Full Title of the Project :- **Tundah-II Hydro Electric Project.**
File No. :- **FP/HP/HYD/49283/2020.**
Date of Proposal :- **31/08/2020.**

Check List Serial No – 4

DETAIL NOTE ON THE PROJECT

1. TYPE OF THE PROJECT

The Tundah-II Hydro Electric Project has been contemplated as Run-of-River scheme on Tundah Stream (a tributary of Ravi River) in DistrictChambaof Himachal Pradesh. The stream originates from an altitude of 2742.0 m. The catchment area of Tundah-II Hydro Electric Projectis 265 square km. The area on both sides of the stream is hilly with steep slopes. Population in and around project area is very small and mostly rural. Main work of the people is agriculture. Discharge in the stream is mainly contributed by snow and rain falls.

2. LOCATION OF THE PROJECT

The Tundah-II Hydro Power Project site is geographically located on rightand left bank of Tundah Stream, near Panjari Village in Chamba Distt.of Himachal Pradesh. The center line of penstockin power house is 1408.00m above MSL.

Distance of Tundah-II HEP from important towns is listed below:

Sr. No	Station	Distance of site	Connected with transport
1	Chandigarh	417 Km	Road
2	Shimla	475Km	Road
3	Chamba	57Km	Road

In the absence of very heavy snow in the region,all the road leading to the project site remains open throughout the year. Good services of transportation are available round the year from Chambaand beyond. Rest House, Forest Rest House and number of Hotels are available at Chamba for comfortable boarding & lodging etc.

Thepower house and switchyard site are not connected with road. Hence, a road of length approximately1 km long is proposed up to power house.

3. PROJECT SUMMERY

The Tundah-IIHydro Electric Project is a captive run of the river scheme for 24 MW power generation on Tundah stream(a tributary of Ravi river). The power house is located at an elevation of1408.00m. The underground Power house has been proposed in the right bank of Budhil Stream in the opposite direction of Lahal Village.

Main features of the Project are as below:-

The project envisages utilization of a gross head of 202.35 m and design discharge of 14.15 Cumecs for the generation of 24 MW. The main features of the Project are as below:

i) **Diversion structure:**Diversion Barrage is proposed at an elevation of EL. 1625.0m to divert 14.15 Cumecs design discharge + 25% discharge for flushing of gravel and silt particles.

ii) **Intake Tank:** Intake on the right bank has been provided with steel gate to divert the requisite design discharge. Provision of Shingle Flushing is also provided in intake tank.

iii) **Power Channel:** RCCbox channel of size 3.6 m X 3.6 m is proposed in between barrage and De-siltingtank to convey the requisite design discharge. A bed slope of 1:500 is proposed to generate flow velocity of 1.638 m/sec.

iv) **De-siltingTank:** A RCC Hopper Type Surfaced De-silting Tank of size 80m x 16.20 m x 8.00 m is proposed on right bank with complete silt flushing arrangement. Silt flushinggate of size1100mm x1500mm is provided to extract silt particle of size 0.15mm and above.

v) **Head Race Tunnel-I:** D-shaped Head Race Tunnel of 3.15m diameter has been proposed at a bed slope of 1 in 500. Plain Cement Concrete lining of grade M-25 and 200 mm thick shall be used in Head Race Tunnel.

vi) **Aquaduct:** Aquaduct36.00m span consists of steel pipe of internal diameter 2.5m has been proposed over the nallah crossing to convey the design discharge of 14.15 cumecs. Flow velocity of 2.88 m/sec shall be generated in the pipe.

vii) **Head Race Tunnel-II:** D-shaped Head Race Tunnel of size 2.8 m diameter has been proposed in the bed slope of 1:500 to convey the required design dischargefrom Aqueduct to Surge Shaft.

viii) **Underground Surge Shaft:** Underground Surge Shaft has been proposed.

ix) **Penstock:**Main underground penstock of 2500 mm, internal diameter in steel conforming to Indian standards and Grade ASTM 516 GR-70 or equivalent grade is proposed. The varying thickness of penstock shall be 10mm - 26mm has been designed on the basis of hydraulic design. Bifurcation is provided near power house, two numbers of branch penstock ofdiameter 1650mm each has been proposed to feed Turbines of 12860 KW capacity each in the power house. Penstock protection valve (PPV) of 2500 mm internal diameter is proposed near Surge Shaft to regulate water into penstock at the time of filling of penstock with water and to ensure repair and maintenance of penstock.

x) **PowerHouse:**Underground Power House of length 35.10 m and width 12.00 m and 19.96 m in height is proposed. HorizontalshaftFrancis turbine with generator having rated output of 12000 KWis proposed. Electric operated crane having capacity to handle 60/10MT load is proposed in power house. Tail Race Tunnelis provided to discharge the water to Budhil Stream.

xi) **Switch-Yard:**33kV outdoor switchyard is proposed near power house.

xii) **Transmission Line:**33kV Double CircuitTransmission Line is proposed up to Lahal substation. Approximate length of transmission line isapproximately 1.25km from switchyard to Lahal Substation.

4. BRIEF PROFILE OF PROMOTERS

Tundah-II HEP is awarded to the Sai Engineering Foundation onBOOT basis. The project will be developed in 70%:30% debt equity ratio. The equity may also be arranged from the financially strong investor as permitted in the provision of Hydro Power Policy.

5. BRIEF PROFILE OF CONSULTANT

M/s. Sai Eternal Foundation (earlier known as Sai Engineering Foundation) is a non-profitable company registered under section-8 of the Companies Act 2013. It is working for the welfare of the humanity without any distinction of caste, color, creed, region and religion in numerous ways. This Foundation is providing Scholarships to economically weaker students, employment opportunities to unemployed youths besides working for the environmental protection and natural disaster mitigation too. It is also promoting Co-operatives in the field of Construction and Hydro Development, providing hydro-electricity to the people of remote un-electrified localities, hamlets. Apart from these services/activities, it is also organizing other social activities such a s blood donation camp, eye treatment camps, medical aid camps, poor feeding, seminars and workshops on Integrated Wasteland Development, Low Cost Housing, and Earthquake Resistant Technique of construction and implementation of Hydrams and Check Dams for irrigation in various parts of the State. M/s. Sai Eternal Foundation is having strong technical base in Himachal Pradesh. It is providing technical support to many private companies and Govt. organizations in the field of Civil, Electrical and Mechanical Engineering. The Foundation is also having requisite infrastructure, know-how and experience in the development of hydro-electric power projects. It has already commissioned 27 numbers of hydel power projects in Himalayan geology. and also has prepared about 100 numbers of Detailed Project Reports (DPRs).

6. **Employment likely to be generated:**

i) During Construction Period:-

Period	**Professional / Technical**	**Skilled Labour**	**Unskilled Labour**	**Total**
1st Year	15	90	130	235
2nd Year	15	90	130	235
3rd Year	25	120	160	305
4th Year	25	120	160	305
TOTAL				**1080**
Total Men Days (1080 Nos. X 365 Days = 394200) during construction period.				

ii) During Operation and Maintenance Period (Post Construction):

Period	Professional/ Technical	Skilled Labour	Unskilled Labour	Total
Upto 40 Yrs. From COD.	15	10	10	35

(Vinay Barwal)
(Authorised Signatory),
Sai Eternal Foundation.