



***Liwo-2***

**Legend**

 : Car is available

 : Foot Pass



Bird view



Road End Point (Sitio Halong) - Site  
About 1km, About 30min on foot



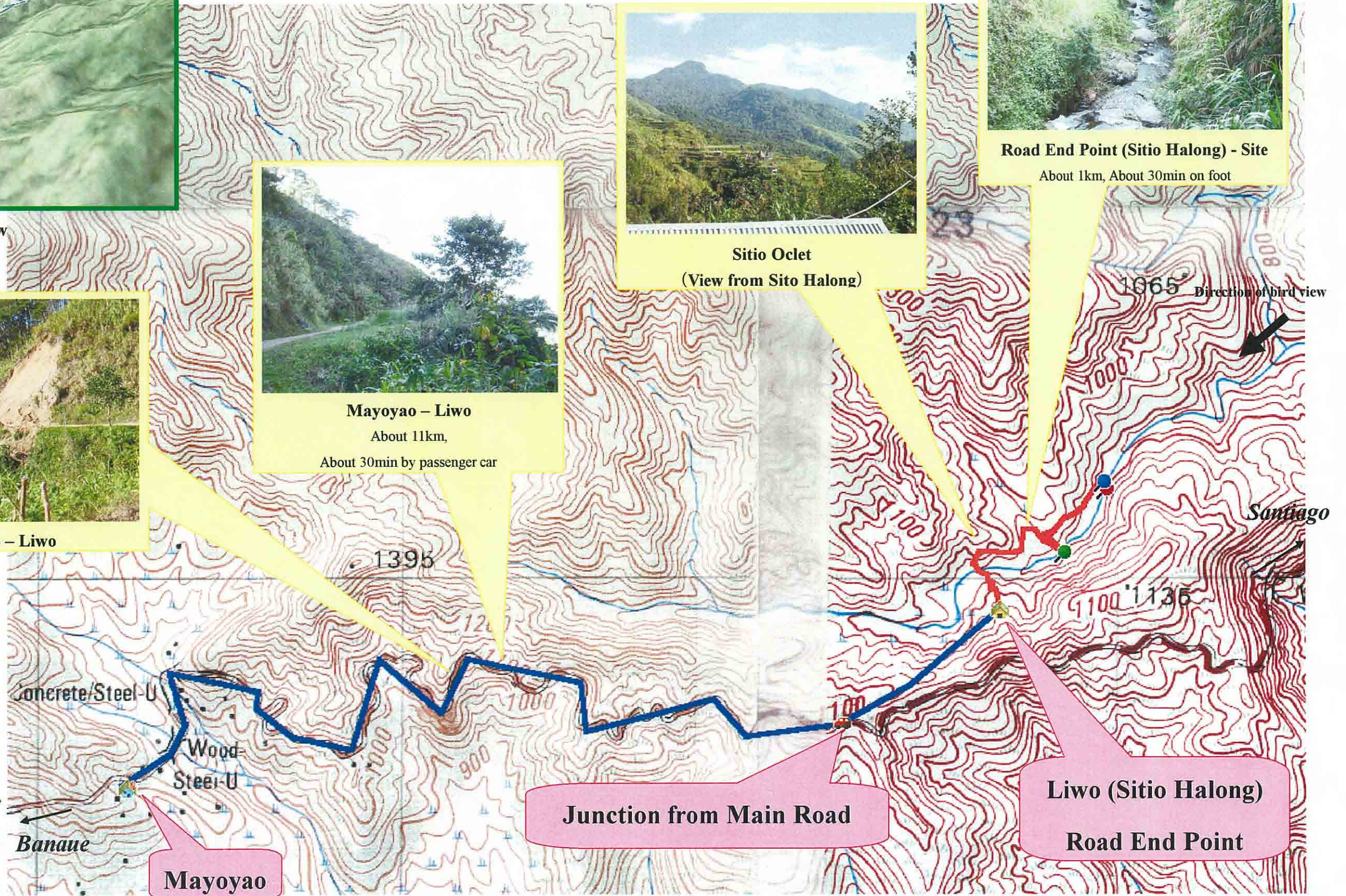
Sitio Oclet  
(View from Sitio Halong)



