Format-HG2

SALIENT FEATURES OF HYDROELECTRIC PROJECT

Name of the Hydro Generating Station: UMTRU

1. Location	
State /Distt.	Meghalaya State/ Ribhoi District
River	Umtrew River and Tail Water of Umiam – Umtru Stage-IV HEP
2. Diversion Tunnel	Diversion Sluice
Size, Shape	1.8 m x 2.44 m, Rectangular
Length	29.70m
3. Dam	
Type	Masonry Weir
Maximum dam height	23.8 m
4. Spillway	
Type	Ogee - Ungated
Crest level of Spillway	123.32 m
5. Reservoir	
Full Reservoir Level (FRL)	123.32 m
Minimum Draw Down Level(MDDL)	118.87 m
Live Storage (MCM)	Not available due to high siltation
6. De-silting Arrangement	
Type	Scouring Sluice
Number and Size	1 No. 1.8 m x 2.4 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 pipes.
10. Power House	
Type	Surface
Installed Capacity (No of Units x MW)	4 x 2.8 MW
Peaking Capacity during lean period (MW)	N.A
Type of Turbine	Vertical Francis Turbine
Rated Head (M)	53.34 m
Rated Discharge (Cumecs)	5.95 Cumecs
11. Tail Race Tunnel	
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	N.A
Length	

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	N.A
Number and Size	
Particle size to be removed (mm)	
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 Tunnel	
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

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	N.A
Type	
Maximum dam height	
4. Spillway	NA
Type	
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 Number and Size Particle size to be removed (mm)	N.A
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 Diameter Height	N.A
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 Tunnel	
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

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	Tail water of Umiam Stage – II PH & Umtru river.
2. Diversion Tunnel	Link Tunnel between Kyrdemkulai pondage and Nor
Size, Shape	Circular – 3.0 m Dia.
Length	2840 m
3. Dam	Kyrdemkulai pondage
Type	Concrete Gravity
Maximum dam height	27.50 M
4. Spillway	Kyrdemkulai pondage
Type	Ogee – gated control
Crest level of Spillway	672.08 m
5. Reservoir	Kyrdemkulai pondage
Full Reservoir Level (FRL)	679.7 M
Minimum Draw Down Level(MDDL)	672.05 M
Live Storage (MCM)	2.78 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 lengt
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
11. Tail Race Tunnel	
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, 55 Km from Shillong.
River	Tail water of Stage – III PH & own catchment.
2. Diversion Tunnel	N.A
Size, Shape	
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	N.A
Type	
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 Tunnel	
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

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	N.A
Size, Shape	
Length	
3. Dam/Weir	**Wahumkhrah**
Type	RCC Counterfort
Maximum dam height	3.50 m
4. Spillway	**Wahumkhrah**
Type	Ogee Spillway
Crest level of Spillway	1399.095 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 (MCM)	395 cum
6. De-silting Arrangement	**Wahumkhrah**
Type	RCC
Number and Size	11.00 m x 2.20 m x 1.75 m
Particle size to be removed (mm)	0.25 mm and above
7. Head Race Tunnel	**Wahumkhrah**
Size and Type	1.00m x 1.00 m,
	Open Channel
Length	632.0 m
Design Discharge (Cumecs)	0.54 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 W
Rated Head (M)	172.42m
Rated Discharge (Cumecs)	0.98 Cumecs
11. Tail Race Tunnel	
Size, Shape	1.50m x 1.50m, Recta
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

ngmahir Forebay.
Nongmahir Forebay.
Earth Dam
47.25 m
Nongmahir Forebay.
Chute with Weir
672.07 m
Nongmahir Forebay.
672.05 m
669.80 m (2197 ft)
2.16 Mm3

n)

Format-HG2

Umshyrpi
Composite (Masonry &RCC)
4.45 m
Umshyrpi
Ogee Spillway
1413.55 m
Umshyrpi
RCC
11.00 m x 2.20 m x 1.75 m
0.25 mm and above
Umshyrpi
1.00m x 1.00 m,
Open Channel
1128.50 m
0.44 cumecs
/heel
ngular