

# Caso de éxito en sellado de cableado crítico

Soluciones de sellado para Infraestructura Ferroviaria y Material Rodante.



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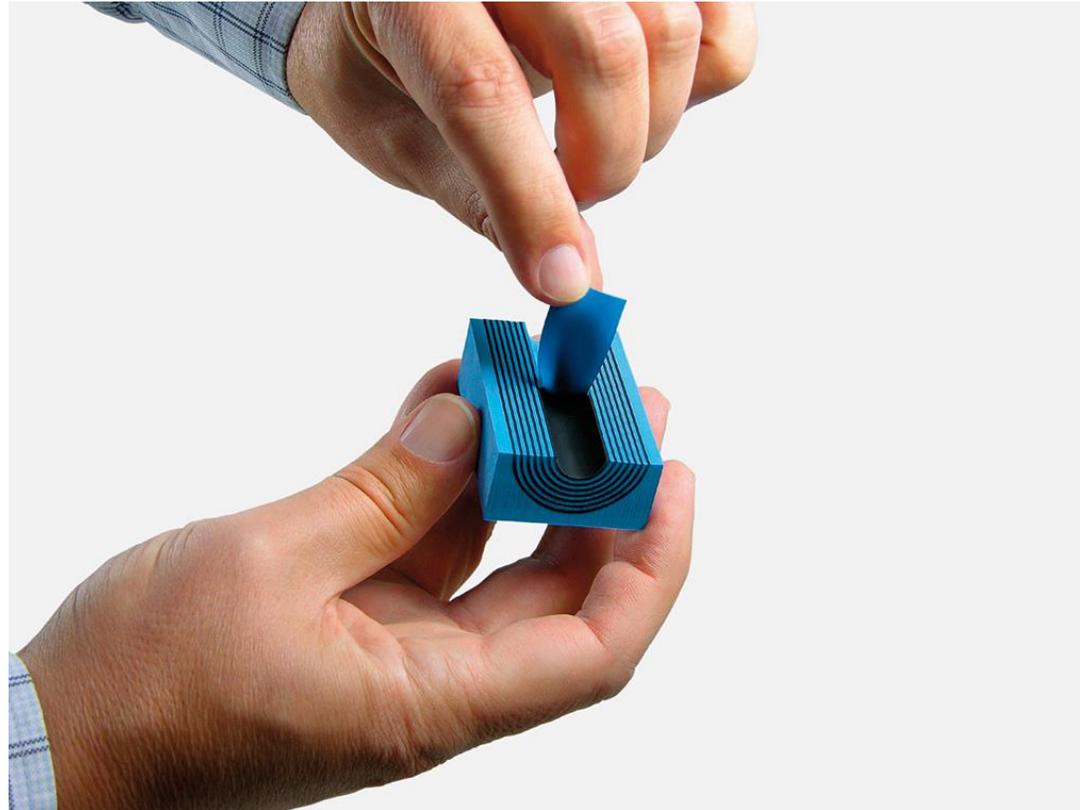


# Acerca de Roxtec

- Fundada en 1990 / Operaciones en México desde el 2010
- Karlscrona, Suecia.
- 28 subsidiarias alrededor del mundo.
- Presencia local en más de 80 mercados.
- Líder mundial en soluciones de sellado modular para múltiples cables o tuberías.