Mayoyao – Liwo  
About 11km,  
About 30min by passenger car



Mayoyao – Liwo



Liwo-2 Micro Hydro Power  
Station Access Plan  
Draw. No. LW-G-001

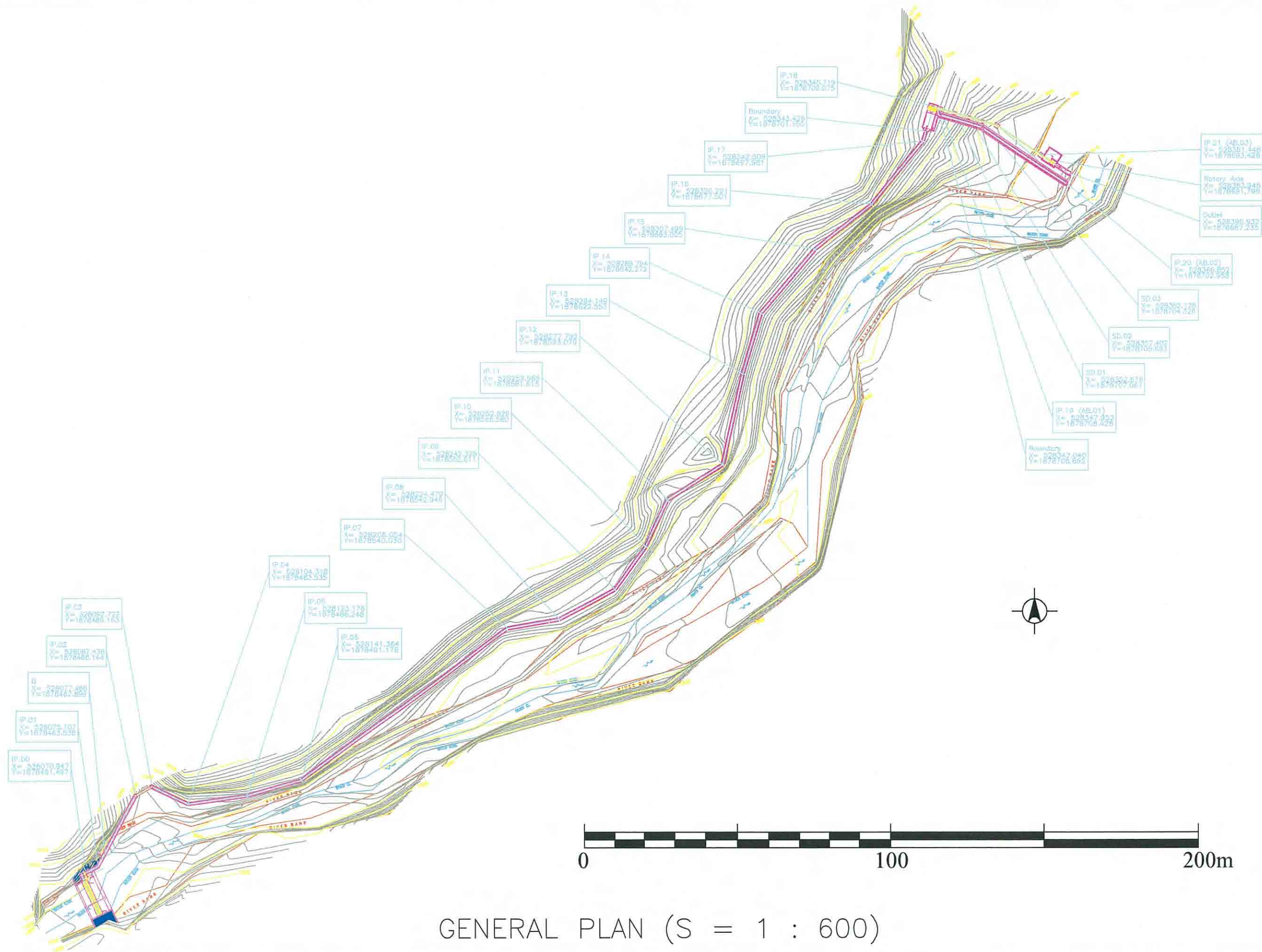
Mayoyao

Junction from Main Road

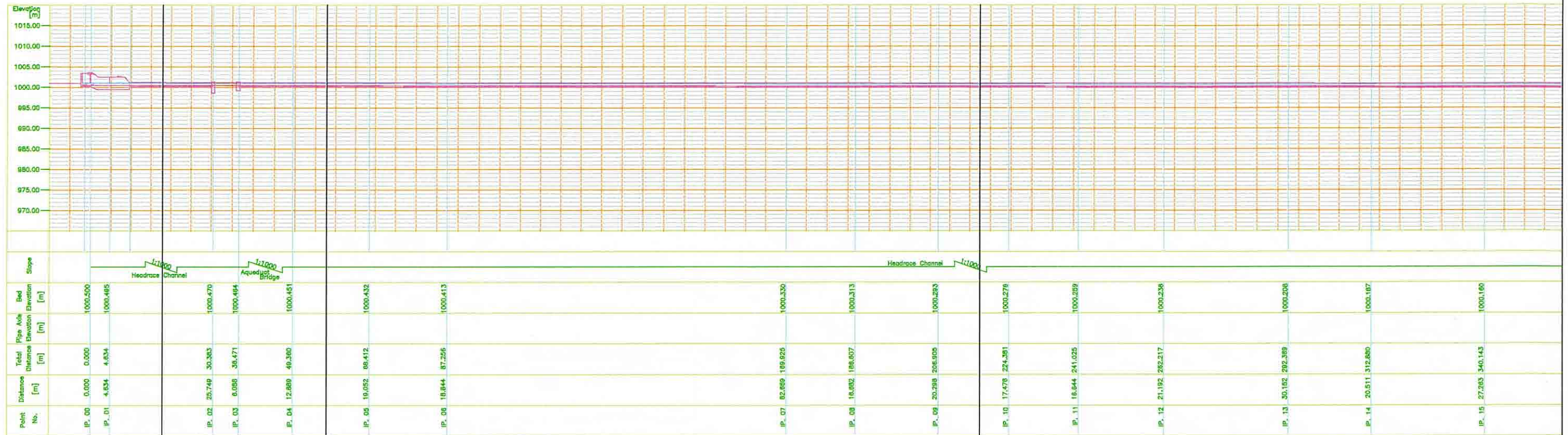
Liwo (Sitio Halong)  
Road End Point

Banaue

Santiago



GENERAL PLAN (S = 1 : 600)



PROFILE  
(S = 1 : 500)



HEADRACE CHANNEL  
TYPICAL SECTION 1  
(S = 1 : 100)

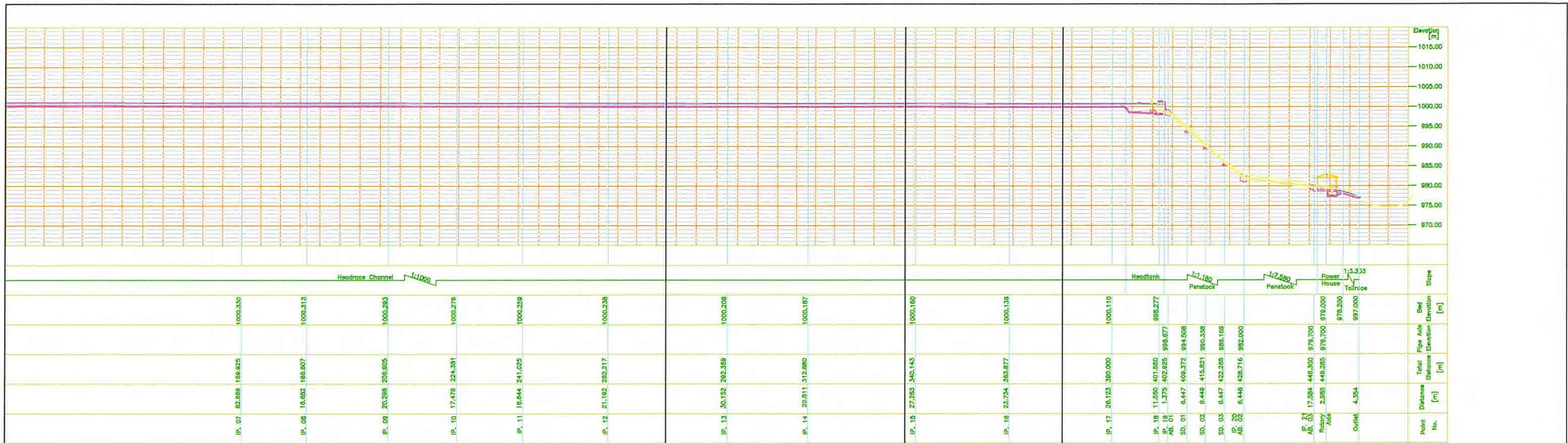


HEADRACE CHANNEL  
TYPICAL SECTION 2  
(S = 1 : 100)



HEADRACE CHANNEL  
TYPICAL SECTION 3  
(S = 1 : 100)





PROFILE  
(S = 1 : 500)



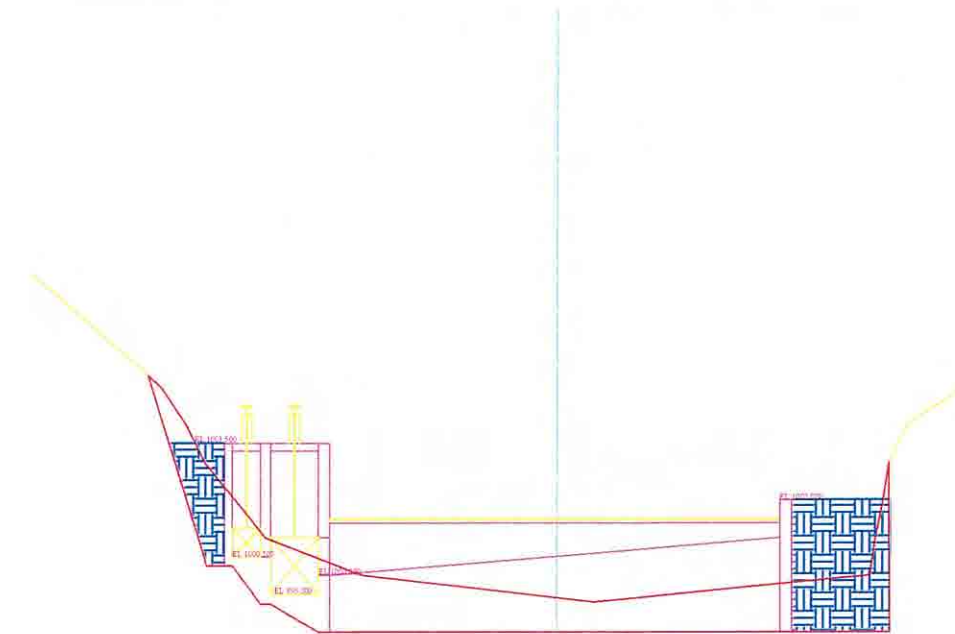
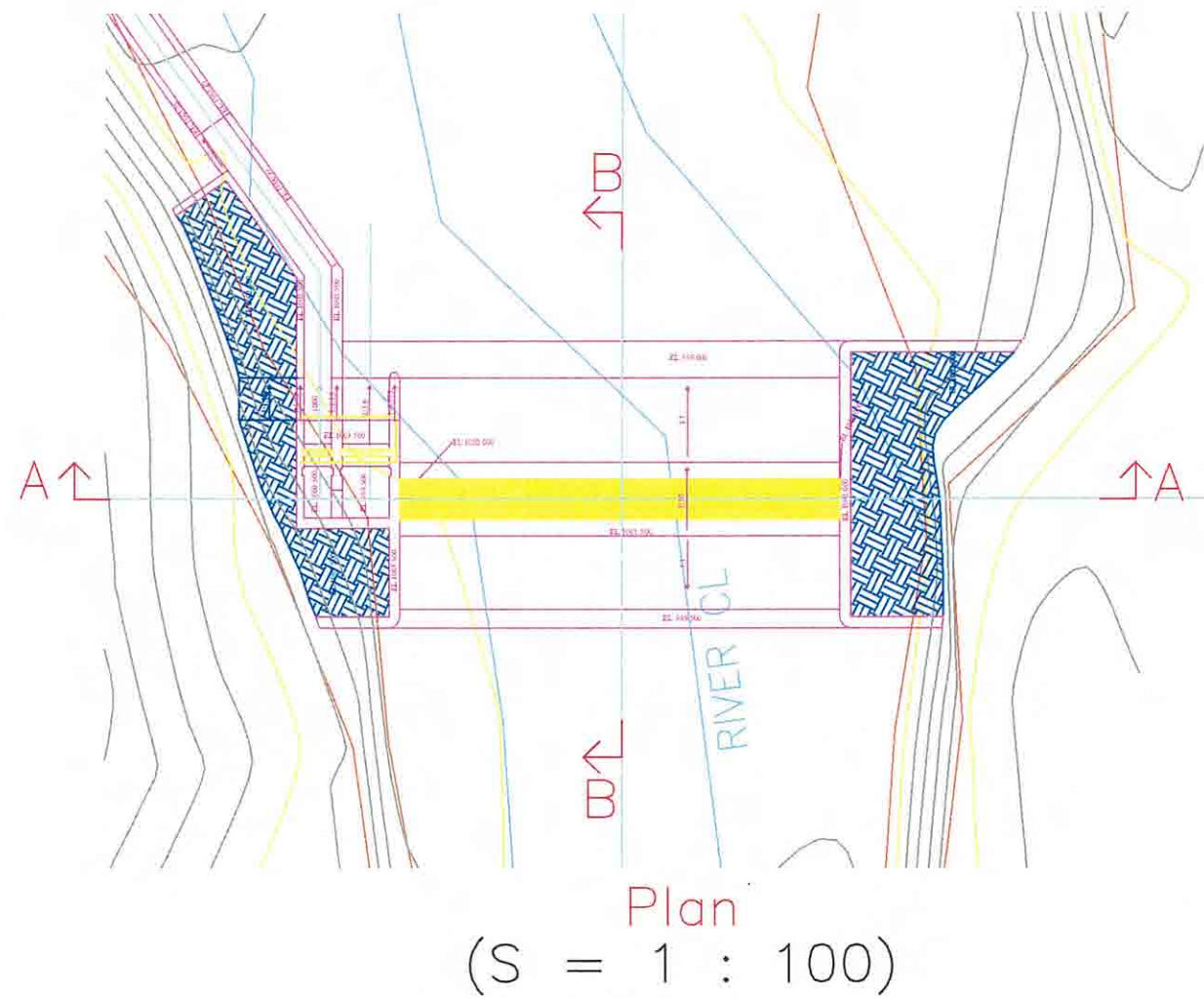
HEADRACE CHANNEL  
TYPICAL SECTION 4  
(S = 1 : 100)



