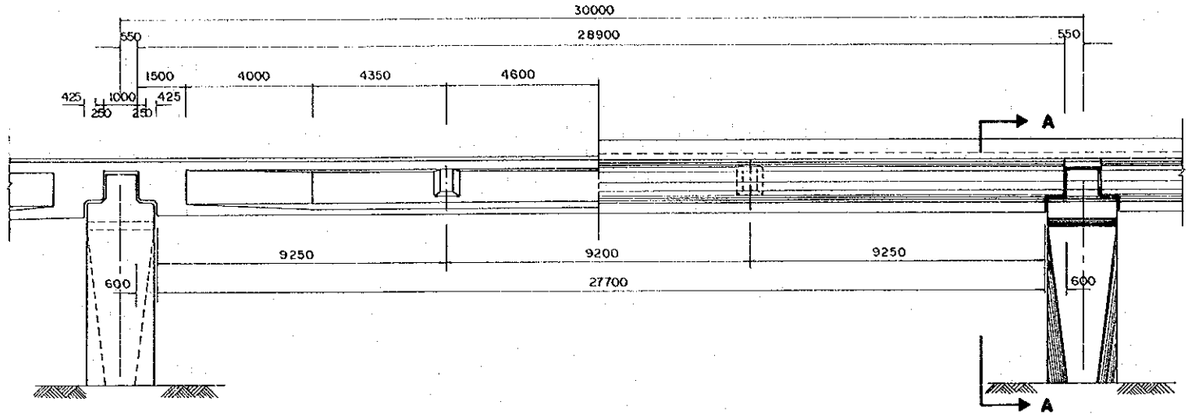
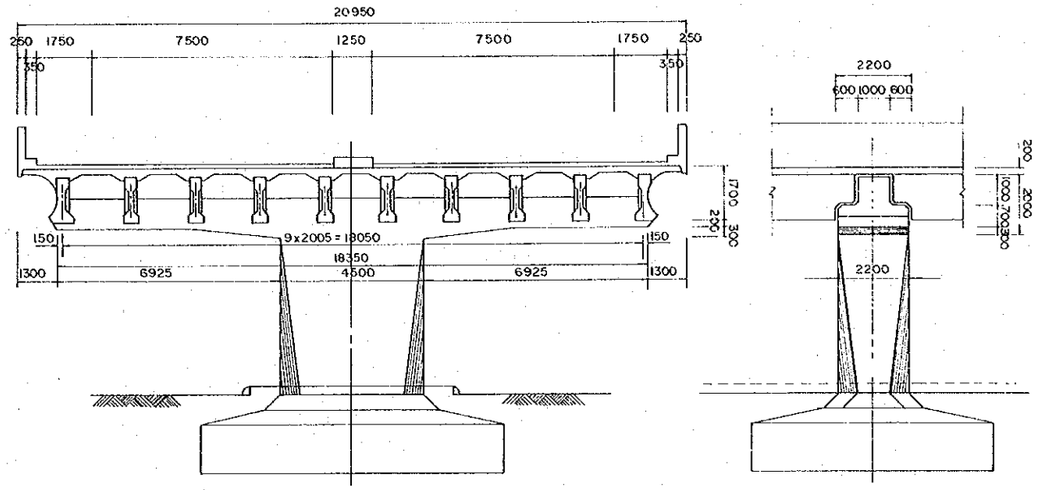
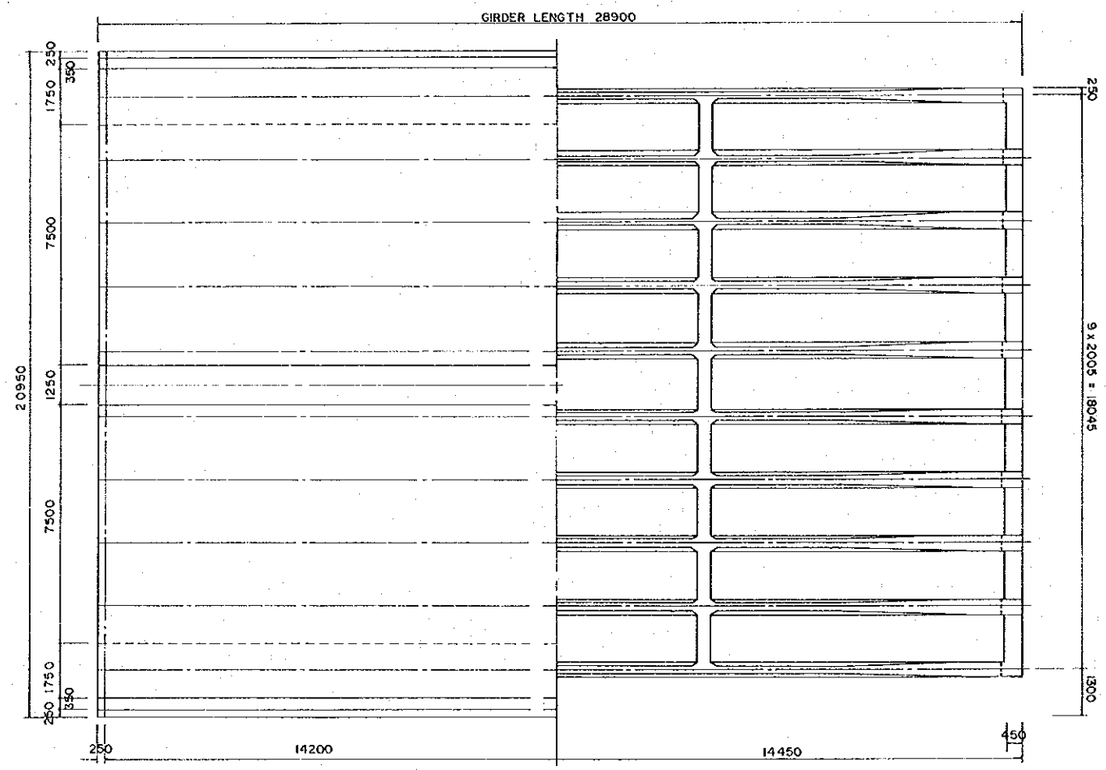
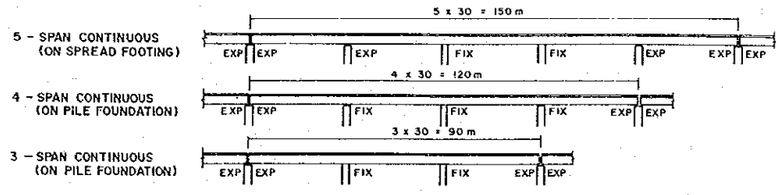




SECTION A – A





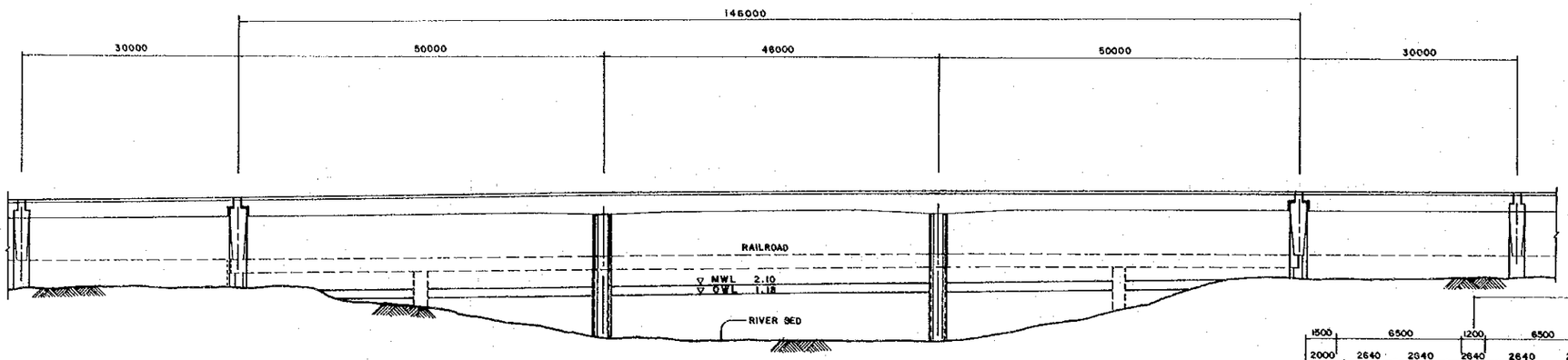
PROPOSED CONTINUOUS SPAN SYSTEM

NOTE)
- LIVE LOAD : HS 20-44 AASHTO Standard Specification for Highway Bridges
- MATERIALS :
  - CONCRETE : Minimum strength of concrete in beams is f'c = 35 MPa
  - PRESTRESSING REINFORCEMENT: Materials for pre-stressing reinforcement shall be in accordance with the latest ASTM specification
- TENSIONING : For beams with post-tensioning tendon, end blocks shall be used to distribute the concentrated pre-stressing forces of the anchorage
- SEGMENTAL CONSTRUCTION

  Beams may be built by segmental construction in lieu of full length construction
- SPECIAL CONDITION FOR CONTINUOUS SLAB

