAL NOTES	
JAPAN INTERNATIONAL COOPERATION AGENCY (JICA) SANYU CONSULTANTS INC.	
DESIGNED	
TRACED	
CHECKED	
APPROVED	
DRAWING NO.	GNL - 1001



LOCATION MAP



CONTROL BENCH MARKS	
FOR ELEVATION CONTROL	
- RID BM1	EL. 1.460 M.
FOR COORDINATION CONTROL	
- RID BM1	N 1,515,401.406 M., E 731,940.912 M.
- RID BM2	N 1,515,458.431 M., E 731,944.262 M.

MAIN PROJECT FACILITIES	
<b>PART-1 MAIN WORKS</b>	
① Bang Pakong Diversion Dam	
Length of Diversion Dam	: 166 m
Tide Protection Gates	
- Regulating Gate (2 units)	: Double leaf wheel type gate 30 m span X (3.1 + 6.9 m) leaf height
- Flood Gate (3 units)	: Single leaf wheel type gate 30 m span X 10 m leaf height
O/M Bridge	: P.C. box girder bridge, width 6.6 m, length 170 m
Concrete Volume	: Approx. 39,000 m <sup>3</sup>
Building	: Control House, Electric House, etc.
② Diversion Canal	
Bottom Width	: 166 m, slope of bank 1 : 5.0
Length of Canal	: Approx. 2.2 km
Excavation Volume	: Approx. 3,500,000 m <sup>3</sup>
③ Closure Dam (including two (2) jetties construction)	
Crest Length	: Approx. 280 m
Dam Height	: 15.9 m
Embankment Volume	: Approx. 310,000 m <sup>3</sup>
④ Road	: Width 9~28 m, length approx. 2.7 km
⑤ Road Bridge	: P.C. box girder bridge, width 13 m, length 227 m
⑥ Pumping Station	
Pump	: Vertical shaft type mixed flow pump ø 1,350 mm X 4 units
Pump House	: Floor area approx. 500 m <sup>2</sup>
Concrete Volume	: Approx. 3,500 m <sup>3</sup>
⑦ Control System & Electrical Facilities	
<b>PART-2 BUILDINGWORKS</b>	
⑧ O/M Building	[For the drawings of the O/M Building, see the Contract Drawings (Part-2 Building Works)]

0 1000m  
SCALE

THE KINGDOM OF THAILAND  
ROYAL IRRIGATION DEPARTMENT  
THE BANG PAKONG DIVERSION DAM PROJECT

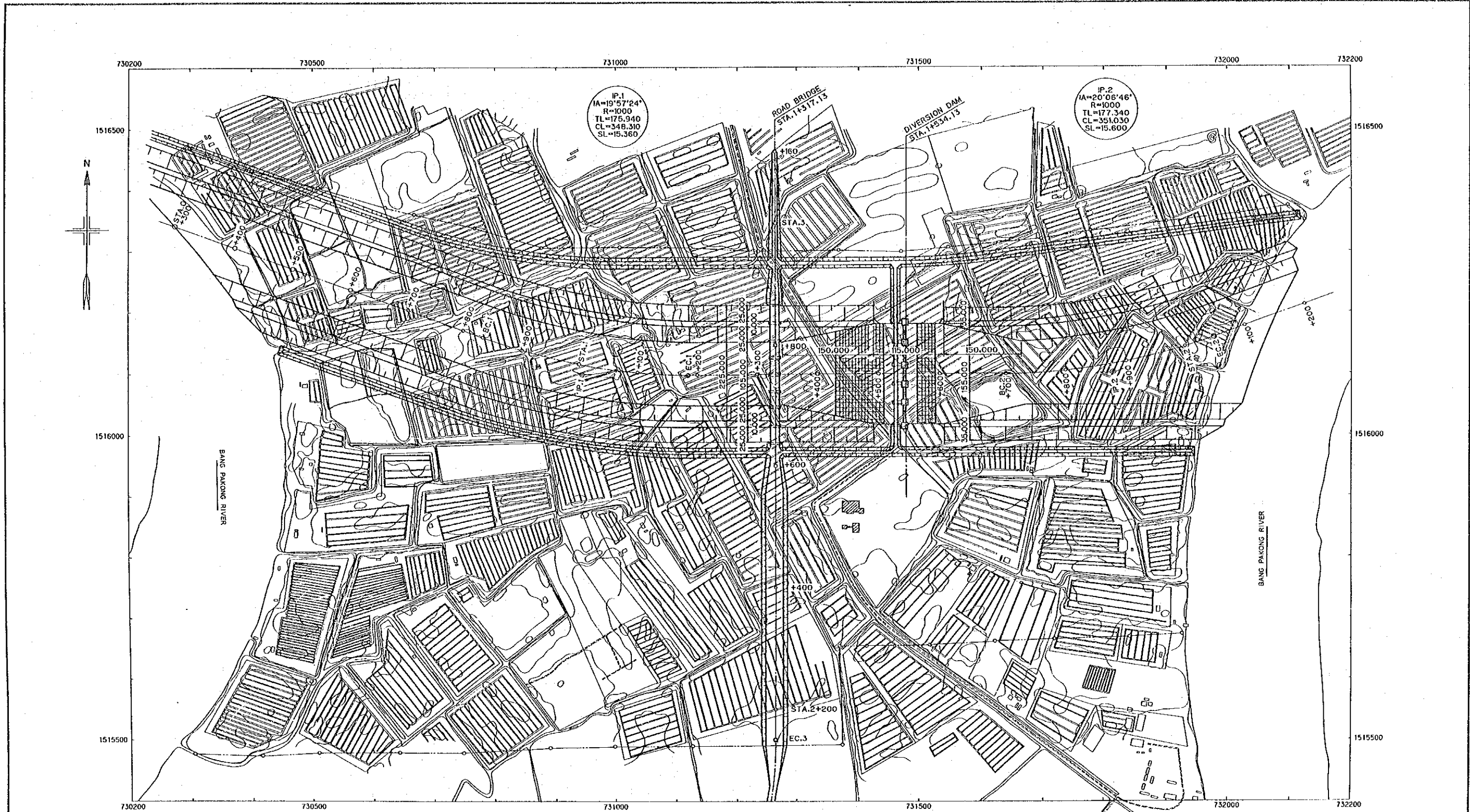
THE SITE PLAN

JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)  
SANYU CONSULTANTS INC.

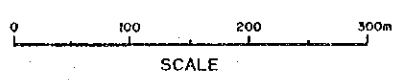
DESIGNED	
TRACED	
CHECKED	
APPROVED	
DRAWING NO.	GNL - 1003

NOTE: 1) THE LIMIT OF THE SITE FOR THE PUMPING STATION IS SHOWN ON DWG. NO. PST-1001.  
2) THE CONSTRUCTION OF MAIN CANAL IS NOT INCLUDED IN THE CONTRACT.

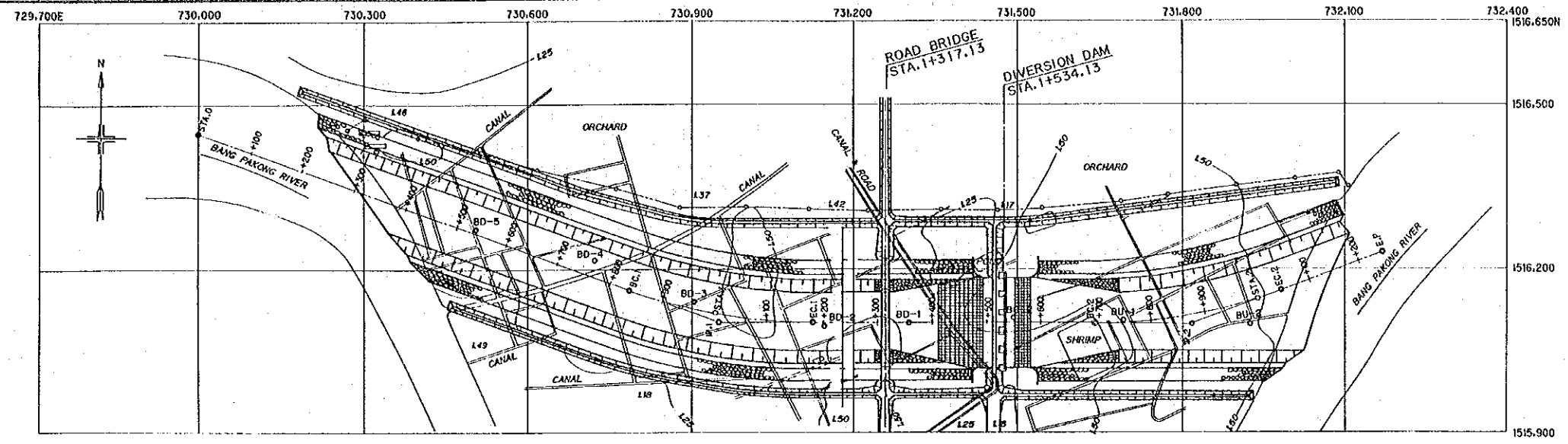
## **DIVERSION CANAL**



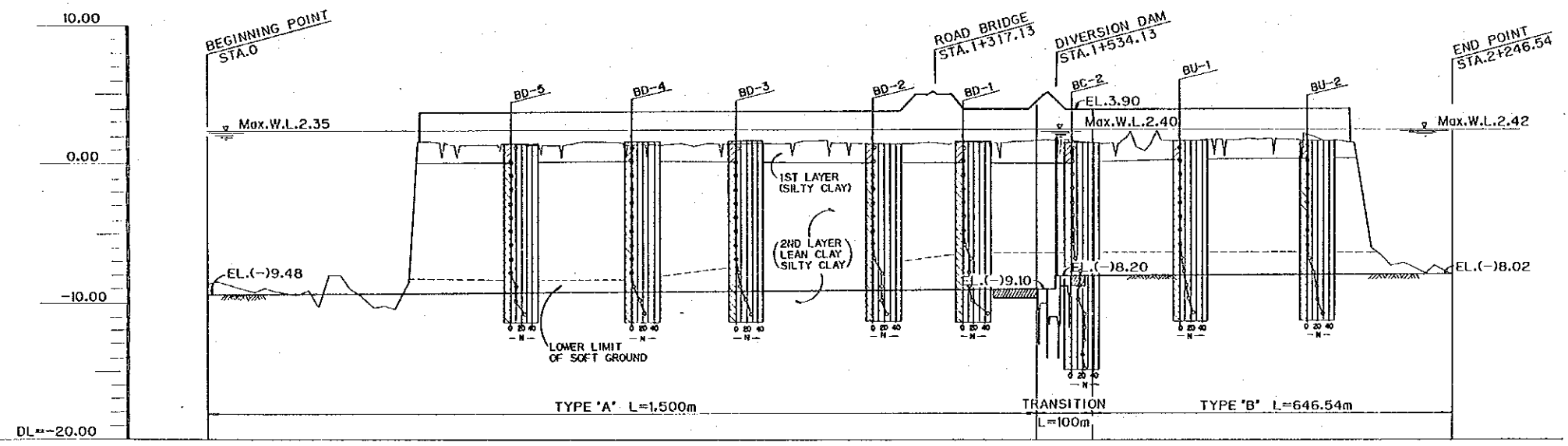
NOTES:  
 1. THE COORDINATIONS OF KEY STATIONS ARE AS FOLLOWS:  
 IP.1 | 1,516,100.00mN, 730,950.10mE  
 IP.2 | 1,516,100.00mN, 731,815.02mE



THE KINGDOM OF THAILAND ROYAL IRRIGATION DEPARTMENT	
THE BANG PAKONG DIVERSION DAM PROJECT	
DIVERSION CANAL GENERAL PLAN	
JAPAN INTERNATIONAL COOPERATION AGENCY (JICA) SANYU CONSULTANTS INC.	
DESIGNED	
TRACED	
CHECKED	
APPROVED	
DRAWING NO. DCN - 1001	



- NOTES:
- THE LIMIT OF THE DIVERSION CANAL, FOR PAYMENT, ARE AS FOLLOWS:
    - STA.0 TO STA.1+280 : L=1280m
    - STA.1+770 TO STA.2+247 : L=477m
  - THE COORDINATIONS OF KYE STATIONS ARE AS FOLLOWS:
    - IP.1 : 1,516,100.00mN  
730,950.10mE
    - IP.2 : 1,516,100.00mN  
731,815.02mE



PLAN	GRADIENT OF WATER SURFACE	2.35																															
	SLOPE OF CANAL BOTTOM	-9.48																															
	CREST OF DIKE			3.86	3.86	3.86	3.87	3.87	3.87	3.88	3.88	3.88	3.88	3.89	3.89	3.89	3.89	5.00	5.20	3.90	4.04	5.10	3.90	3.91	3.91	3.91	3.91	3.92	3.92	3.92			
	WATER LEVEL	2.35	2.36	2.36	2.36	2.36	2.37	2.37	2.37	2.38	2.38	2.38	2.38	2.39	2.39	2.39	2.39	2.39	2.39	2.40	2.40	2.40	2.40	2.41	2.41	2.41	2.41	2.41	2.42	2.42	2.42		
	CANAL BOTTOM ELEVATION	-9.48	-9.46	-9.43	-9.41	-9.38	-9.36	-9.33	-9.31	-9.28	-9.27	-9.26	-9.23	-9.21	-9.19	-9.18	-9.16	-9.15	-9.13	-9.11	-9.10	-9.10	-9.10	-8.18	-8.16	-8.16	-8.13	-8.11	-8.08	-8.07	-8.06	-8.03	-8.02
	GROUND ELEVATION	-6.79	-9.00	-10.29	-10.39	1.56	1.39	1.24	1.51	1.26	1.23	1.35	1.42	1.63	1.36	1.31	1.51	1.47	1.35	1.60	1.45	1.64	0.90	0.90	1.23	1.57	1.68	1.91	1.50	-6.07	-7.97	-9.07	
	ACCUM. DISTANCE	0.00	100.00	200.00	300.00	400.00	500.00	600.00	700.00	800.00	834.86	900.00	1000.00	1100.00	1183.17	1200.00	1300.00	1317.13	1400.00	1500.00	1534.13	1600.00	1684.81	1700.00	1800.00	1900.00	2000.00	2045.84	2100.00	2200.00	2246.54		
	DISTANCE	0.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	34.86	65.14	100.00	100.00	83.17	16.83	100.00	17.13	82.87	100.00	34.13	65.87	94.81	5.19	100.00	100.00	100.00	45.84	54.16	100.00	46.54		
	STATION	STA.0	+100	+200	+300	+400	+500	+600	+700	+800	BC.1	+900	STA.1	+100	EC.1	+200	+300	+317.13	+400	+500	+534.13	+600	BC.2	+700	+800	+900	STA.2	EC.2	+100	+200	E.P.		
	CURVE ARRANGEMENT	IP.1 IA=19°57'24" R=1000 TL=175.94 CL=548.31 SL=15.36																IP.2 IA=20°06'46" R=1000 TL=177.34 CL=351.03 SL=15.60															

THE KINGDOM OF THAILAND  
ROYAL IRRIGATION DEPARTMENT

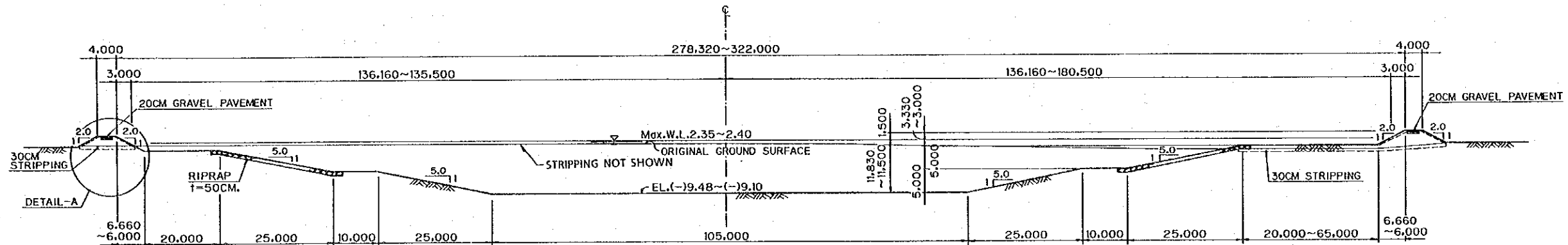
**THE BANG PAKONG DIVERSION DAM PROJECT**

**DIVERSION CANAL  
PLAN & PROFILE**

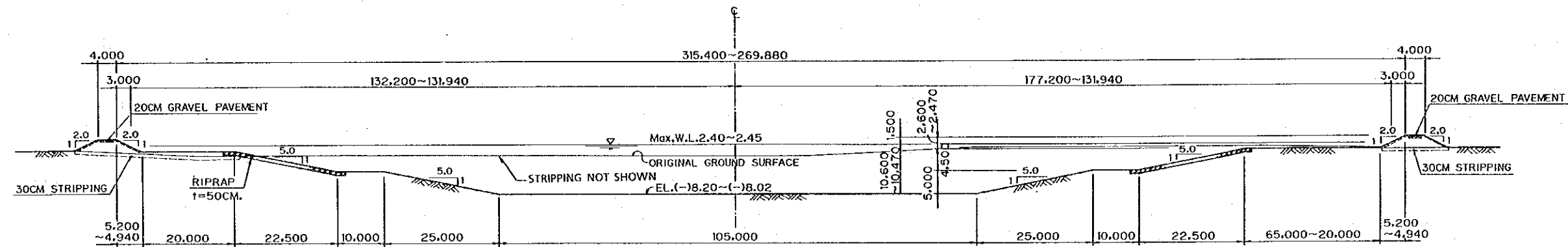
JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)  
SANYU CONSULTANTS INC.

DESIGNED \_\_\_\_\_  
TRACED \_\_\_\_\_  
CHECKED \_\_\_\_\_  
APPROVED \_\_\_\_\_

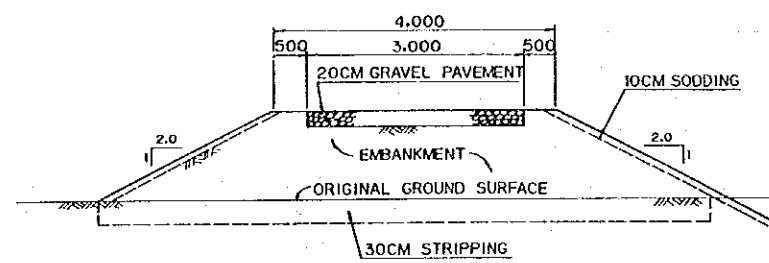
DRAWING NO. DCN-1002



TYPE 'A' SCALE 'B'  
(STA.0~STA.1+500)

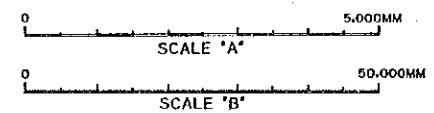


TYPE 'B' SCALE 'B'  
(STA.1+600~STA.2+246)



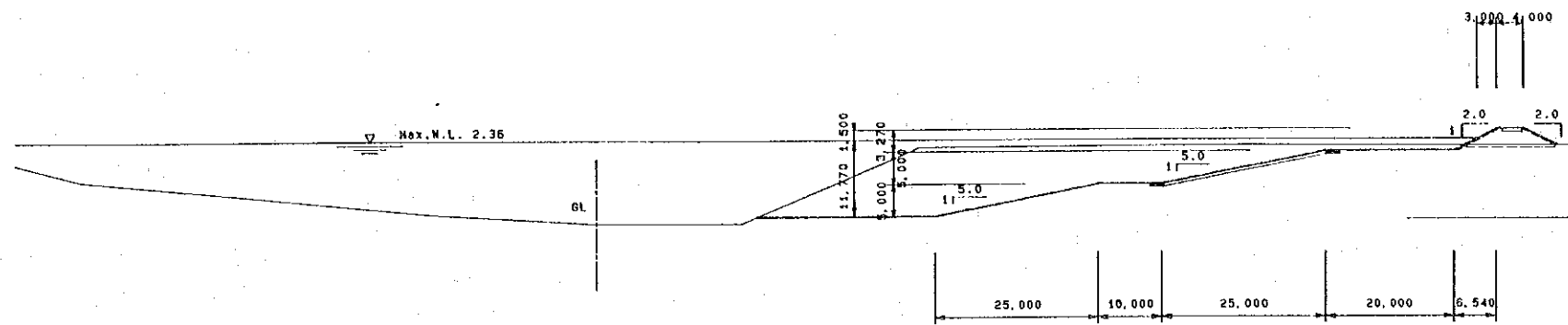
DETAIL-A  
SCALE 'A'

THE THICKNESS OF STRIPPING AT THE SITES OF THE BANG PAKONG DIVERSION DAM, ROAD BRIDGE AND DIVERSION CANAL SHALL BE 30 CM.