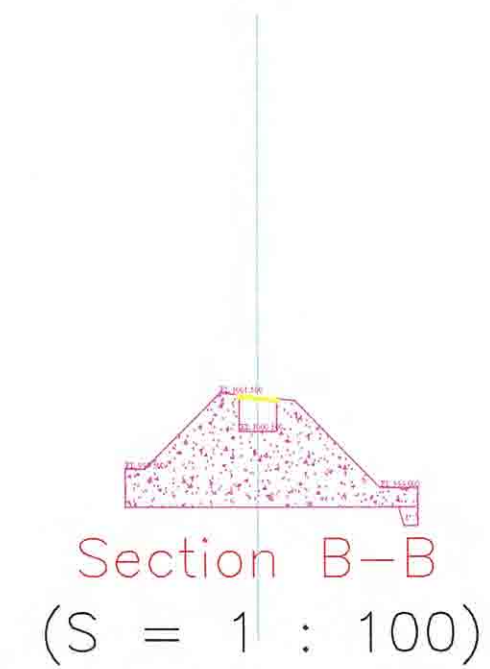
HEADRACE CHANNEL  
TYPICAL SECTION 5  
(S = 1 : 100)

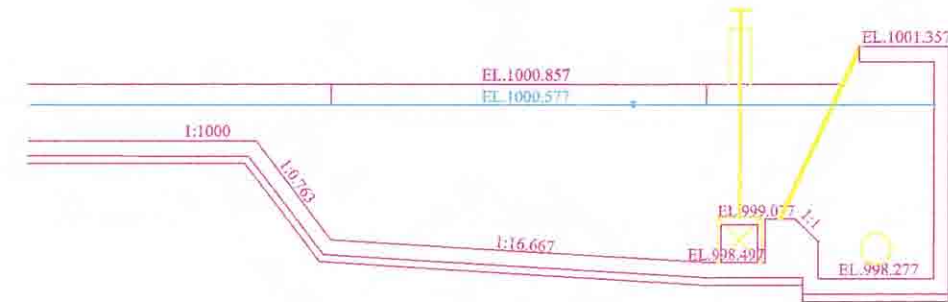
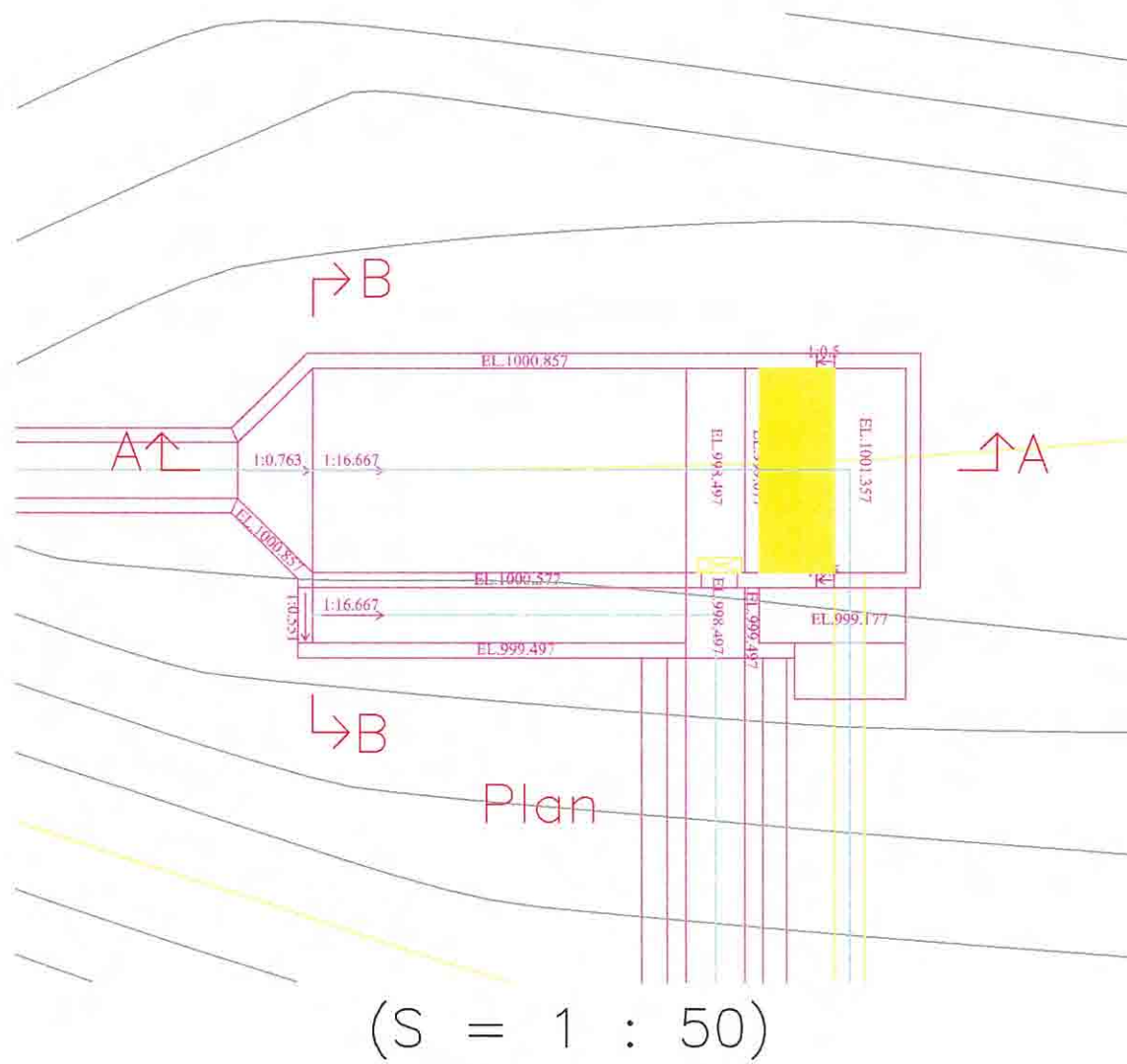


