

SALIENT FEATURES OF HYDROELECTRIC PROJECT

Name of the Hydro Generating Station: UMTRU

1. Location	
State /Distt.	Meghalaya State/ Ribhoi District
River	Umtrew River with Umiam Diversion
2. Diversion Tunnel	
	Diversion Sluice
Size, Shape	1.8 m x 2.44 m, Rectangular
Length	29.70m
3. Dam	
Type	Concrete & Masonry combined
Maximum dam height	25.98 m
4. Spillway	
Type	Ogee - gated control
Crest level of Spillway	124.00 m
5. Reservoir	
Full Reservoir Level (FRL)	130.10 m
Minimum Draw Down Level(MDDL)	124.50 m
Live Storage (MCM)	2.38 Mcum
6. De-silting Arrangement	
Type	Scouring Sluice
Number and Size	2 Nos. 1.8 m x 2.4 m, & 3.00 m x 5.00 m Rectangular
Particle size to be removed (mm)	N.A
7. Head Race Tunnel	
Size and Type	2.97 m Dia, Horse shoe.
Length	1298.46 m
Design Discharge (Cumecs)	25 Cumecs
8. Surge Shaft	
Type	Circular
Diameter	9.75 m
Height	35.40 m
9. Penstock/ Pressure Shafts	
Type	Steel Liner, Circular
Diameter & Length	2.44 m, 105.8 m breaking into 4 lines of 1.22 m dia. pipes.
10. Power House	
Type	Surface
Installed Capacity (No of Units x MW)	4 x 2.8 MW
Peaking Capacity during lean period (MW)	11.20 MW
Type of Turbine	Vertical Francis Turbine
Rated Head (M)	53.34 m

Rated Discharge (Cumecs)	5.95 Cumecs
11. Tail Race	
Diameter, Shape	Rectangular Channel
Length	7.6 m
Minimum tail water level	62.96 m
12. Switch yard	
Type of Switch gear	Outdoor
No. Of generator bays	4
No. Of Bus Coupler bays	
No. Of line Bays	10

Format-HG2

SALIENT FEATURES OF HYDROELECTRIC PROJECT

Name of the Hydro Generating Station: Umiam Stage-I

1. Location	
State /Distt.	Sumer Village, Ri-Bhoi District, Meghalaya State.
River	Umiam River
2. Diversion Tunnel	
Size, Shape Length	N.A
3. Dam	
Type	Concrete Gravity
Maximum dam height	73 m
4. Spillway	
Type	Ogee – gated control/Crest control
Crest level of Spillway	969.26 m
5. Reservoir	
Full Reservoir Level (FRL)	981.46 m
Minimum Draw Down Level(MDDL)	960.12 m
Live Storage (MCM)	142.35 Mm3
6. De-silting Arrangement	
Type Number and Size Particle size to be removed (mm)	N.A
7. Head Race Tunnel	
Size and Type	3.05 m Dia, Horse Shoe
Length	2058 m
Design Discharge (Cumecs)	28.12 Cumecs
8. Surge Shaft	
Type	Circular

Diameter	4.90 m
Height	48.3 m
9. Penstock/ Pressure Shafts	
Type	Steel Liner
Diameter & Length	2 Nos of 1.98 m dia. each & 618.70 m (Combine length) each.
10. Power House	
Type	Surface
Installed Capacity (No of Units x MW)	4 x 9 MW
Peaking Capacity during lean period (MW)	N.A
Type of Turbine	Vertical Francis
Rated Head (M)	145 m
Rated Discharge (Cumecs)	8.27 Cumecs
11. Tail Race	
Diameter, Shape	Open Channel
Length	366 m
Minimum tail water level	809.40 m
12. Switch yard	
Type of Switch gear	Outdoor
No. Of generator bays	4
No. Of Bus Coupler bays	1
No. Of line Bays	7

Format-HG2

SALIENT FEATURES OF HYDROELECTRIC PROJECT

Format-HG2

Name of the Hydro Generating Station: Umiam Stage-II

1. Location	
State /Distt.	Meghalaya State/ Ribhoi District
River	Umiam River – Tail water of Umiam Stage-I HEP
2. Diversion Tunnel	
Size, Shape	3050 MM, D Shape
Length	1896 M
3. Dam	
Type	N.A
Maximum dam height	
4. Spillway	
Type	NA
Crest level of Spillway	

