



***CIPP INTERNACIONAL S.L.***

***DOSSIER***

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## **0.- INTRODUCTION**

**CIPP INTERNACIONAL S.L.** is a company formed by a multi-disciplinary human team with a solid technical training in various fields: Civil Works and Building Construction, Mining, Environment and Occupational Risk Prevention, offering practical and innovative solutions. It also carries out and takes part R&D+i projects in these areas of knowledge and in others, such as robotics and logistics.

CIPP INTERNACIONAL S.L. collaborates with journals and conferences in national and international congresses and publishes papers in scientific journals, one of which (“A Bayesian network analysis of the workplace accidents caused by falls from a height”) was published on 11<sup>th</sup> March 2008 in the International Journal in the framework of Science Journal Citation Reports. On 5<sup>th</sup> June 2008, the Information Service and Scientific News (SINC) reflected this fact for the repercussion that this article had in the scientific field due to its being a pioneer in Spain in the Occupational Risk Prevention sphere.



## ***1.- DESCRIPTION OF ACTIVITIES***

The group of activities listed in this section is carried out by professionals with demonstrated technical training and experience in the various services offered.

In developing some of these activities, the most advanced technical means and software are used; 3D Modelling Systems, Geographic Information Systems, GPS Fleet Control Systems etc.

The works performed will be carried out, wherever possible, with the formats customarily used by the customer so as to simplify their insertion into its digital files.

## **1.1. Studies and projects.**

CIPP INTERNACIONAL S.L. performs studies and projects in the various fields comprising its activity: Civil Works and Building Construction, Mining, Environment and Occupational Risk Prevention.

### **CIVIL WORKS**

#### **❖ Geological and geotechnical studies**

- **Producing annexes for construction projects**
- **Stability calculations for cutting, embankment or tip slopes**
- **Rock mechanics, designing underground excavations, support**
- **Producing terrain improvement projects**
- **Calculating deep foundations**
- **Terrain characterisation, hardness, rippability, etc**
- **Others**

#### **❖ Geophysical studies**

#### **❖ Hydrological studies**

- **Excavation drainage works in lineal works etc**
- **Tip drainage**
- **Work impact studies on aquifers and water courses**

- ❖ **Structure analysis and calculation**
  - **Optimisation from the economic and execution point of view**
  - **Foundation analysis and calculation**
  - **Factory elements - steel and concrete**
  - **Producing annexes in construction projects**
  - **Structural pathologies**
  
- ❖ **Economic studies**
  - **Viability studies**
  - **Investment and finance plans**
  - **Producing offers**

## **BUILDING**

- ❖ **Geotechnical studies**
  - **Project annexes**
  - **Terrain improvement and reinforcement**
  
- ❖ **Structure**
  - **Structure calculations**
  - **Structure safety**
  - **Actions on building**
  - **Factory elements**
  - **Steel structures**
  - **Wood structures**

❖ **Foundations**

- **Foundation analysis: piles, walls and screens**
- **Foundation calculation**

❖ **Sundry**

- **Safety in the event of fire**
- **Safety in use**
- **Health, safety and environmental protection**
- **Energy saving**

## **MINING**

❖ **Economic viability studies of a mining activity**

- **Market studies, competitive forces**
- **SWOT studies**
- **Economic studies**

❖ **Terrain-deposit characterisation**

- **Geological and geotechnical studies**
- **Complete volume determination of mineral deposits**
- **3D modelling of deposits**

❖ **Design and planning of exploitation method**

- **Design and planning of quarries and open cast mines**
- **Design of tips**
- **Rock mechanics; underground excavation, mine and support design**

❖ **Sundry projects**

- **Surface geotechnical studies, slope stabilities, tip stabilities**
- **Exploitation optimisation in mining centres**
- **Blasting projects: administrative processes**
- **Blasting effectiveness studies, blasting design, fragmentation, vibrations**
- **Others**

## **ENVIRONMENT**

❖ **Environmental Protection**

- **Environmental studies**
- **Environmental sustainability studies, land and landscape impact**
- **Environmental impact studies: ecological, visual acoustic etc. impact**
- **Environmental risk analysis and its interaction with social-economic development activities**
- **Pollution prevention and integrated control studies and projects**
- **Regenerated area control and monitoring originating in building or mining activities or environmental improvement actions**
- **Studies for preserving natural spaces**
- **Studies for improving landscape surroundings**
- **Taking part in environmental education programmes: Sustainability and environmental topics**
- **Fire protection studies**
- **Environmental cartography**