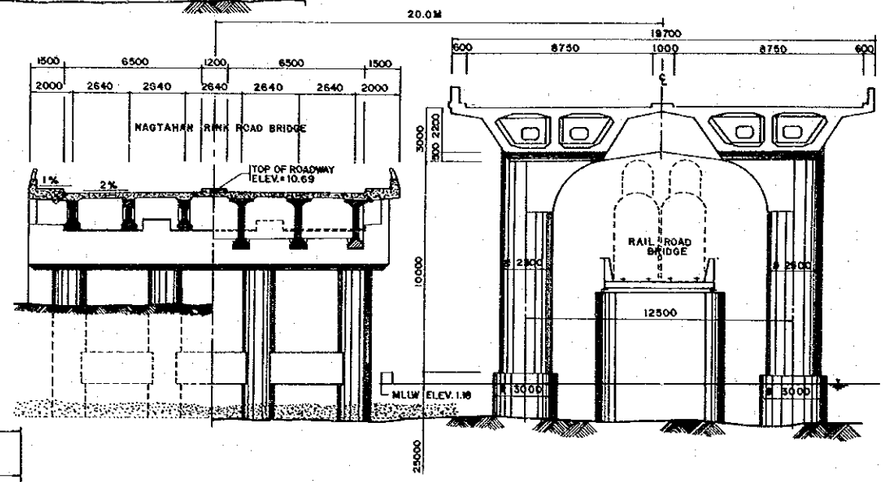
  To increase an earthquake resistance and to minimize an expansion joint, continuous slab has recommended with appropriate design method

KEI KATAHIRA & ENGINEERS INTERNATIONAL	JICA JAPAN INTERNATIONAL COOPERATION AGENCY	DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS Republic of the Philippines	FEASIBILITY STUDY ON METRO MANILA URBAN EXPRESSWAY SYSTEM	STANDARD VIADUCT – 2	SCALE 1 : 100 / DWG. No. 8 – 2



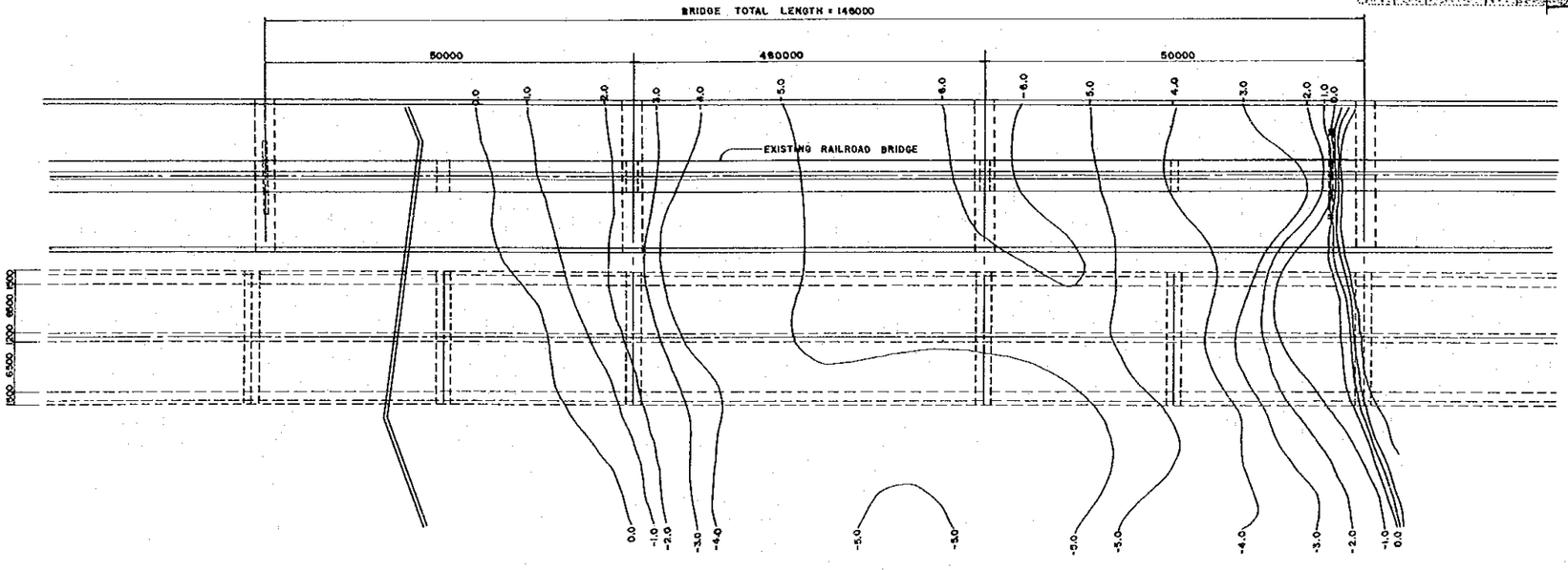
PROFILE

SCALE . . . . . 1 : 400



CROSS SECTION

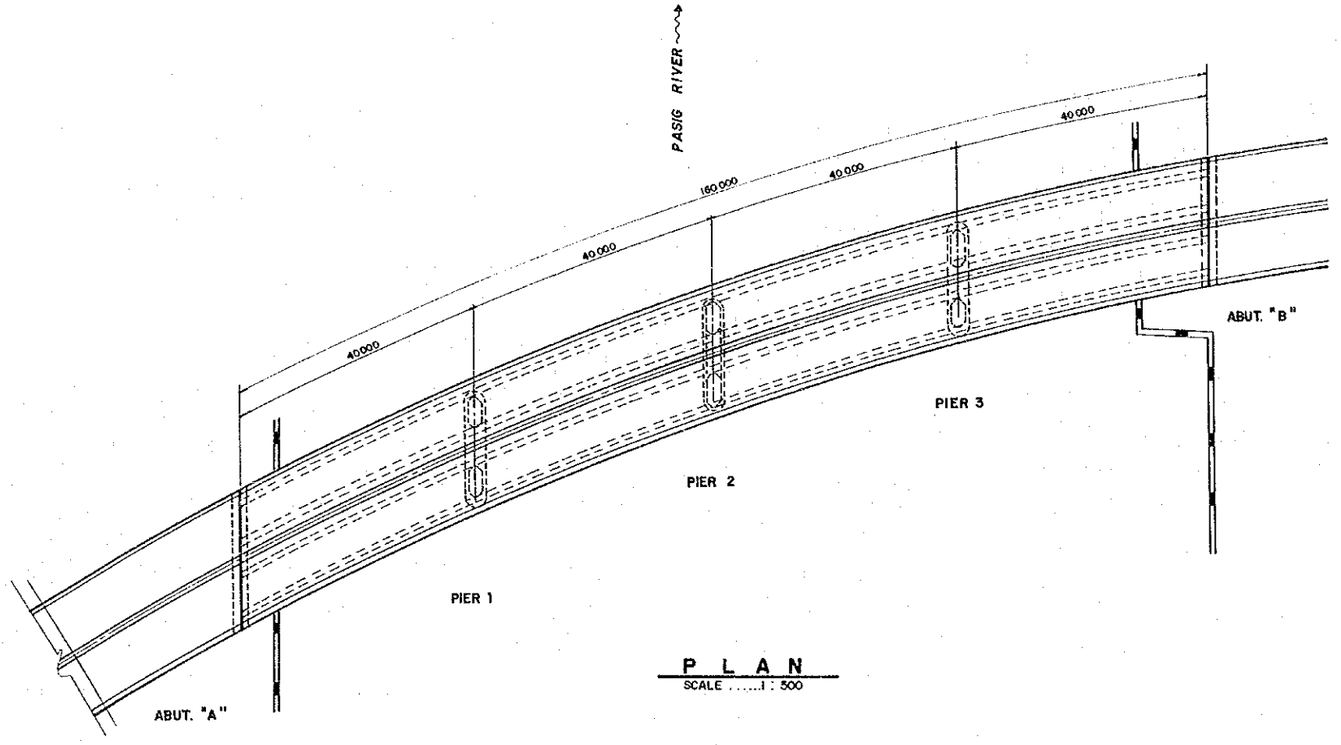
SCALE . . . . . 1 : 150



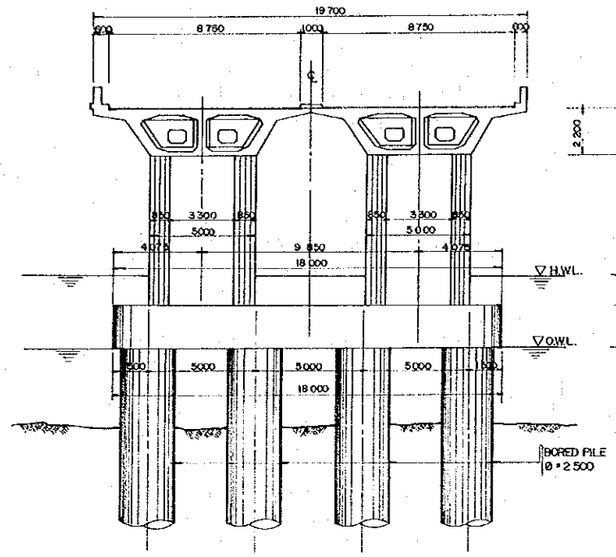
P L A N

SCALE . . . . . 1 : 400

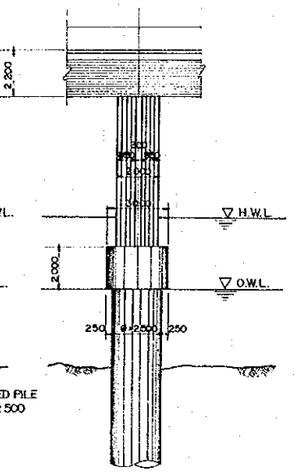
KEI KATAHIRA & ENGINEERS INTERNATIONAL	JICA JAPAN INTERNATIONAL COOPERATION AGENCY	DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS Republic of the Philippines	FEASIBILITY STUDY ON METRO MANILA URBAN EXPRESSWAY SYSTEM	C - 3 PASIG RIVER BRIDGE	SCALE: AS SHOWN / DWG. No.: 8 - 3