5. Reservoir	Forebay :Size: 76.2M x 34 M x 9.75 M
Full Reservoir Level (FRL)	804.06 M
Minimum Draw Down Level(MDDL)	800.85 M
Live Storage (MCM)	0.0083 Mm3
6. De-silting Arrangement	
Type	N.A
Number and Size	
Particle size to be removed (mm)	
7. Head Race Tunnel	
Size and Type	3.05m Dia. D-type section
Length	1869 m + 1113 m Open Canal/Channel
Design Discharge (Cumecs)	28.12 Cumecs
8. Surge Shaft	
Type	N.A
Diameter	
Height	
9. Penstock/ Pressure Shafts	
Type	Steel Liner
Diameter & Length	Diameter =2.74 m, Length = 333 m
10. Power House	
Type	Surface
Installed Capacity (No of Units x MW)	2x10 MW
Peaking Capacity during lean period (MW)	N.A
Type of Turbine	Vertical Francis
Rated Head (M)	77.67 M
Rated Discharge (Cumecs)	15.47 Cumecs per unit
11. Tail Race	
Diameter, Shape	Open Channel
Length	19.44M
Minimum tail water level	722.376M
12. Switch yard	
Type of Switch gear	Out door
No. Of generator bays	2
No. Of Bus Coupler bays	
No. Of line Bays	1

Format-HG2

SALIENT FEATURES OF HYDROELECTRIC PROJECT

Name of the Hydro Generating Station: Umiam Stage-III

1. Location

State /Distt.	Meghalaya, Ri-Bhoi District, 45 Km from Shillong	
River	Umtru river with Umiam Diversion	
2. Diversion Tunnel	Link Tunnel between Kyrdemkulai pondage and Nongmahir Forebay.	
Size, Shape	Circular – 3.0 m Dia.	
Length	2840 m	
3. Dam	Kyrdemkulai pondage	Nongmahir Forebay.
Type	Concrete Gravity	Earth Dam
Maximum dam height	27.50 M	47.25 m
4. Spillway	Kyrdemkulai pondage	Nongmahir Forebay.
Type	Ogee – gated control	Chute with Weir
Crest level of Spillway	672.08 m	672.07 m
5. Reservoir	Kyrdemkulai pondage	Nongmahir Forebay.
Full Reservoir Level (FRL)	679.7 M	672.05 m
Minimum Draw Down Level(MDDL)	672.05 M	669.80 m (2197 ft)
Live Storage (MCM)	2.78 Mm3	2.16 Mm3
6. De-silting Arrangement	N.A	
Type		
Number and Size		
Particle size to be removed (mm)		
7. Head Race Tunnel		
Size and Type	3.96 m Dia, Circular	
Length	601.50 M	
Design Discharge (Cumecs)	51.00 Cumecs	
8. Surge Shaft		
Type	Circular	
Diameter	7.30 M	
Height	55.15 m Depth	
9. Penstock/ Pressure Shafts		
Type	Steel Liner	
Diameter & Length	2 Nos of 2.59 m dia.each, 472.66 m (combine length)	
10. Power House		
Type	Surface	
Installed Capacity (No of Units x MW)	2 X 30 MW	
Peaking Capacity during lean period (MW)	N.A	
Type of Turbine	Vertical Francis	
Rated Head (M)	150 M	
Rated Discharge (Cumecs)	23.5 Cumecs for each unit	
11. Tail Race		
Diameter, Shape	Trapezoidal	
Length	50 m	
Minimum tail water level	504.5 m	

12. Switch yard	
Type of Switch gear	Outdoor
No. Of generator bays	2
No. Of Bus Coupler bays	1
No. Of line Bays	7

Format-HG2

SALIENT FEATURES OF HYDROELECTRIC PROJECT

Name of the Hydro Generating Station: Umiam Stage-IV

1. Location	
State /Distt.	Meghalaya, Ri-Bhoi District
River	Umtru River with Umiam Diversion
2. Diversion Tunnel	
Size, Shape	N.A
Length	
3. Dam	
Type	Concrete Gravity
Maximum dam height	43.00 M
4. Spillway	
Type	Ogee- gated Controlled
Crest level of Spillway	491M
5. Reservoir	
Full Reservoir Level (FRL)	503.00 M
Minimum Draw Down Level(MDDL)	496.00 M
Live Storage (MCM)	0.80 Mm3
6. De-silting Arrangement	
Type	N.A
Number and Size	
Particle size to be removed (mm)	
7. Head Race Tunnel	
Size and Type	3.96 m Dia. and Circular
Length	6128.38 M
Design Discharge (Cumecs)	51 Cumecs
8. Surge Shaft	
Type	Orifice Type
Diameter	10.00 M
Height	73.06 M
9. Penstock/ Pressure Shafts	
Type	Steel Liner

