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Connecting and Protecting the Networked World

VII Semana de Infraestrutura da Internet no Brasil

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Dez/2017

São Bernardo do Campo Case

ethod of Construction – Micro Trenching deploying 3 ducts of 18 mm each
rform estimation in 34 days – 300m per day
ost estimation R$ US$ 152.880,00 or US$ 15/m

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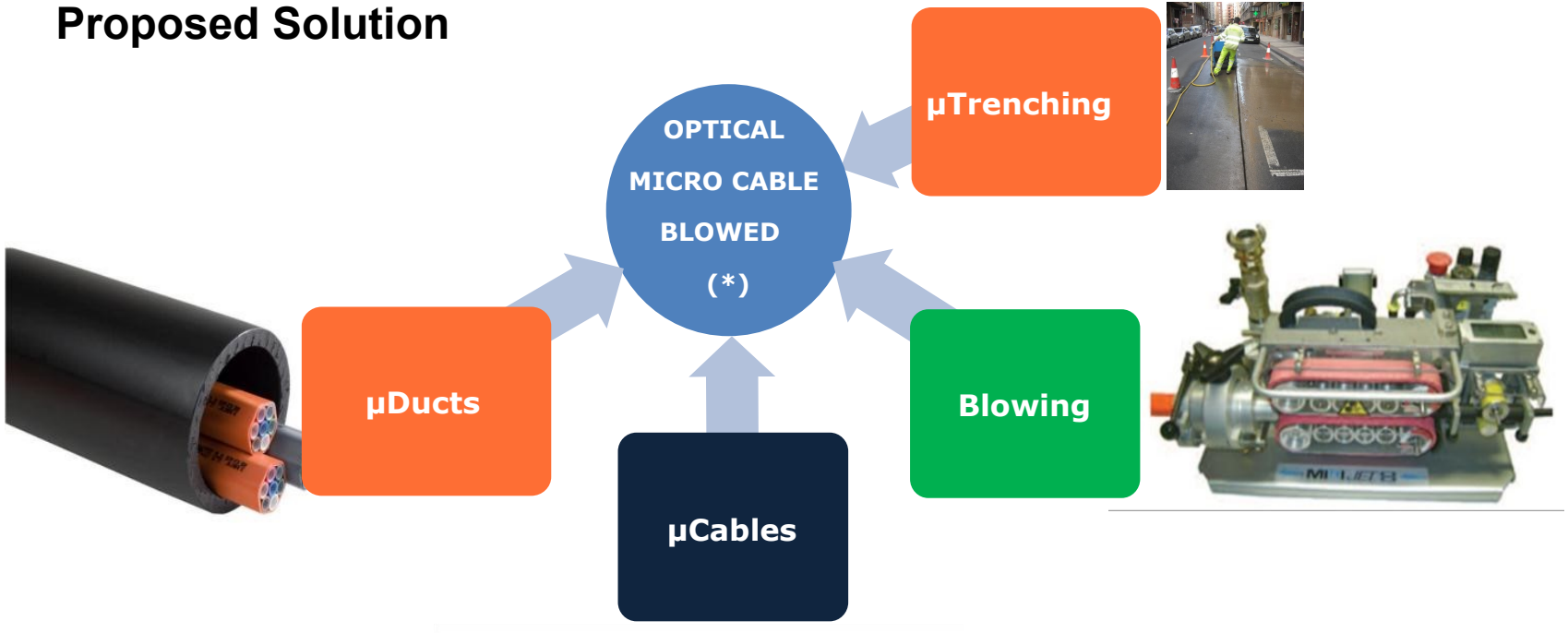
Proposed Solution



Construcion on micro trenchs: Cut and micro duct instalation

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Construcion on micro trenchs: Cut and micro duct instalation

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Deep: 70 to 300 mm
Width: 10 a 30 mm
Trench opened with specilized equipments that has cut disks
Fill the trench with quick drying grout