❖ **Soils**

- **Soil pollution studies**
- **Soil situation preliminary reports (IPS) RD 9/2005.**
- **Polluted soil recuperation studies**

❖ **Waste management**

- **Studies and projects for developing Waste Management Activities associated with specific construction environments or facts**
- **Waste dump studies (evaluation, implementation, preventive measures etc.)**
- **Tip status evaluation (inert and organic) by means of performing *in situ* permeability tests**
- **Projects and studies of sealing and recuperating waste tips**

❖ **Hydrological studies**

- **Water quality studies**
- **Pollution studies of surface or underground aquifers and water courses**
- **Studies for recuperating and regenerating water courses and basins**
- **Basin studies - flooding**
- **Mass evolution modelling**
- **Flood simulation, civil defence reactions, obtaining damage reports etc.**
- **Optimisation studies of water resources**



## **OCCUPATIONAL RISK PREVENTION**

- ❖ **Producing projects, procedures and made to measure models in order to reach prevention excellence in the activity, organisation or the company**
  
- ❖ **Proposals of active policies and specific control programmes in prevention material aimed at improving the working conditions, reducing accident levels and protecting and/or promoting the workers' safety**
  
- ❖ **Studies leading towards the analysis, detection and elimination of the causes of occupational accidents and illnesses and to encourage the updated awareness on risks and preventive measures.**

## **1.2. R&D+i projects and works**

**CIPP INTERNACIONAL S.L. offers an integral management of research projects and/or works.**

**For that purpose, it can count on a team of professionals who are leaders in the research of different areas of work, such as Occupational Risk Prevention, Environment, Mining, Construction and Robotics.**

**Producing research projects and/or work will follow the sequence of actions listed as follows:**

- + Budgeting**
- + Producing all the necessary prior documentation to define correctly the research project and/or work to be carried out.**
- + Field work**
- + Writing the project**

**Strict compliance with the applicable standards will be verified at all times and in each case.**

**PUBLICATION: Depending on the nature of the research project or work to be carried out, CIPP INTERNACIONAL S.L., prior agreement between the parties, offers the possibility of producing papers and/or posters for future dissemination in scientific congresses and/or journals both nationally and internationally.**

### **1.3. Integral Building Project and Works Management**

CIPP INTERNACIONAL S.L. offers an integral project and works management covering the entire construction process.

Such integrated management allows the resources involved in the construction process to be optimised and therefore to reduce delivery periods and total costs.

#### **PRIOR WORK**

- Holding prior meetings with the customer to be aware of its needs and to establish the ideas to be developed
- Concise definition of the goals that must be reached

#### **PRODUCING THE PROJECT**

- Choosing the most suitable team and technical means to produce the project, which will be produced in a reliable and ordered manner
- Constructional feasibility analysis of all the projected solutions, ensuring their suitability and offering possible choices that optimise quality, delivery periods and costs.
- Itemised study of the compliance with all legislation in force

## **CARRYING OUT THE WORK**

- **Selecting the companies involved in the different phases of the execution with a rigorous evaluation of the bids presented**
  
- **Technical presence during the entire construction process and coordination of all the adjudicated contractors**
  
- **Continuous supervision of the work by professionals with wide technical experience to ensure that the previously set goals are completely developed**
  
- **Cost control and compliance with delivery periods**
  
- **Verification of quality objectives**

## **1.4. Producing Construction Projects**

Generally and bearing in mind the possible variations deriving from the customer's initial requirements, producing projects will follow the following work sequence:

### **PRODUCING DOCUMENTS**

- ✚ Producing all the necessary documents for correctly defining the work to be carried out**
- ✚ Report and annexes (design and calculation of the works elements and installations)**
- ✚ Geological and geophysical studies**
- ✚ Topography**
- ✚ Drawings**
- ✚ Particular Technical Specifications document**
- ✚ Budget**
- ✚ Works plan**
- ✚ Health and safety study**

**Verifying at all times strict compliance with the applicable regulations in force in each case**

### **ANALYSIS OF ALTERNATIVES**

**Agreed justification of the solution eventually adopted, considering the quality, economic and delivery period criteria**

## **1.5. On-site technical assistance**

Based on our experience, achieving an efficient ON-SITE TECHNICAL ASSISTANCE is established previously with its series of development points:

❖ **Strategic works plan.**

A study of the direct costs through real sub-contractors' offers to determine the forecast costs of the main works units

Carrying out a realistic study of the works plan to define the technical personnel and the resources involved in the indirect costs

❖ **Study of the alternatives for improving development and results**

❖ **Carrying out and justification of modified projects**

❖ **Producing comparative studies**

❖ **Integral works control**

❖ **Issuing orders**

❖ **Equipment and resource management**

❖ **Variance control on the initial works plan**

❖ **Detecting and resolving budget anomalies**

❖ **Works monitoring, producing periodical reports, measurements, certifications.**

❖ **Applying and monitoring the quality plan**

The work will be done with the forms customarily used by the customer.

CIPP INTERNACIONAL S.L. also offers subcontracting of all or part of the works technical team to carry out the tasks customarily performed by the Works Manager, Production and/or Technical Managers, prior an analysis of the requirements of the works.

## **1.6. Consultancy and training**

The technical knowledge possessed by the professionals and/or collaborators of CIPP INTERNACIONAL S.L. in the areas of Occupational Risk Prevention, Environment, Mining and Construction, allows it to offer a quality technical consultancy service in these fields of activity.

In particular, in the field of Occupational Risk Prevention, technical, legal and expert legal report consultancy may be carried out for companies, organisations, Prevention Technicians and Professionals for administrative, civil and criminal processes relating to the responsibilities required of them in health and safety at the workplace topics and for specialist labour consultancy with Work Inspectors and legal organs.

CIPP INTERNACIONAL S.L. also offers specialised courses in Occupational Risk Prevention matters aimed at providing continuous training in companies:

- Worker training, preventive resources and Prevention Delegates.
- Training managers
- Training to achieve a higher grade of Integration in occupational risk prevention in the company
- Optimisation of company management models
- Costs of industrial accidents and their incidence in the accounts of the company
- Civil and criminal liability for health and safety at work
- R&D+I in ORP in the company – competitive advantages
- Etc.

## ***2.- CUSTOMERS AND USERS***

- **ADMINISTRATIONS**

  - CENTRAL**
  - REGIONAL**
  - LOCAL**

- **COMPANIES**

- **BUSINESS ASSOCIATIONS**

- **TRADE UNION ORGANISATIONS**

- **ENGINEERING COMPANIES**

- **WATER BOARDS**

- **BUILDING PROMOTERS**

- **ARCHITECTURAL FIRMS**

- **UNIVERSITIES**

- **PRIVATE INDIVIDUALS**

### **3.- LIST OF WORKS**

The practical and experimental foundations on which the solvency and quality of the services offered is seated are based on the Curricula of the Company's technical personnel and its Collaborators.

There follows a summary of the most important projects and works in which this work and research group has taken part. Most of these projects were carried out prior to or at the beginning of the activity of CIPP INTERNACIONAL S.L.

The following list details them, classified according to their sphere of application.

#### **CIVIL WORKS AND BUILDING CONSTRUCTION**

##### **WORKS, PROJECT, TASK**

##### **CUSTOMER**

Technical Assistance: building of the Piqueras Gallery, linking galleries and new electricity routing. Provincial border between Soria and Logroño.	Galería de Piqueras TJV. (Obras Subt. - TECONSA)
Research Work: Conception, calculation and design of a new metal carrying structure for natural stone cladding for a back-ventilated façade	Rocas Europeas de Construcción, S.A. (RECSA)
Geotechnical annexe for the new Avilés market project.	Avilés Town Hall
Geotechnical annexe for the adaptation project for the new port entrance at San Esteban de Pravia.	PROINTEC
Rehabilitation project, proposal of measures and inventory of cutting and embankment slopes and structures of Madrid Leon-Orense railway line; Monforte de Lemos-Orense stretch.	ADIF
Project; Stabilisation by prior study of proposal for corrective measures of the slopes of the CN-111 road.	Min. of Development C&L Road demarcation