THE KINGDOM OF THAILAND ROYAL IRRIGATION DEPARTMENT	
THE BANG PAKONG DIVERSION DAM PROJECT	
DIVERSION CANAL TYPICAL SECTION	
JAPAN INTERNATIONAL COOPERATION AGENCY (JICA) SANYU CONSULTANTS INC.	
DESIGNED	
TRACED	
CHECKED	
APPROVED	
DRAWING NO. DCN - 1003	

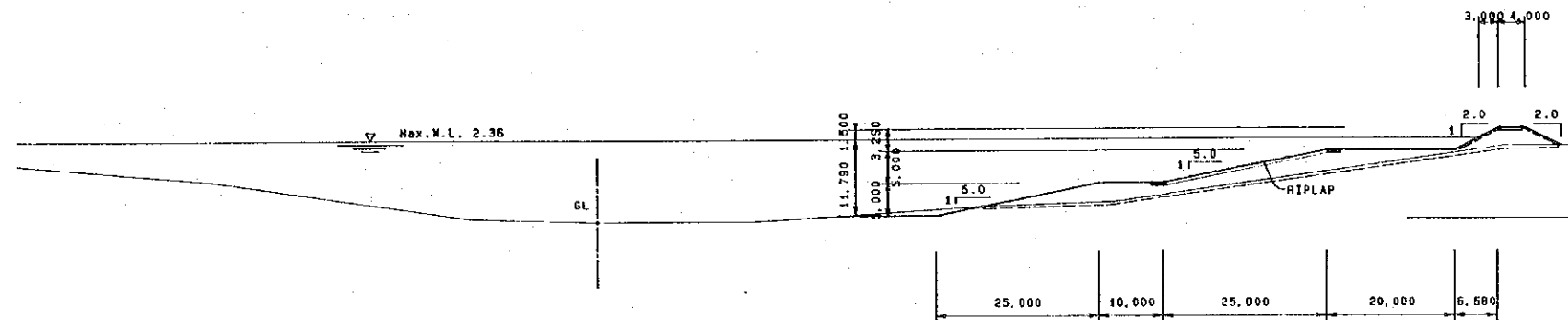
DL = -10.00



STA. 0+300

GH = -10.19  
FH = -9.410

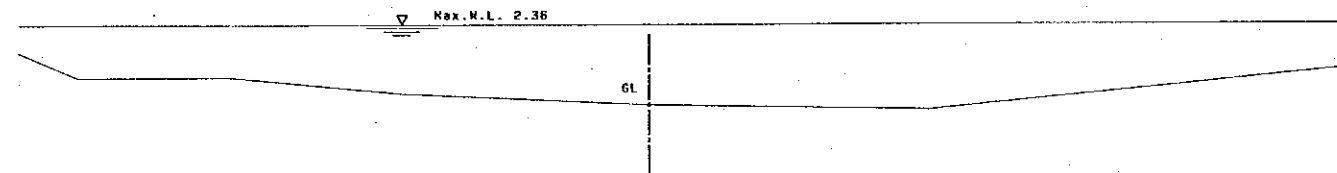
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STA. 0+200

GH = -10.28  
FH = -9.410

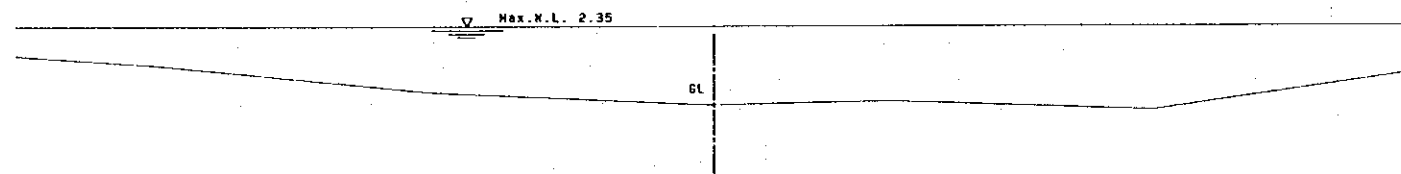
DL = -10.00



STA. 0+100

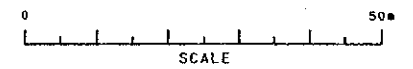
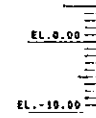
GH = -9.00  
FH = -9.450

DL = -10.00



STA. 0

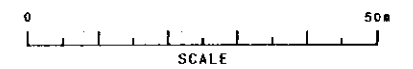
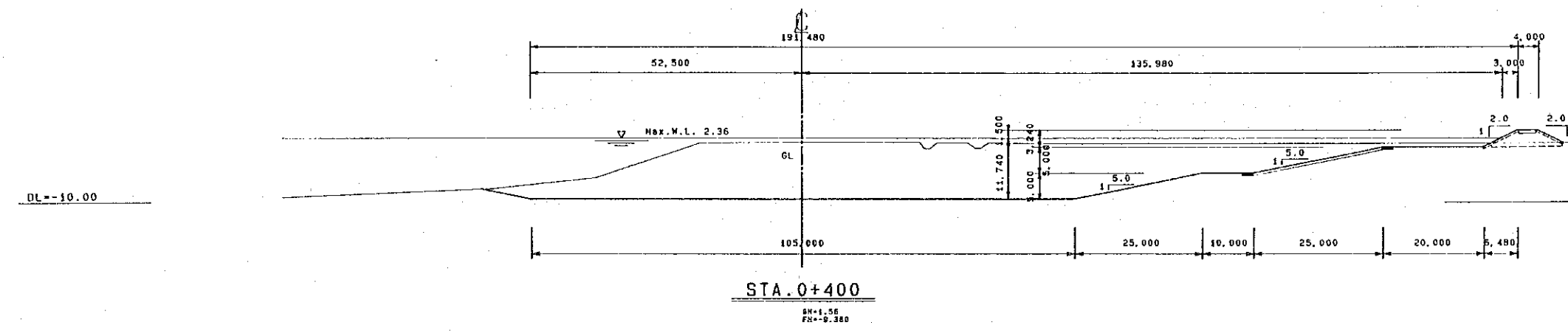
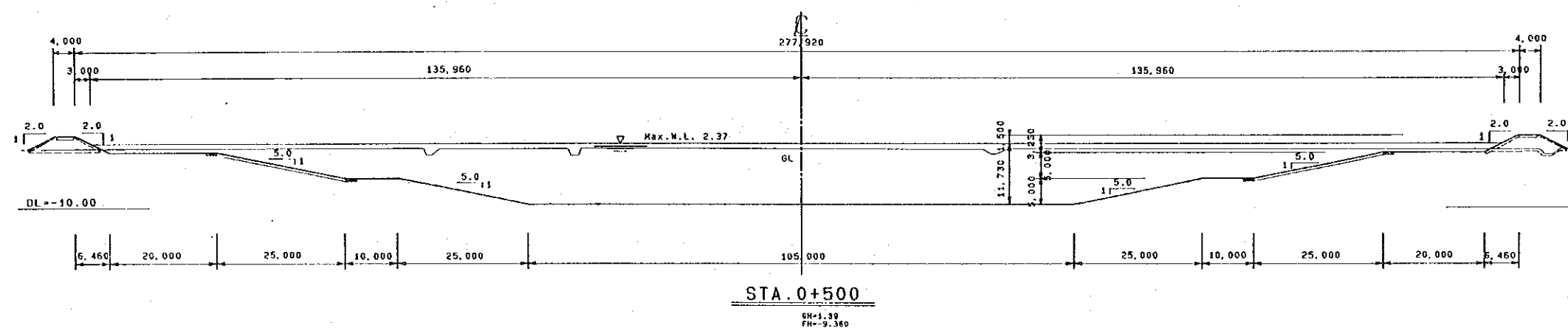
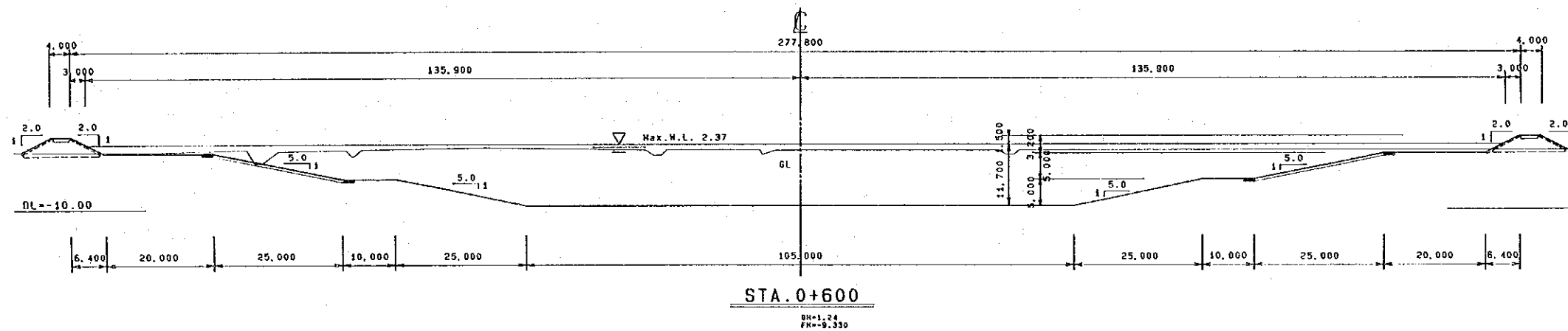
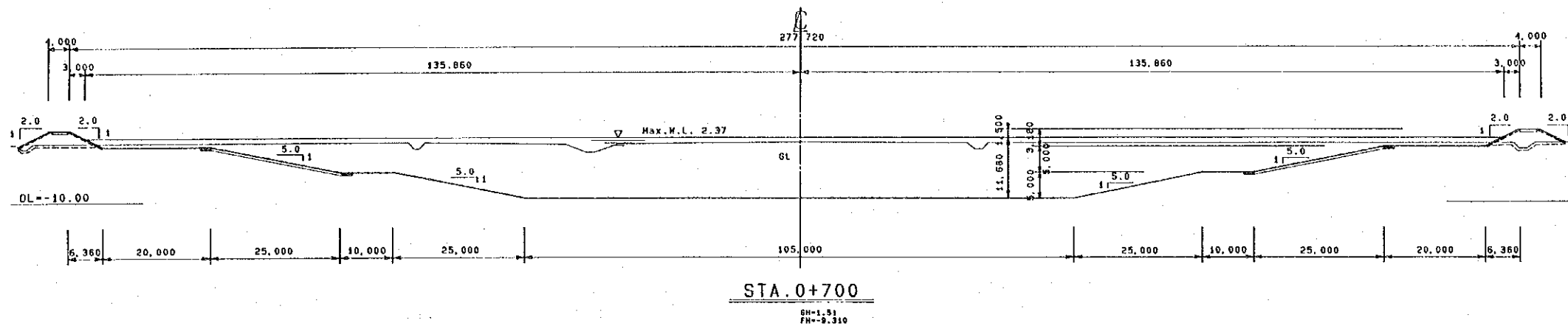
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FH = -9.480



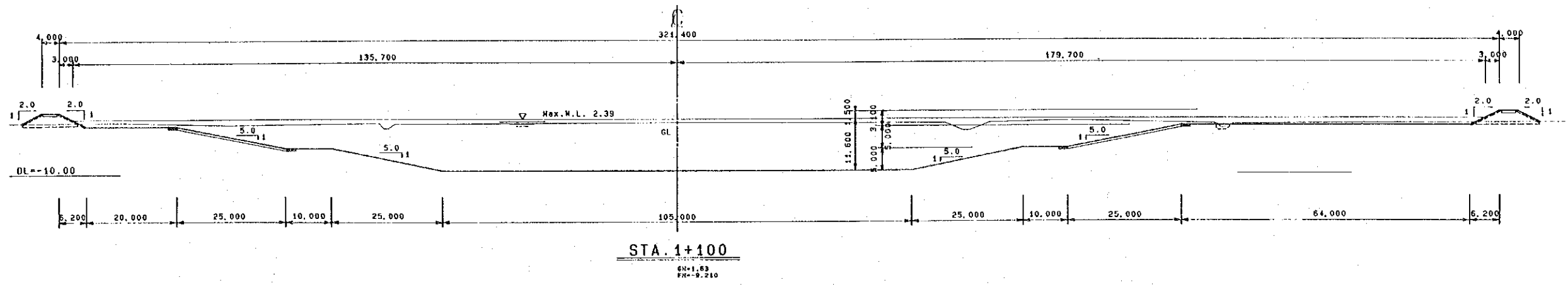
**LEGEND**  
 GH..... ORIGINAL GROUND ELEVATION AT CENTER  
 FH..... PLANNED ELEVATION AT CENTER  
 Max. W.L. .... WATER LEVEL AT TIME OF DESIGN FLOOD  
 DL..... DATUM LINE  
 TOP ELEVATION OF SIDE DIKES IS = Max. W.L. + 1500mm  
 & ..... CENTER OF DIVERSION CANAL  
 GL..... ORIGINAL GROUND SURFACE

THE KINGDOM OF THAILAND ROYAL IRRIGATION DEPARTMENT	
THE BANG PAKONG DIVERSION DAM PROJECT	
DIVERSION CANAL CROSS SECTIONS (1/7)	
JAPAN INTERNATIONAL COOPERATION AGENCY (JICA) SANYU CONSULTANTS INC.	
DESIGNED	
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DRAWING NO. DCN - 1004	



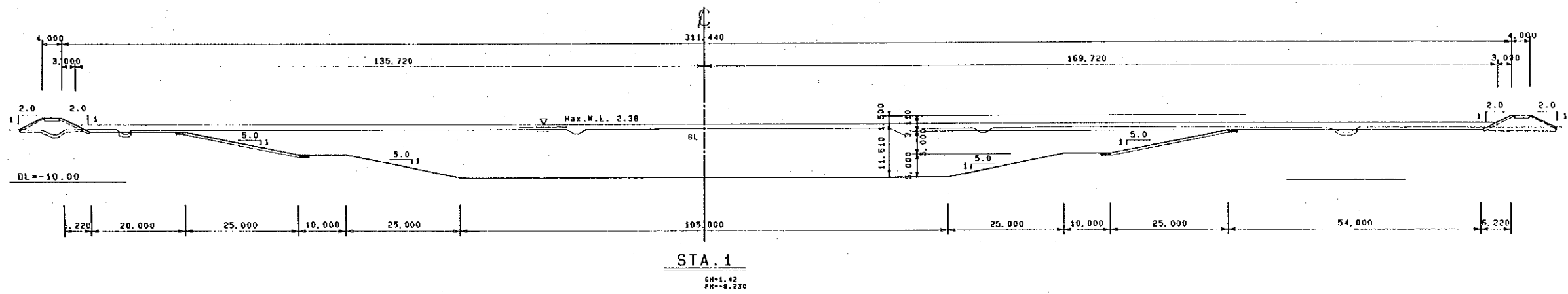


THE KINGDOM OF THAILAND ROYAL IRRIGATION DEPARTMENT	
THE BANG PAKONG DIVERSION DAM PROJECT	
DIVERSION CANAL CROSS SECTIONS (2/7)	
JAPAN INTERNATIONAL COOPERATION AGENCY (JICA) SANYU CONSULTANTS INC.	
DESIGNED	
TRACED	
CHECKED	
APPROVED	
DRAWING NO. DCN-1005	



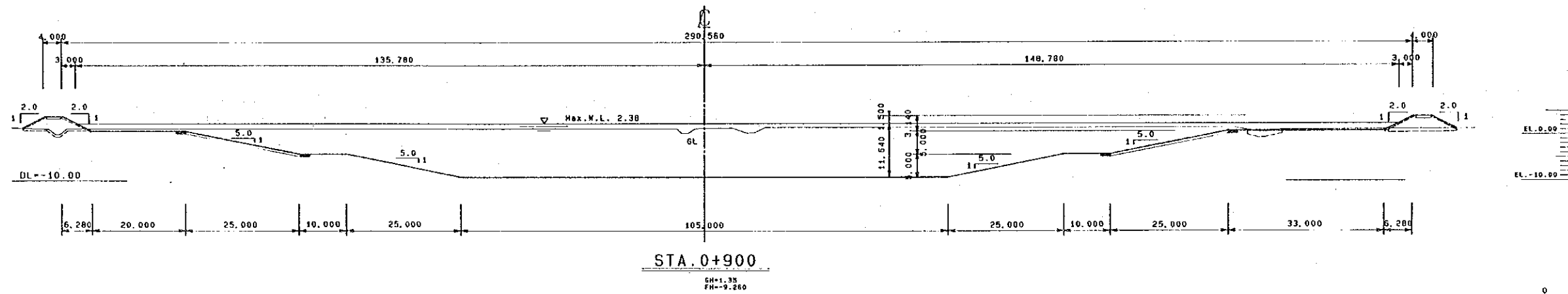
STA. 1+100

SH-1.03  
FH-9.210



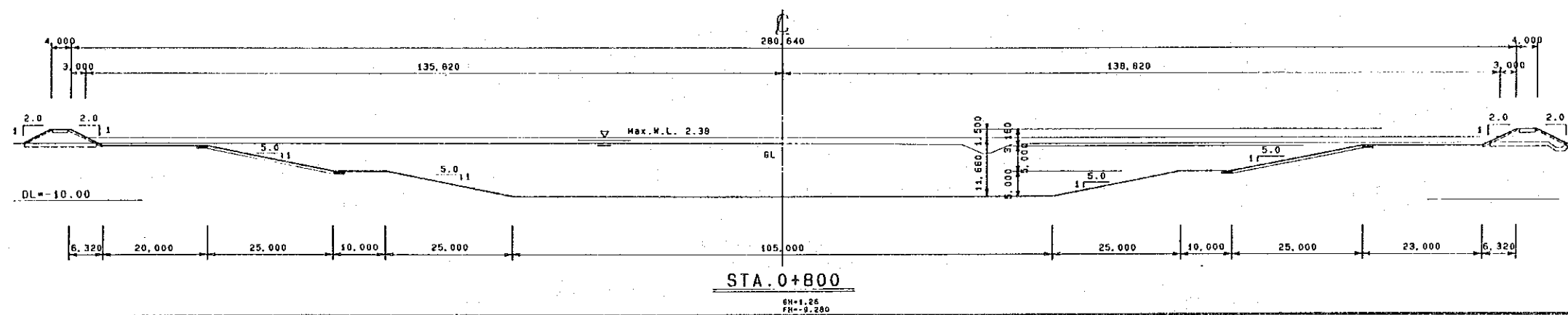
STA. 1

SH-1.42  
FH-9.210



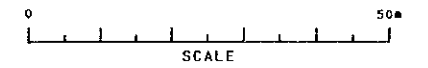
STA. 0+900

SH-1.35  
FH-9.260

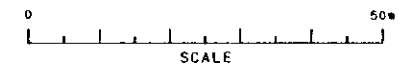
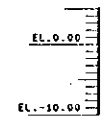
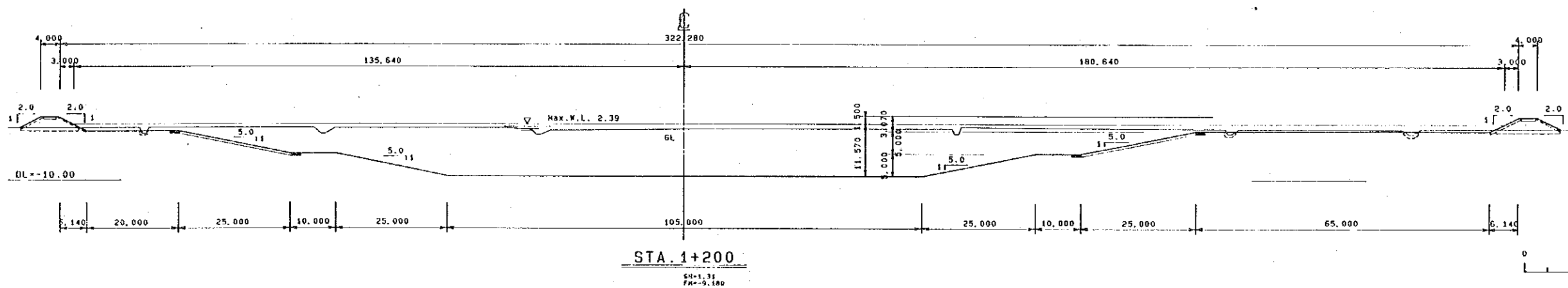
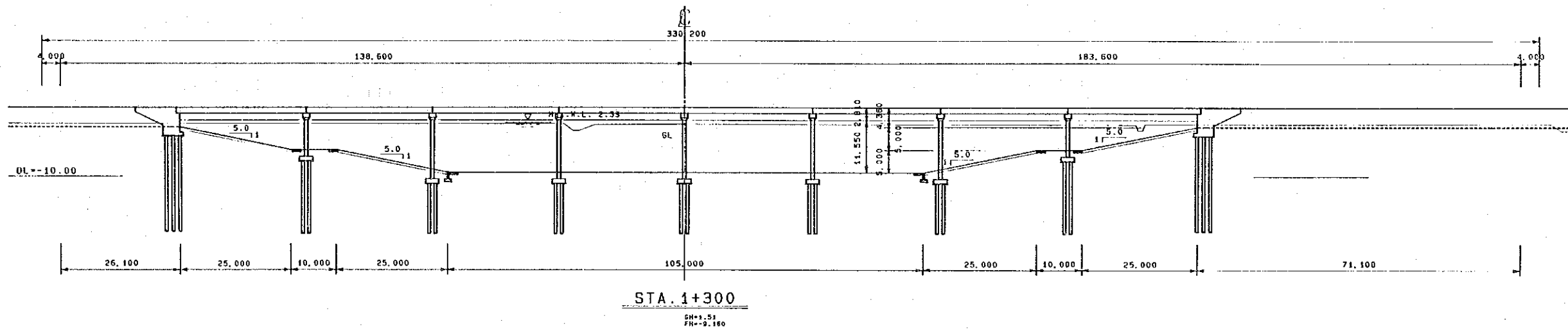
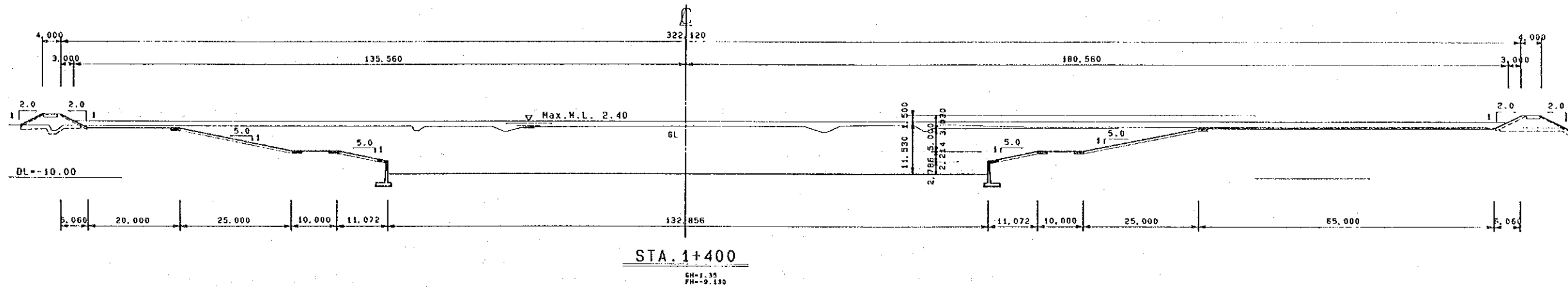