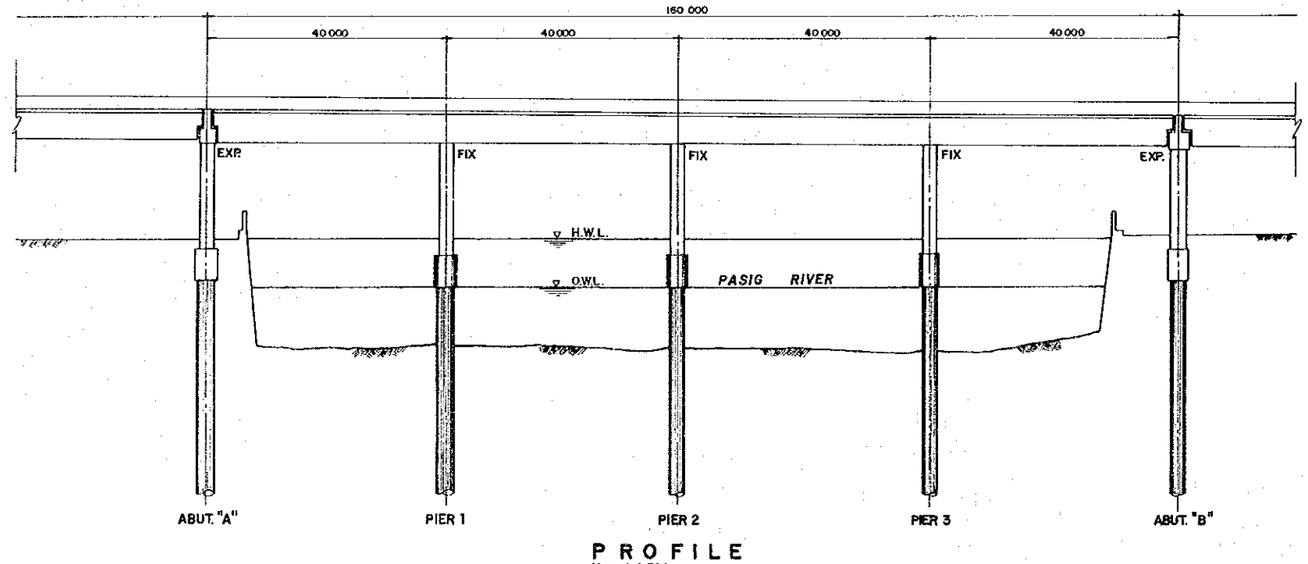
P L A N
SCALE .....1 : 500



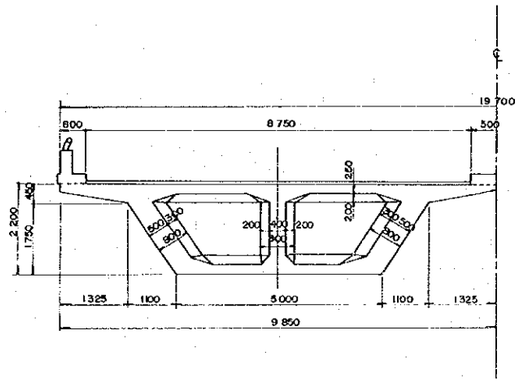
CROSS SECTION
SCALE . . . . . 1 : 150



SIDE VIEW

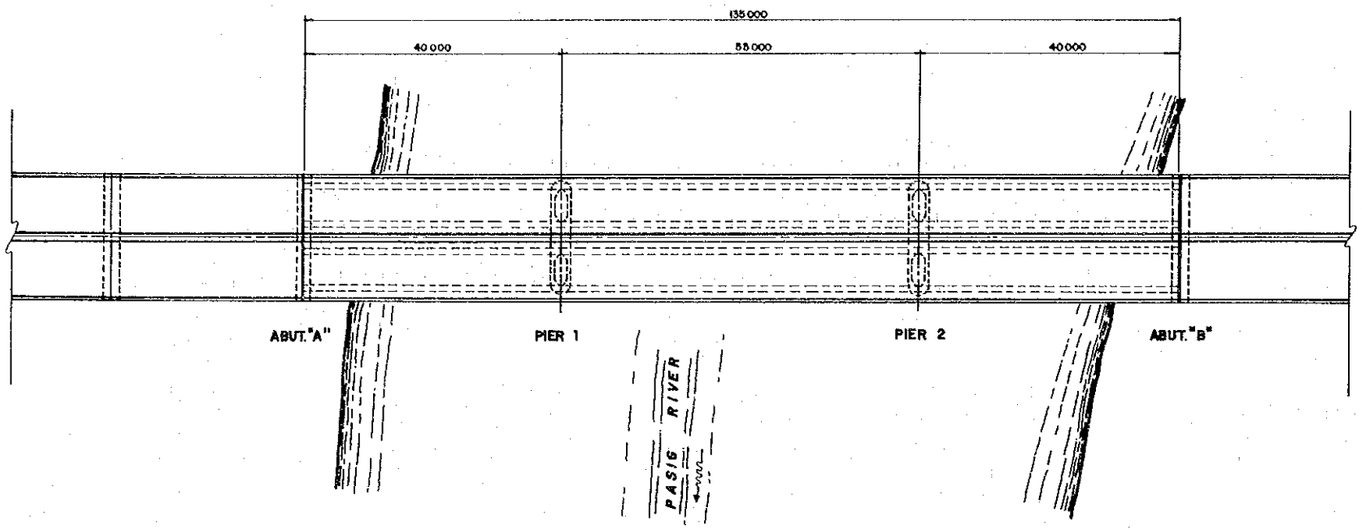


P R O F I L E
H = 1 : 500
V = 1 : 200



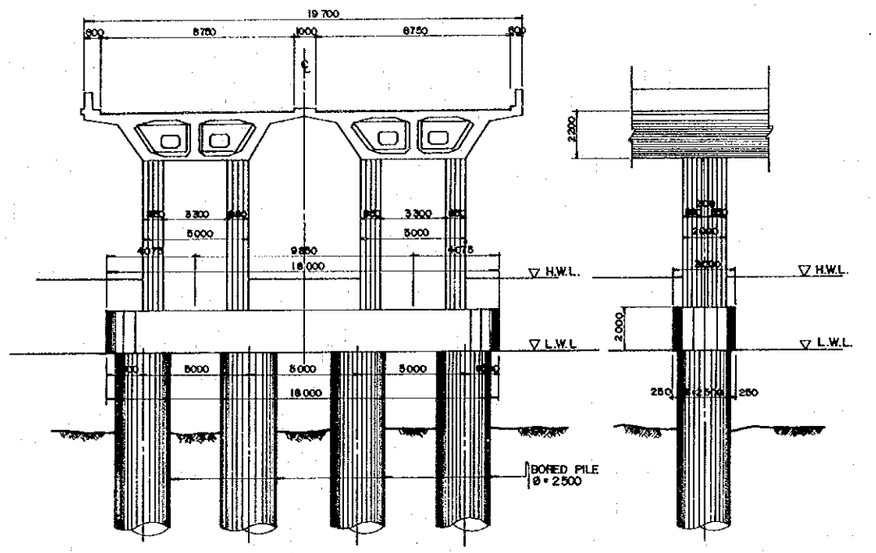
CROSS SECTION OF GIRDER
SCALE . . . . . 1 : 75

KEI KATAHIRA & ENGINEERS INTERNATIONAL	JICA JAPAN INTERNATIONAL COOPERATION AGENCY	DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS Republic of the Philippines	FEASIBILITY STUDY ON METRO MANILA URBAN EXPRESSWAY SYSTEM	R-4 PASIG RIVER BRIDGE 1	SCALE AS SHOWN	DWG. No. 8 - 4



