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## GEODETECTION AND GEOREFERENCING OF UNDERGROUND NETWORKS RECONNAISSANCE OF BUILDING NETWORKS

**Networks are vital structures.** A perfect knowledge of them is crucial to comply with increased demands regarding their **maintenance**, **safety**, and **safety of persons**.

**Damage to the networks** can bring about operating loss, risks for persons and property, service interruption.

**Maintenance of networks** requires a perfect knowledge of their structure before any intervention.

**INNOGEO, Network department**, provides a comprehensive offer for on-site investigations and the re-establishment of optimal tender drawings. **INNOGEO's** teams operate everywhere in France and around the world.

### UNDERGROUND NETWORKS

INNOGEO operates:

- Before and during underground works.
- Checking network maps.
- Mapping underground networks.
- Securing underground soundings and excavations.
- Locating buried objects (waste, ammunition, various remains).

INNOGEO operates on public and private properties, notably as part of regulation against damage\*.



GPR detection



Colour marking and coding



Detection by radiofrequency

### BUILDING NETWORKS

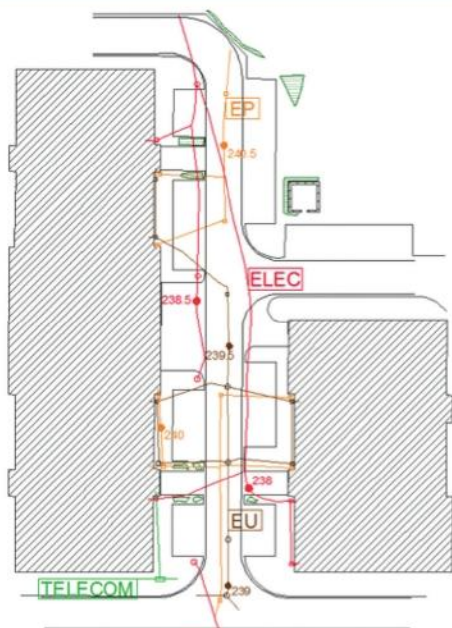
INNOGEO proceeds to systematic investigations, one network by one network:

- |                       |                         |
|-----------------------|-------------------------|
| → Cold water.         | → Air conditioning.     |
| → Domestic hot water. | → Ventilation.          |
| → Service water.      | → Heating.              |
| → Waste water.        | → Medical fluids.       |
| → Rain water.         | → Special fluids.       |
| → Power currents.     | → Low-voltage currents. |

Upon request, INNOGEO can mark pipes in accordance with the NFX 08-100 standard.



## EXAMPLE OF AN UNDERGROUND NETWORK MAP



Réseaux :	Bouches :	Divers :
— Electricité	○ Télécommunications	○ Fosse
— Eclairage Public et Basse tension	○ Eau Potable	○ Poteau avec remontée de réseau
— Télécommunications	○ Gaz	○ Trottoir
— Eau Potable	○ Assainissement	○ Point d'implantation (profondeur)
— Gaz	○ Indéterminé	○ Zone d'écart
— Assainissement		EC : avant et sur le plan et le terrain
— Indéterminé		RV : réseau sur le plan mon ou sur le terrain
— Passage Probable		DN : réseau vu sur le terrain et non reporté sur le plan
	<b>Compteurs :</b>	
	○ Electrique	
	○ à Gaz	
		⊕ Point d'origine géoréférence

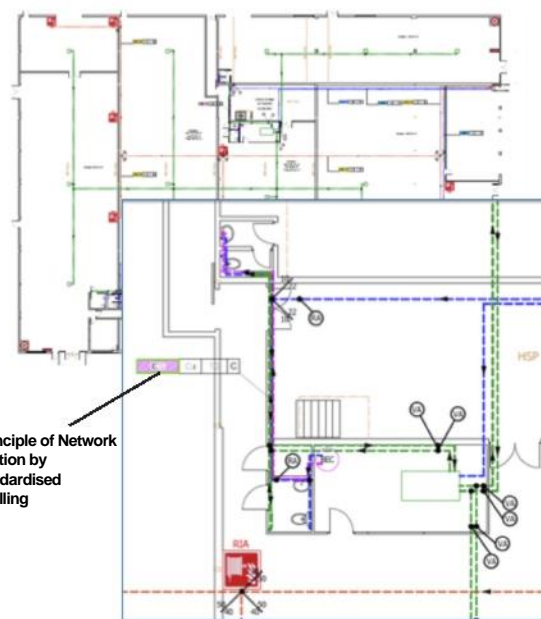
**\*Regulation against damage on the execution of works near certain underground, aerial or subaquatic structures of transport or supply.**

- Decree 2011-1241 of October 5, 2011
- Order of February 15, 2012
- Standard NF S070-003

**INNOGEO is a member of the FNEDRE, the French national federation of network detection companies.**

**INNOGEO is insured by COVEA RISKS with professional indemnity insurance, other than decennial.**

## EXAMPLE OF A BUILDING NETWORK MAP



\*Principle of Network location by standardised labelling

### KEY & SYMBOLS HVAC NETWORKS...

EAU FROIDE	EF	EAUX PLUVIALES	E.pl
EAU CHAUDE SANITAIRE	ECS	EAUX USEES	E.us
EAU CHAUFFAGE allée	Ch.a		
EAU CHAUFFAGE retour	Ch.r		
RESEAUX INCENDIE	INC		

### \* Principle of network location by standardised labelling:

Fluid type	Diametre	Materials	Heat-
Cold water	32 mm	Cuivre	insulated
<b>EF</b>	<b>32</b>	<b>CU</b>	<b>e</b> or not

### Compliance with graphic design standards from CSTB\*:

- Nature of fluids.
- Diametre.
- Nature of the materials.
- Lagging.



\* Scientific and Technical Centre for Building

## CONCERNED BUSINESS SECTORS AND STAKEHOLDERS

### BUSINESS SECTOR

- Historical buildings
- Public works, civil engineering, roads and utilities
- Industries
- Energy production and transport

- Mines & quarries
- Telecommunications
- ...

### STAKEHOLDER

- Local authorities
- Maintenance
- Construction firms
- Contractors and contracting authority
- Experts (insurance, legal, technical)
- Heritage managers
- Government agencies
- Engineering companies