STA. 0+800

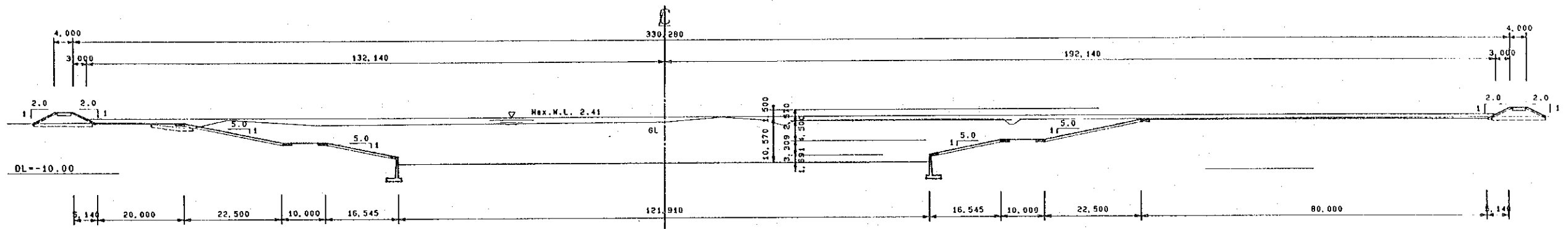
SH-1.25  
FH-9.280



THE KINGDOM OF THAILAND ROYAL IRRIGATION DEPARTMENT	
THE BANG PAKONG DIVERSION DAM PROJECT	
DIVERSION CANAL CROSS SECTIONS (3/7)	
JAPAN INTERNATIONAL COOPERATION AGENCY (JICA) SANYU CONSULTANTS INC.	
DESIGNED	
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APPROVED	
DRAWING NO. DCN-1006	

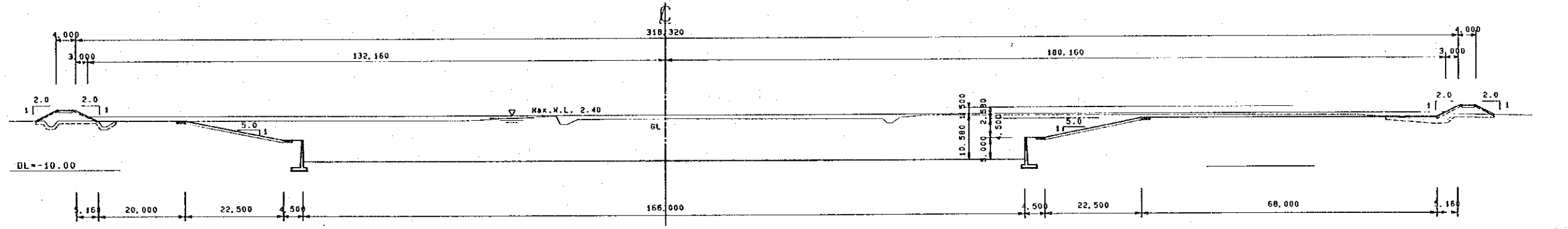


THE KINGDOM OF THAILAND ROYAL IRRIGATION DEPARTMENT	
THE BANG PAKONG DIVERSION DAM PROJECT	
DIVERSION CANAL CROSS SECTIONS (4/7)	
JAPAN INTERNATIONAL COOPERATION AGENCY (JICA) SANYU CONSULTANTS INC.	
DESIGNED	
TRACED	
CHECKED	
APPROVED	
DRAWING NO. DCN-1007	



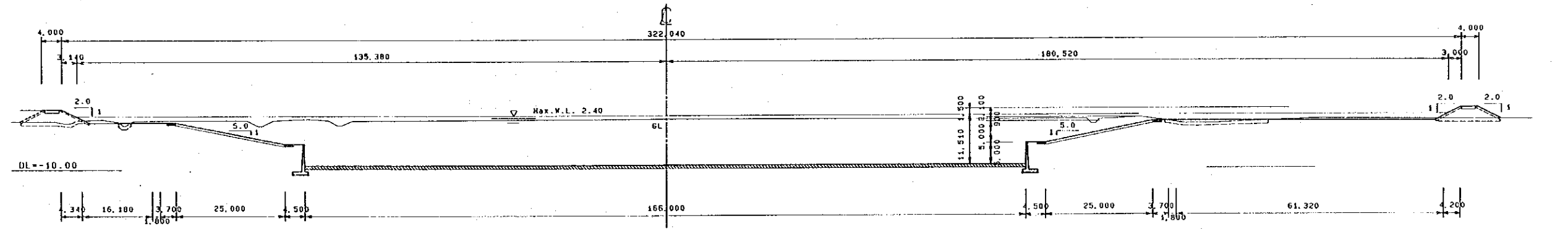
STA. 1+700

SH-1.23  
FH-8.160



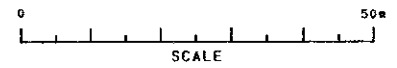
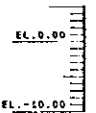
STA. 1+592.13

SH-1.54  
FH-8.180

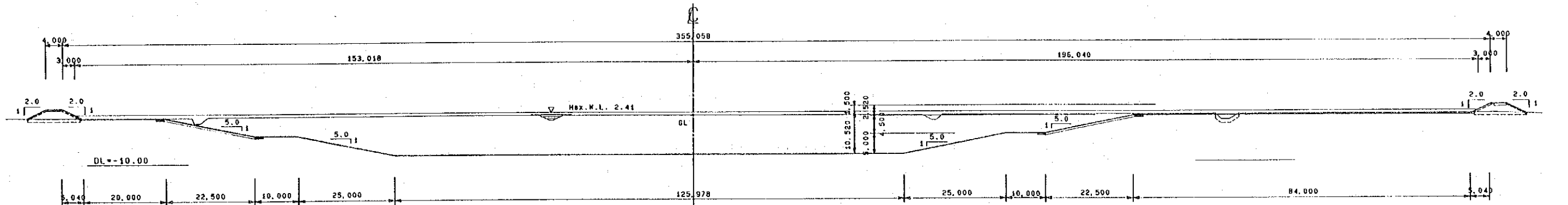


STA. 1+477.13

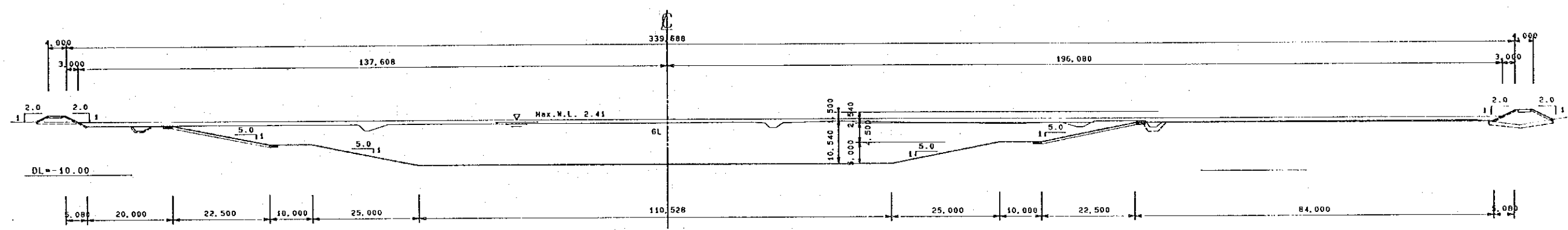
SH-1.60  
FH-8.110



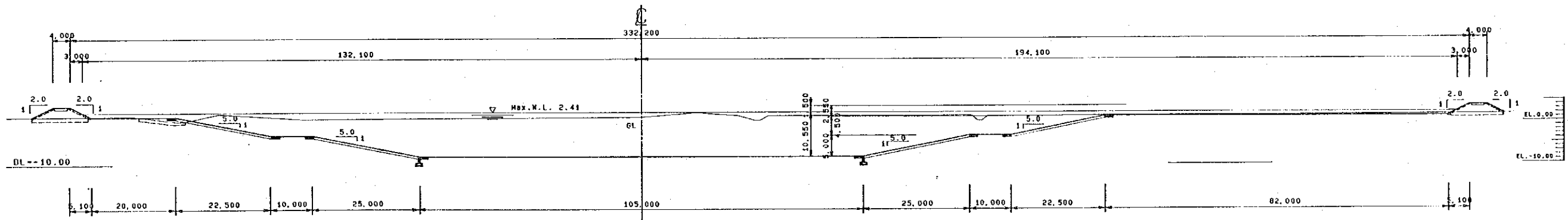
THE KINGDOM OF THAILAND ROYAL IRRIGATION DEPARTMENT	
THE BANG PAKONG DIVERSION DAM PROJECT	
DIVERSION CANAL CROSS SECTIONS (5/7)	
JAPAN INTERNATIONAL COOPERATION AGENCY (JICA) SANYU CONSULTANTS INC.	
DESIGNED	
TRACED	
CHECKED	
APPROVED	
DRAWING NO. DCN - 1008	



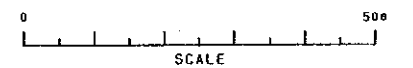
STA. 1+900  
 GN=1.89  
 FN=0.110



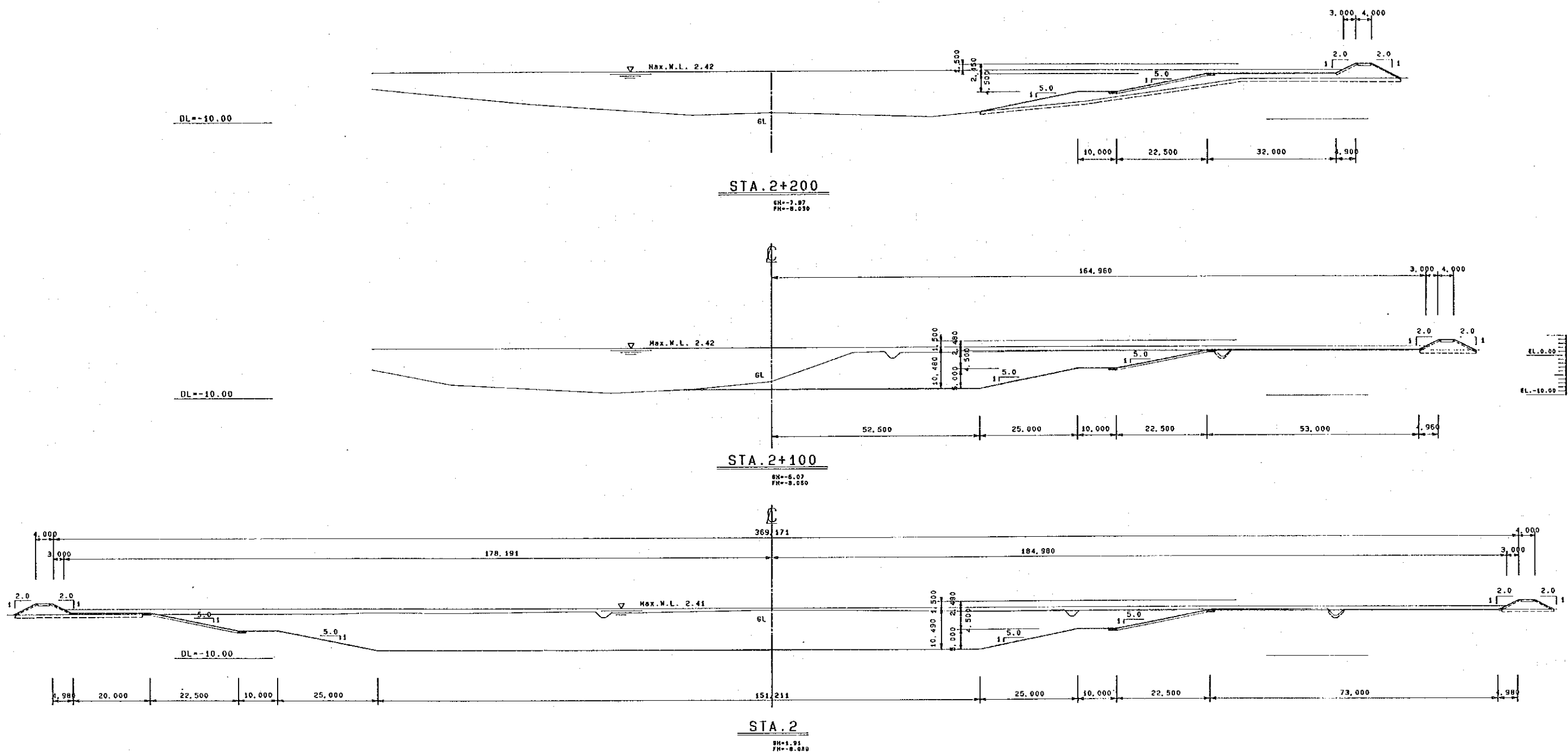
STA. 1+800  
 GN=1.97  
 FN=0.130



STA. 1+742.13  
 GN=1.23  
 FN=0.140

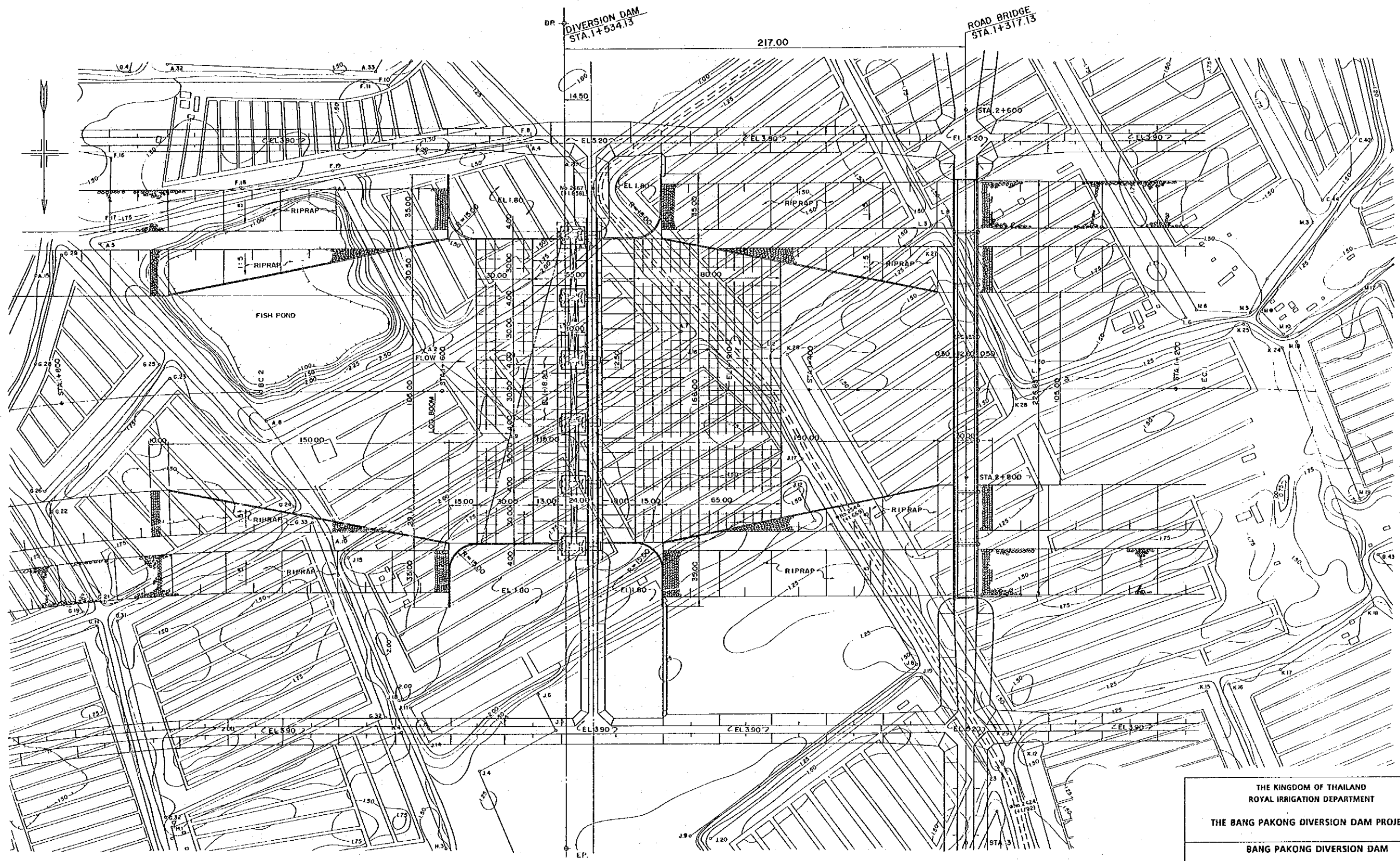


THE KINGDOM OF THAILAND ROYAL IRRIGATION DEPARTMENT	
THE BANG PAKONG DIVERSION DAM PROJECT	
DIVERSION CANAL CROSS SECTIONS (6/7)	
JAPAN INTERNATIONAL COOPERATION AGENCY (JICA) SANYU CONSULTANTS INC.	
DESIGNED	
TRACED	
CHECKED	
APPROVED	
DRAWING NO. DCN-1009	



THE KINGDOM OF THAILAND ROYAL IRRIGATION DEPARTMENT	
THE BANG PAKONG DIVERSION DAM PROJECT	
DIVERSION CANAL CROSS SECTIONS (7/7)	
JAPAN INTERNATIONAL COOPERATION AGENCY (JICA) SANYU CONSULTANTS INC.	
DESIGNED	
TRACED	
CHECKED	
APPROVED	
DRAWING NO. DCN-1010	

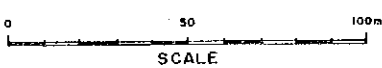
# **BANG PAKONG DIVERSION DAM**



**GENERAL PLAN**

COORDINATES OF STATION

STATION	N	E
BP.	1515,900	731,477
EP.	1516,350	731,477



**NOTES**

1. ALL DIMENSIONS ARE IN METERS, UNLESS OTHERWISE SHOWN.
2. ALL ELEVATIONS ARE IN METERS.

THE KINGDOM OF THAILAND  
ROYAL IRRIGATION DEPARTMENT

THE BANG PAKONG DIVERSION DAM PROJECT

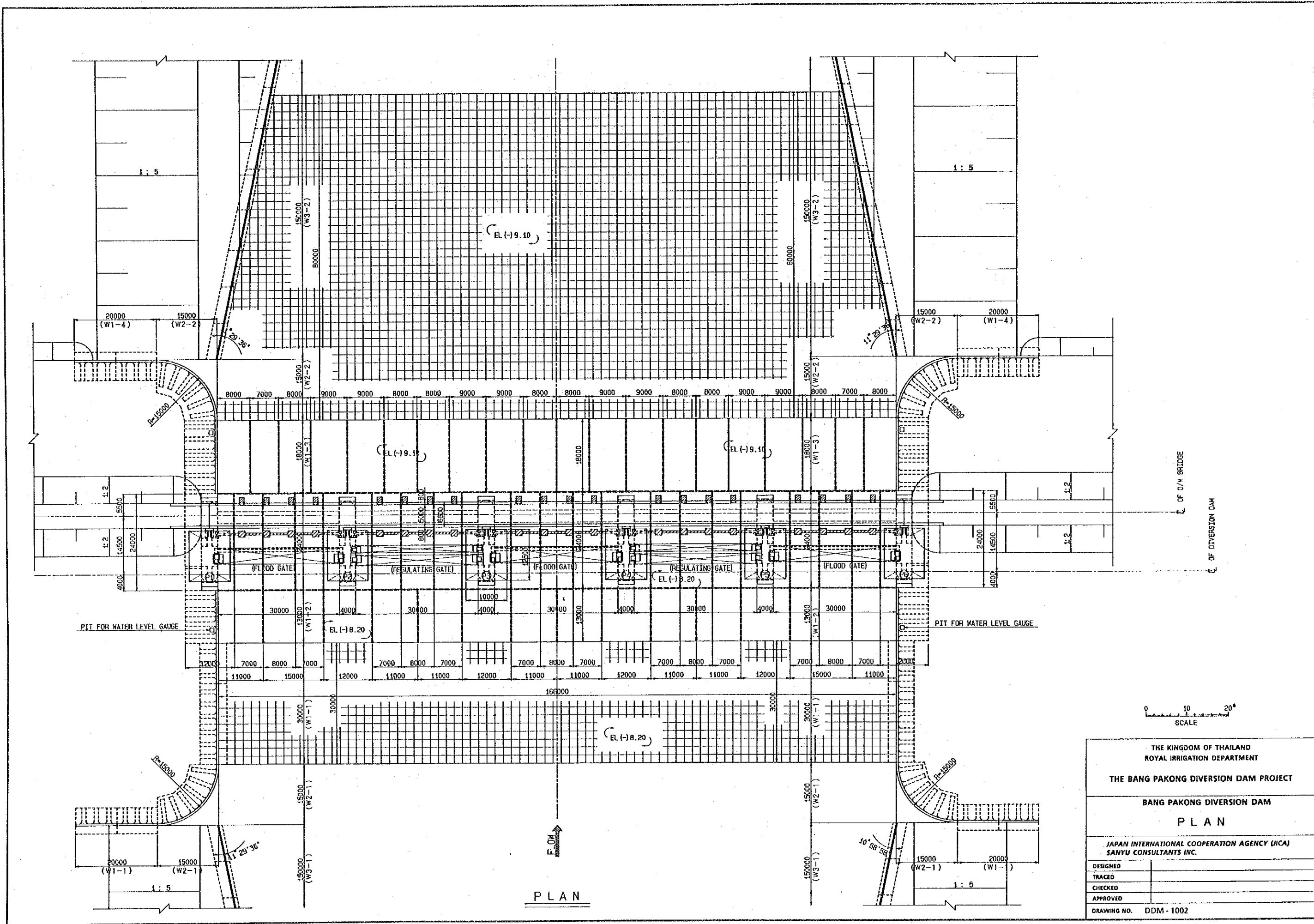
BANG PAKONG DIVERSION DAM  
GENERAL PLAN

JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)  
SANYU CONSULTANTS INC.