HEADRACE CHANNEL  
TYPICAL SECTION 6  
(S = 1 : 100)

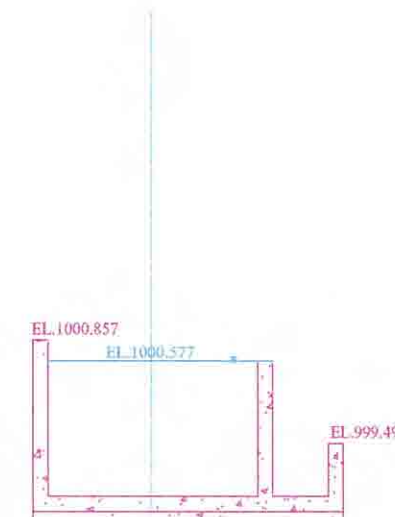


Section A-A  
(S = 1 : 100)

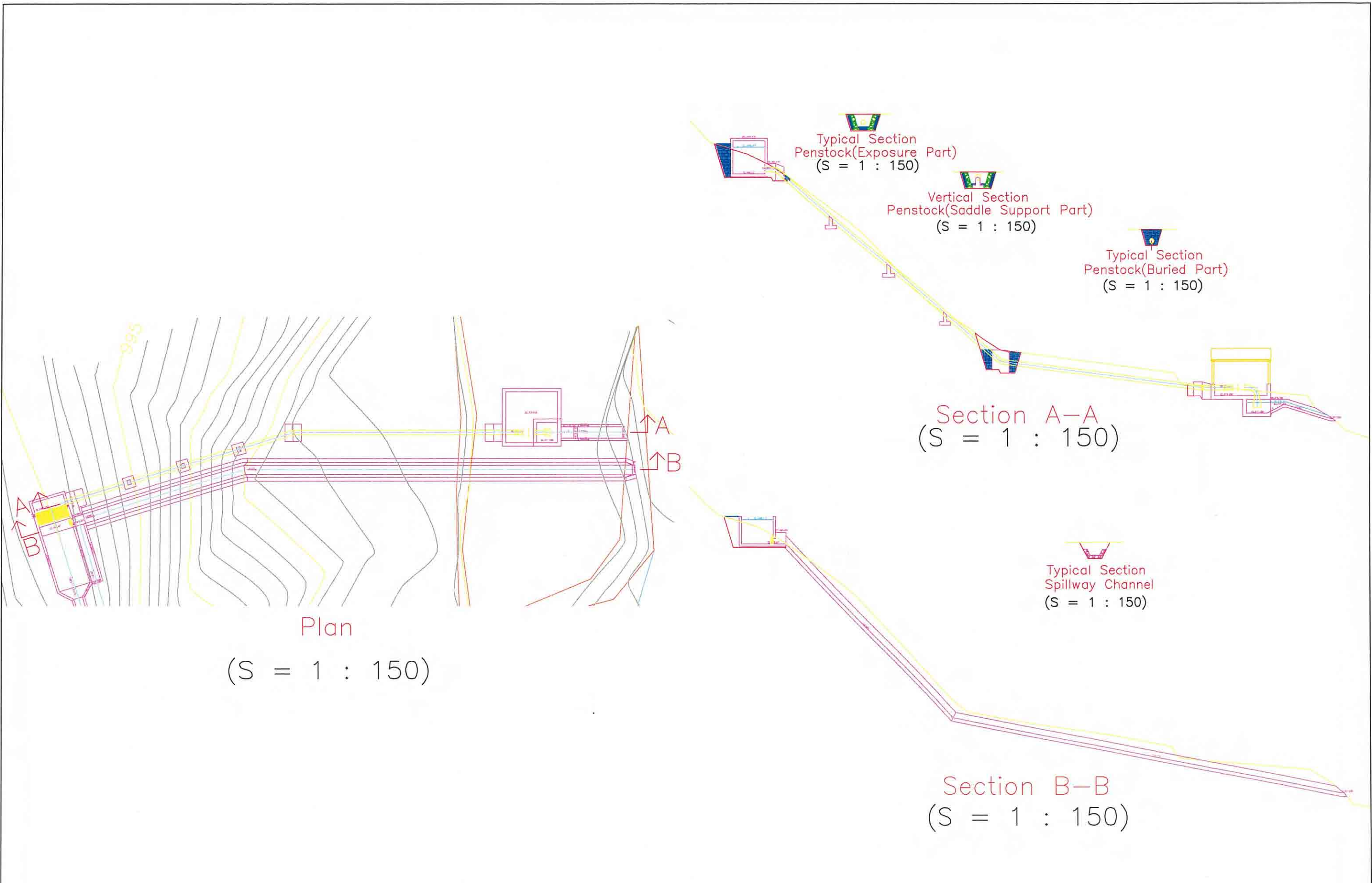




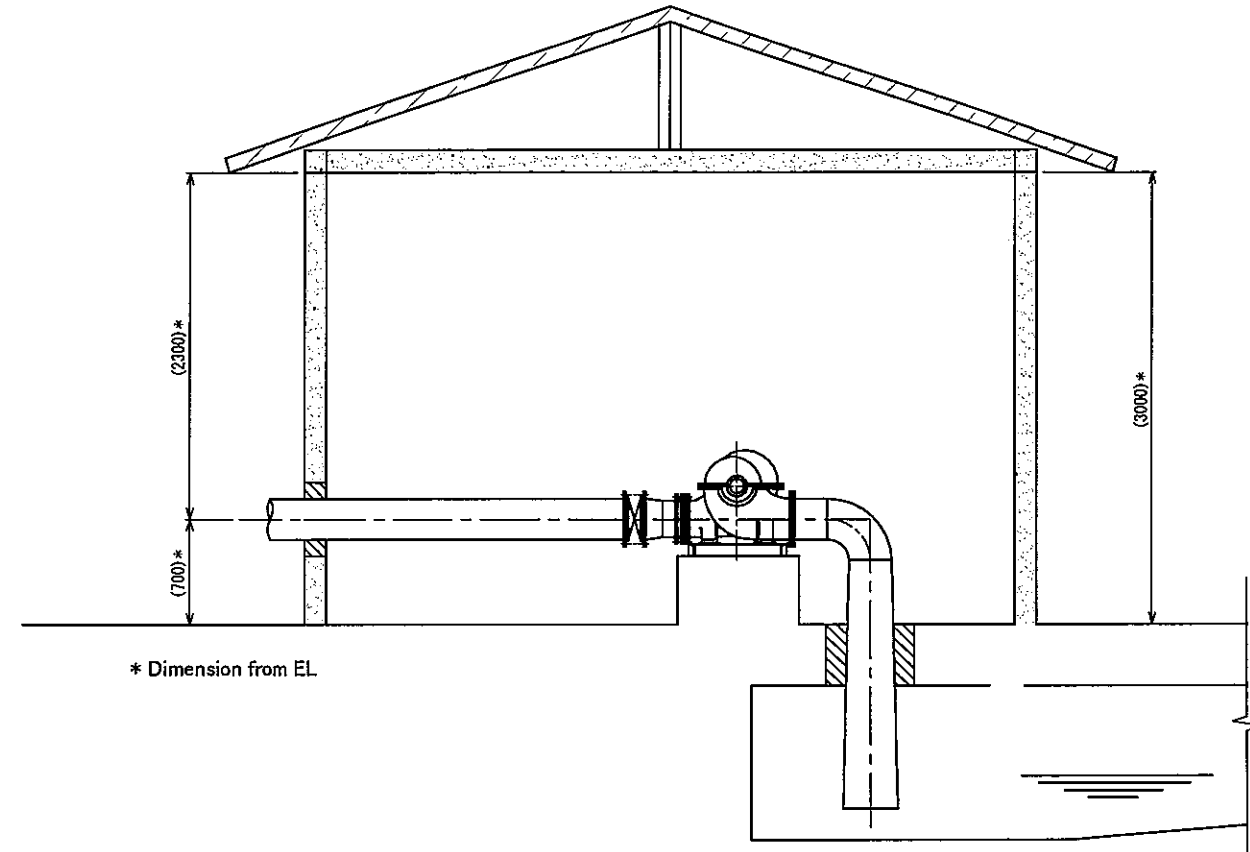
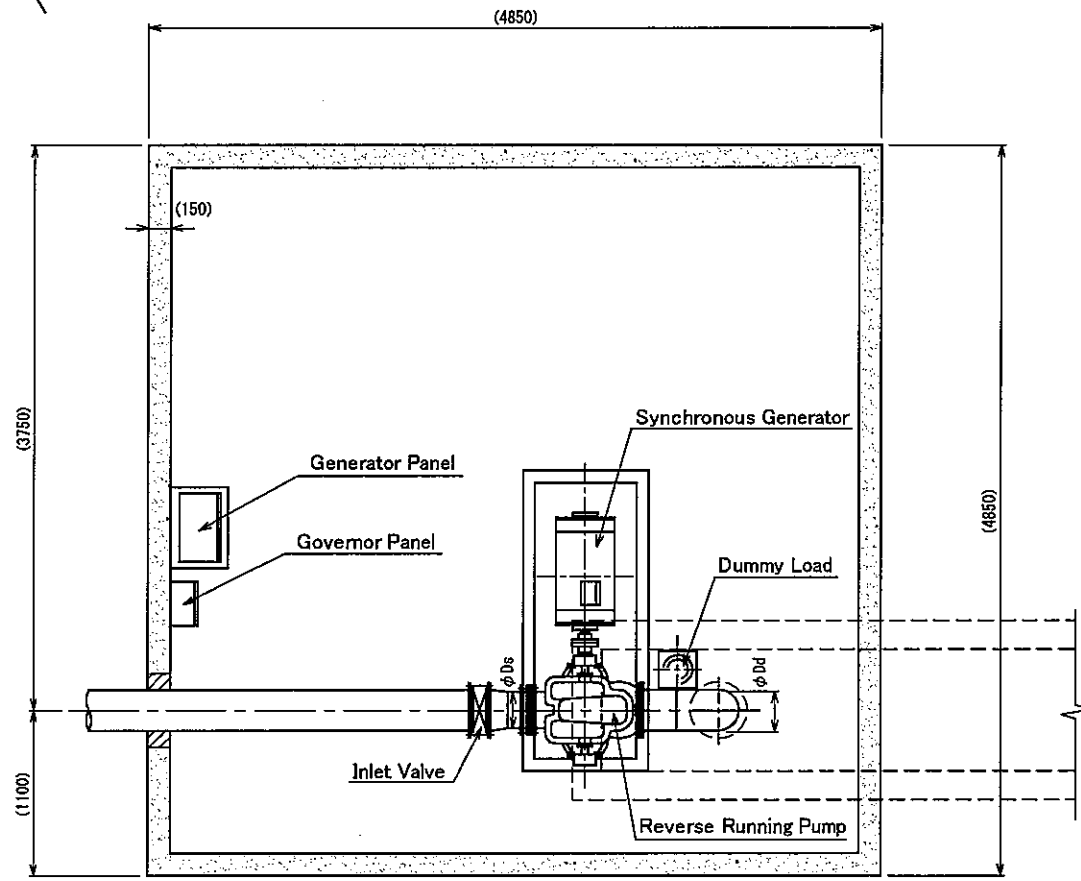
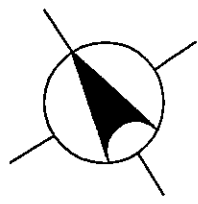
Section A-A  
(S = 1 : 50)



Section B-B  
(S = 1 : 50)







\* Dimension from EL