## WORKS, PROJECT, TASK

## CUSTOMER

Foundation geotechnical study and calculation for the Edificio. Forum 2004 project, Barcelona.	IBERING, S.A.
Project and Works Management: Irrigation project for Águilas (Murcia) District Council.	Min of Ag, Livestock and Fish
Geotechnical study for the closure and valley of the “Venero Claro” arch dam (Ávila).	Confed. Hidrográfica del Duero
Construction of HSL Platform corridor North-Northeast of High Speed – Ourense-Santiago axis Lalín-Santiago stretch. Sub-stretch: Boqueixón-Santiago.	ADIF
Construction of Madrid-Barcelona HSL, Arcos de Jalón – Alcolea del Pinar stretch.	ADIF
Construction of toll motorway Santiago de Compostela-Ourense, Stretches 3 and 4, Puente Ulla – Silleda and stretch 7, Lalín.	Dozón UTE
Construction of el Ferrol outer port.	Dragados
Construction of Jorba – Coppons bypass (Igualada, Barcelona).	ALDESA
Construction of Cervelló bypass of the N-340, between Pajejá and Vallirana, Barcelona	UTE Cervelló (Ferroviario-Agroman))
Construction of motorway stretch A-66, Salamanca-Cuatro Calzadas.	COPISA
Construction of motorway stretch A-50, San Pedro del Arroyo-Chaherrero (Ávila).	OHL
Construction of the Pla de SALT housing estate, Gerona.	Albada Star
Construction of the leisure complex FORUM GIRONÉS.	TEC Engineering
Geotechnics: Studies of various types for linear works	FERROVIAL
Geotechnics: Studies of various types for linear works	DRAGADOS
Geological-geotechnical study of the Ribadeo west bypass and the Cantabrico motorway stretch (Annexes 3, 4, 7 and 12).	Ministry of Development
Technical assistance: Construction of the Ferrol-Vilalba motorway, Igrexafeita-Espiñaredo and Espiñaredo-As Pontes stretches.	Xunta de Galicia
Construction of the Villaveta dam in the Navarra Canal (Navarre).	Navarre regional government

## Ongoing

Works Management: Construction of mining gallery, new electrical stretches and access roads. Barahona – Dominican Republic.	TYPSA
Construction of A-66 motorway stretch, El Cubo de la Tierra del Vino – Calzada de Valdunciel (Zamora, Salamanca).	VÍAS Y CONSTRUCCIONES
Construction of A-66 motorway stretch, Montejo-Guijuelo (Salamanca).	PLODER

## MINING

### PROJECT, WORKS

### CUSTOMER

Research and Business plan for exploiting a slate mine in China.	Magnesitas de Rubián, S.A.
Viability of the quartz exploitation by underground mining in the Serrabal mine.	R.A.M.S.A.
Creating a competence centre associated with the economic sectors of: granite, slate, water, aggregates and construction in Galicia.	Galicia regional government- Innovation and Industry Dept.
Adapting the blasting works of the Impensada mine.	Magnesitas de Rubián, S.A.
Evaluating the reserves and cartography of the Benedicta mining concession.	Ingemiga, S.L.
S.I.G. on the underground slate exploitation in Galicia.	Galicia regional government- Innovation and Industry Dept.
Research on slate permits of the province of Zamora.	Lignitos de Meirama, S.A.

### *On going*

3D modelling of an iron mine in Mesones de Isuela, Zaragoza	PROMINDSA
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## ENVIRONMENT

### PROJECT, WORK

### CUSTOMER

Mineral study and sizing of a cryolite recycling plant	University of Oviedo
Environmental Impact Study caused as a consequence of the hypothetical siting of a cryolite recycling plant in the Aviles River	Malaga Ecological Research Institute
Study of dust as a pollutant and design of a corrective installation in granite and slate mining	Galicia regional government- Innovation and Industry Dept.
Dust generation study for the C-631 road between Matarrosa and Páramo del Sil (León).	Coto Minero del Sil, S.A.
Special earthquake emergency plan for Galicia (SISMIGAL)	University of Vigo and Justice and Internal Affairs Dept. of Galicia regional government