Diameter & Length	2.59 M, 2 Nos of 540.67 m & 546.01 m (combined length)
10. Power House	
Type	Surface
Installed Capacity (No of Units x MW)	(2X30) MW
Peaking Capacity during lean period (MW)	N.A
Type of Turbine	Vertical Francis
Rated Head (M)	140.00 M
Rated Discharge (Cumecs)	25.04 Cumecs
11. Tail Race	
Diameter, Shape	Channel, Trapezoidal
Length	50 m
Minimum tail water level	338.9 m
12. Switch yard	
Type of Switch gear	Outdoor (SF-6)
No. Of generator bays	2
No. Of Bus Coupler bays	1
No. Of line Bays	4

Format-HG2

SALIENT FEATURES OF HYDROELECTRIC PROJECT

Name of the Hydro Generating Station: Sonapani

1. Location		
State /Distt.	Meghalaya, East Khasi Hills District Lumkshaid Shillong.	
River	Umshyrpi &Wahumkhrah	
2. Diversion Tunnel		
Size, Shape	N.A	
Length		
3. Dam/Weir		
	Wahumkhrah	Umshyrpi
Type	RCC Counterfort	Composite (Masonry &RCC)
Maximum dam height	3.50 m	4.45 m
4. Spillway		
	Wahumkhrah	Umshyrpi
Type	Ogee Spillway	Ogee Spillway
Crest level of Spillway	1399.095 m	1413.55 m
5. Reservoir		
	Forebay, Sise – 41 m x 9 m x 3.35 m	
Full Reservoir Level (FRL)	1396.295 m	
Minimum Draw Down Level(MDDL)	1395.045 m	
Live Storage	395 cum	

6. De-silting Arrangement	Wahumkrah	Umshyrpi
Type	RCC Desilting chamber	RCC Desilting chamber
Number and Size	11.00 m x 2.20 m x 1.75 m	11.00 m x 2.20 m x 1.75 m
Particle size to be removed (mm)	0.25 mm and above	0.25 mm and above
7. Head Race Tunnel	Wahumkrah	Umshyrpi
Size and Type	1.00m x 1.00 m, Open Channel	1.00m x 1.00 m, Open Channel
Length	632.0 m	1128.50 m
Design Discharge (Cumecs)	0.54 cumecs	0.44 cumecs
8. Surge Shaft	N.A	
Type		
Diameter		
Height		
9. Penstock/ Pressure Shafts		
Type	Steel Pipe	
Diameter & Length	0.70m Dia ,370.00m(Length)	
10. Power House		
Type		Surface
Installed Capacity (No of Units x MW)		1x1.5MW
Peaking Capacity during lean period (MW)		N.A
Type of Turbine		Horizontal Pelton Wheel
Rated Head (M)		172.42m
Rated Discharge (Cumecs)		0.98 Cumecs
11. Tail Race		
Size, Shape		1.50m x 1.50m, Rectangular
Length		20.00m
Minimum tail water level		1216.50 m
12. Switch yard		
Type of Switch gear		Out door
No. Of generator bays		1
No. Of Bus Coupler bays		2
No. Of line Bays		3

Format-HG2

SALIENT FEATURES OF HYDROELECTRIC PROJECT

Name of the Hydro Generating Station: Myntdu Leshka Power Station

1. Location	
State /Distt.	Meghalaya State, West Jaintia Hills District
River	Myntdu River.
2. Diversion Tunnel	Construction Sluice

Size, Shape	3.0 m x3,0 m, L = 70.80 m
Length	L = 70.80 m
3. Dam	
Type	Concrete Gravity
Maximum dam height	63.00 M
4. Spillway	
Type	Sluice
Crest level of Spillway	587.50 M
5. Reservoir	
Full Reservoir Level (FRL)	618.00 M
Minimum Draw Down Level(MDDL)	606.15 M
Live Storage (MCM)	7.00 MCM
6. De-silting Arrangement	
Type	N.A
Number and Size	
Particle size to be removed (mm)	
7. Head Race Tunnel	
Size and Type	3.40 M, Modified Horse Shoe
Length	3313.46 M
Design Discharge (Cumecs)	46.49 Cumecs
8. Surge Shaft	
Type	Restricted Orifice Surge Tank with Orifice, Diameter=1.8 m
Diameter	8.80 M
Height	85.0 M
9. Penstock/ Pressure Shafts	
Type	Circular (Steel) penstock
Diameter & Length	3 nos. Each 2.0 M Dia, 756.25 m
10. Power House	
Type	Surface
Installed Capacity (No of Units x MW)	3 x 42MW
Peaking Capacity during lean period (MW)	N.A
Type of Turbine	Vertical Francis
Rated Head (M)	300.30 M
Rated Discharge (Cumecs)	15.05 each Unit
11. Tail Race	
Diameter, Shape	Channel Type
Length	60.0 M
Minimum tail water level	286.78 m
12. Switch yard	
Type of Switch gear	Outdoor

No. Of generator bays	3 Nos.
No. Of Bus Coupler bays	1 No.
No. Of line Bays	2 Nos.