	Turbine Discharge ( $m^3/s$ )	Effective Head (m)	Speed ( $min^{-1}$ )	Rated Capacity (kVA)	Speed Increase Gear	Dimension	
						Ds	Dd
Liwo-2	0.29	20.84	1200	60	—	250	350



JAPAN INTERNATIONAL COOPERATION AGENCY

PROJECT & LOCATION:

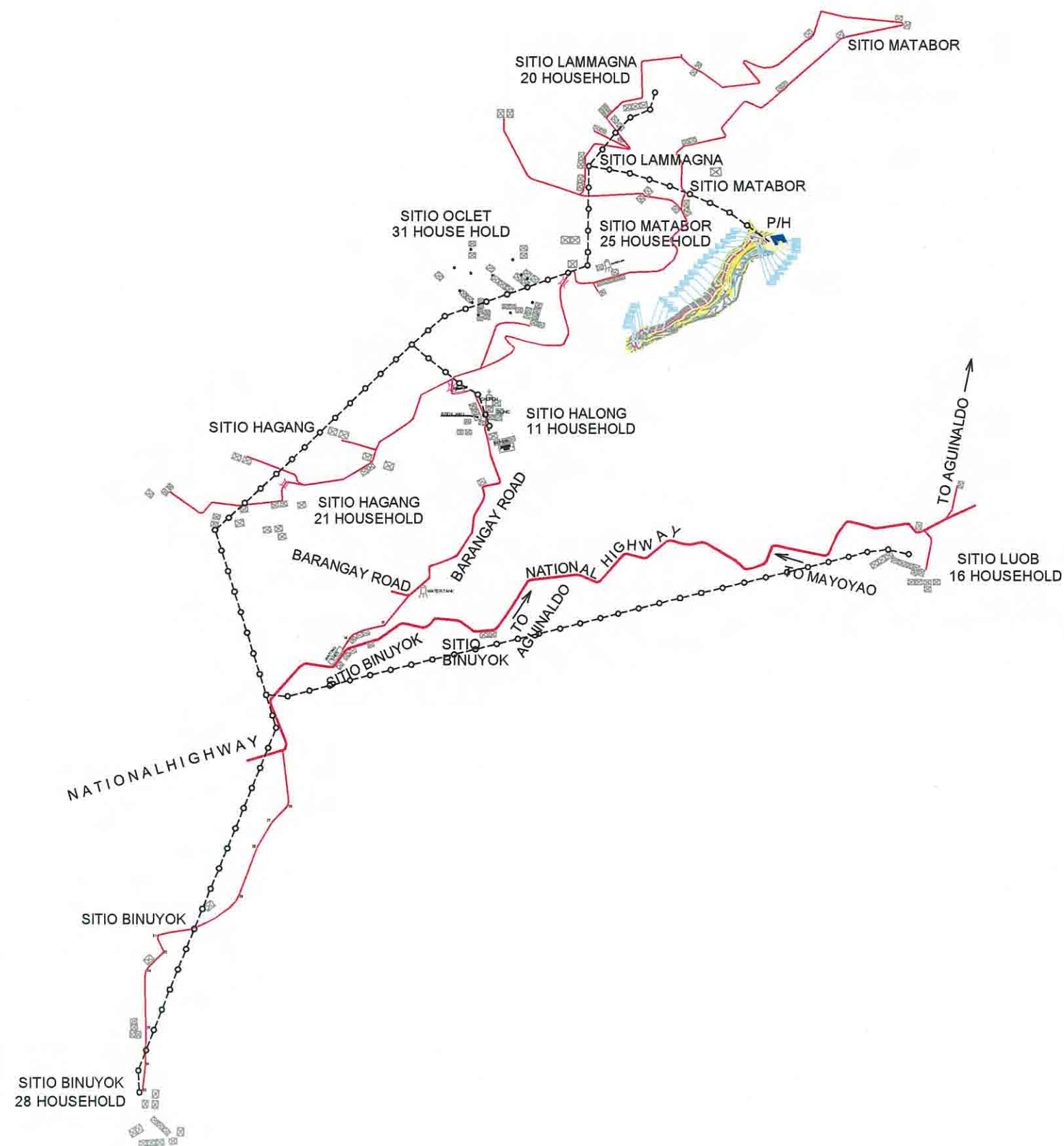
THE BASIC DESIGN STUDY ON THE PROJECT FOR  
RURAL ELECTRIFICATION IN NORTHERN LUZON IN  
THE REPUBLIC OF THE PHILIPPINES

SHEET CONTENTS

Liwo-2 Micro Hydro Power Station Plan

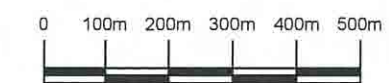
Draw. No.