P L A N

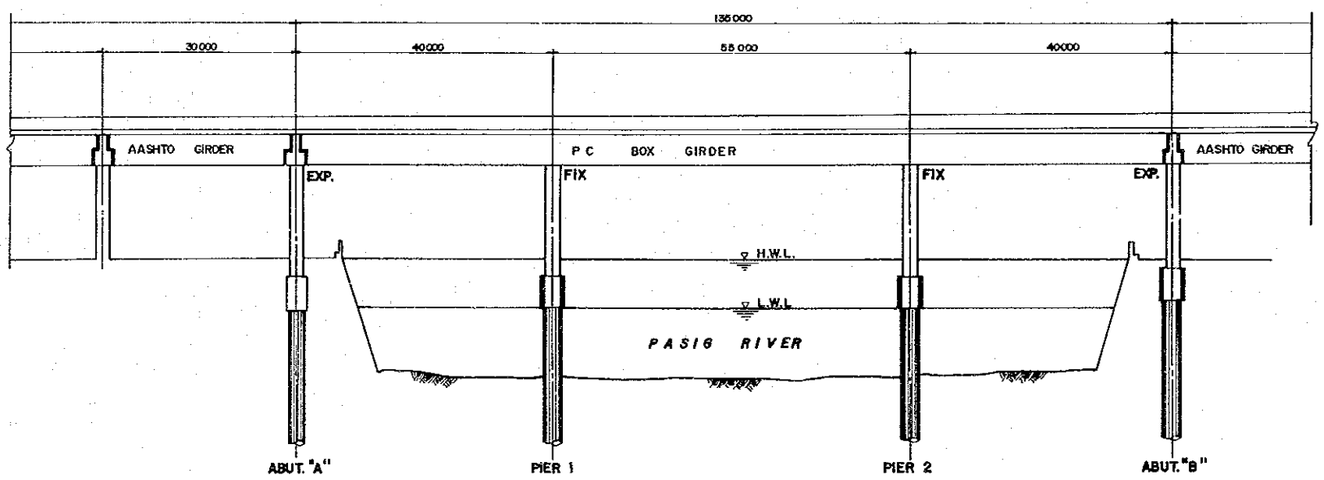
SCALE ..... 1 : 500



CROSS SECTION

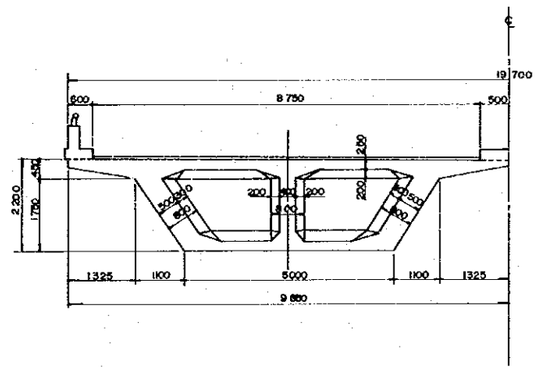
SCALE ..... 1 : 150

SIDE VIEW



P R O F I L E

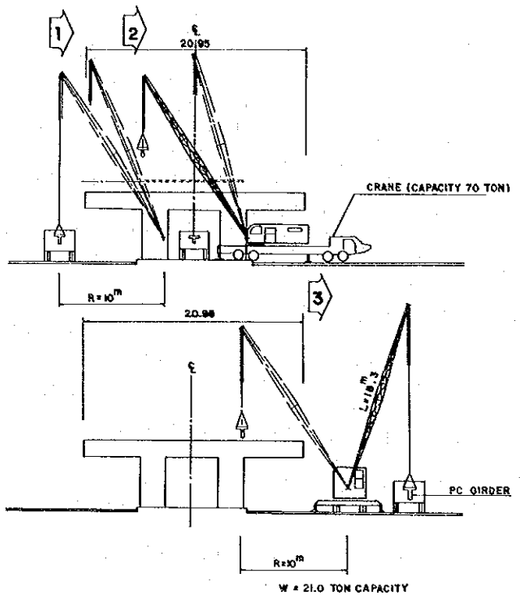
H = 1 : 500
V = 1 : 200

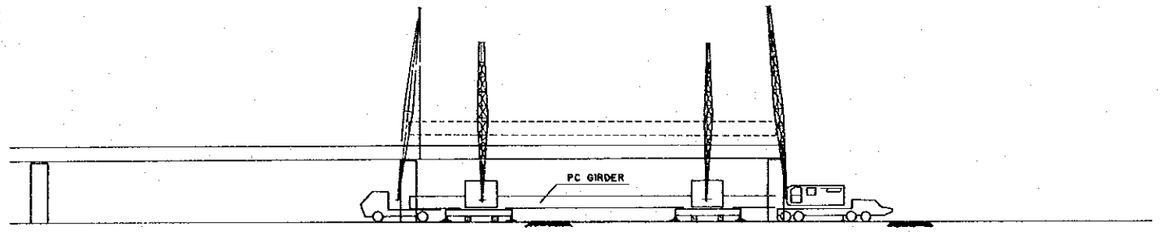


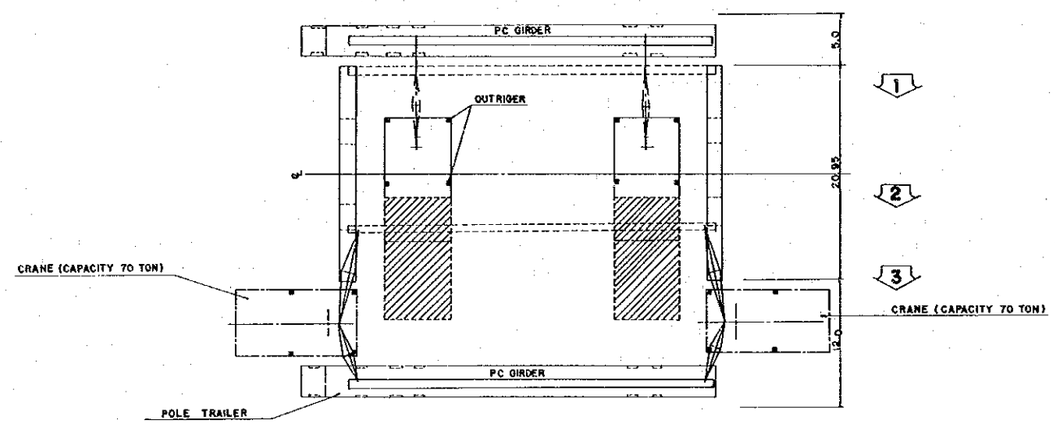
CROSS SECTION OF GIRDER

SCALE ..... 1 : 75

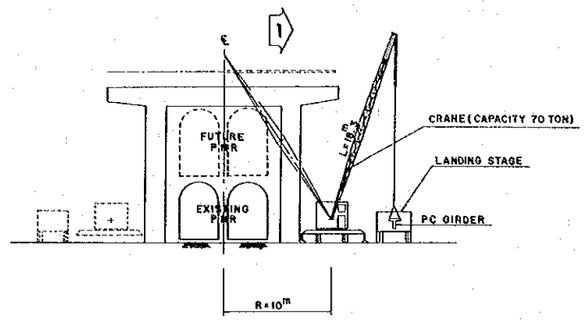
KEI KATAHIRA & ENGINEERS INTERNATIONAL	JICA JAPAN INTERNATIONAL COOPERATION AGENCY	DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS Republic of the Philippines	FEASIBILITY STUDY ON METRO MANILA URBAN EXPRESSWAY SYSTEM	R - 4 PASIG RIVER BRIDGE 2	SCALE AS SHOWN	DWG. No. 8 - 5