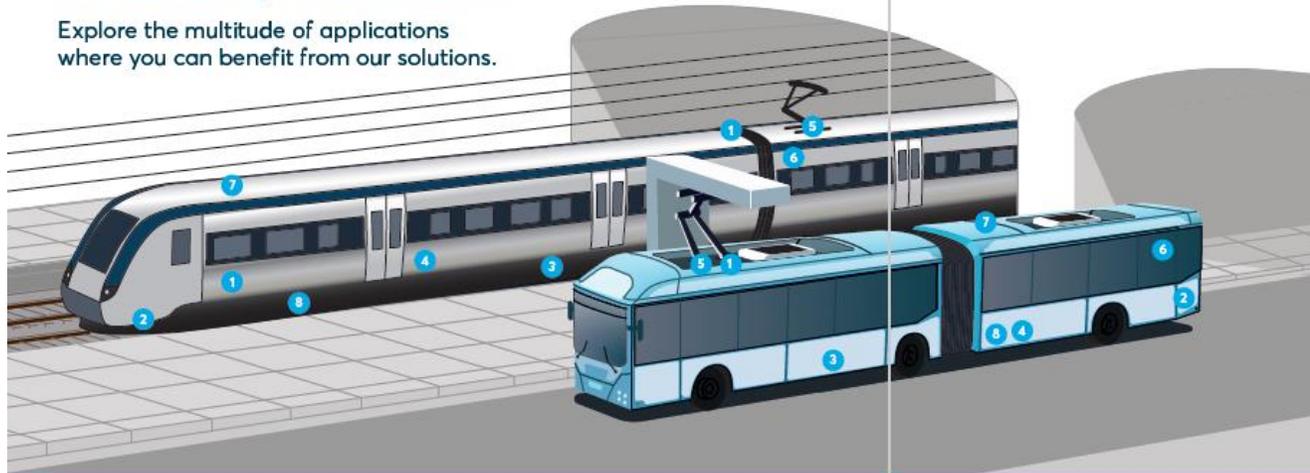
# Multidiameter™ Modules



# Material Rodante

## Roxtec sealing solutions for the rolling stock and e-mobility industries

Explore the multitude of applications where you can benefit from our solutions.



### Why use Roxtec?

- Firestop
- Vibration damping
- Watertight, dust-tight and smoke-tight
- Air-shock protection
- EMV/EMP protection

### Superior simplicity

- Easy and safe installation
- Flexible for cables, pipes and conduits of different sizes
- Customized solutions for specific requirements

### Tested and approved

- IEC 60529 up to IP66/67
- IEC 61373
- UL, NEMA, CSA enclosure rating 4, 4X, 12, 12K, 13
- EN 45545/2 according to HL3
- EN 45545/3 up to E60
- NFPA 130
- EN 15085

[roxtec.com/rollingstock](http://roxtec.com/rollingstock)



**1. Cable management**  
The Roxtec sealing system is gentle to the cable sheath, and excellent for keeping cables in place to avoid damage. Simplify installation and maintenance by using our area efficient solutions.



**2. Converters and inverters**  
Roxtec compact seals are lightweight and quick to install, and they ensure peace of mind for years to come. The built-in spare capacity simplifies retrofits and upgrades.



**3. Floor**  
Roxtec bolted and welded transits are ideal for demanding floor applications. A wide range of frames with varying packing space and frame depth makes design work easy.



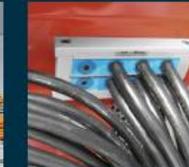
**4. Junction boxes**  
Roxtec's area efficient, compact solutions allow for high cable density, which enables designers to reduce the size and weight of junction boxes. Use our flexible solutions to save time and ensure reliable operations in harsh and high temperature environments.



**5. Pantograph**  
Roxtec solutions help you seal off and ground high-voltage power cables and ensure long-term operational reliability. Use round seals for area efficient installations and high environmental protection.



**6. Partition walls**  
Roxtec seals are easy to install since each module is flexible and adaptable to cables, hydraulic pipes and plastic conduits of different sizes. Use our sealing solutions to maintain the integrity of the fire barrier.



**7. Rooftop**  
Roxtec's seals for rooftop-mounted equipment ensure long-term reliability of air-conditioning systems, antennas, roof boxes and more. The flexibility and adaptability of the modular-based concept make retrofits and service an easy task.