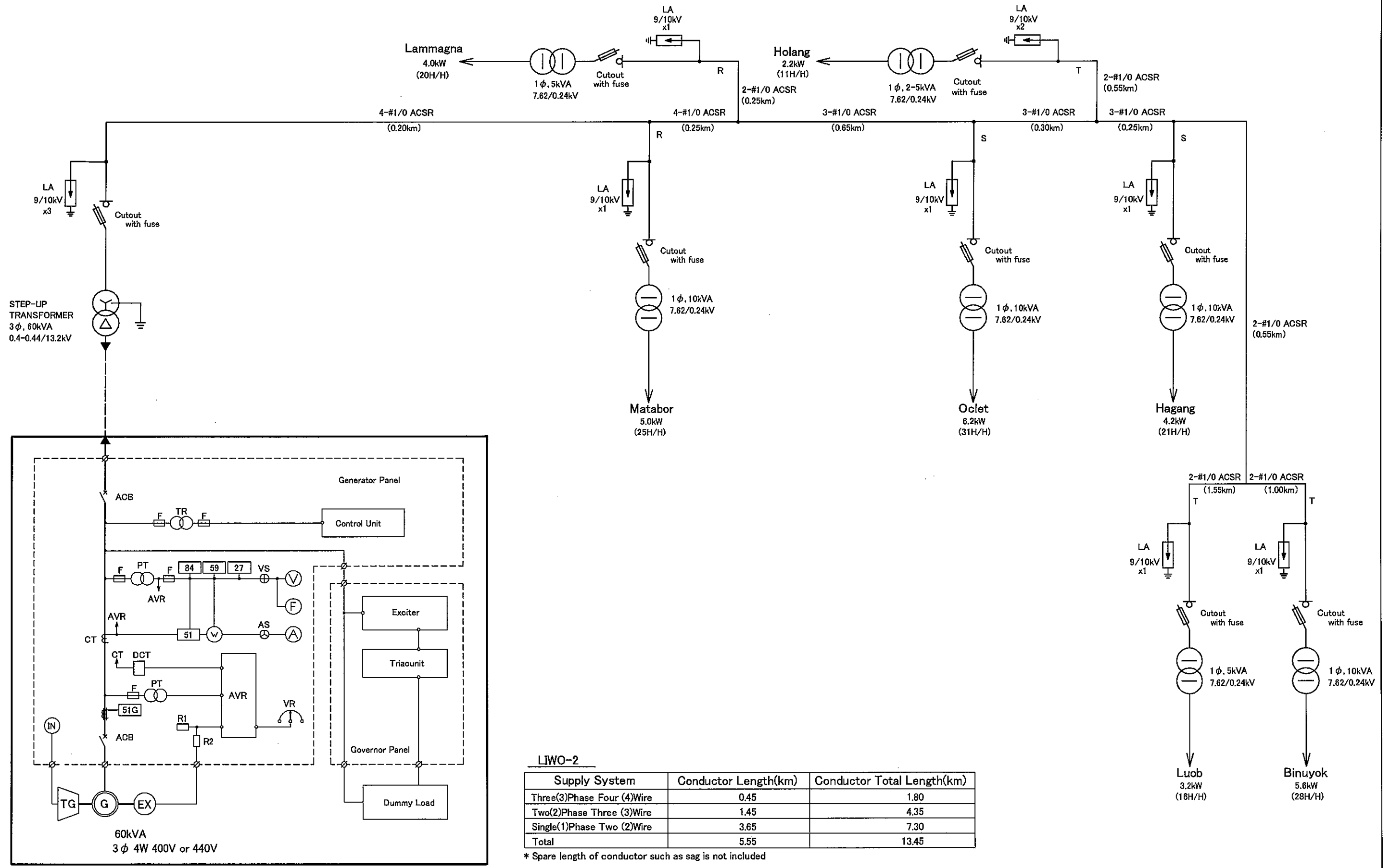
LW-E-001



Legend

○-----○	Transmission Line Route Plan
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**LIWO-2**

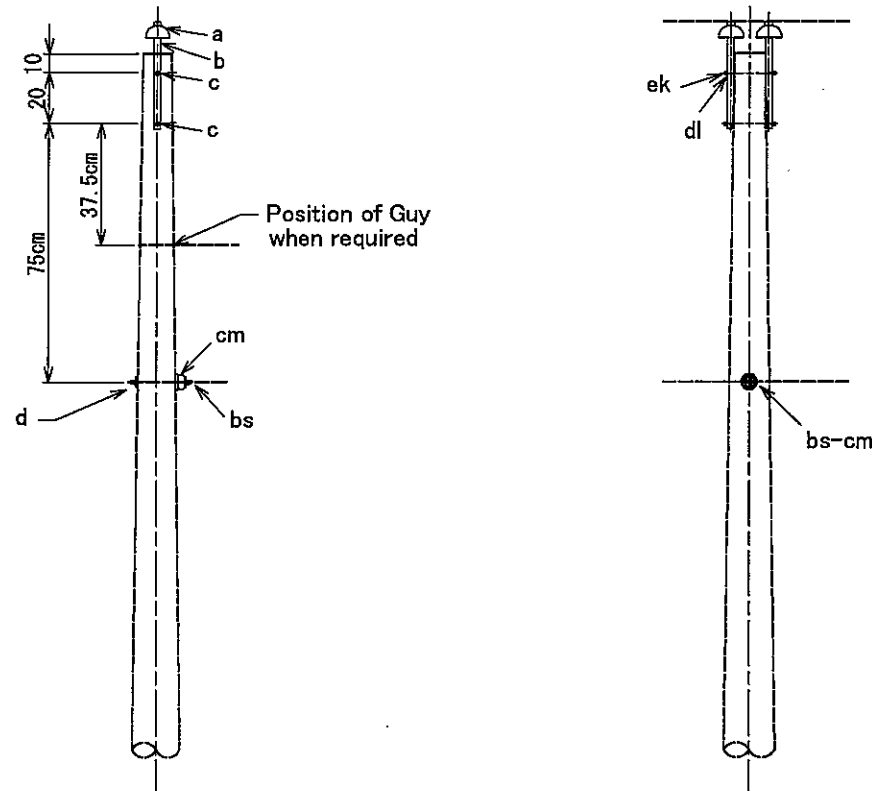
Supply System	Conductor Length(km)	Conductor Total Length(km)
Three(3)Phase Four (4)Wire	0.45	1.80
Two(2)Phase Three (3)Wire	1.45	4.35
Single(1)Phase Two (2)Wire	3.65	7.30
<b>Total</b>	<b>5.55</b>	<b>13.45</b>

\* Spare length of conductor such as sag is not included

POWER HOUSE FOR LIWO-2

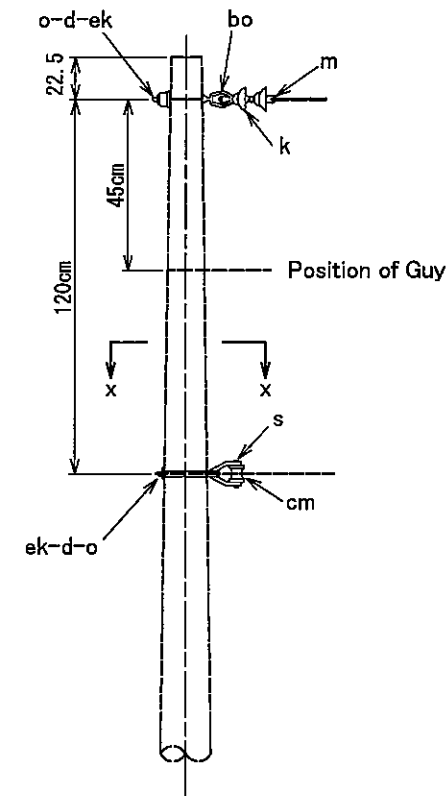
7.62/13.2KV.PRIMARY,SINGLE PHASE 0° TO 5°ANGLE