Conventional Tech x Micro cable Techs

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General Comparitions

	Conventional	Microcables
1. Infraestrutura cost	Greater	Smaller
2. Cable Cost (288fo)	US$ 9,55/m	US$ 6,36/m
3. Execution Time (300m trench)	10 days	2 days
4. Dificult grade of execution	Greater	Smaller
5. Sistem flexibility	Smaller	Greater
6. Pavement cost recomposition	Greater	Smaller

Conventional Tech x Micro cable Techos

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Aprox Numerical Comparitions

	Conventional	Microcable/microtrench
1. Cost per Km of trench	1	0,6
2. Cost per Km x duct	4	1
3. Cost of cable	1,5	1
4. Cost per m x fibra	2	1
5. Cost per pavement recover(*)	20	1 (*)

(*) It depends of agreement with City Halls in order to eliminate the necessity of mill 2 or 3 m at each side of the trench and redo the asphalt pavement.

Estimates

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Description	Qty ducts	US$/m	**Relation**
Micro ducts 18 mm in micro trench 18 mm x 300 mm (LxP)	7	15	6,7
Conventional ducts 40 mm in conventional trench	7	100	1

Important: All above is totally theoretical, since we do not have history of micro trenchs constructions.

PROS X CONS

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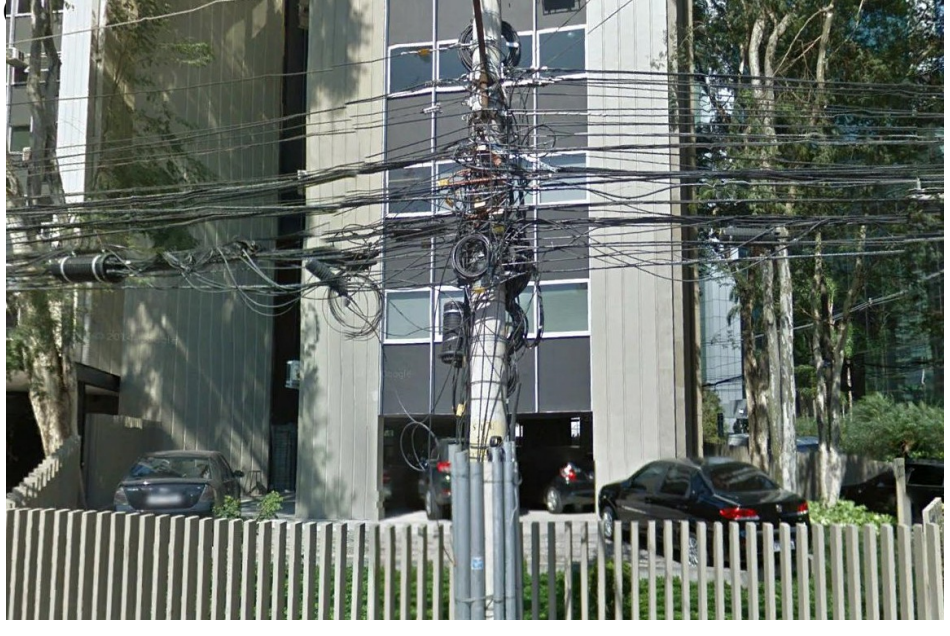
PROS	CONSTRAINS
QUICKLY INSTALLATION	DETAILLED MAPPING NECESSITY DUE CUT AUTOMATIZATION
LESS COSTS	MICRO CABLE ANATEL´S HOMOLOGATION TIME
LESS IMPACTS	

Estimative to start this kind of deployment in 2016, january due micro cable homologation considerations