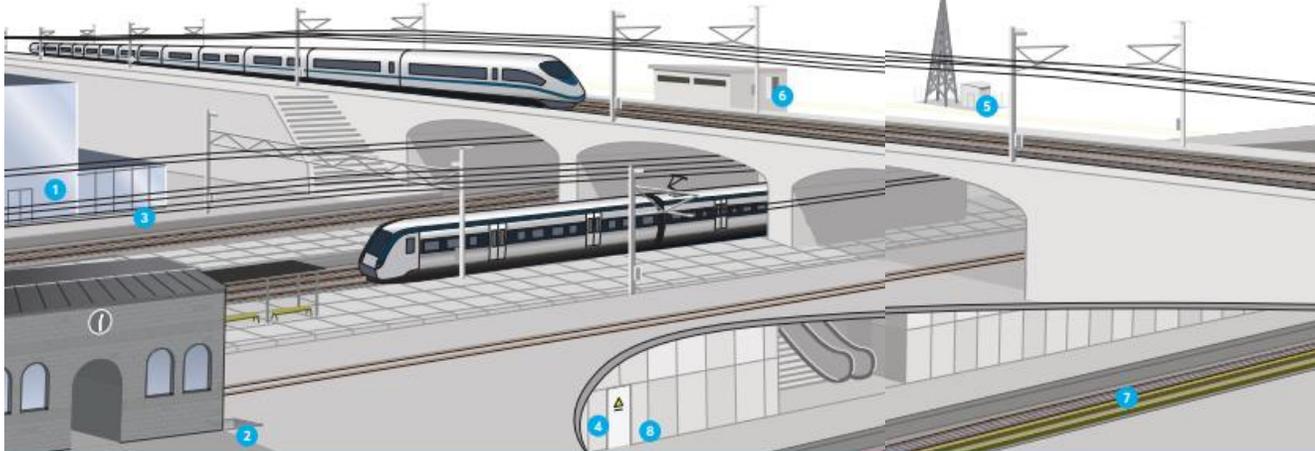


**8. Pipes**  
Roxtec's round and compact sealing solutions are ideal for the vehicle undercarriage to seal off around hydraulic pipes. Openable seals and one-way installation make them quick and easy to install.

# Infraestructura

## Roxtec sealing solutions in rail infrastructure

Explore the multitude of applications where you can benefit from our solutions.



### Why use Roxtec?

- Certified and engineered solutions
- Watertight up to 4 bar/58 psi/133 feet of water
- Fire rated up to 4 hours and non-toxic smoke
- Gas- and air-tight (2.5 bar)
- Corrosion and pest resistant
- Lowest total cost of ownership

### Superior simplicity

- Multidiameter™ by Roxtec – adapts to cables and conduits of different sizes
- Suitable for operation from -60° C to +80° C
- Built-in spare capacity for upgrades and retrofits
- Custom solutions

[roxtec.com/railinfrastructure](http://roxtec.com/railinfrastructure)



#### 1. Buildings – newbuild

Roxtec seals provide a clean solution when multiple cables, conduits and pipes are to pass through a wall or floor and the structure must meet certain safety ratings. Use our system in high voltage substations, technical rooms, switching stations, signal and control buildings, rail yards, tunnels and railway stations.



#### 2. Buildings – retrofit

Our modular design and split construction are ideal for efficient retrofit work with cable penetrations in underground vaults, cable trenches, manholes and pull boxes. The ability to open up our system allows for safe re-entry to add or change cables with no damage or disruption to the power, signaling or communications infrastructure.



#### 3. Foundations

Roxtec solutions eliminate humidity and prevent the intrusion of rodents when sealing power cables entering buildings via foundations. Our solutions can be installed in running water and damp conditions and eliminate water ingress during construction.



#### 4. Conduit plugs

Cap the ends of ducts and rigid metallic or flexible non-metallic conduits with our solutions during construction and after pulling cables in order to prevent ingress of water, gas, rodents and foreign materials. Multidiameter™, our invention of sealing modules with removable layers, offers flexibility to seal a wide range of conduit inner diameters and minimizes stock keeping units.



#### 5. Shelters

Roxtec seals protect equipment inside communication and signal shelters from water, moisture and rodents. Our seals are used in concrete metal and sandwich panel shelters and are designed and tested for long-term cable retention.



#### 6. Cabinets and enclosures

Roxtec's design makes it easy to route pre-terminated cables into signal boxes, junction boxes, communication equipment enclosures and rail heating cabinets. Use our seals with armored cables and shielded cables to ensure electromagnetic compatibility. Replace cable glands with Roxtec seals to increase the number of cables going into the cabinet – keeping units.



#### 7. Trackside equipment

Roxtec seals prevent intrusion of debris, rodents and moisture into overhead contact systems, radio masts and GSM-R communication towers. Our seals are reliable for long-term cable retention in aerial deck penetrations and protection against vibrations along the track.



#### 8. Pipes

Roxtec solutions are used around plastic pipes, metal pipes and conduits of various sizes entering buildings both above and below ground. Our seals prevent water, fire, pests, hazardous gases and other environmental hazards from entering buildings.