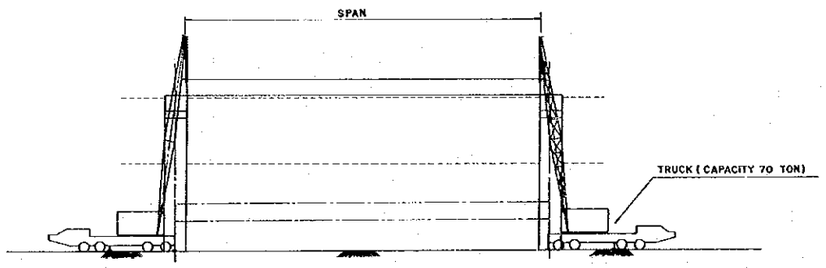


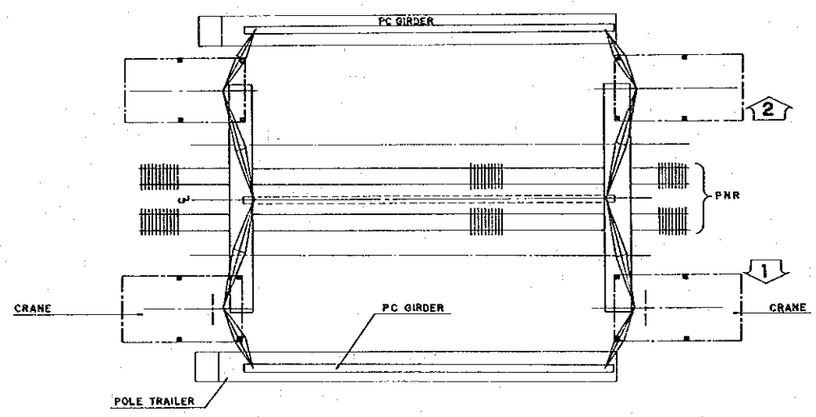




ERECTION OF GIRDER OVER EXISTING ROAD
SCALE 1 : 300

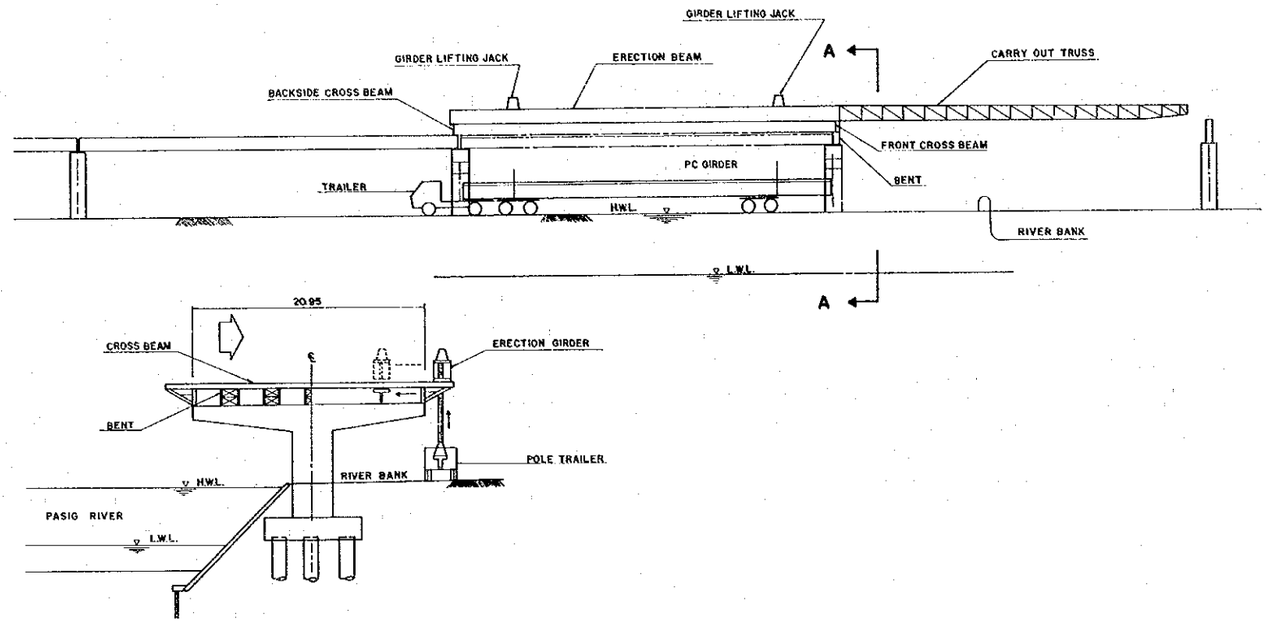






ERECTION OF GIRDER OVER EXISTING PNR (RAIL ROAD)
SCALE 1 : 300

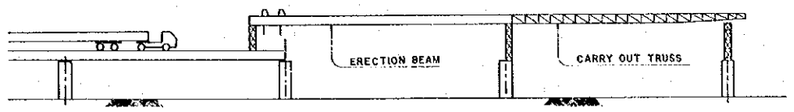
KEI KATAHIRA & ENGINEERS INTERNATIONAL	JICA JAPAN INTERNATIONAL COOPERATION AGENCY	DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS Republic of the Philippines	FEASIBILITY STUDY ON METRO MANILA URBAN EXPRESSWAY SYSTEM	ERECTION METHOD (1/2)	SCALE AS SHOWN	DWG. No. 8 - 6



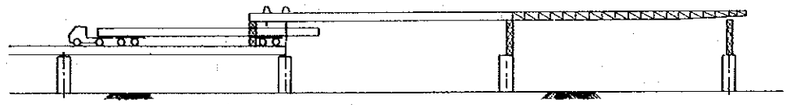
SECTION A - A

ERECTION OF GIRDER OVER PASIG RIVER BANK

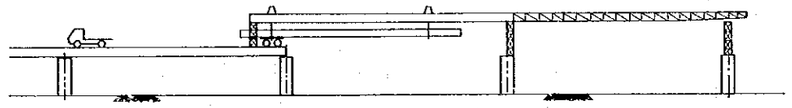
SCALE 1 : 300



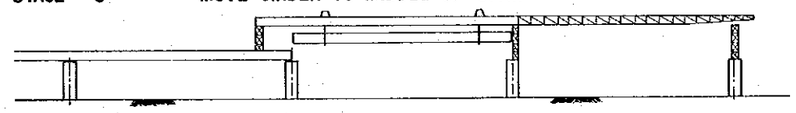
STAGE - 1 DELIVERED GIRDER



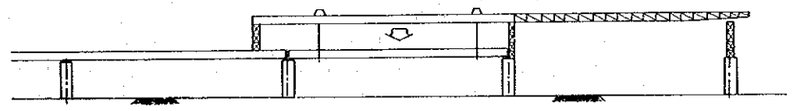
STAGE - 2 GIRDER HOLD BY ERECTION BEAM



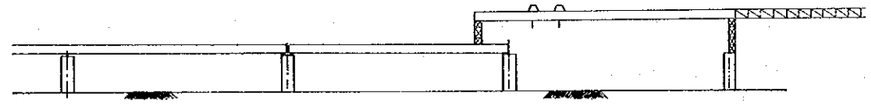
STAGE - 3 MOVE GIRDER TO MIDDLE OF SPAN



STAGE - 4 LOWERING GIRDER INTO POSITION



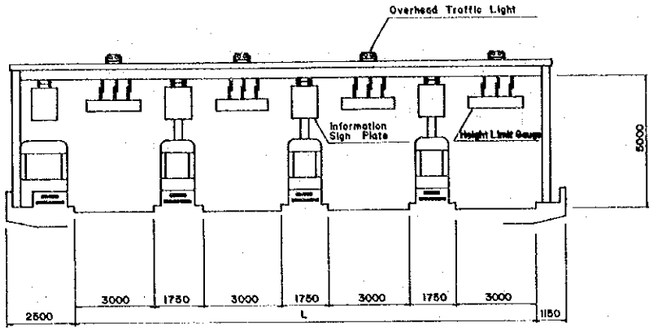
STAGE - 5 ERECTION GIRDER MOVE TOWARD NEXT SPAN (REPEAT CYCLE)



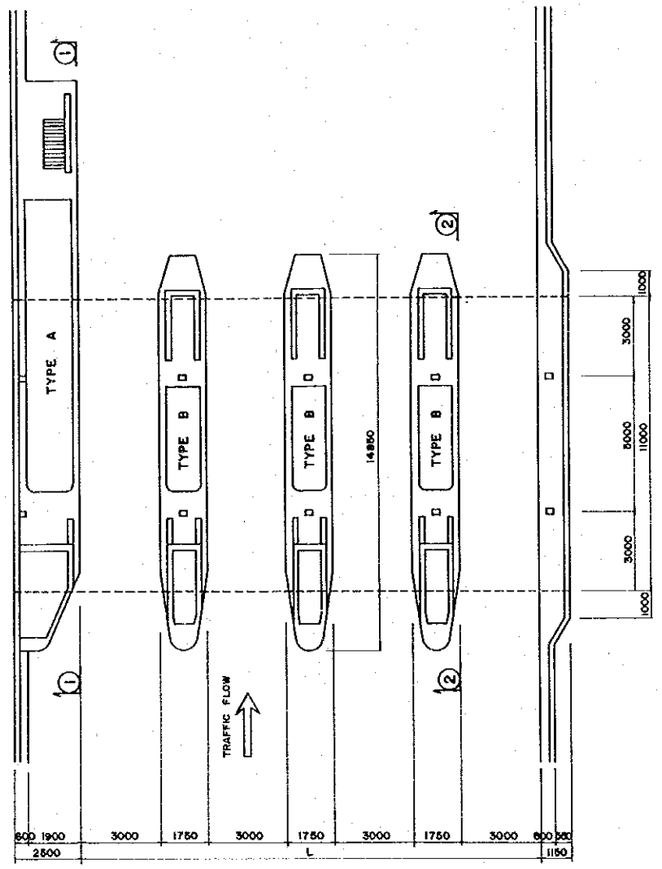
ERECTION OF GIRDER OVER SOUTH LUZON EXPRESSWAY

SCALE 1 : 500

KEI KATAHIRA & ENGINEERS INTERNATIONAL	JICA JAPAN INTERNATIONAL COOPERATION AGENCY	DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS Republic of the Philippines	FEASIBILITY STUDY ON METRO MANILA URBAN EXPRESSWAY SYSTEM	ERECTION METHOD (2/2)	SCALE: AS SHOWN / DWG. No.: 8 - 7