7.62/13.2KV.PRIMARY,SINGLE PHASE 30° TO 60°ANGLE

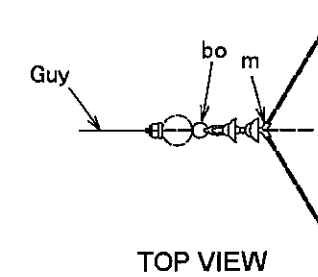


ELEVATION

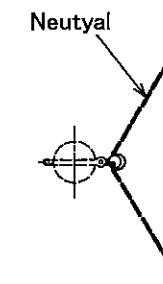
SIDE VIEW



ELEVATION



TOP VIEW



SECTION x-x

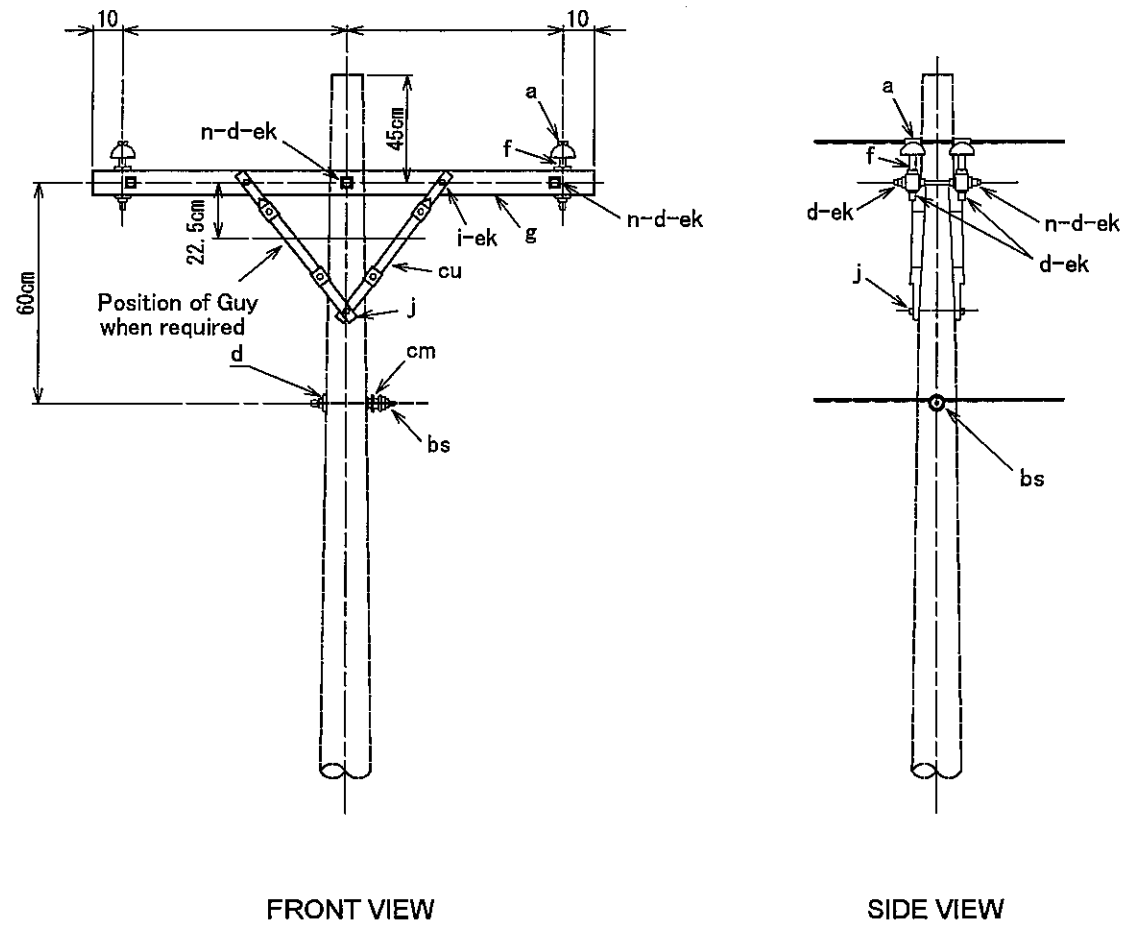
Item	Materials	Item	Materials
a-	Pin type insulator	cm-	1 3/4"dia x 1 1/2"pipe spacer
b-	20" Pole top pin	dl-	3/4"dia x 1 1/2"pipe spacer
c-	5/8" x 12" Machine bolts	ek-	5/8" Locknut
d-	3/16" x 2 1/4"-13/16"hole washer	bv-1	Armor rod(single support)*
bs-	9" Single upset bolt	bv-2	Armor rod(double support)*
Tw-	Tie wire*		

\*Conductor Accessories

Item	Materials	Item	Materials
d-	2 1/4" x 3 1/8" Hole washer	cm-	1 3/4"dia groove spool insulator
k-	Suspension insulator	bo-	Anchor shackle
o-	5/8" x 9" Eye bolt	ek-	5/8" Locknuts
m-	Suspension clamp	tw-	Tie wire*
s-	Secondary swinging clevis	bv-	Armor rod(single support)*

\*Conductor Accessories

7.62/13.2KV.TWO PHASE , 0° TO 5° ANGLE



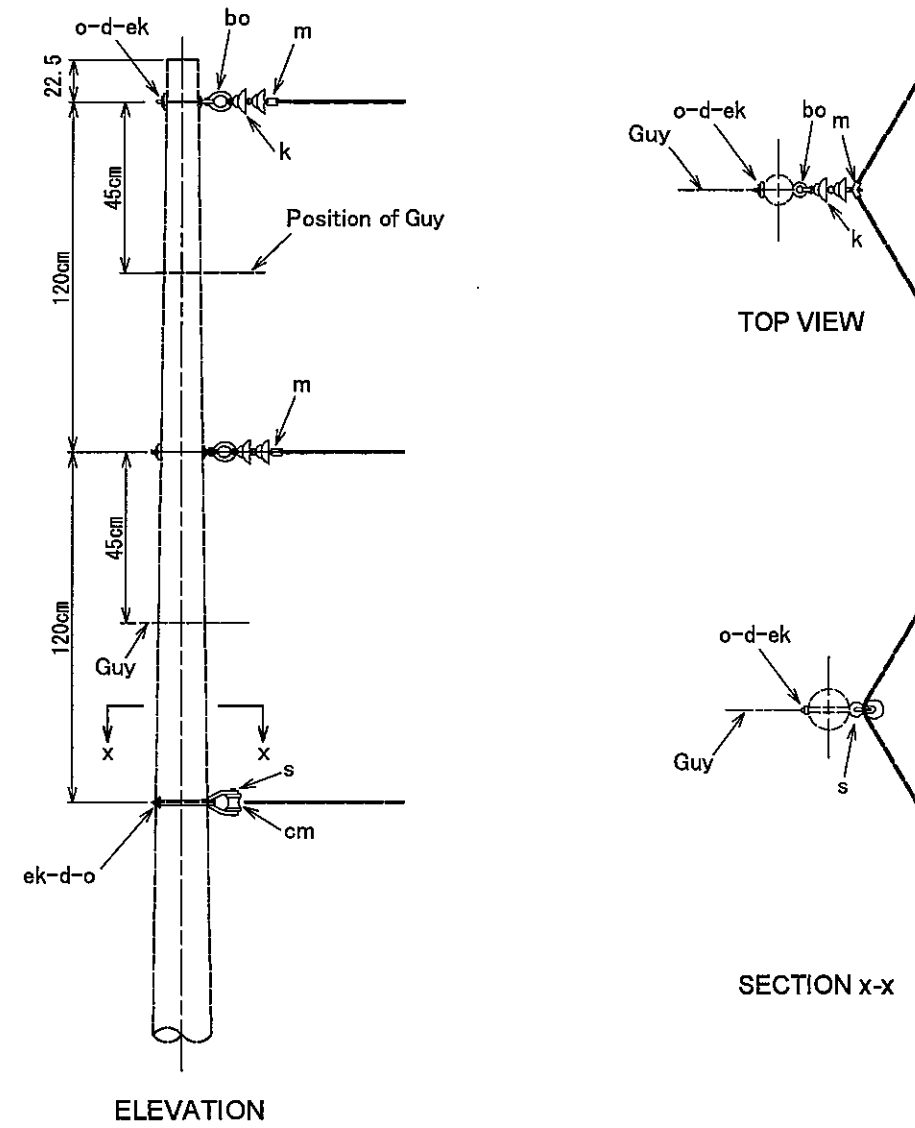
FRONT VIEW

SIDE VIEW

Item	Materials	Quantity	Item	Materials	Quantity
a-	Pin type insulator	4	j-	1/2" x 4' Lag screw	2
d-	3/16" x 2 1/4"-13/16 Hole washer	11	n-	5/8" x 20" double arming bolt	3
f-	5/8" x 10 3/4" Crossarm steel pin	4	bs-	10" Single upset bolt	1
g-	3 2/1" x 4 1/2" 8' Crossarm	2	cm-	1 3/4" dia. groove spool insulator	1
cu-	28" Wood brace	4	bv-1	Armor rod single support*	1
ek-	3/8" Locknuts	4	bv-2	Armor rod double support*	2
ek-	5/8" Locknuts	10	tw-	Tie wire*	40'
i-	3/8" x 4 1/2" Carriage bolts	4			