Motivations

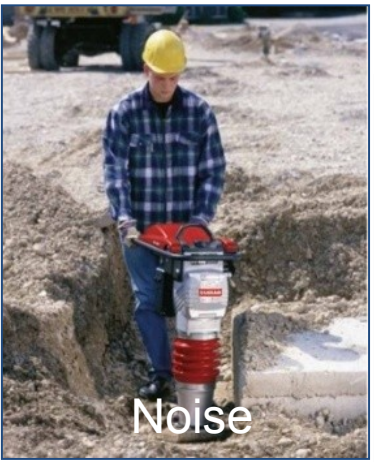
Actual aerial Network

- High level of ocupation of the poles;
- Impeachment of new ocupations in central áreas of the main cities (São Paulo, Rio and Curitiba;
- High level of cuts due third part actions, vandalisms, vehicles accidents, high height of trucks, short circuits in power transformers generating fires.



Motivations

- Actual subterranean Network
  - High metropolitan construction cost: R$ 300/m ou US$ 100/m;
  - High level of impact in the traffic of vehicles;
  - Low Productivity: 30 m/day;
  - High level of pavement damage, requiring recomposition of large área and increment of costs due this.



Development of the work to get micro cable Anatel´s homologation

urecom I have invite all Optical cable maker to form a fórum to discuss the micro cable spe

- Recognizing that the success of this technology is strongly dependente of the micro duct and cable lay techs, was invited another companies, such as: micro duct makers, subcontractors, cut machines makers, labs, among others.

OPERATORS	CABLE MAKERS	DUCT MAKERS	SUBCONTRACTORS	ASSOCIATIONS	ANOTHERS	GOVERN
Telefonica	Huber&Suhner	Tecnexus	Integer	Telcomp	Vermeer	PRODAM
Algar Telecom	Sterlite	Polierg	Empretec	CPqD	Ditch Witch	Ministério das Comunicações
Level 3	Furukawa	Fibracem	Petcom		Photon	Anatel
Avvio	ZTT	Duraline/Amanco	ELO Telecom		TE Electronics	
Compuline	Cablena		Ericsson		Redex	
SAMM	Prysmian		Omega		Vitale Consultoria	
Nettel	Sumitomo		Fastlink Telecom		Zettabyte	
GVT	Corning		Smartel		Audax Telecom	
RNP			RLP		Connecthouse	
TIM			Fibertec			
TELECOM ITALIA						
Oi						

tart the works to write the specs and I divide in the groups:

- Micro Cable
- Micro Ducts
- Installation and maintenance

Several meetings was performed

Development

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- **Project, construcion and aceptance of outside networks with micro cables**
- **Project, construcion and aceptance of micro ducts in micro trenchs**
- **Project, construcion of aerial micro ducts**
- **Fiber splice and termination of micro cables**
- **Operation and Mantenance**
- **Training**
- **Project, construcion and aceptance of internal Optical networks**

Obtained Results at the moment

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MICRO DUCTS

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COMPARISON OF MICRO DUCTS WITH ACTUAL DUCTS

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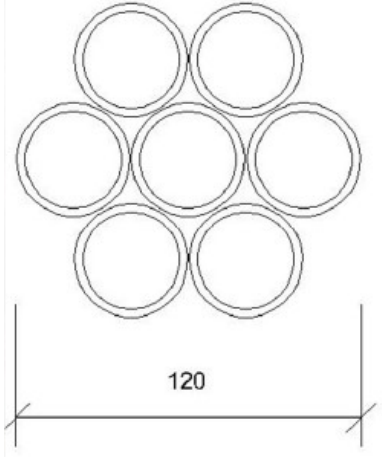
Dutos convencionais x Microdutos