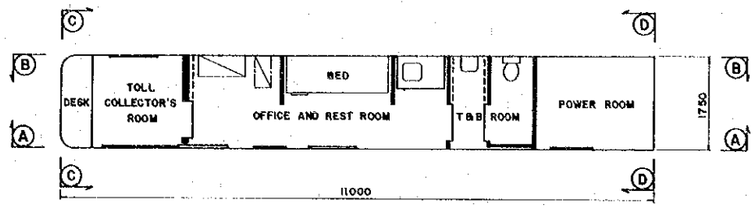


ELEVATION

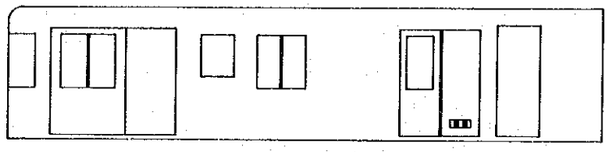


PLAN

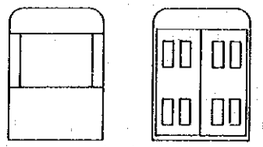
TOLL PLAZA
SCALE 1 : 120



PLAN

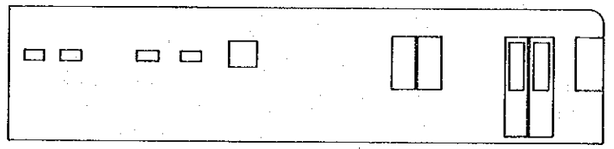


Ⓐ - Ⓐ SECTION



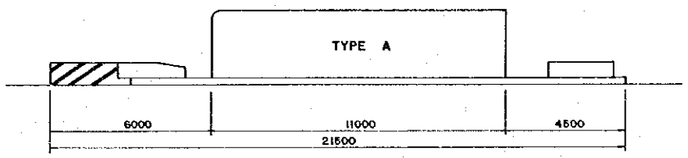
Ⓒ - Ⓒ SECTION

Ⓓ - Ⓓ SECTION

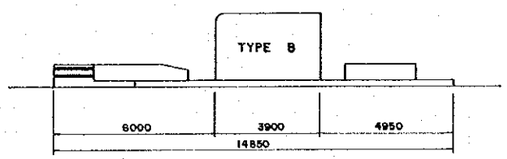


Ⓑ - Ⓑ SECTION

TOLL BOOTH TYPE A
SCALE 1 : 60

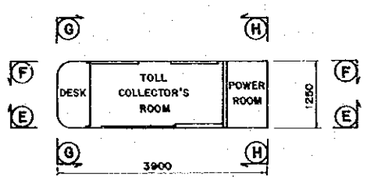


① - ① SECTION

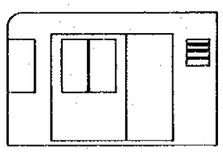


② - ② SECTION

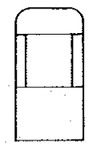
	L (M)
1 LANE 2 BOOTH	7.750
2 LANE 4 BOOTH	17.250
2 LANE 6 BOOTH	26.750
4 LANE 8 BOOTH	36.250



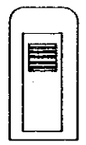
PLAN



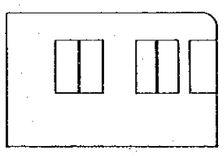
Ⓔ - Ⓔ SECTION



Ⓖ - Ⓖ SECTION



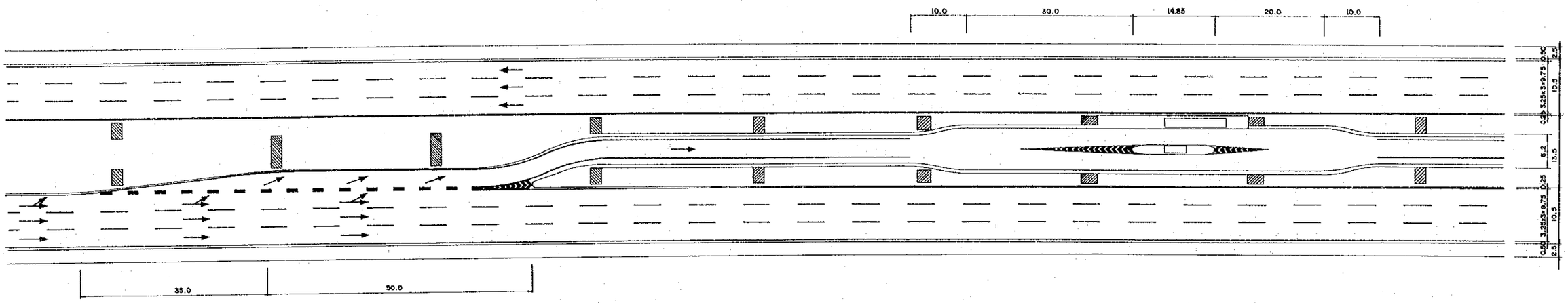
Ⓗ - Ⓗ SECTION



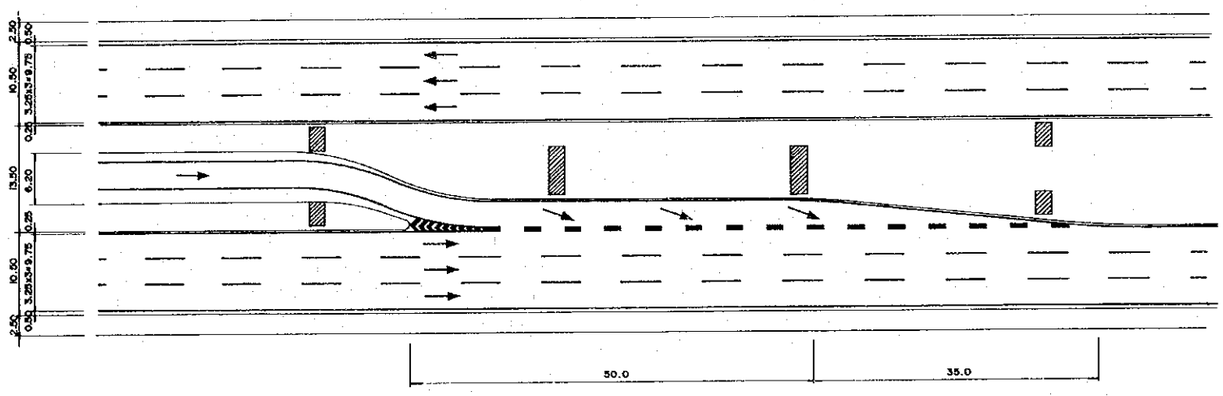
Ⓕ - Ⓕ SECTION

TOLL BOOTH TYPE B
SCALE 1 : 60

KEI KATAHIRA & ENGINEERS INTERNATIONAL	JICA JAPAN INTERNATIONAL COOPERATION AGENCY	DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS Republic of the Philippines	FEASIBILITY STUDY ON METRO MANILA URBAN EXPRESSWAY SYSTEM	TOLL PLAZA AND TOLL BOOTH PLAN, ELEVATION, AND SECTION	SCALE: AS SHOWN	DWG. No.: 9 - 1



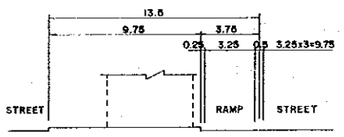
ON - RAMP



OFF - RAMP

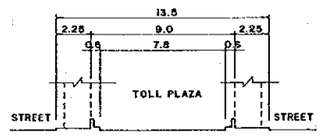
P L A N

SCALE 1 : 400



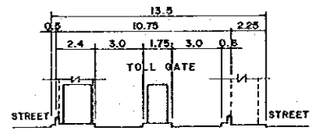
① - ① SECTION

SCALE 1 : 200



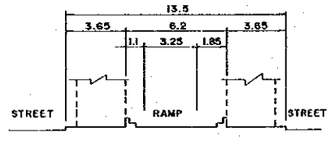
② - ② SECTION

SCALE 1 : 200



③ - ③ SECTION

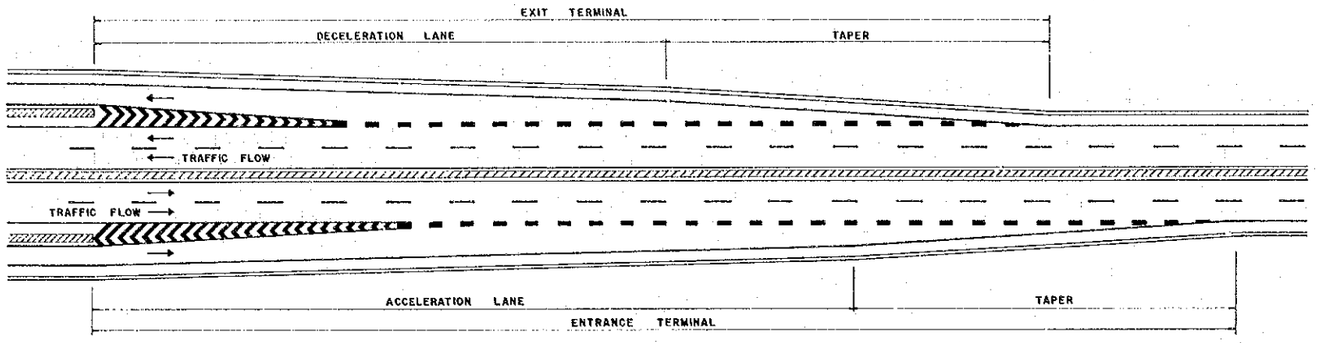
SCALE 1 : 200



④ - ④ SECTION

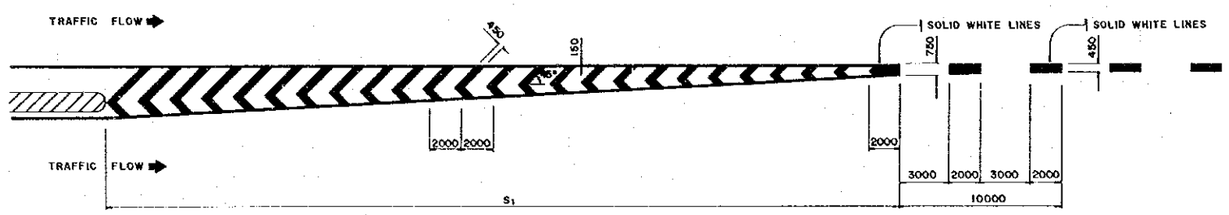
SCALE 1 : 200

KEI KATAHIRA & ENGINEERS INTERNATIONAL	JICA JAPAN INTERNATIONAL COOPERATION AGENCY	DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS Republic of the Philippines	FEASIBILITY STUDY ON METRO MANILA URBAN EXPRESSWAY SYSTEM	DETAILS OF CENTER RAMP TERMINAL AT AT-GRADE ROAD	SCALE: AS SHOWN / DWG. No.: 9 - 2