DESIGNED	
TRACED	
CHECKED	
APPROVED	

DRAWING NO. DDM - 1001

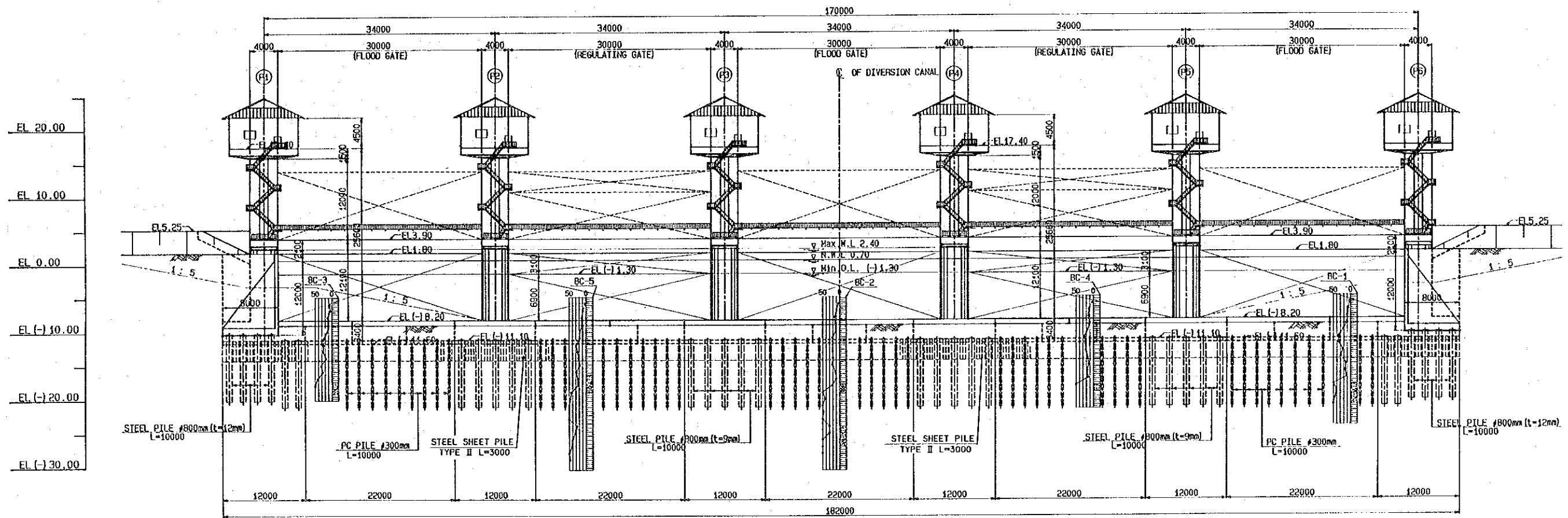




THE KINGDOM OF THAILAND  
 ROYAL IRRIGATION DEPARTMENT  
**THE BANG PAKONG DIVERSION DAM PROJECT**  
 BANG PAKONG DIVERSION DAM  
**PLAN**

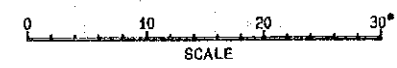
JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)  
 SANYU CONSULTANTS INC.

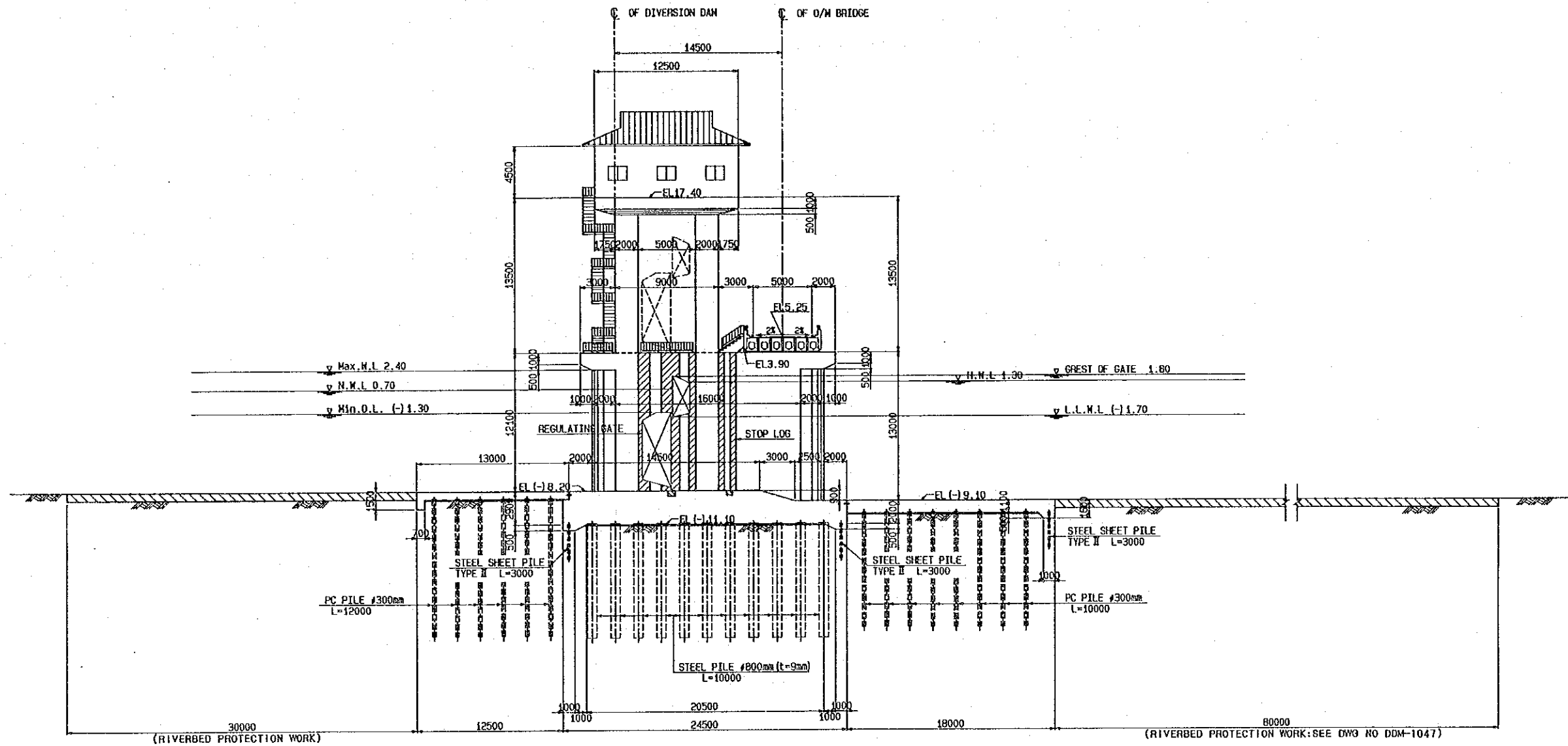
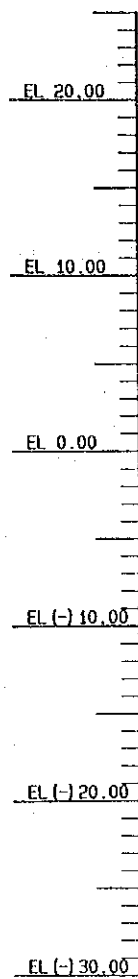
DESIGNED	
TRACED	
CHECKED	
APPROVED	
DRAWING NO. DDM - 1002	



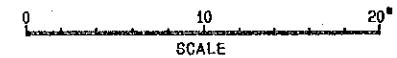
ELEVATION

THE KINGDOM OF THAILAND ROYAL IRRIGATION DEPARTMENT	
THE BANG PAKONG DIVERSION DAM PROJECT	
BANG PAKONG DIVERSION DAM	
ELEVATION	
JAPAN INTERNATIONAL COOPERATION AGENCY (JICA) SANYU CONSULTANTS INC.	
DESIGNED	
TRACED	
CHECKED	
APPROVED	
DRAWING NO.	DDM - 1003

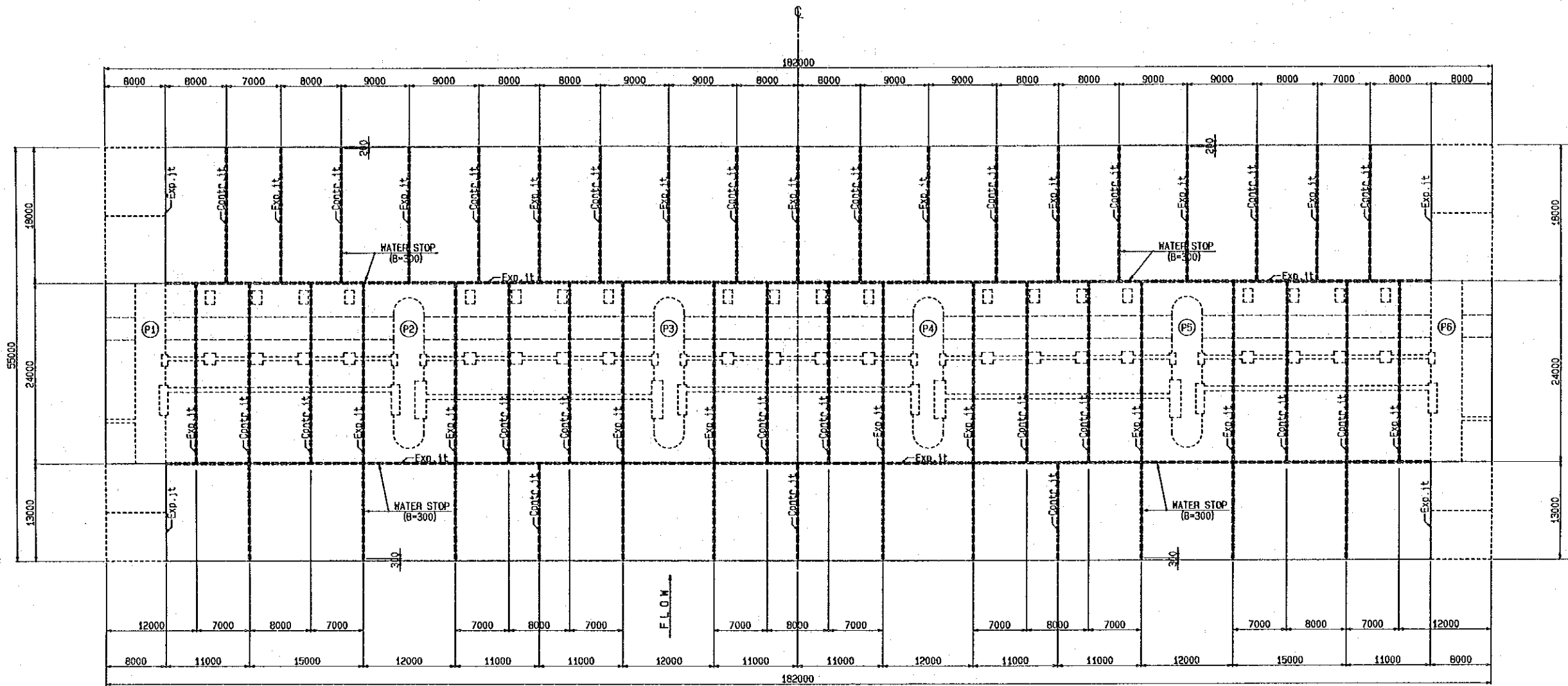




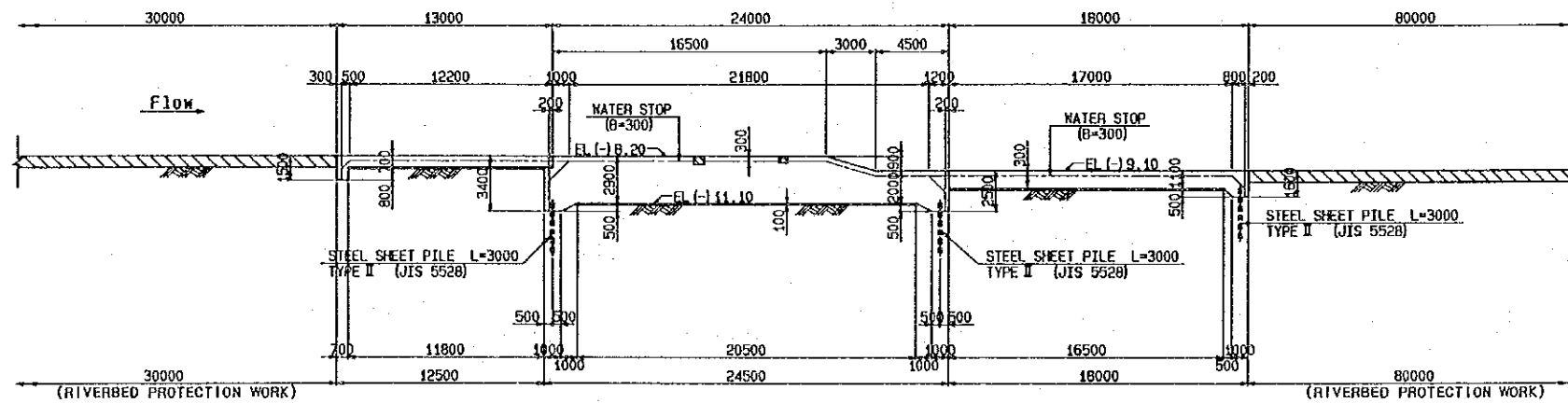
TYPICAL SECTION



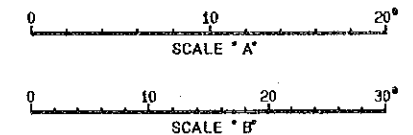
THE KINGDOM OF THAILAND ROYAL IRRIGATION DEPARTMENT	
THE BANG PAKONG DIVERSION DAM PROJECT	
BANG PAKONG DIVERSION DAM	
TYPICAL SECTION	
JAPAN INTERNATIONAL COOPERATION AGENCY (JICA) SANYU CONSULTANTS INC.	
DESIGNED	
TRACED	
CHECKED	
APPROVED	
DRAWING NO.	DDM-1004



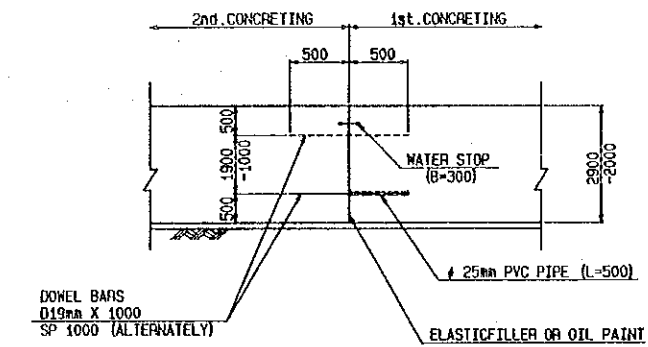
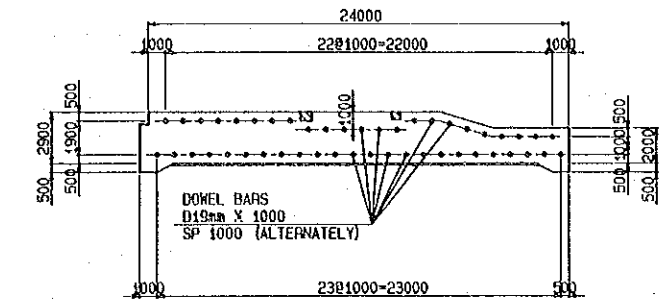
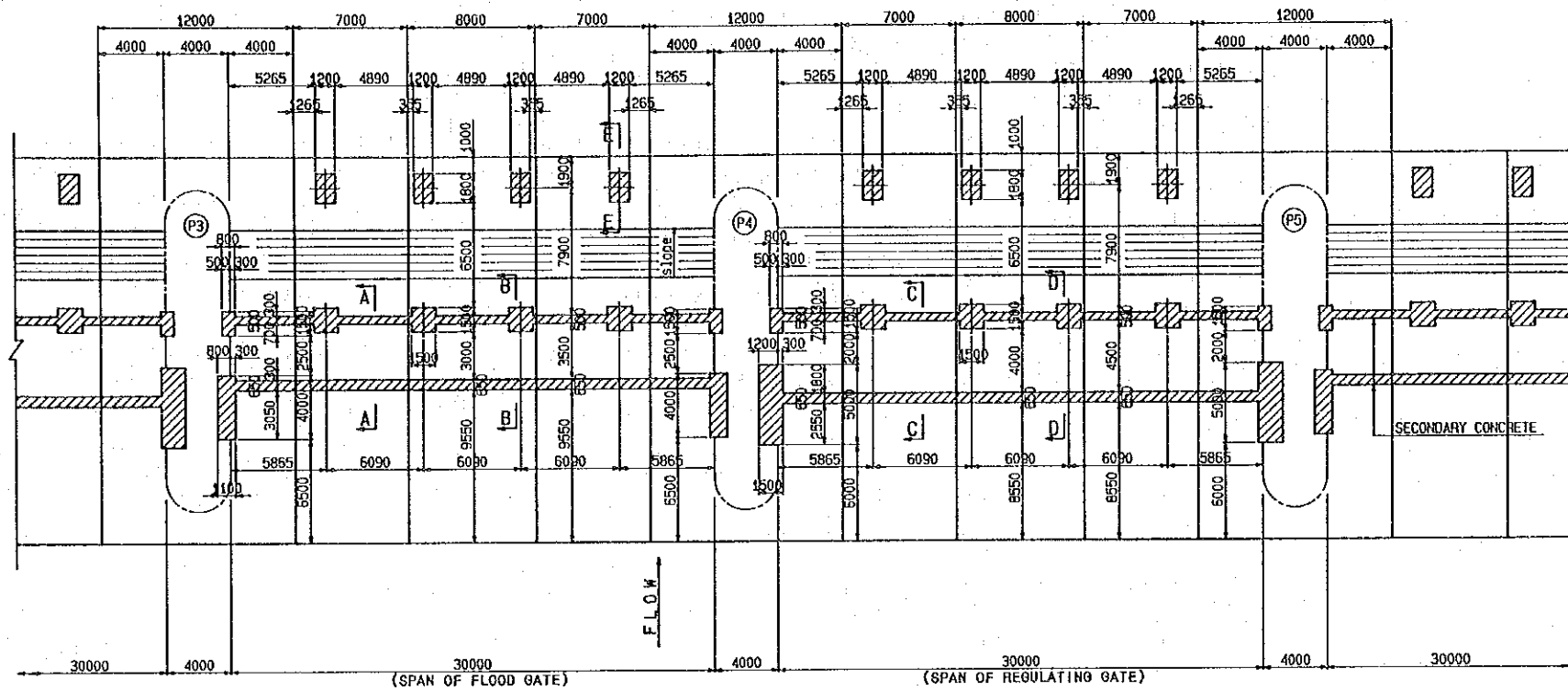
PLAN  
SCALE "B"



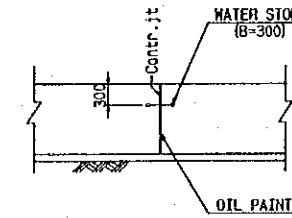
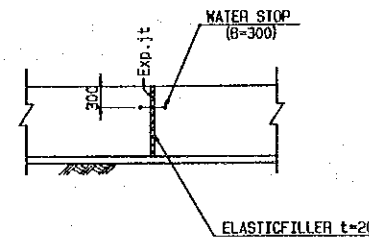
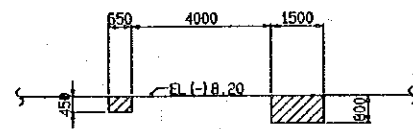
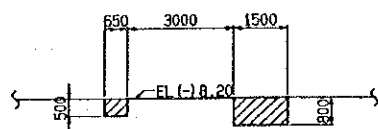
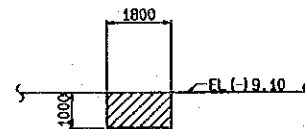
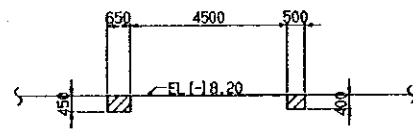
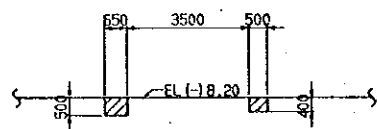
TYPICAL SECTION  
SCALE "A"



THE KINGDOM OF THAILAND ROYAL IRRIGATION DEPARTMENT	
THE BANG PAKONG DIVERSION DAM PROJECT	
BANG PAKONG DIVERSION DAM APRON STRUCTURE (1/2)	
JAPAN INTERNATIONAL COOPERATION AGENCY (JICA) SANYU CONSULTANTS INC.	
DESIGNED	
TRACED	
CHECKED	
APPROVED	
DRAWING NO. DDM - 1005	

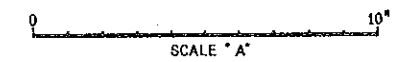
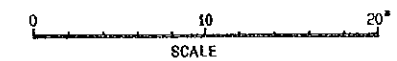