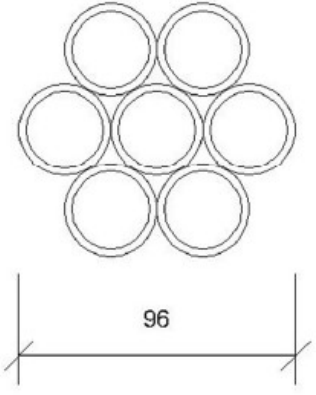
Duto 7x40mm



Ø TOTAL **120mm**

Area 0.0107 m²

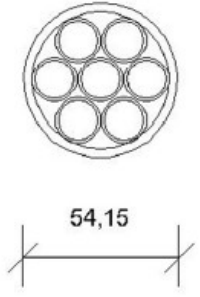
Duto 7x32mm



Ø TOTAL 96mm

Area 0.0073 m²

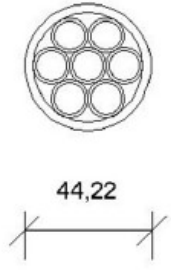
μ duto 7x16mm



Ø TOTAL 54mm

Area 0.0023 m²

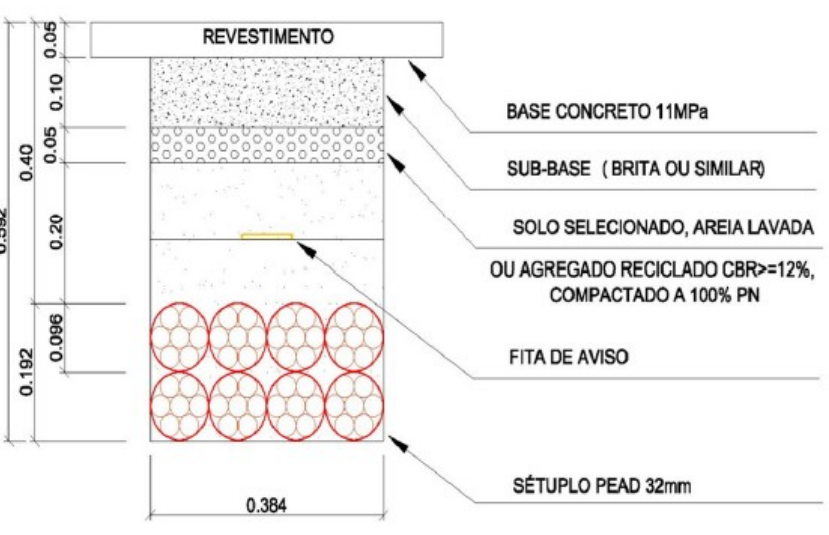
μ duto 7x12.7mm



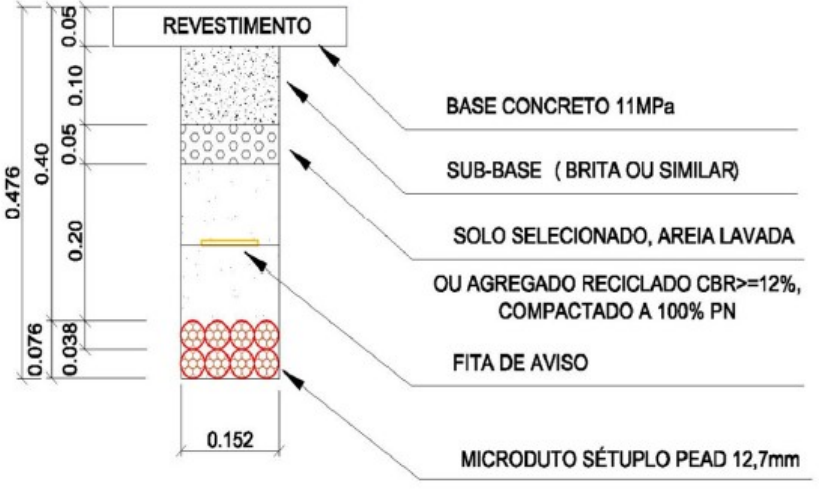
Ø TOTAL 44mm

Area 0.0015 m²

Dutos convencionais x Microdutos
Comparativo em vala a céu aberto



ÁREA ESCAVADA = 0.227m²



ÁREA ESCAVADA = 0.072m²

A área escavada é 3 vezes menor.
Se escavamos 5cm de largura para instalar apenas 1 sétuplo 12,7mm a área escavada (0,024m2) é 9 vezes menor

