



REPÚBLICA FEDERATIVA DO BRASIL  
Paulo Fernando Santos de Lacerda  
TRADUTOR PÚBLICO JURAMENTADO E INTÉRPRETE COMERCIAL  
MAT. JUCEPAR 08/002-T - CPF 297.096.447-34  
Inglês - Francês - Espanhol - Português  
SWORN PUBLIC TRANSLATOR  
English - French - Spanish - Portuguese

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I, SWORN PUBLIC TRANSLATOR AND COMMERCIAL INTERPRETER  
SIGNED BELOW, APPOINTED BY THE PRESIDENT OF THE TRADE  
BOARD OF THE STATE OF PARANA (JUCEPAR), LICENSED IN THE  
FOLLOWING LANGUAGES: ENGLISH, FRENCH, AND SPANISH UNDER  
PERMIT 08/002-T

HEREBY CERTIFY IN GOOD FAITH  
THAT ON THIS DATE A DOCUMENT WAS PRESENTED TO ME WRITTEN  
IN PORTUGUESE, WHICH I NOW TRANSLATE INTO THE ENGLISH IDIOM  
WITH THE BEST OF MY KNOWLEDGE AND IN GOOD FAITH, AS  
COMMANDED BY MY OFFICIAL DUTY, AS FOLLOWS:

(On the Letterhead of Consórcio Construtor Irapé) ----



**Consórcio Construtor Irapé**

STATEMENT

We certify, for all due purposes, that **INTERTECHNE  
CONSULTORES ASSOCIADOS S/C. LTDA.**, with registered  
office in Curitiba/Paraná, Marechal Deodoro, 51 - 15º  
andar, with Corporate Taxpayer Identification Number  
CNPJ 80.378.052/0001-35, provided, in consortium with  
**LEME ENGENHARIA LTDA.**, known as LEME/INTERTECHNE  
consortium, with Corporate Taxpayer Identification  
Number CNPJ 04.862.577-0001/63, in accordance with  
Agreement IRP-COM-ENG-034/02, dated May 20, 2002,  
with the following technical engineering services  
connected with Irapé Hydroelectric Plant, controlled



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by CEMIG, located in Jequitinhonha river, between the municipalities of Berilo and Grão Mogol, in the State of Minas Gerais. -----

Dam works were completed and the reservoir started to be filled in December 2005. -----

- Irapé Hydroelectric Plant Feasibility Study Reassessment and Updating -----

- Survey and Geological/Geotechnical Investigation Programming and Monitoring -----

- Irapé Hydroelectric Plant Basic Project Completion -

- Civil Work Executive Project and Electromechanical Executive Project -----

- Supervision, Control, Security, and Auxiliary System Executive Project, SDSC and Parameterization Software Application Development -----

- Worksite Field Engineering Services -----

- Work Supervision and Technical Monitoring -----

**1) SCOPE OF SERVICES -----**

• Project, budgeting, technical specification, technical study, technical data survey, civil structural calculation project -----

• Project, budgeting, technical specification, technical study, geotechnical/technical data survey --

• Project: architectonic, landscape, and urbanism ----



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- Budgeting, technical specification, technical study, technical data survey, and geology project applied to engineering -----  
-----
- Project, technical consulting, budgeting, technical study, electrical technical data survey -----
- Project, technical specification, and mechanical technical study -----
- Project including river deviation and control operation sequences during construction -----
- Project of final accesses -----
- Cofferdam and worksite security works project -----
- Pit excavation project (soil/rock) -----
- Tunnel, gallery, and other underground excavation projects -----
- Foundation treatment injection, slopes and underground excavation project -----
- By-pass tunnel controlling and reconstruction structural project -----
- rock-fill dam with clay core project -----
- Water intake structural project, underground forced piping, power house structure, spillway approaching and controlling structures, spillway underground chute structures, spillway discharge springboard structures, yards, internal accesses and related





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engineering structures, administration building and ancillary buildings, architecture shape of buildings, various/embedded metallic parts; -----

- Layout project and location of various equipments --
- Provision of layout drawings, location, built-in, and material listing of all equipments and systems of various structures in this enterprise -----
- Electric interconnection, and detailed project of routes for hydraulic pipe routing for spillway hydro-mechanical equipments, overflow, residual flow and water intake control device -----
- Mechanical auxiliary system project -----
- Electrical auxiliary system project -----
- Provision of single file diagrams from various bars of Alternating Current and Direct Current Auxiliary Service System -----
- Mechanical auxiliary system piping project -----
- Installation projects including grounding, lighting, cable routing, internal telephone network, people-search, interconnections and electronic security -----
- Executive project including 345 kV transmission lines from Power House and Sub-station, and provision of drawings, material lists and specification



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required for supply, construction and assembly  
thereof -----

- Plant Operation Manual, interconnecting each  
equipment and system operation manuals -----
- SDSC and electrical/mechanical auxiliary systems  
Operation Manuals -----
- Commissioning Manuals, including the relevant Field  
Test Instructions (FTIs) covering  
electrical/mechanical auxiliary systems -----
- Interconnection project covering Plant auxiliary  
service systems to 13.8 kV external network  
connection point -----
- Project and metallic finishing of stairs,  
handrails, covers of gutter and groove covers -----
- Digital Supervision and Control System (SDSC)  
Project -----
- Security System Project -----
- Auxiliary Electrical Service System Project -----
- Panel Manufacturing Project -----
- Supervision, technical monitoring and technological  
control services -----
- Worksite Field Engineering Services - assist with  
the interpretation and analysis of construction  
drawings, provide construction-drawing match, attend