DETAIL OF DOWEL BARS  
NO SCALE



NOTES

- FOUNDATION PILES ARE NOT SHOWN IN THIS DRAWING



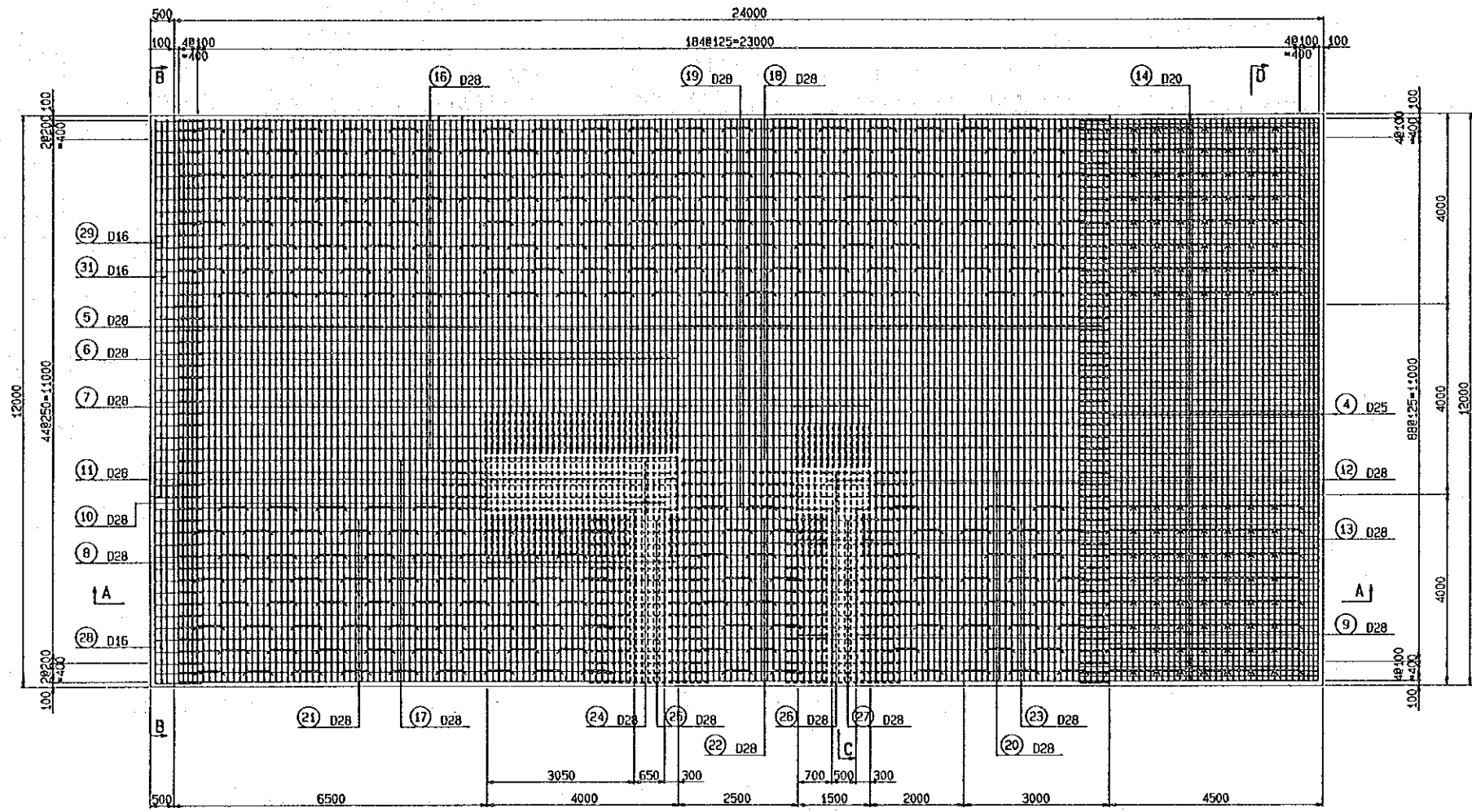
THE KINGDOM OF THAILAND  
ROYAL IRRIGATION DEPARTMENT  
THE BANG PAKONG DIVERSION DAM PROJECT

BANG PAKONG DIVERSION DAM  
APRON STRUCTURE (2/2)

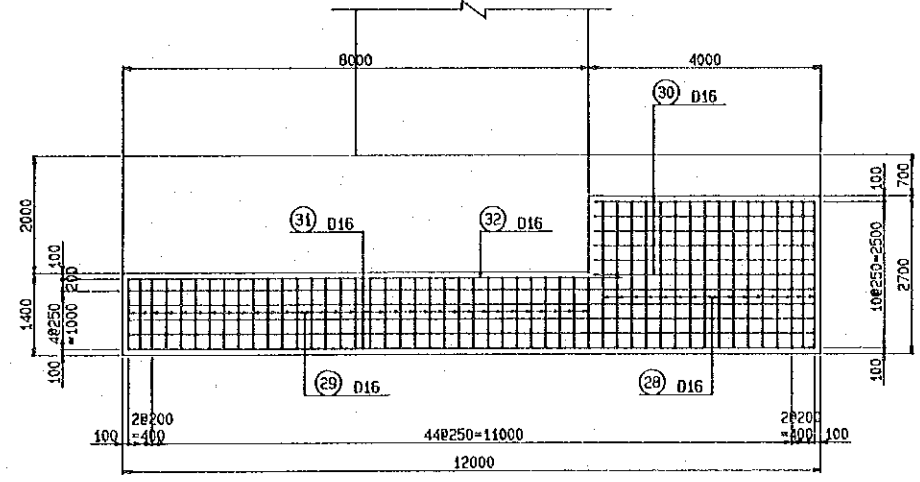
JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)  
SANYU CONSULTANTS INC.

DESIGNED  
TRACED  
CHECKED  
APPROVED

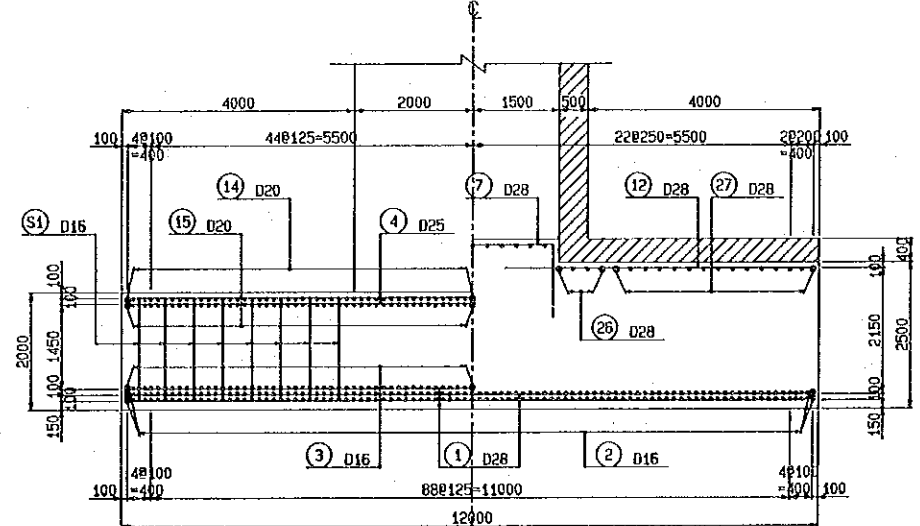
DRAWING NO. DDM - 1005



PLAN P1 P2

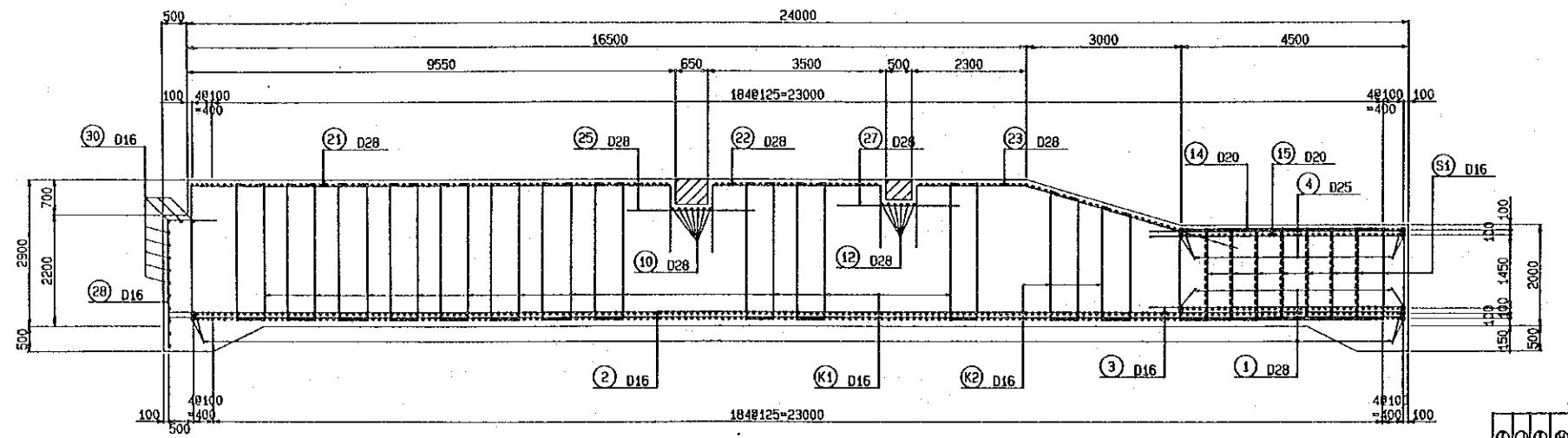


SECTION B-B

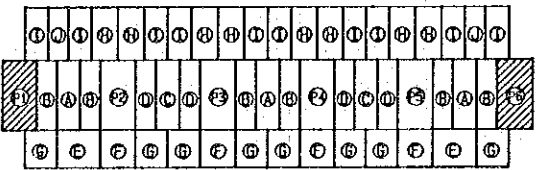
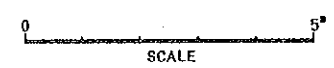


SECTION D-D

SECTION C-C



SECTION A-A



KEY PLAN

THE KINGDOM OF THAILAND  
ROYAL IRRIGATION DEPARTMENT

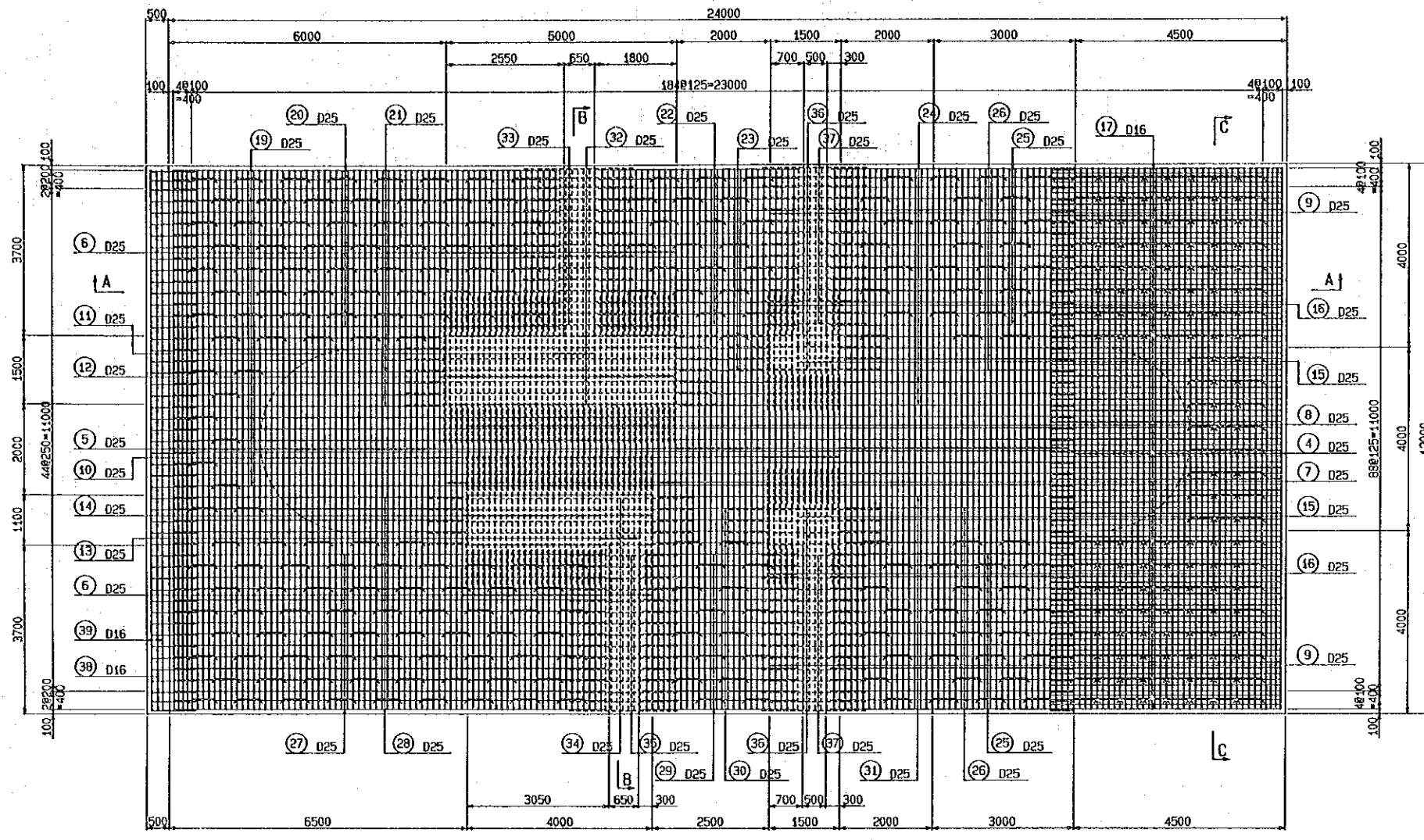
THE BANG PAKONG DIVERSION DAM PROJECT

BANG PAKONG DIVERSION DAM

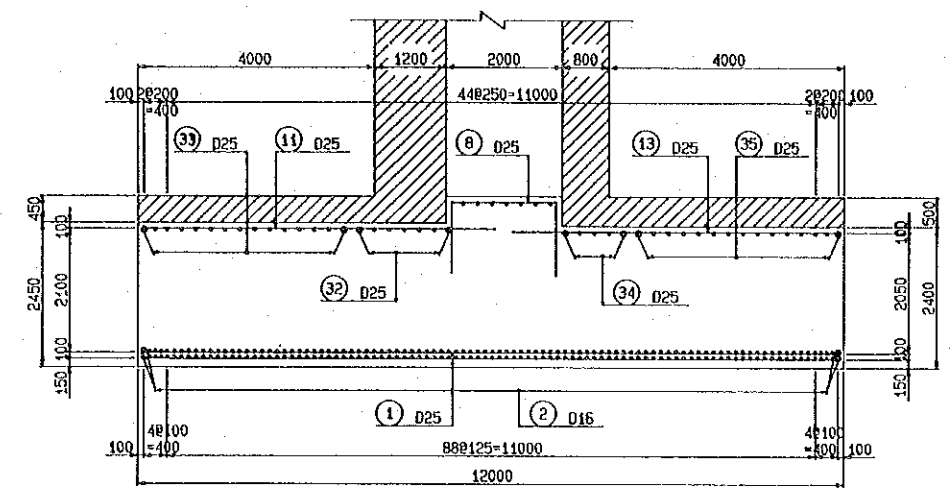
(P1) & (P2) APRON REINFORCEMENT

JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)  
SANYU CONSULTANTS INC.