Construction of Micro ducts: Closing

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Aerial Micro ducts

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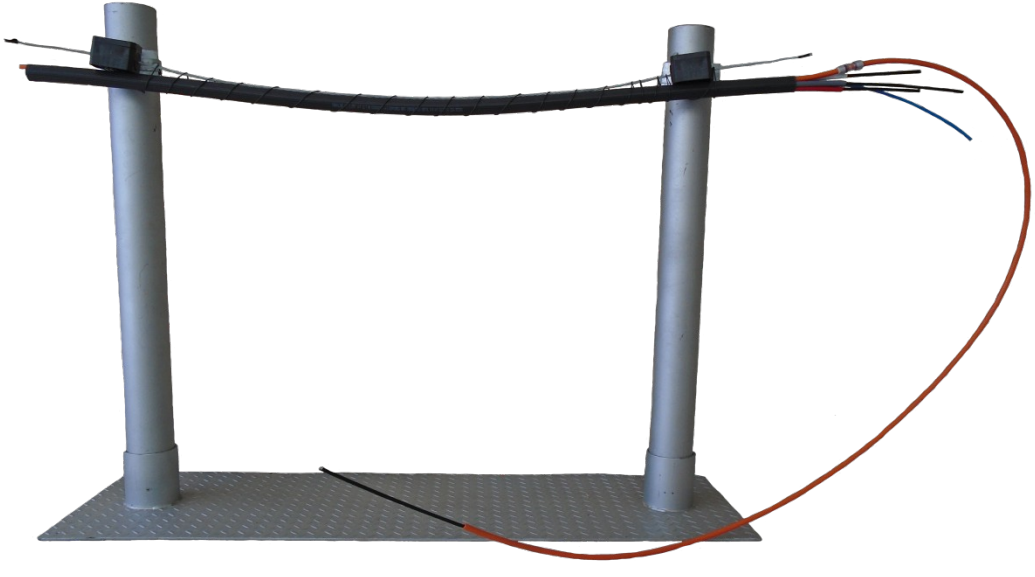
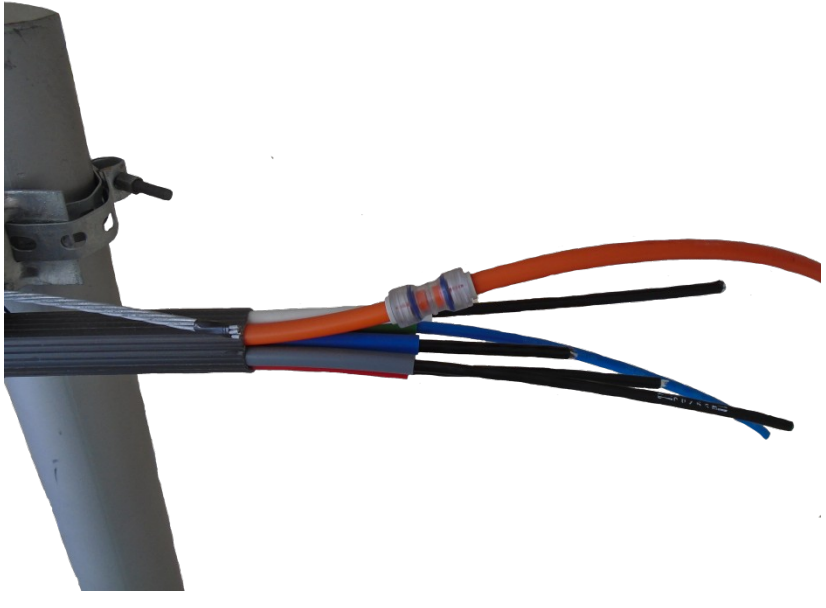
- The micro duct agruped+micro cable allow optimize the available space in the poles.
- 1 point can be shared up to 7 PTTs





DERIVATIONS

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