## OCCUPATIONAL RISK PREVENTION

### PROJECT, WORK

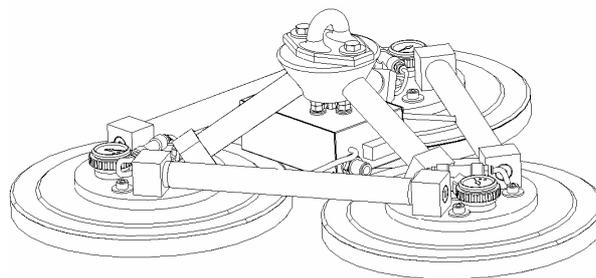
### CUSTOMER

Safety analysis for working at heights during a short time span	University of Vigo
Sector plan for the prevention of mining accidents in Galicia	Justice and Internal Affairs Dept. of Galicia regional government
Occupational safety analysis of falls in different storey levels at work	University of Vigo
District Prevention services in the Galician mining sphere. Implementing a geographical information system	Industry Dept. of Galicia and the University of Vigo
Safety analysis for working at heights during a short time span. Anti-fall system by suction pad anchorings	BLOKDEGAL, S.A
Study of uninsured costs of mining in Galicia	Justice and Internal Affairs Dept. of Galicia regional government
Actions to promote occupational risk prevention: occupational risk prevention technical manuals for the mining, slate and aggregates sector	Justice and Internal Affairs Dept. of Galicia regional government and University of Vigo
Special earthquake emergency plan for Galicia (SISMIGAL)	University of Vigo and Justice and Internal Affairs Dept. of Galicia regional government

## **4.- PATENTS**

CIPP INTERNACIONAL S.L. collaborated with the company BLOKDEGAL, S.A. and the University of Vigo in the patent: *“Temporary fixing system by means of suction apparatus for personal protection equipment for falls from heights”*.

This system (figure 1) is characterised by fixing the equipment to the support medium by a suction system. The equipments consists of one or several suction pads, which are attached to the support surface by a vacuum system, A solid structure is assembled to the suction pads and an anchoring point is attached to the latter, This anchoring point is used to anchor the necessary safety elements of the personal protection against falls from height, The known alternatives to this proposal are systems fixed by means of drilling, which harm the support surface whose first installation is tedious and geared towards works that are not carried out in short time periods.



**Figure 1:** Temporary fixing system by suction pad anchoring apparatus

## **5.- PAPERS IN SCIENTIFIC-TECHNICAL JOURNALS AND CONTRIBUTIONS TO CONGRESSES**

CIPP INTERNACIONAL S.L, collaborates with journals and national and international congress presentations and publishes papers in scientific journals, one of which (“A Bayesian network analysis of the workplace accidents caused by falls from a height”) was published on 11<sup>th</sup> March 2008 in the International Journal in the framework of Science Journal Citation Reports. On 5<sup>th</sup> June 2008, the Information Service and Scientific News (SINC) reflected this fact for the repercussion that this article had in the scientific field due to its being a pioneer in Spain in the Occupational Risk Prevention sphere.

### **TITLE PUBLICATION**

### **JOURNAL/CONGRESS**

A Bayesian network analysis of the workplace accidents caused by falls from a height	Safety Science. 2008
A machine learning methodology for the analysis of workplace accidents	International Journal of Computer Mathematics. 2008
Occupational risk prevention research: Occupational safety analysis of falls from different storeys at work	PW Magazine. 2007
Industrial accident analysis using graphic models. Bayesian networks.	Riesgo Laboral. 2007
Something is failing..	Industria y Minería. 2004
Proposal of an anchor device to reduce the risk of falls during rock extractive activities	II International Congress Dimension Stone. Carrara. (Italia). 2008
Bayesian network-based analysis of the causes of falls from different levels	VI Congreso Internacional de Prevención de Riesgos Laborales. Coruña. 2008
Proposal for anchoring device for short-term work carried out in the extracting industry	XII Congreso Internacional de Energía y Recursos Minerales. Oviedo. 2007

**TITLE PUBLICATION**

**JOURNAL/CONGRESS**

Application of Bayesian networks in analysing accidents arising in the working environment	XII Congreso Internacional de Energía y Recursos Minerales. Oviedo. 2007
Creating a district prevention service for Galician mining	XII Congreso Internacional de Energía y Recursos Minerales. Oviedo. 2007
Analysis of workplace accidents using machine learning techniques	Proceedings of the International Conference on Computational and Mathematical Methods in Science and Engineering, 2006
Proposal to create a district prevention service in the Galician mining sector	I INTERNATIONAL CONGRESS. Santiago. 2009.
Accident analysis in Galician mining	I INTERNATIONAL CONGRESS. Santiago. 2009.
Safety based on costs of non-prevention	I INTERNATIONAL CONGRESS. Santiago. 2009.
Analysis of the causes of falls at work by means of graphic models	I INTERNATIONAL CONGRESS. Santiago. 2009.