# Soluciones de sellado completas para la infraestructura ferroviaria | Roxtec México

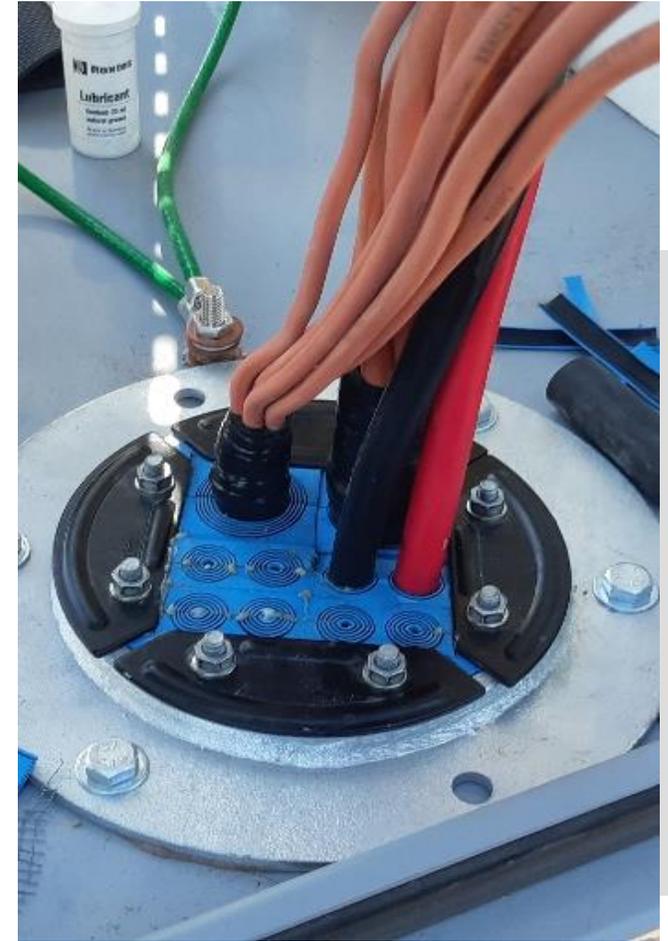


# Protección de Infraestructura Ferroviaria alrededor del mundo.

- El sistema de sellado Roxtec para cables, conductos y tuberías se utiliza en toda Bélgica en subestaciones de energía de tracción, zanjas de cables, estaciones ferroviarias, túneles, casetas y armarios a lo largo de las vías férreas.
- Los sellos están clasificados contra incendios y pueden proteger un área contra la entrada de humo, gas o agua, humedad y polvo a la vez que garantizan la protección contra roedores, vibraciones, tracción del cable, picos de tensión e influencias medioambientales.
- Los sellos Roxtec cumplen los requisitos de seguridad en términos de inflamabilidad, emisión de humos y toxicidad para túneles ferroviarios y de servicio, así como para estaciones ferroviarias.

