



LARSEN & TOUBRO LIMITED

-----ENGINEERING, CONSTRUCTION & CONTRACTS DIVISION-----

Site Office: Punatsangchhu-1 Hydroelectric Project, Post Box No. 1300, Wangdue Phodrang, Bhutan.
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Ref: LTCG-MC1/PHEP/COW/BAUER/13/23

Date: March 11, 2014

TO WHOM SO EVER IT MAY CONCERN

Sub: Punatsangchhu-I Hydroelectric Project, Bhutan - Pretreatment and Cut-off Wall works in upstream Coffor Dam – **Letter of reference**

Name of the Project	1200 MW Punatsangchhu-I Hydroelectric Project		
Name of the Employer	Punatsangchhu-I Hydroelectric Project Authority (1200 MW)		
Name of the Main Contractor	Larsen & Toubro Limited		
Main Contract Agreement No.	MC1/2009		
Name of the Subcontractor	M/s. Bauer Spezialtiebau GmbH, Straße 1, Schrobenshausen, 86529, Germany		
Subcontract Agreement No. & date	Nil dated 15 th June 2011		
Value of work done	€ 10,928,062/-		
Commencement date	8 th May 2012, start of 1 st panel for cut-off-wall		
Completion date	20 th November 2012		
Name of the work	Construction of 1200 mm thick slurry trench cut-off-wall including execution of pre-treatment works, through soil & boulder, at upstream Dam		
Details of work executed			
A. Pre-Treatment (PT): Gravity Grouting and Tam Grouting		B. Cut-off Wall:	
Nos. of boreholes	114 Nos. (Max. Depth 93m)	Nos. of panels	55 Nos. (Max. Depth 93m)
Total PT Drilling Quantity	6,807 m	Total CoW Quantity	8,061.72 m ²
Quantity of injected material	2,154m ³	Two Cutter units – MC 128 from M/s Bauer and HS 885 – BC 40 from M/s L&T and one grab unit from M/s Bauer, one chiseling unit from L&T, with all associated plant and equipment of M/s L&T, were used for the CoW works.	
One small diameter drilling rig and one grouting station was deployed.			

The above work was executed in the alluvial overburden, consisting of silt/sand/gravel layers with cobbles and boulders, underlain by gneiss bedrock.

The general quality management and control along the detailed method statement secured the highest standards of quality for the final product and technical issues related to the execution of this Project were attended by BAUER proactively.

This letter of reference shall be used by M/s. Bauer for pre-qualification purpose only.

We wish M/s Bauer Spezialtiebau GmbH all success in their future endeavors.

For Larsen & Toubro Limited

Handwritten signature and date: 11-03-14

(K. K. GUPTA)
Project Director



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