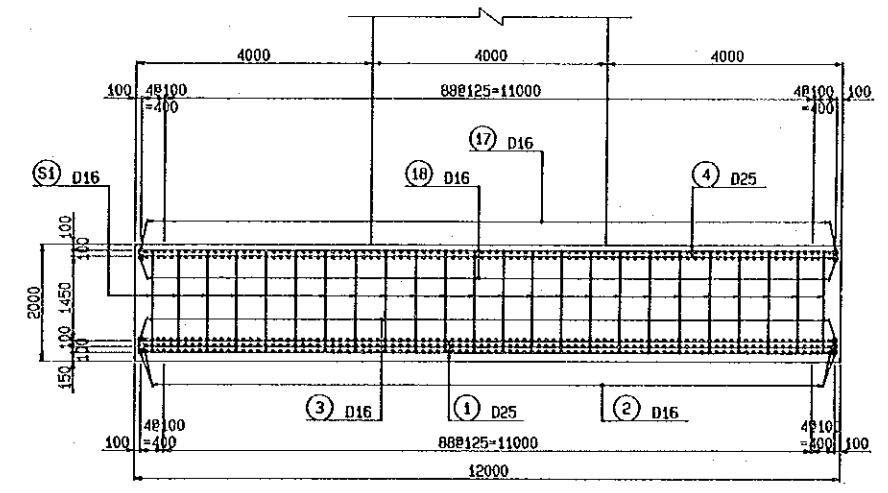
DESIGNED	
TRACED	
CHECKED	
APPROVED	
DRAWING NO.	DDM - 1007



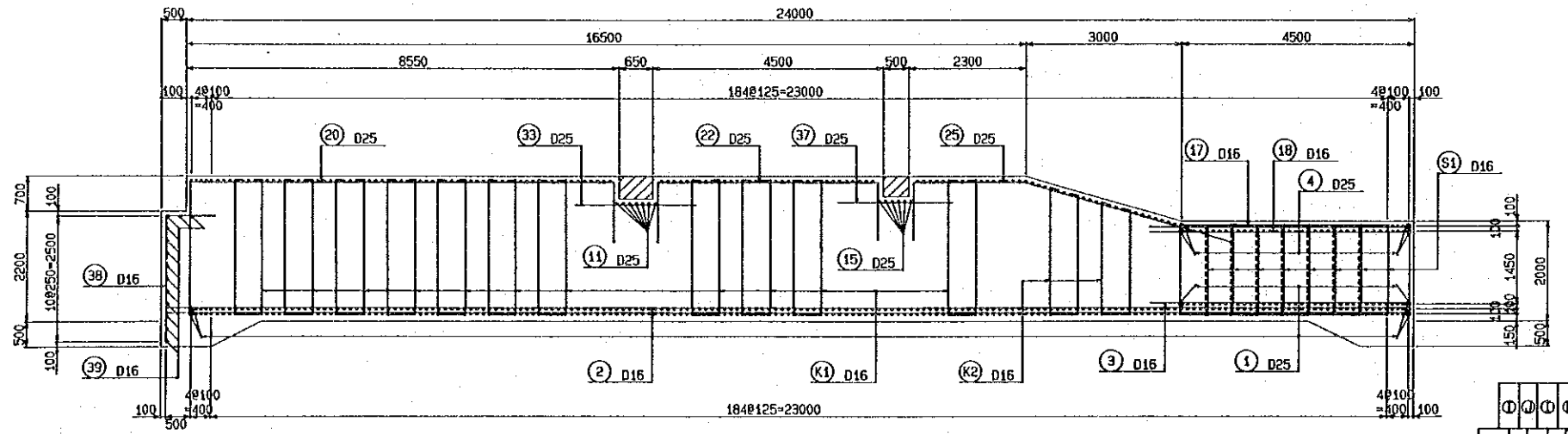
PLAN P2 ~ P5



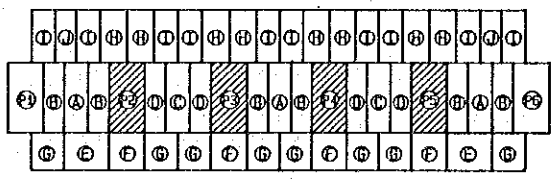
SECTION B-B



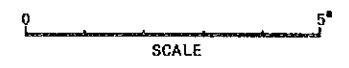
SECTION C-C



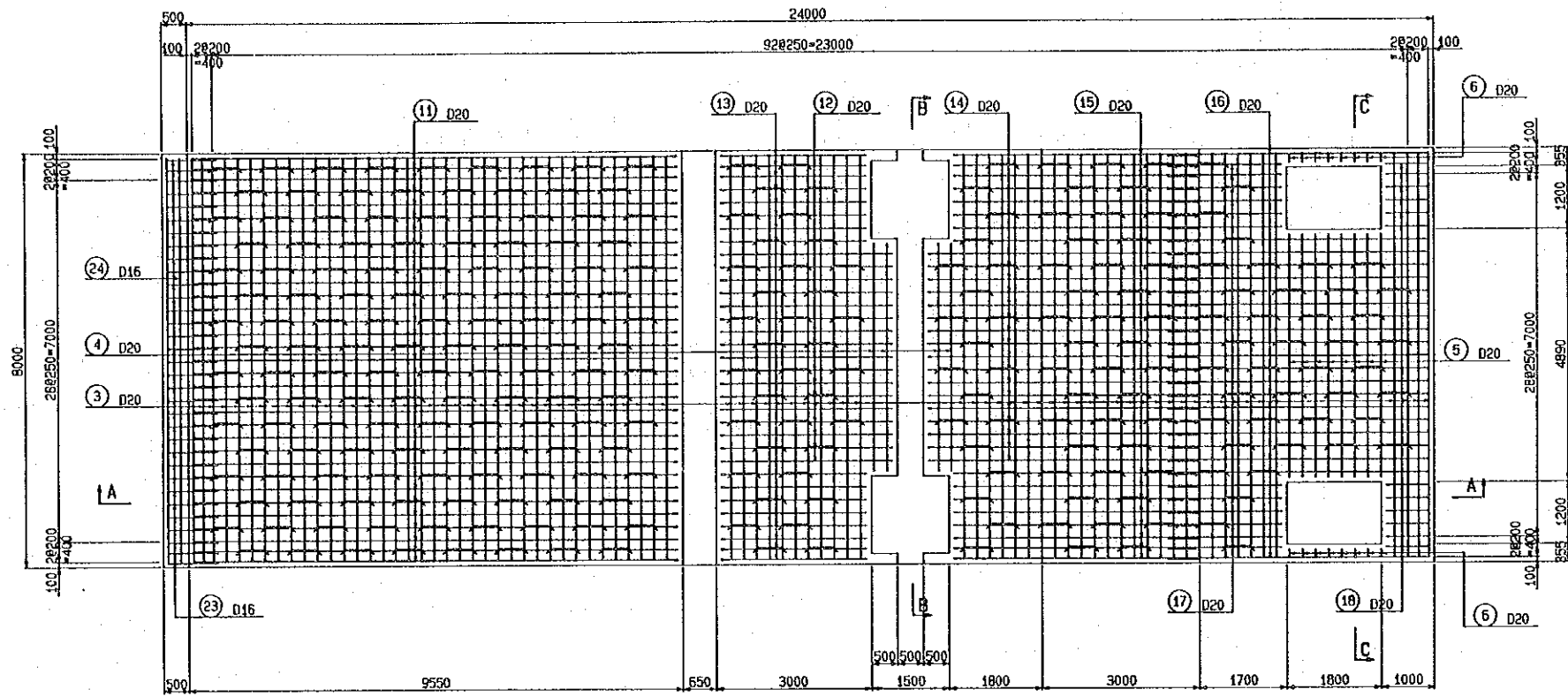
SECTION A-A



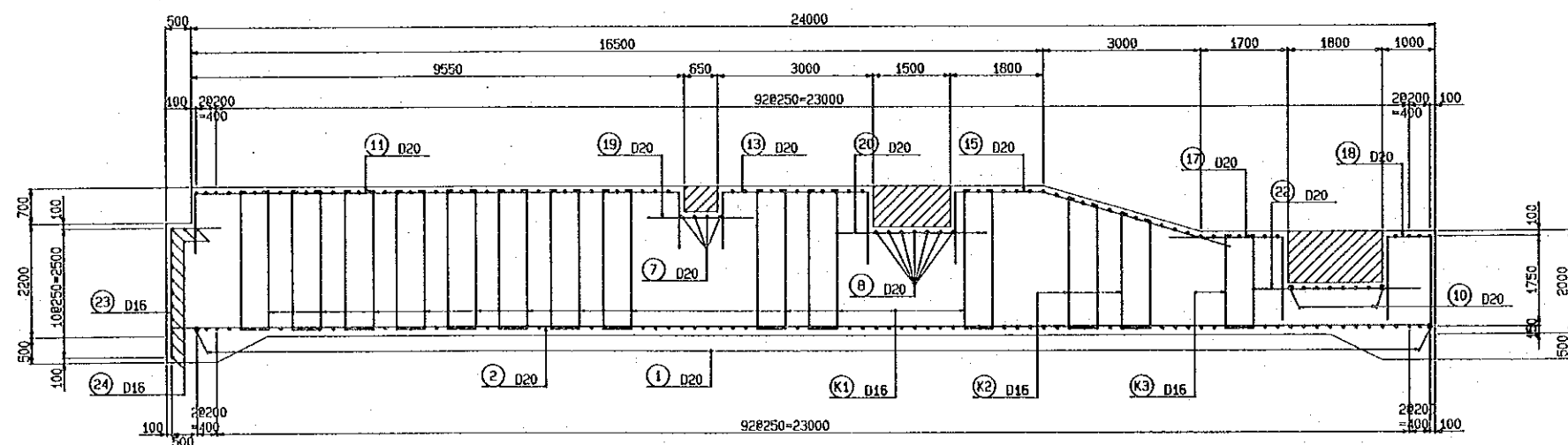
KEY PLAN



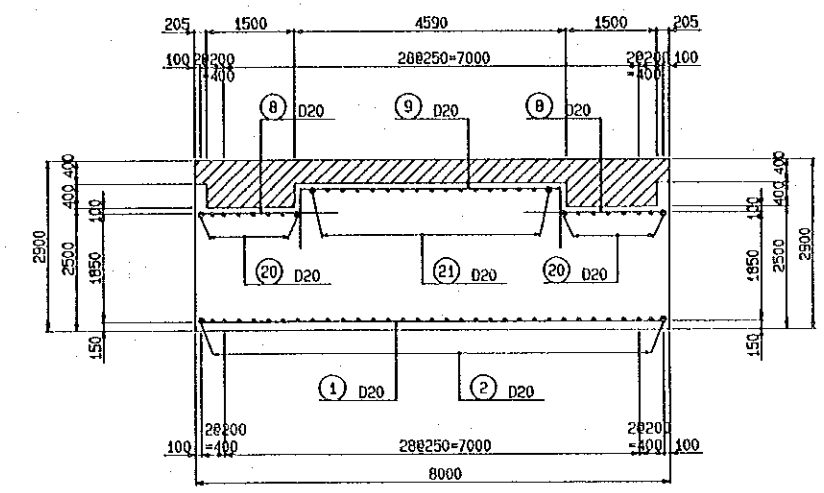
THE KINGDOM OF THAILAND ROYAL IRRIGATION DEPARTMENT	
THE BANG PAKONG DIVERSION DAM PROJECT	
BANG PAKONG DIVERSION DAM	
P2 ~ P5 APRON REINFORCEMENT	
JAPAN INTERNATIONAL COOPERATION AGENCY (JICA) SANYU CONSULTANTS INC.	
DESIGNED	
TRACKED	
CHECKED	
APPROVED	
DRAWING NO.	DDM - 1008



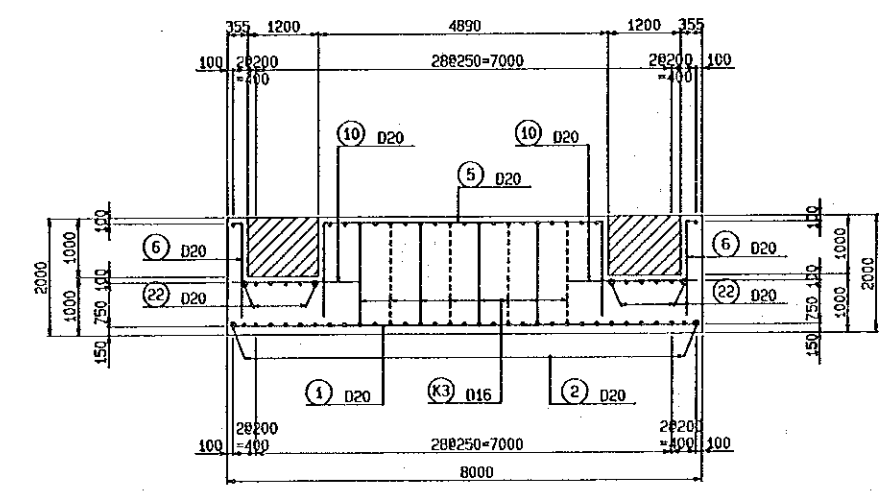
PLAN A



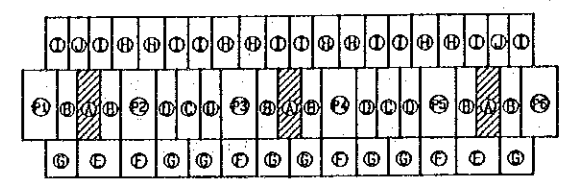
SECTION A-A



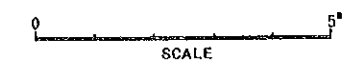
SECTION B-B



SECTION C-C

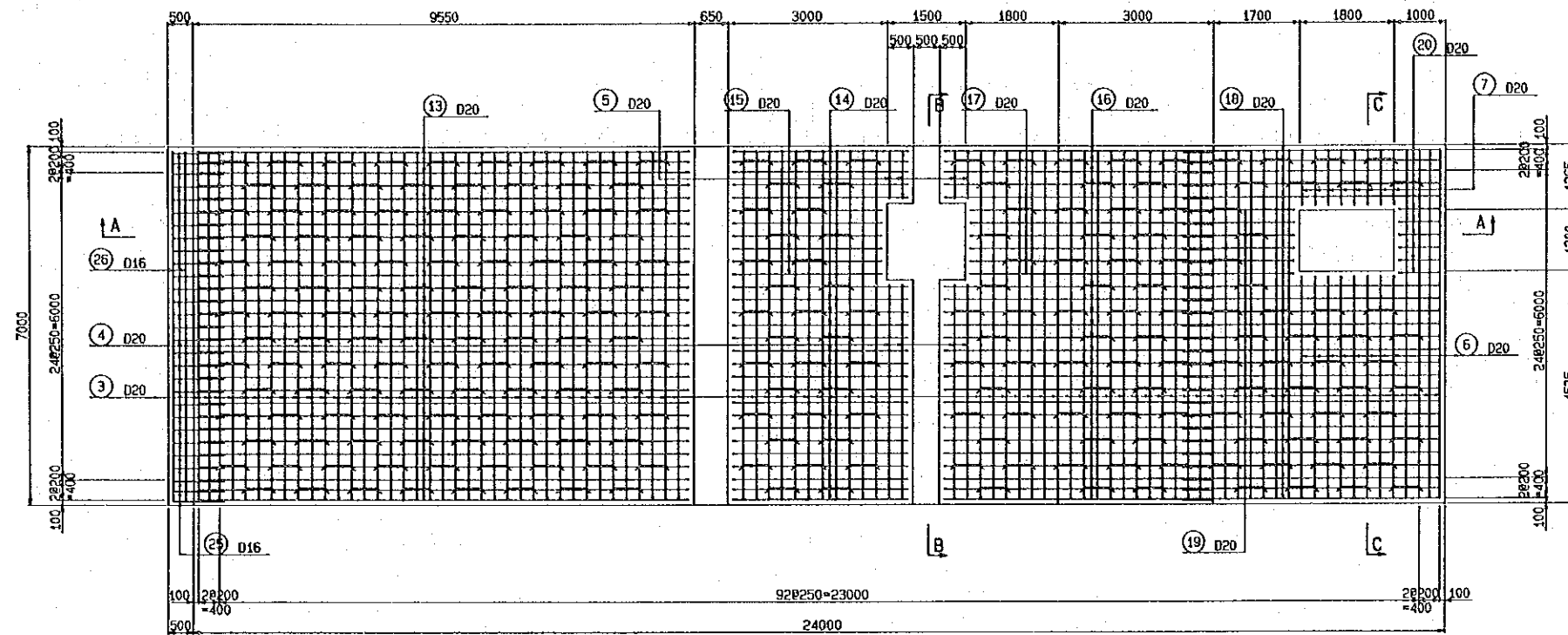


KEY PLAN

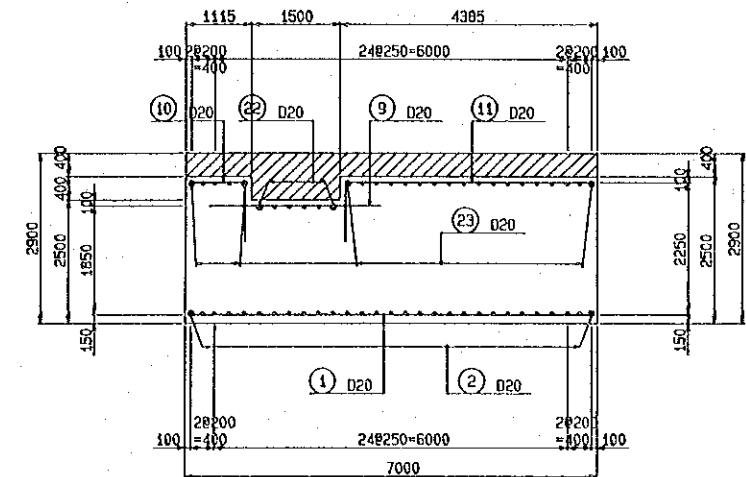


THE KINGDOM OF THAILAND ROYAL IRRIGATION DEPARTMENT	
THE BANG PAKONG DIVERSION DAM PROJECT	
BANG PAKONG DIVERSION DAM	
(A) APRON REINFORCEMENT	
JAPAN INTERNATIONAL COOPERATION AGENCY (JICA) SANYU CONSULTANTS INC.	
DESIGNED	
TRACED	
CHECKED	
APPROVED	
DRAWING NO. DDM - 1009	

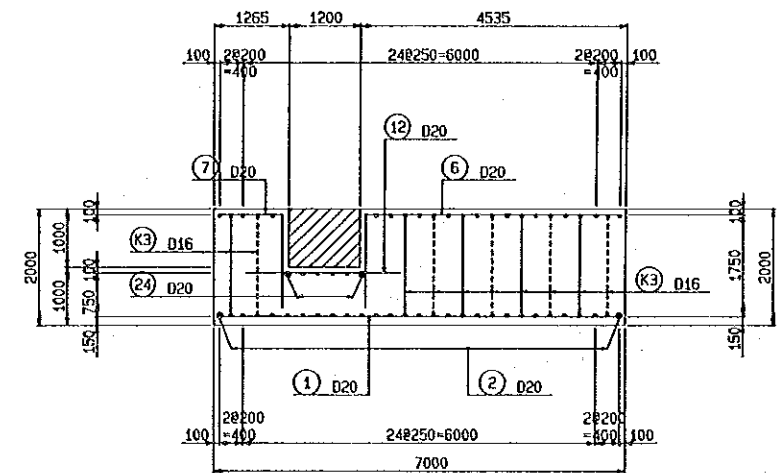




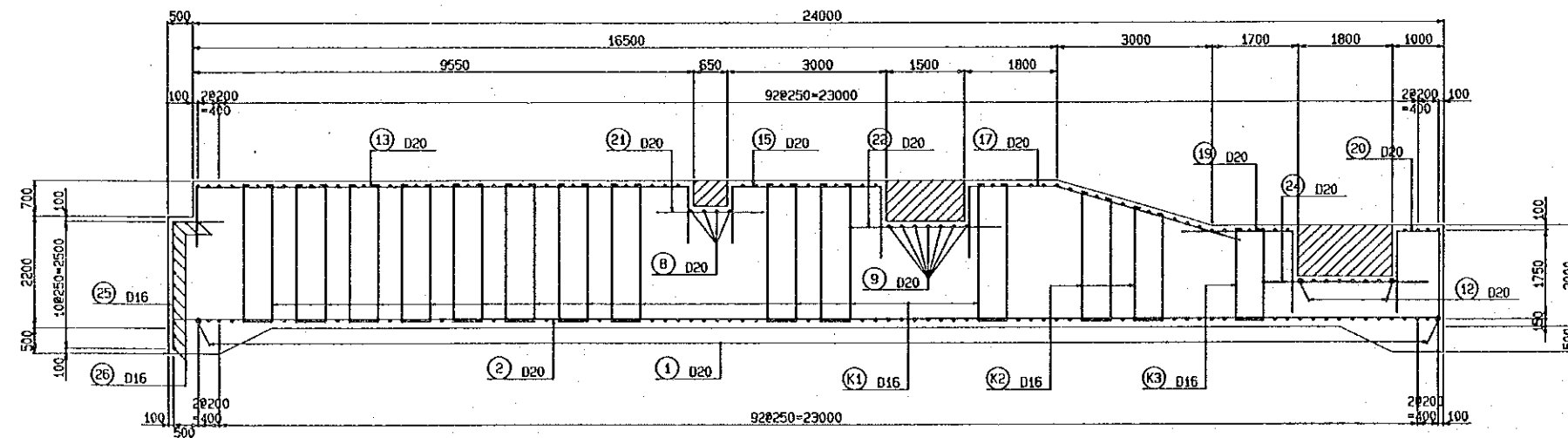
PLAN (B)



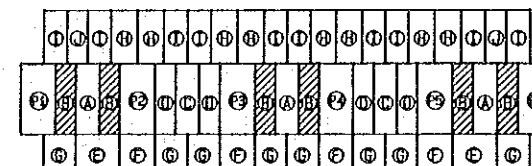
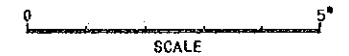
SECTION B-B



SECTION C-C

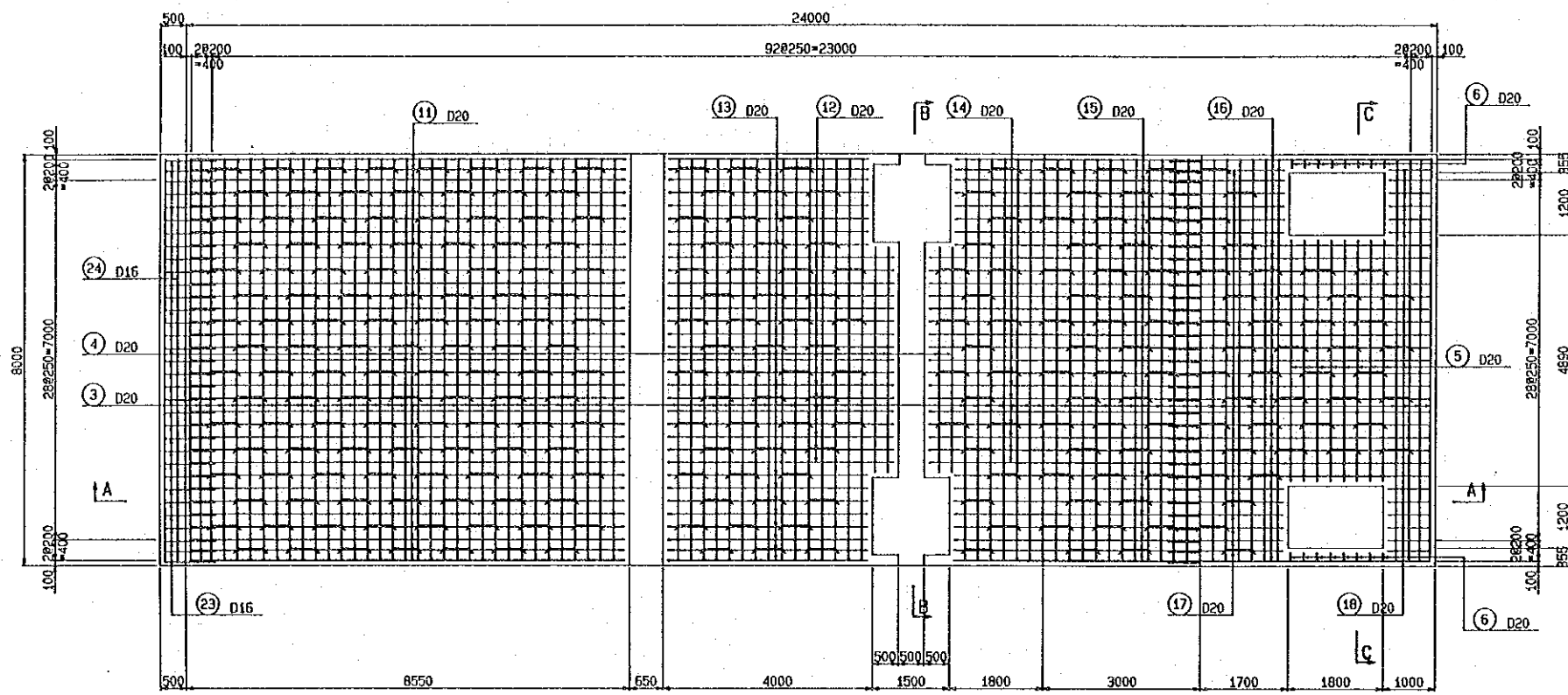


SECTION A-A

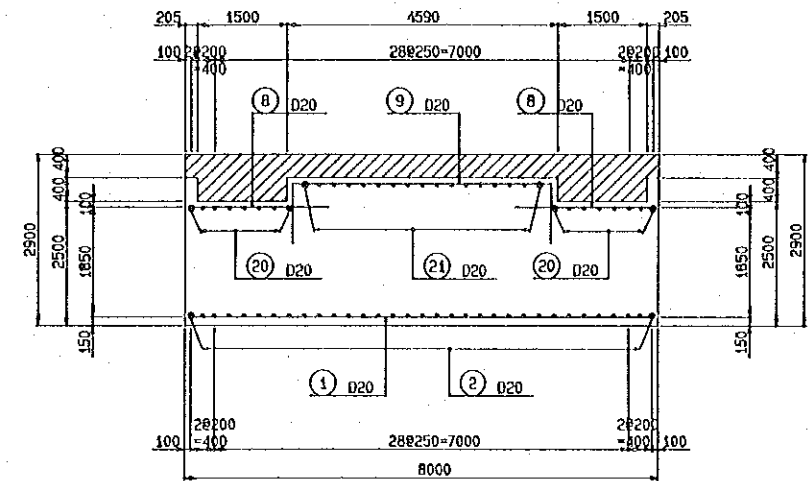


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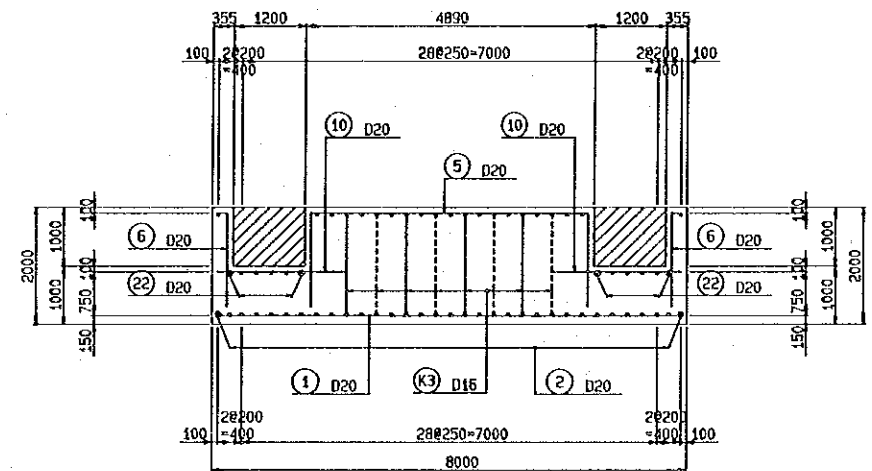
THE KINGDOM OF THAILAND ROYAL IRRIGATION DEPARTMENT	
THE BANG PAKONG DIVERSION DAM PROJECT	
BANG PAKONG DIVERSION DAM	
(B) APRON REINFORCEMENT	
JAPAN INTERNATIONAL COOPERATION AGENCY (JICA) SANYU CONSULTANTS INC.	
DESIGNED	
TRACED	
CHECKED	
APPROVED	
DRAWING NO. DDM - 1010	