TYPICAL PAVEMENT MARKINGS AT SPEEDCHANGE AREAS

NOT TO SCALE

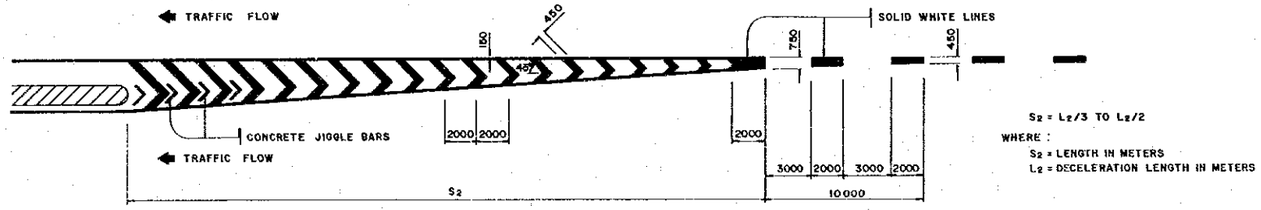


$S_1 = L_1/3$ TO $L_1/2$

WHERE :
S_1 = LENGTH IN METERS
L_1 = ACCELERATION LENGTH IN METERS

TYPICAL PAVEMENT MARKING APPROCHING ENTRANCE NOSE

SCALE 1 : 200

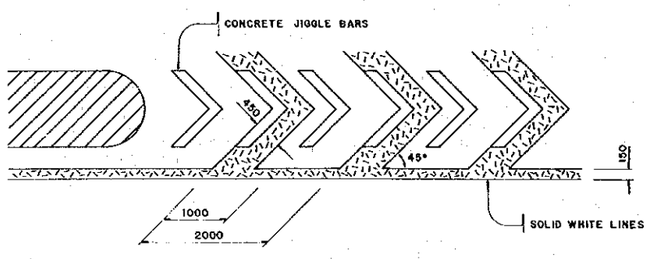


$S_2 = L_2/3$ TO $L_2/2$

WHERE :
S_2 = LENGTH IN METERS
L_2 = DECELERATION LENGTH IN METERS

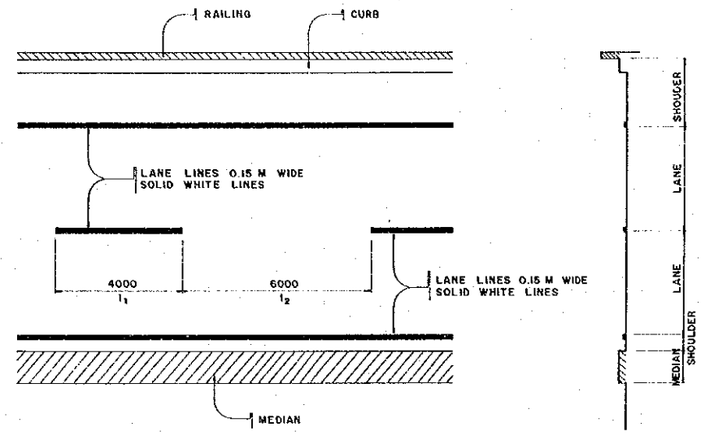
TYPICAL PAVEMENT MARKING APPROCHING EXIT NOSE

SCALE 1 : 200



DETAIL OF EXIT NOSE

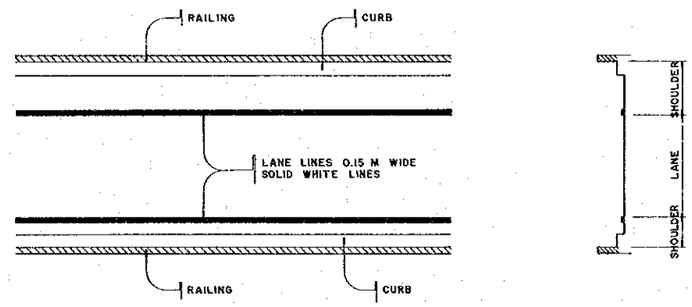
SCALE 1 : 50



NOTE :
WHEN EXPRESSWAY DESIGN SPEED IS 80KM/H SHALL BE KEEPED TO LENGTH OF l_1 = 8.0 M AND l_2 = 12.0 M

TYPICAL PAVEMENT MARKING OF TWO – LANES

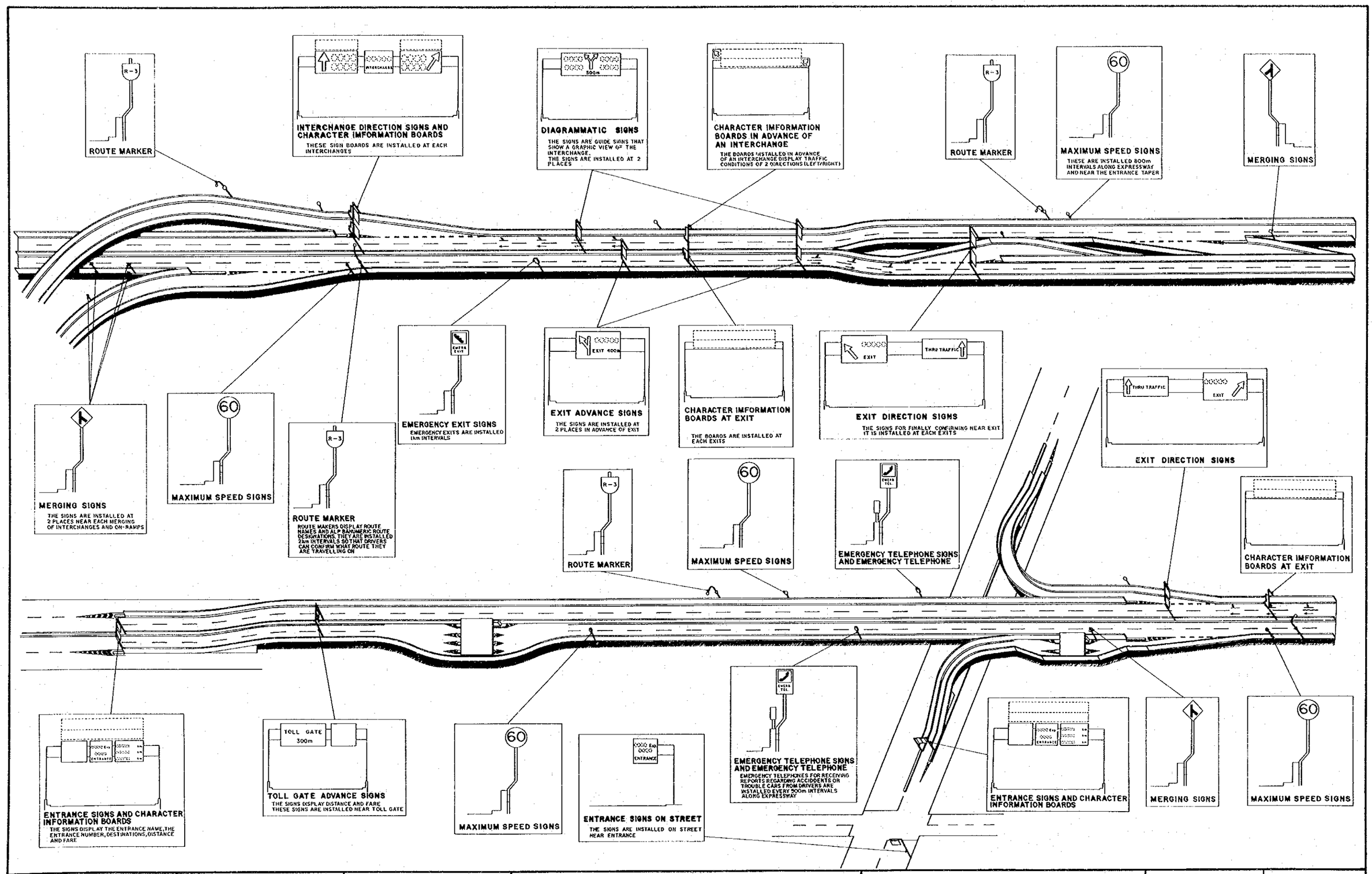
NOT TO SCALE



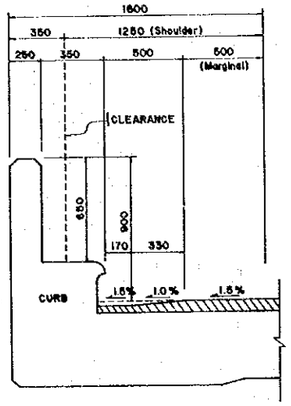
TYPICAL PAVEMENT MARKING OF ONE – LANE

NOT TO SCALE

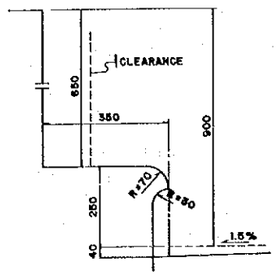
KEI KATAHIRA & ENGINEERS INTERNATIONAL	JICA JAPAN INTERNATIONAL COOPERATION AGENCY	DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS Republic of the Philippines	FEASIBILITY STUDY ON METRO MANILA URBAN EXPRESSWAY SYSTEM	TYPICAL PAVEMENT MARKINGS DETAILS	SCALE: AS SHOWN / DWG. No.: 9 - 3