\*Conductor Accessories

7.62/13.2KV.TWO PHASE , 30° TO 60° ANGLE



ELEVATION

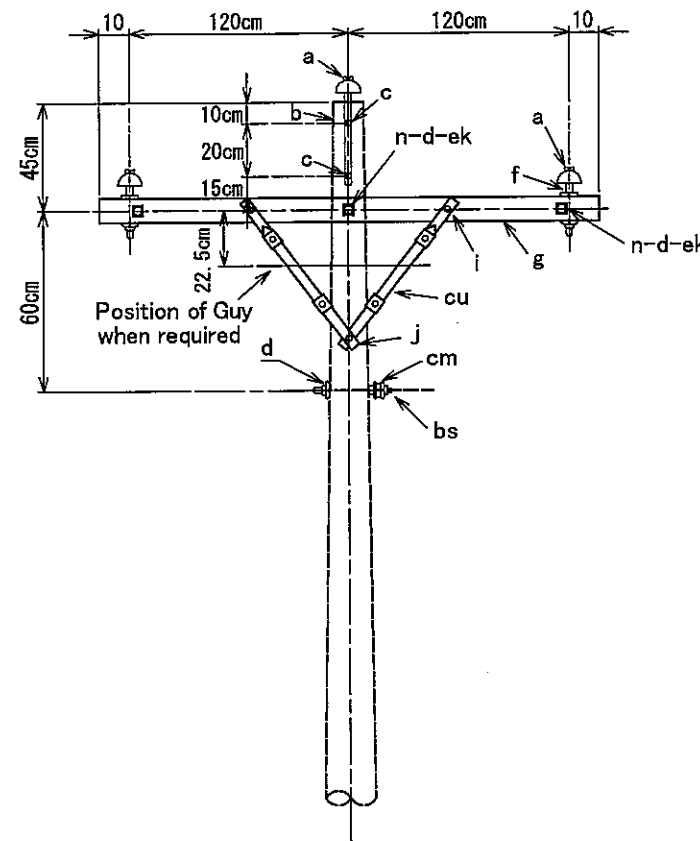
TOP VIEW

SECTION x-x

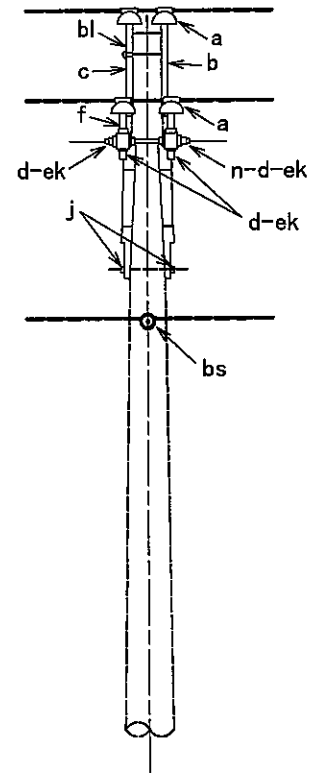
Item	Materials	Item	Materials
d-	3/16" x 2 1/4"-13/15" Hole washer	cm-	1 3/4" dia groove spool insulator
k-	Suspension insulator	bo-	Anchor shackle
o-	5/8" x 10" Eye bolt	ek-	5/8" Locknuts
m-	Suspension clamp	bv-1	Armor rod(single support)*
s-	Secondary swinging clevis	tw-	Tie wire*

\*Conductor Accessories

7.62/13.2KV.THREE PHASE, 0° TO 5° ANGLE



FRONT VIEW

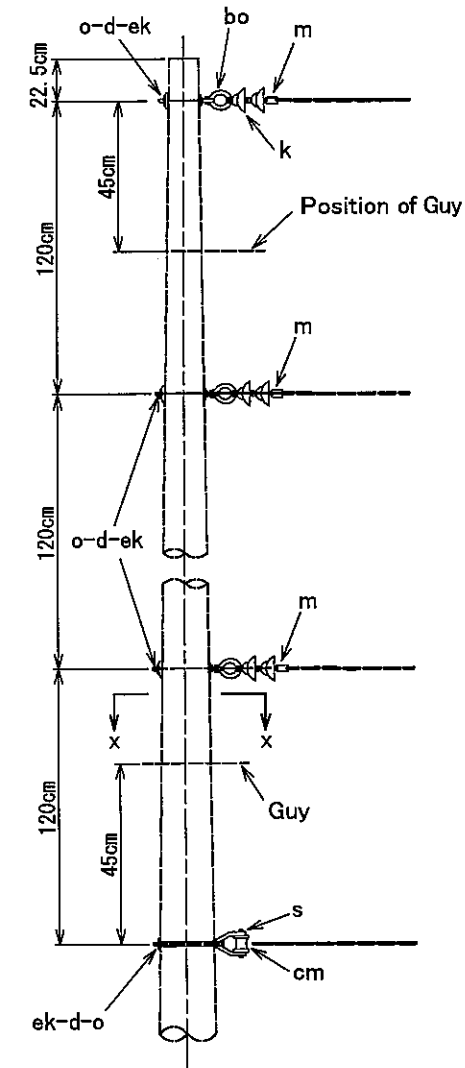


SIDE VIEW

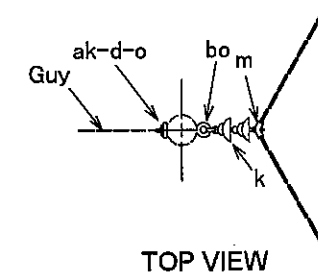
Item	Materials	Item	Materials
a-	Pin type insulator	bs-	5/8" x 10" single upset bolt
b-	20" Pole top pin	ek-	5/8" Locknuts
c-	5/8" x 12 Machine bolts	ek-	3/8" Locknuts
d-	3/16" x 2 1/4"- 13/16" hole washer	cu-	28" Wood brace
f-	5/8" x 10 3/4" Crossarm steel pin	cm-	1 3/4" spool insulator
g-	3 2/1" x 4 1/2" x 8" Crossarm	dl-	3/4" dia x 1 1/2" pipe spacer
i-	3/8" x 4 1/2" Carriage bolt	bv-1	Armor rod(single support)*
j-	1/2" x 4" Lag screw	bv-2	Armor rod(double support)*
n-	5/8" x 18" double arming bolt	tw-	Tie wire*

\*Conductor Accessories

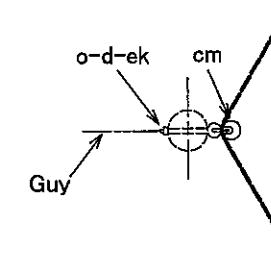
7.62/13.2KV.THREE PHASE, 30° TO 60° ANGLE



ELEVATION



TOP VIEW



SECTION x-x

Item	Materials	Item	Materials
d-	3/16" x 2 1/4"-13/16" hole washer	bo-	Anchor shackle
k-	Suspension insulator	o-	5/8" x 12" Eye bolt
ek-	5/8" Locknut	cm-	3" dia groove spool insulator
m-	Suspension clamp	bv-1	Armor rod(single support)*
s-	Secondary swinging clevis	tw-	Tie wire*

\*Conductor Accessories



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SHEET CONTENTS

Support Fitting Types for Three Phase

Draw. No.

FP-E-003