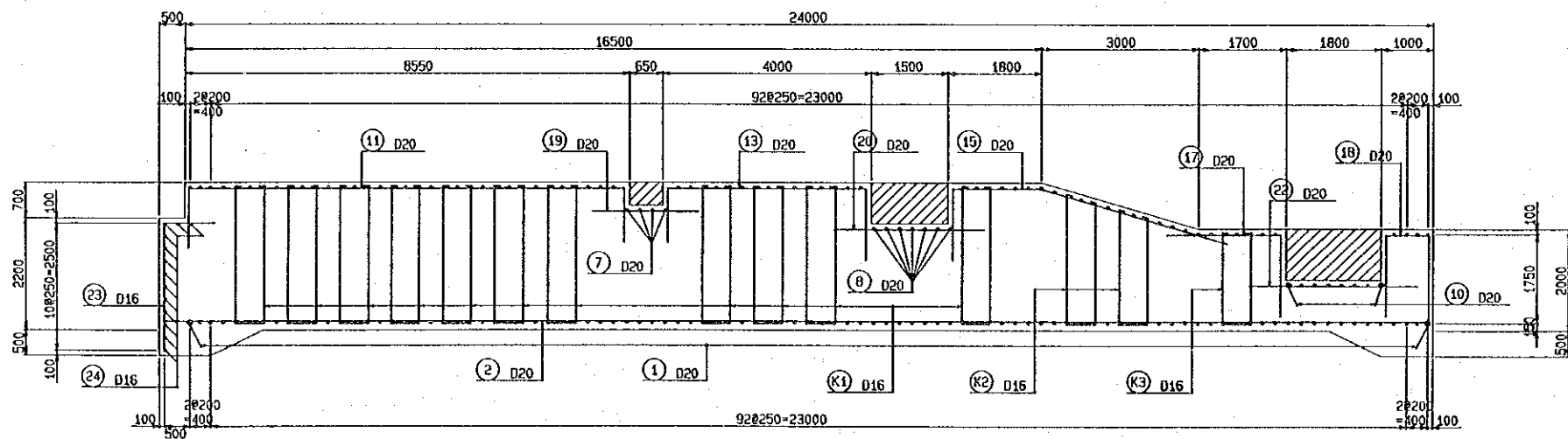
PLAN C



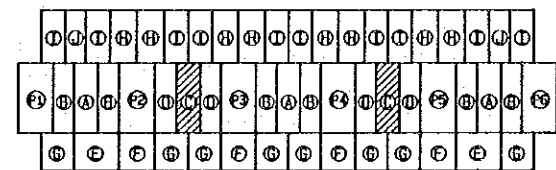
SECTION B-B



SECTION C-C



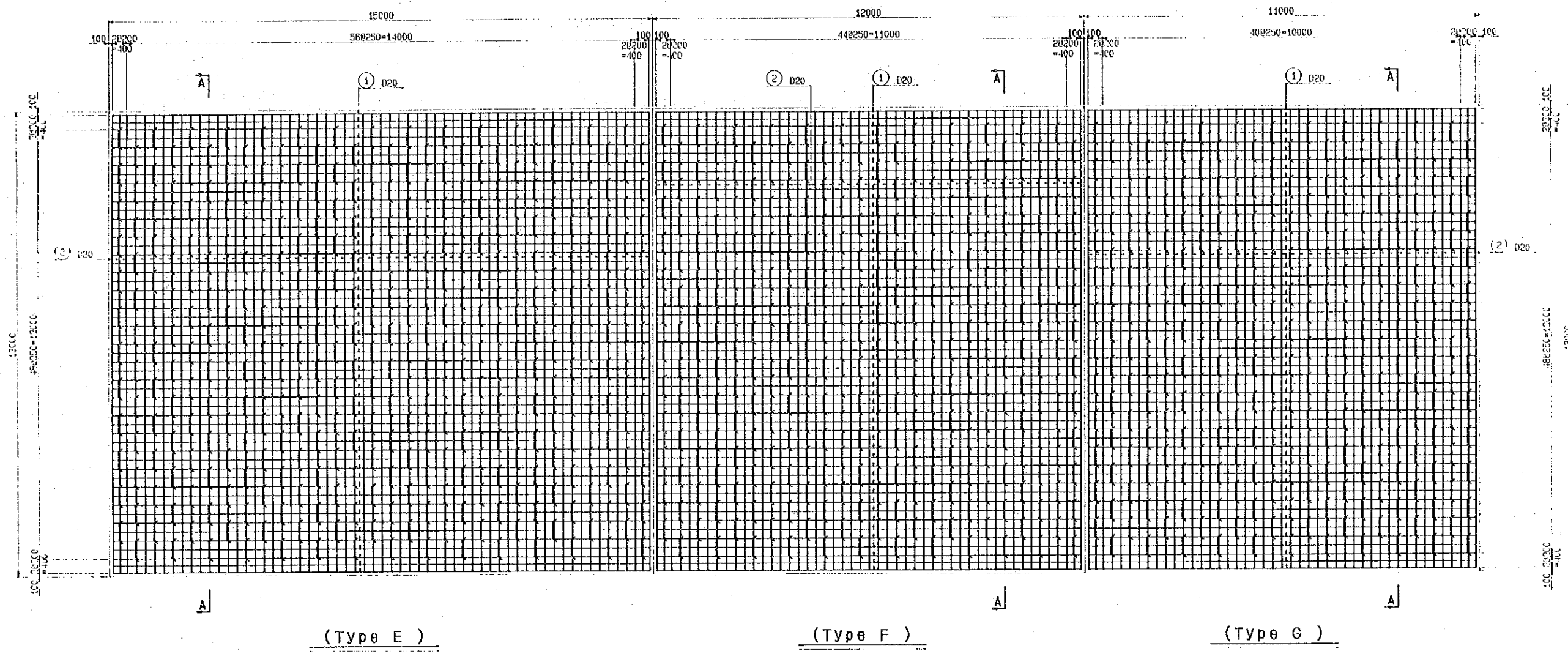
SECTION A-A



KEY PLAN

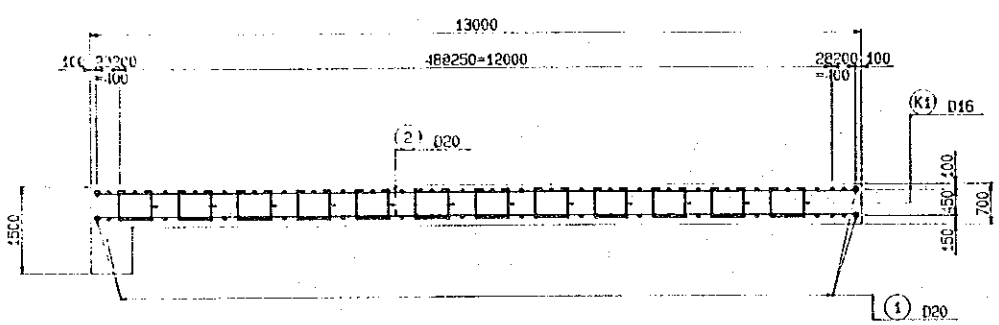
THE KINGDOM OF THAILAND ROYAL IRRIGATION DEPARTMENT	
THE BANG PAKONG DIVERSION DAM PROJECT	
BANG PAKONG DIVERSION DAM	
© APRON REINFORCEMENT	
JAPAN INTERNATIONAL COOPERATION AGENCY (JICA) SANYU CONSULTANTS INC.	
DESIGNED	
TRACED	
CHECKED	
APPROVED	
DRAWING NO. DDM - 1011	



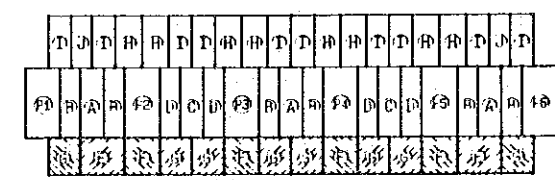


(Type E) (Type F) (Type G)

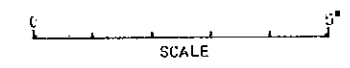
PLAN



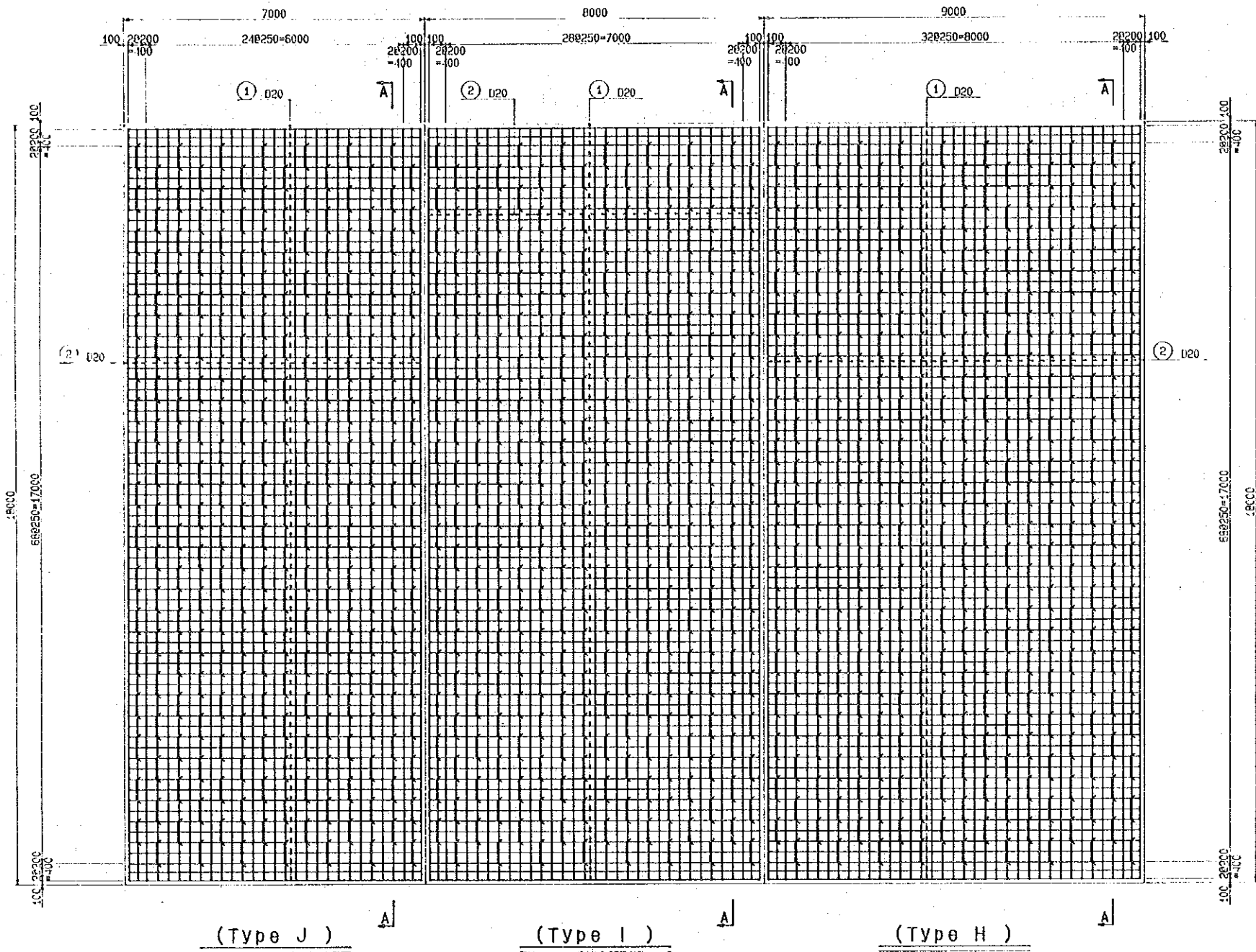
SECTION A-A



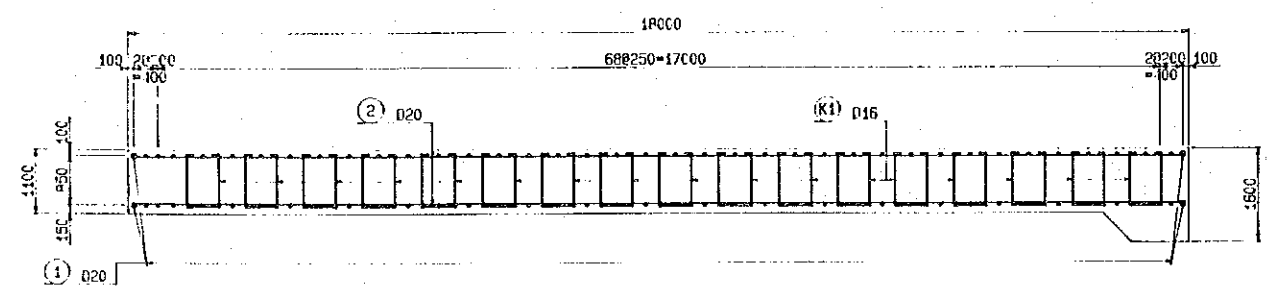
KEY PLAN



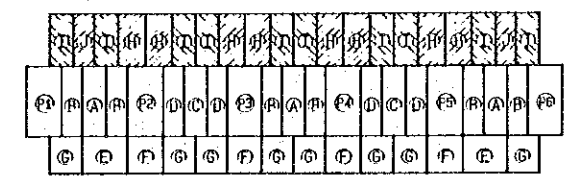
THE KINGDOM OF THAILAND ROYAL IRRIGATION DEPARTMENT	
THE BANG PAKONG DIVERSION DAM PROJECT	
BANG PAKONG DIVERSION DAM	
(E,F)&(G) APRON REINFORCEMENT	
JAPAN INTERNATIONAL COOPERATION AGENCY (JICA) SANYU CONSULTANTS INC.	
DESIGNED	
TRACED	
CHECKED	
APPROVED	
DRAWING NO. DDM - 1013	



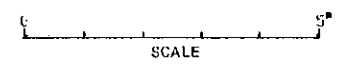
PLAN



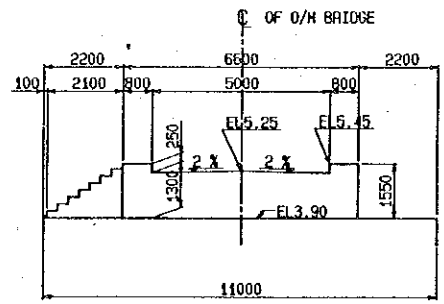
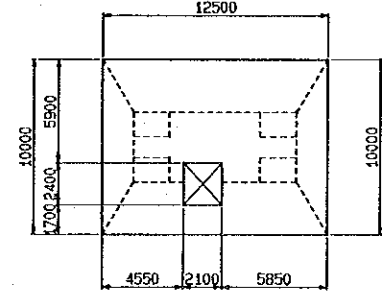
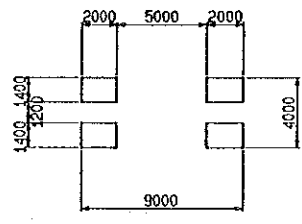
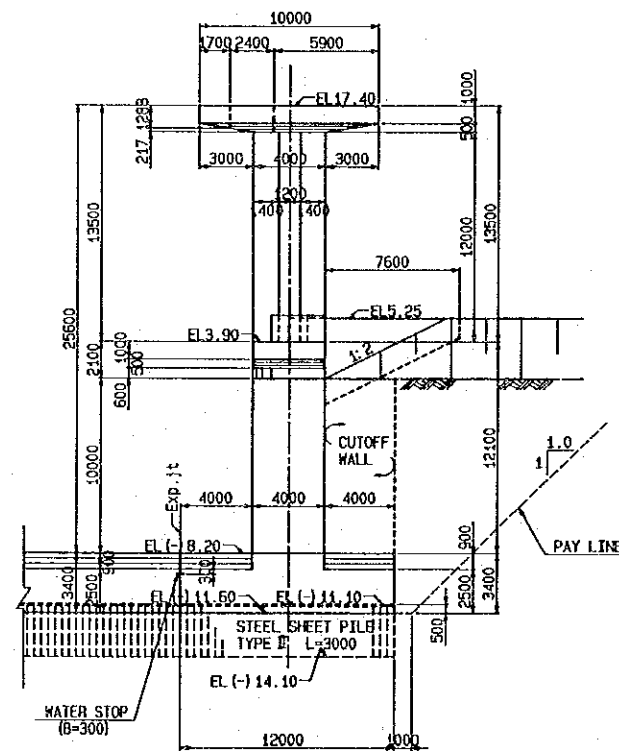
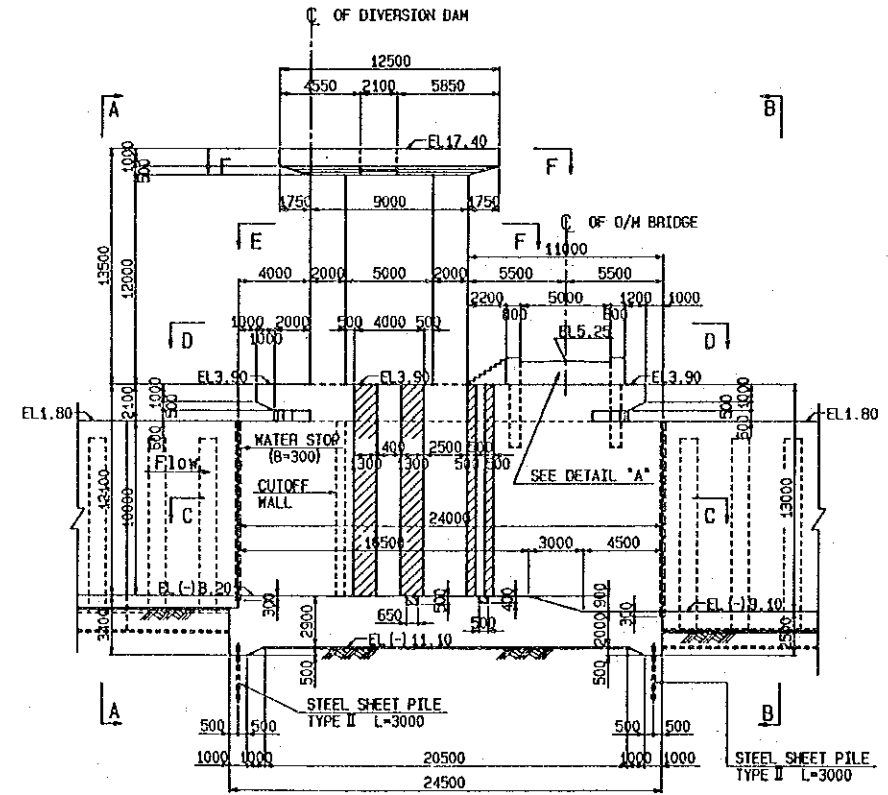
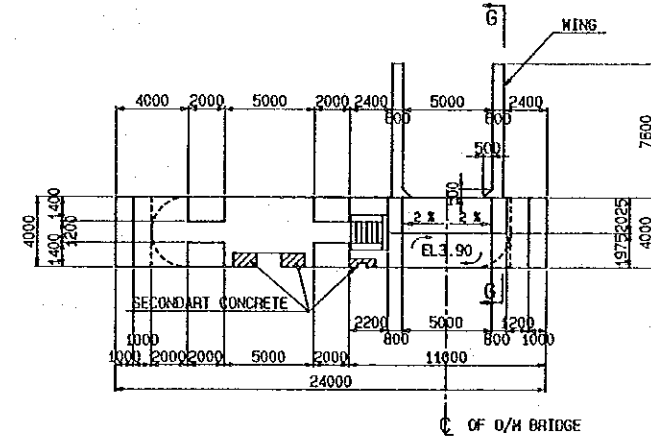
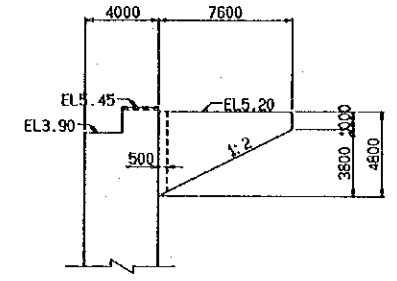
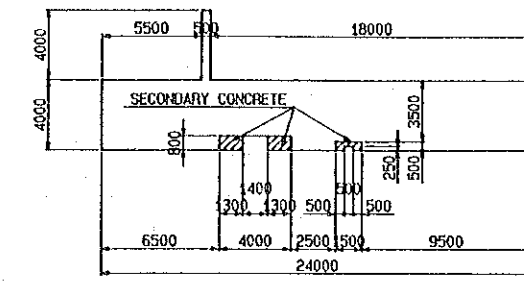
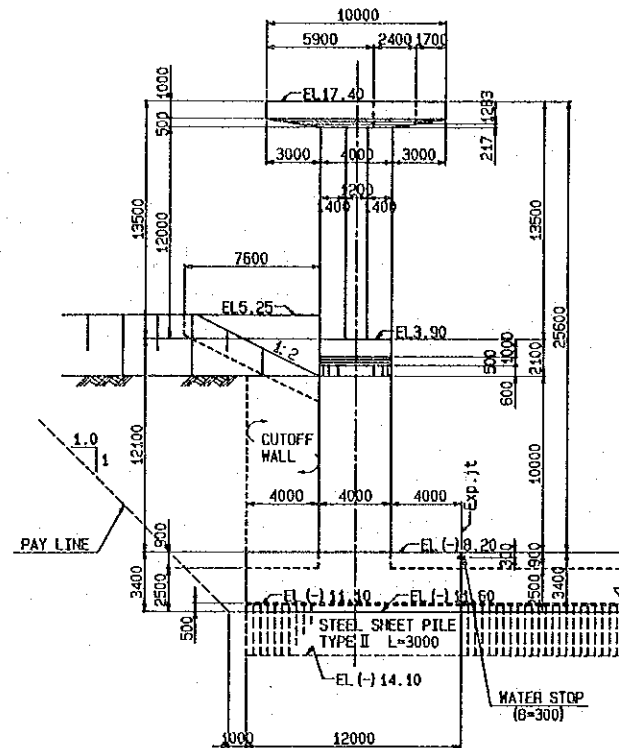
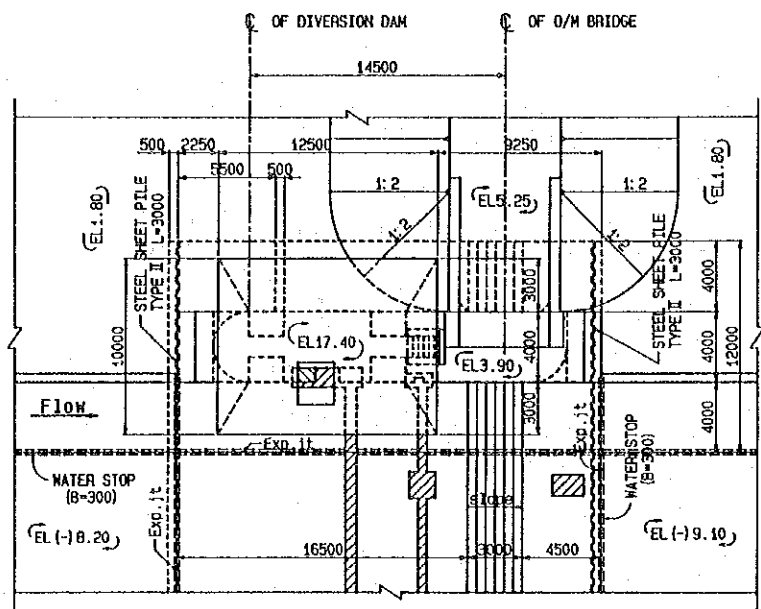
SECTION A-A