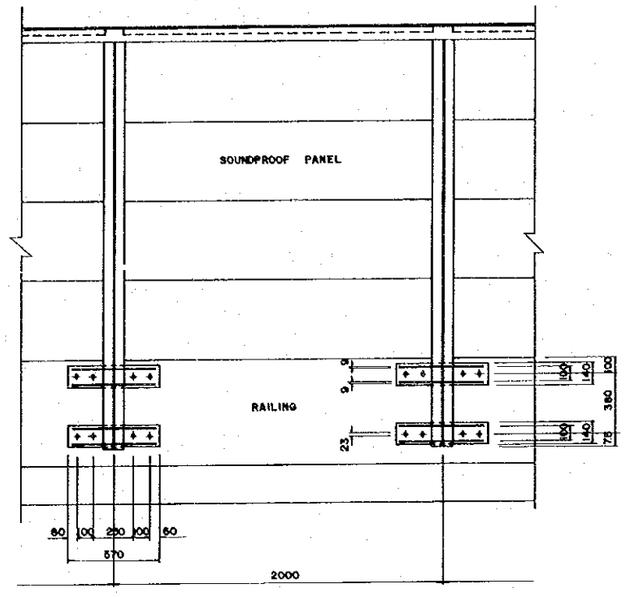
KEI KATAHIRA & ENGINEERS INTERNATIONAL	JICA JAPAN INTERNATIONAL COOPERATION AGENCY	DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS Republic of the Philippines	FEASIBILITY STUDY ON METRO MANILA URBAN EXPRESSWAY SYSTEM	LAYOUT OF TRAFFIC CONTROL FACILITIES	SCALE: NOT TO SCALE / DWG. No.: 9 - 4



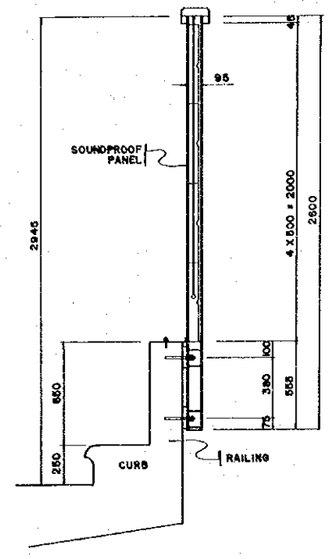
CONCRETE RAILING
SCALE 1 : 20



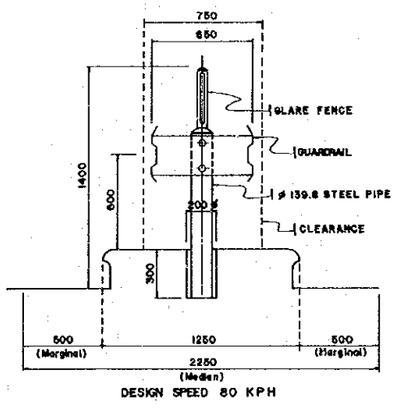
CONCRETE CURB
SCALE 1 : 10



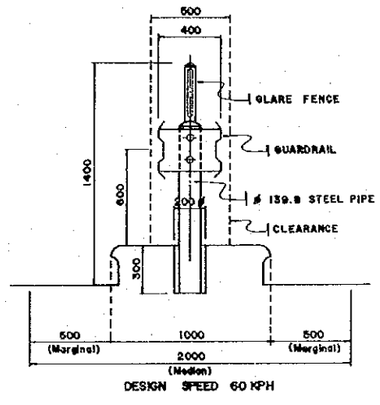
SIDE ELEVATION



SECTION

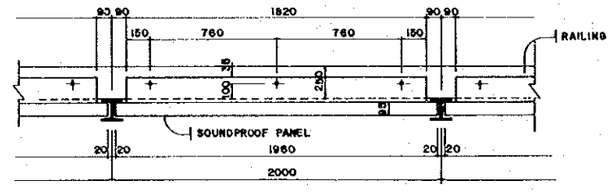


SECTION



SECTION

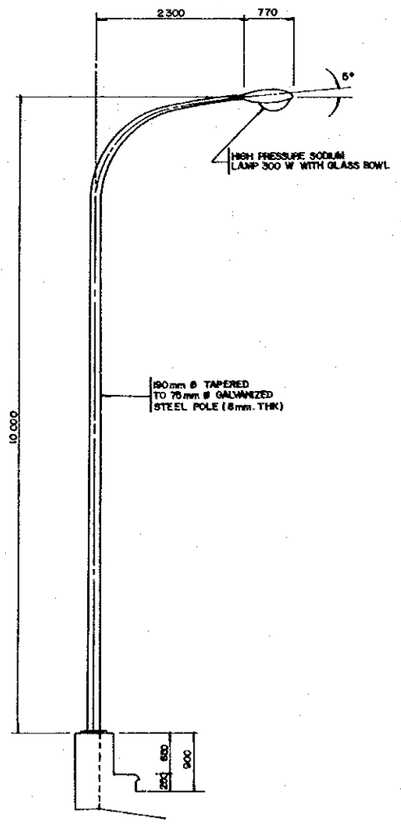
MEDIAN AND GUARDRAIL
SCALE 1 : 20



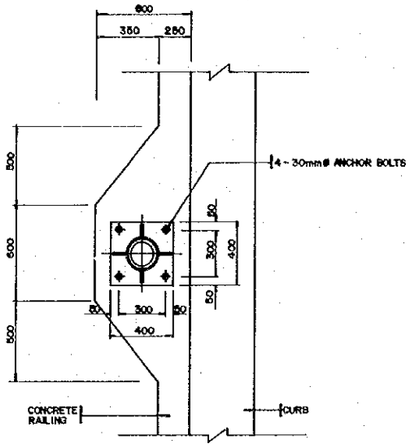
PLAN

NOISE BARRIER
SCALE 1 : 20

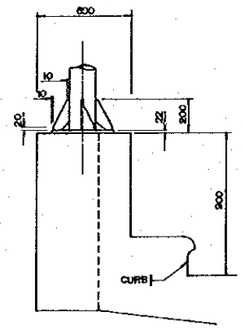
KEI KATAHIRA & ENGINEERS INTERNATIONAL	JICA JAPAN INTERNATIONAL COOPERATION AGENCY	DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS Republic of the Philippines	FEASIBILITY STUDY ON METRO MANILA URBAN EXPRESSWAY SYSTEM	STANDARD CONCRETE RAILING, AND NOISE BARRIER DETAILS	SCALE: AS SHOWN / DWG. No.: 9 - 5



SECTION
SCALE.....1:50

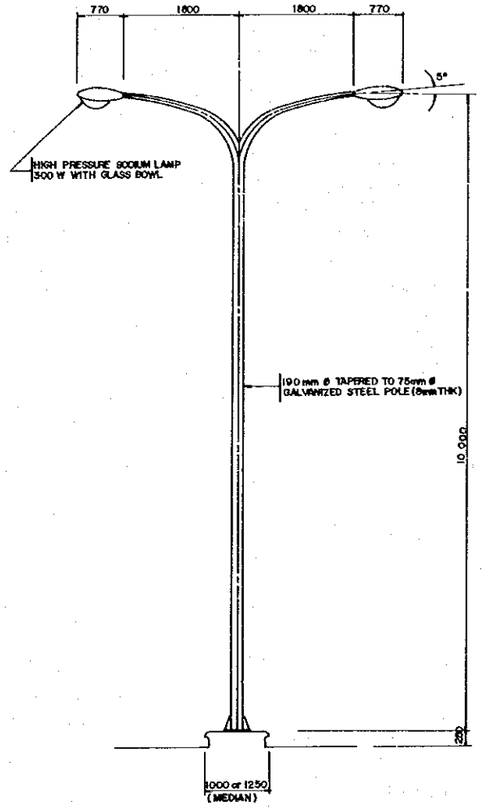


P L A N
SCALE 1:20

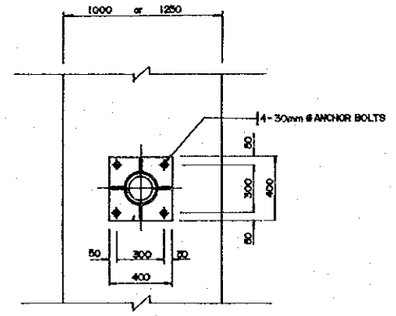


LIGHTING POST ON RETAINING WALL
SCALE 1:20

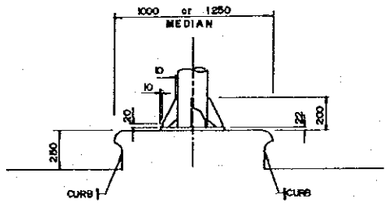
DETAIL OF TAPERED POST



SECTION
SCALE.....1:50



P L A N
SCALE 1:20



LIGHTING POST ON MEDIAN
SCALE 1:20

DETAIL OF TWIN ARM TAPERED POST

KEI KATAHIRA & ENGINEERS INTERNATIONAL	JICA JAPAN INTERNATIONAL COOPERATION AGENCY	DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS Republic of the Philippines	FEASIBILITY STUDY ON METRO MANILA URBAN EXPRESSWAY SYSTEM	STANDARD LIGHTING	SCALE: AS SHOWN / DWG. No.: 9 - 6