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coordination and planning meetings, prepare the geological/geotechnical survey for excavation and foundation -----

• As-built project connected with the civil and electromechanical executive project provided. -----

**2) SERVICE PRICE/OTHER INFORMATION -----**

The services above are provided in consideration of the aggregate amount of BRL 14,594,787.72 on the base-date in February 2001, and each PROJECTING company has a 50% share. -----

**3) MAIN FEATURES -----**

Irapé Hydroelectric Plant main features are as follows: -----

• POWER HOUSE -----

- Type: Open -----

- Number of units: 3 -----

- Power capacity: 3 x 120 MW = 360 MW -----

- Gross Head: 179.10 meters -----

• DAM -----

- Type: rock-fill with clay core -----

- Maximum height: 208 meters -----

- Sill length: 540c meters -----

-----

- PROJECT TOTAL FLOW UNLOAD SYSTEM (6,000 m3/s) -----

- SPILLWAY -----





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Type: Creager Profile controlled by radial gate -----

Design flow: 4,000 m<sup>3</sup>/s-----

Number/size of gates: 2 x 11 meters x 20 meters -----

- OVERFLOW -----

Type: bottom, controlled by radial gate -----

Design flow: 2,000 m<sup>3</sup>/s-----

Number/size of gates: 2 x 7 meters x 9.4 m -----

• WATER INTAKE -----

- Type: Tower -----

- Height: 57 m -----

- Number/size of gates: 3 x 5.8 meters x 5.1 meters --

• RIVER BY-PASS -----

- Typo: Tunnel -----

- Number/size: -----

- 1 x 13 meter diameter rectangular arch section

Lower Tunnel. -----

- 1 x 14 meter diameter rectangular arch section

Upper Tunnel -----

- Length: -----

Lower Tunnel: 1,228 meters -----

Upper Tunnel: 1,068 meters -----

- Design flow: 3,540 m<sup>3</sup>/s-----



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-----  
• RESERVOIR CUMULATIVE LIVE STORAGE VOLUME: 3,695.98  
X 106 m<sup>3</sup>-----

- RESERVOIR AREA IN NORMAL MAXIMUM N.A.: 137.16 Km<sup>2</sup>---

-----  
- TOTAL CONCRETE VOLUME: 232.580 m<sup>3</sup>-----

-----  
- TOTAL REGULAR EXCAVATION VOLUME: 596,300 m -----

- Structures and Quarries: 2.120.200 m<sup>3</sup> c-----

- Pit: 4,571,100 m<sup>3</sup> c-----

- Road Plan: 1,062,450 m<sup>3</sup> c-----

-----  
• TOTAL OPEN PIT ROCK EXCAVATION VOLUME: 4,729,000 m<sup>3</sup>

- Structures: 3,435,000 m<sup>3</sup> c-----

- Quarries: 3,871,200 m<sup>3</sup> c-----

- Road Plan: 339,000 m<sup>3</sup> c-----

-----  
- TOTAL UNDERGROUND ROCK EXCAVATION VOLUME: 770,110 m<sup>3</sup>  
C -----

- TOTAL UPSTREAM COFFERDAM ENCLOSURE: 10,199,170 m<sup>3</sup>---

- UNDERGROUND EXCAVATION DETAILS: -----

- ACCESS TUNNEL -----

Length: 500 m -----

Section: 57 m<sup>2</sup>-----





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- FOREBAY -----

Length overall: 1,568 meters -----

Section: 23 m<sup>2</sup>-----

-----

- RIVER BY-PASS TUNNELS -----

Upper Tunnel -----

Length: 1.069 meters -----

Section: 133 m<sup>2</sup>-----

Lower Tunnel -----

Length: 1,233 meters -----

Section: 154 m<sup>2</sup>-----

-----

- OUTLET SYSTEM TUNNELS -----

Spillway tunnels -----

Length overall: 1,308 meters -----

Section: 113 m<sup>2</sup>-----

Overflow tunnel -----

Length: 668 meters -----

Section 133 m<sup>2</sup> -----

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- CONSTRUCTION ADIT TUNNELS -----

Length overall: 1,016 meters -----

Section: 30 m<sup>2</sup>-----

-----

Belo Horizonte, June 27, 2006

-----

Rua Francisco Rocha, nº 62 / sala 1101

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Tel: (41) 3243-9040 - E-mail: parla@parla.com



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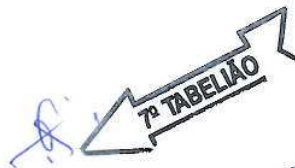
(There appears signature of Engineer Marco Tulio Pinto, Project Manager, CCI - Consórcio Construtor Irapé) -----

(There appears stamp acknowledging the signature of Marco Tulio Pinto, signed by Elizabete Ferreira Machado, Notary Public, dated June 27, 2006) -----

(There appear Inspection Seal, and stamp from the Register of Deeds, and reference to court fees paid) -  
-----

THIS WAS THE FULL TEXT of said document, the true translation whereof I ATTEST. -----

WITNESS MY HAND AND SEAL, this 08 day of December 2011. -----



7º. TABELIAO - DR. ANGELO VOLPI NETO  
R. Mal Deodoro, 230, centro F: 3094-7700  
CURITIBA - PARANA

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Reconheço e dou fe' por SEMELHANCA a(s)  
firma(s) Infra-assinada(s) de:  
[LHnTPczC]-PAULO FERNANDO SANTOS DE....  
LACERDA.....

Em testemunho da verdade  
Curitiba, 09 de Dezembro de 2011

027-MAGDA FLORES RODRIGUES  
ESCREVENTE

PCSL