KEY PLAN



THE KINGDOM OF THAILAND ROYAL IRRIGATION DEPARTMENT	
THE BANG PAKONG DIVERSION DAM PROJECT	
BANG PAKONG DIVERSION DAM	
(H)·(I)·(J) APRON REINFORCEMENT	
JAPAN INTERNATIONAL COOPERATION AGENCY (JICA) SANYU CONSULTANTS INC.	
DESIGNED	
TRACED	
CHECKED	
APPROVED	
DRAWING NO. DDM - 1014	



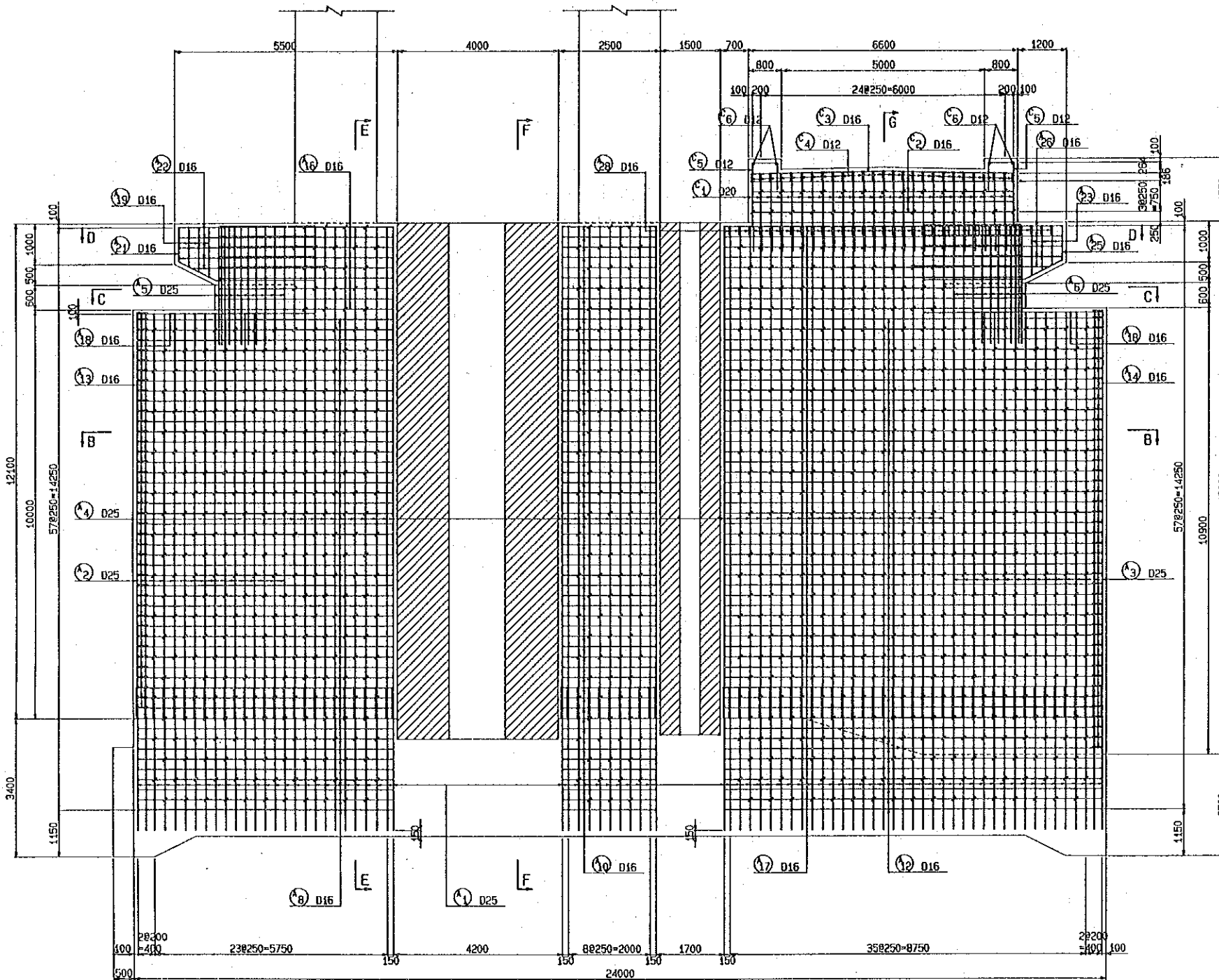
**NOTES**

1. FOUNDATION PILES ARE NOT SHOWN IN THIS DRAWING

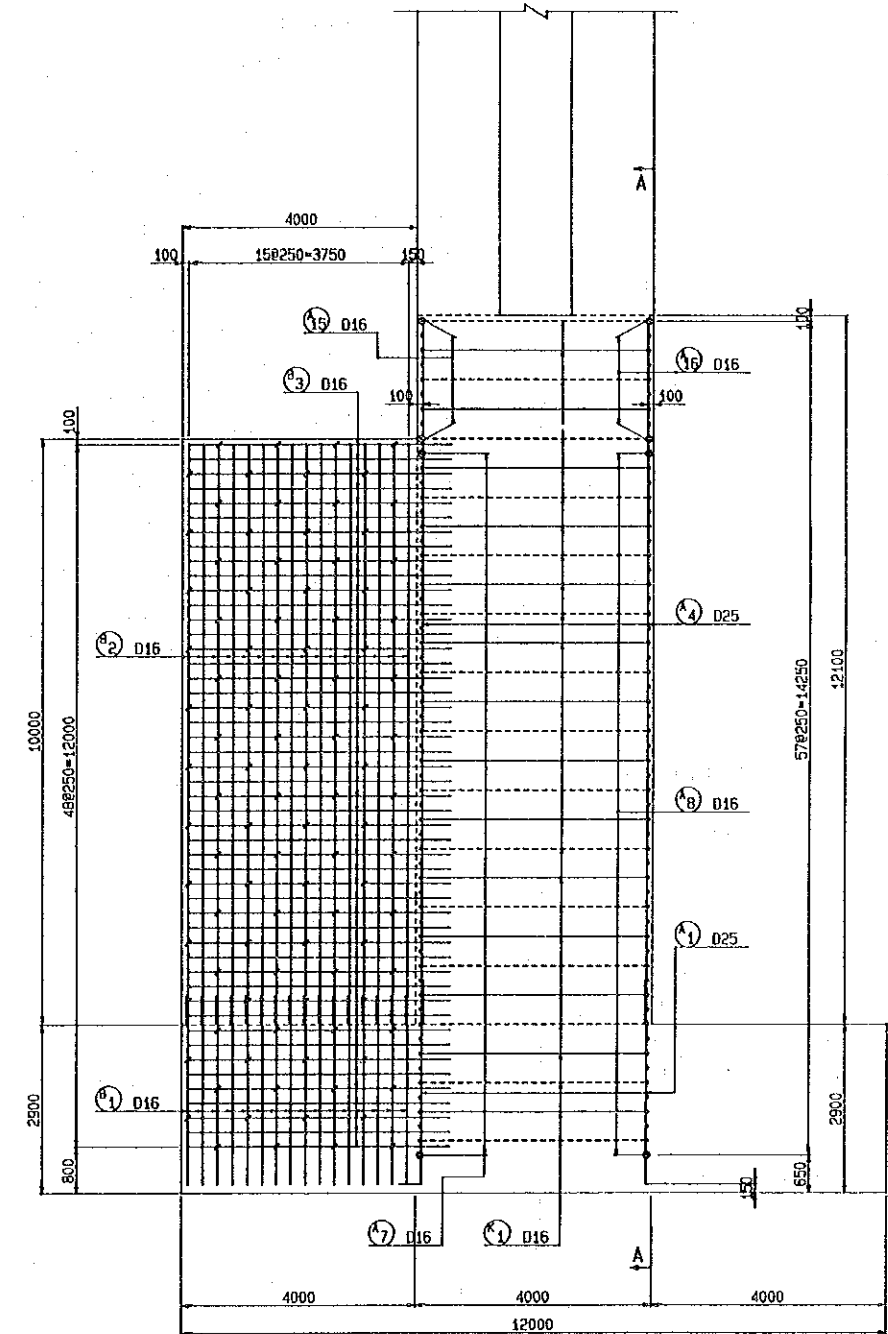
0 10 20  
SCALE

0 10  
SCALE 'A'

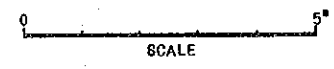
THE KINGDOM OF THAILAND ROYAL IRRIGATION DEPARTMENT	
THE BANG PAKONG DIVERSION DAM PROJECT	
BANG PAKONG DIVERSION DAM ABUT. PIER STRUCTURE	
JAPAN INTERNATIONAL COOPERATION AGENCY (JICA) SANYU CONSULTANTS INC.	
DESIGNED	
TRACED	
CHECKED	
APPROVED	
DRAWING NO. DDM - 1015	



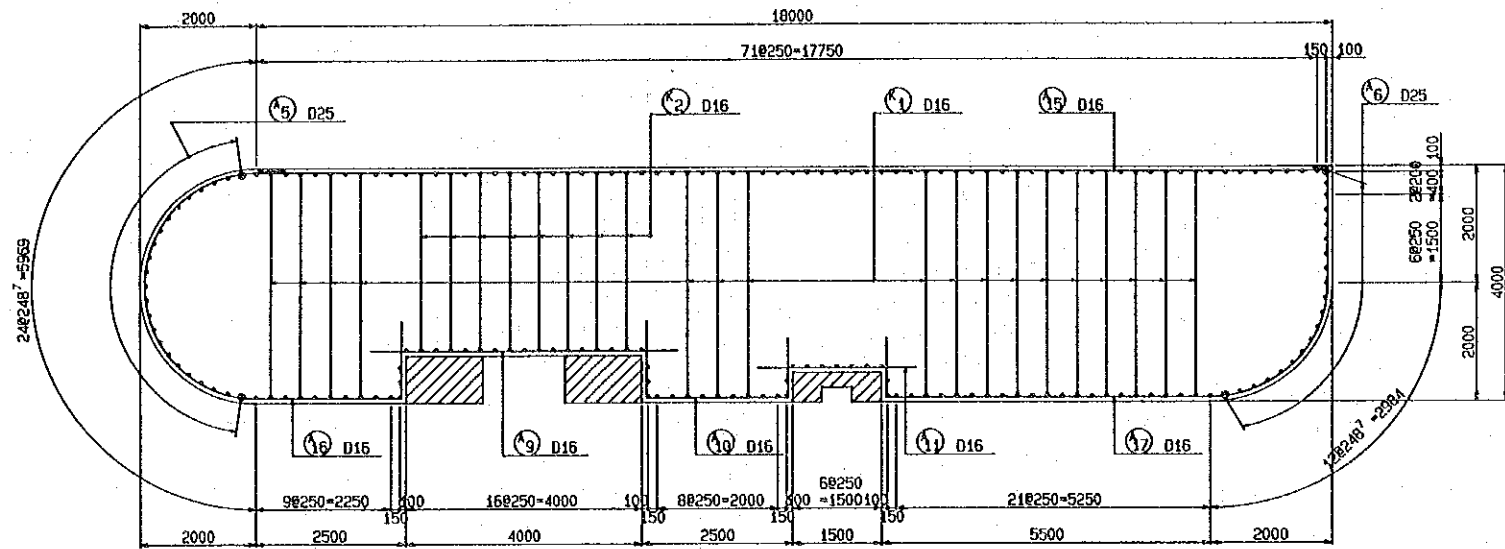
SECTION A-A  
(LOWER HALF OF PIER)



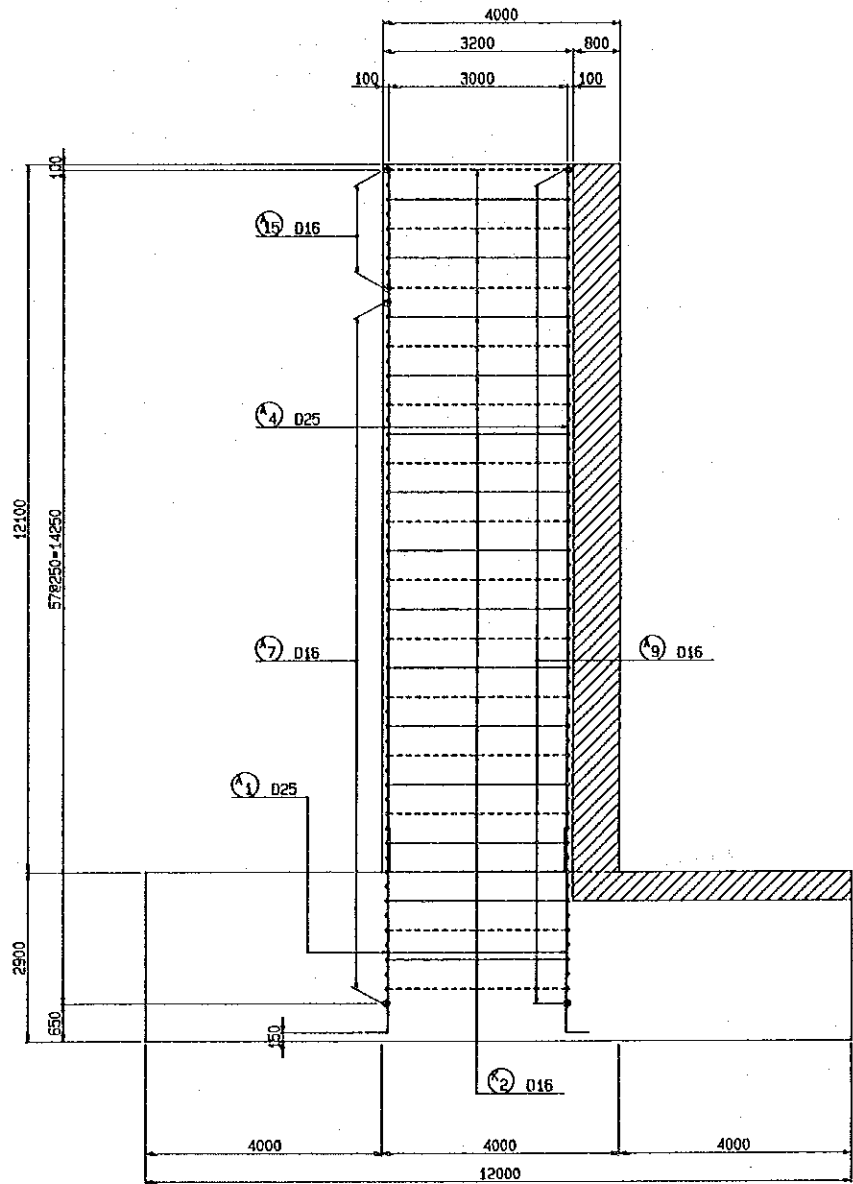
SECTION E-E



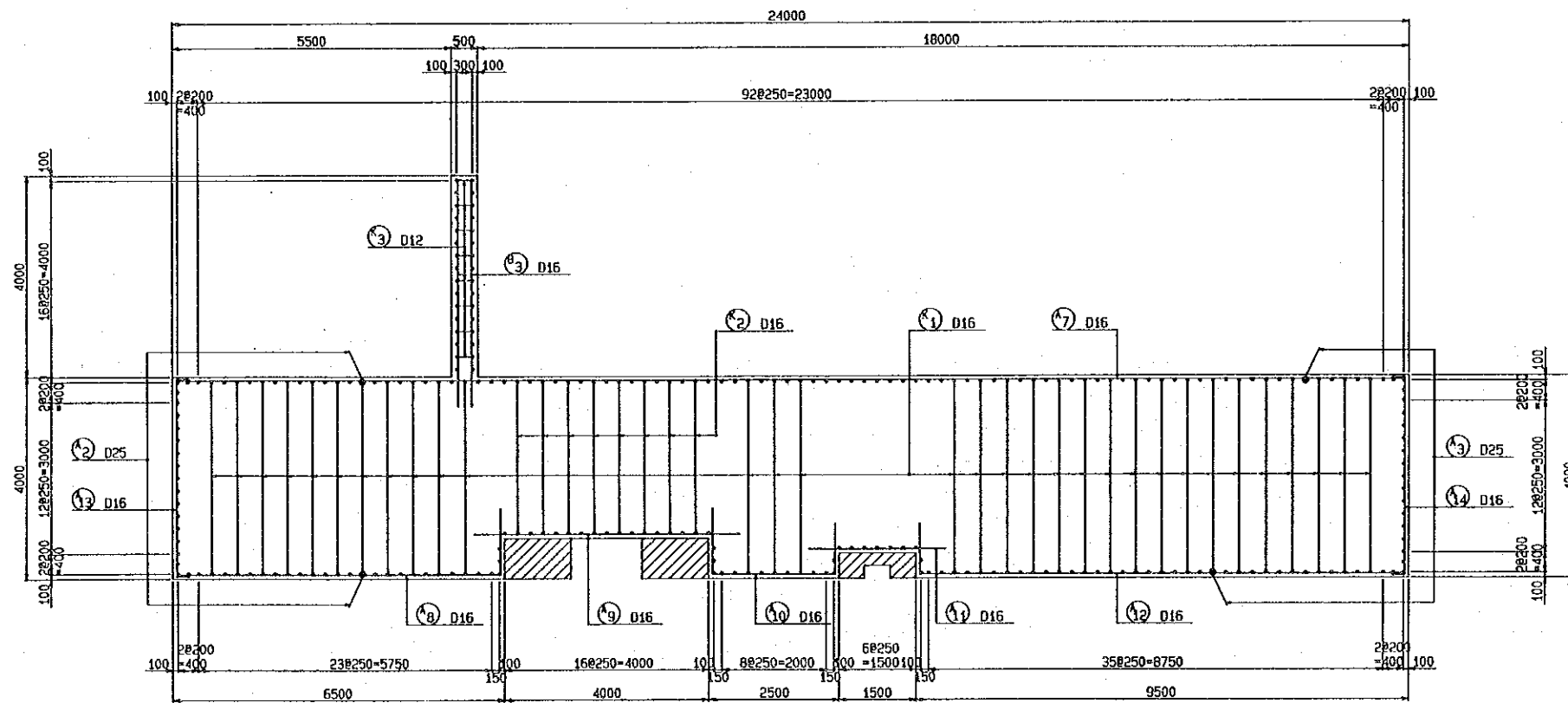
THE KINGDOM OF THAILAND ROYAL IRRIGATION DEPARTMENT	
THE BANG PAKONG DIVERSION DAM PROJECT	
BANG PAKONG DIVERSION DAM ABUT. PIER REINFORCEMENT (1/5)	
JAPAN INTERNATIONAL COOPERATION AGENCY (JICA) SANYU CONSULTANTS INC.	
DESIGNED	
TRACED	
CHECKED	
APPROVED	
DRAWING NO. DDM - 1016	



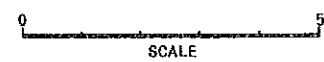
SECTION C-C



SECTION F-F



SECTION B-B



THE KINGDOM OF THAILAND ROYAL IRRIGATION DEPARTMENT	
THE BANG PAKONG DIVERSION DAM PROJECT	
BANG PAKONG DIVERSION DAM	
ABUT. PIER REINFORCEMENT (2/5)	
JAPAN INTERNATIONAL COOPERATION AGENCY (JICA) SANYU CONSULTANTS INC.	
DESIGNED	
TRACED	
CHECKED	
APPROVED	
DRAWING NO.	DDM - 1017