# Proyectos para el Sector Transporte en México

# Cruceros a Nivel

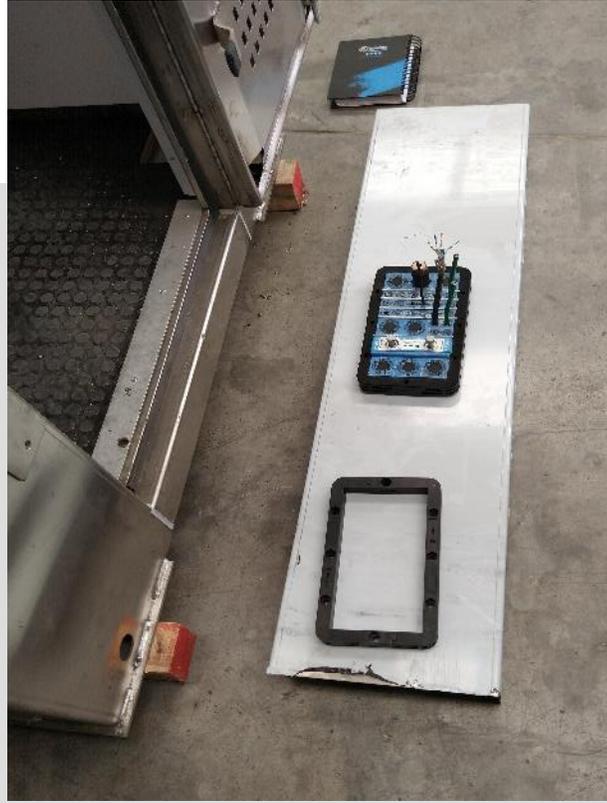
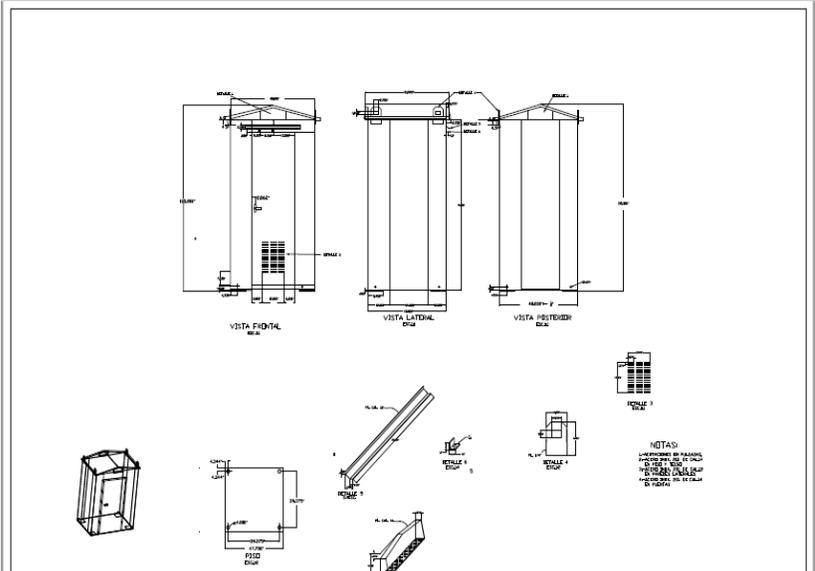


# Solución customizada para protección contra robo de cable.

- Proyectos de mantenimiento

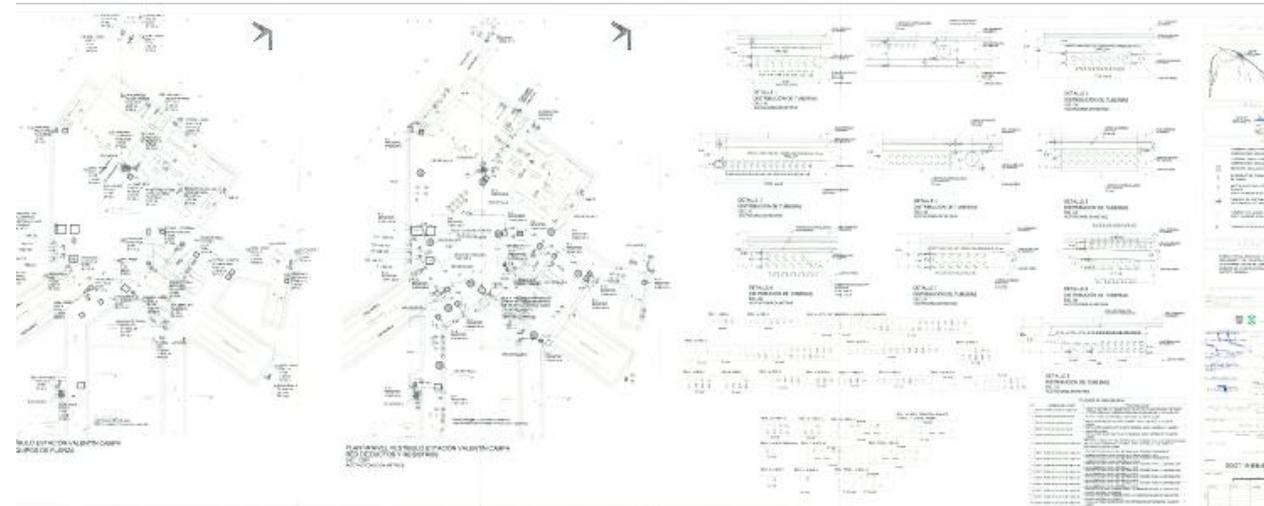


# Se trabaja desde el diseño para el sellado de casetas de señalización.



# Roxtec se especifica desde la ingeniería

- Proyecto de ampliación
- Roxtec está especificado para: señalización y control, gabinetes, potencia, bancos de ductos y cables subterráneos.
- Los sellos ya están indicados en los planos del proyecto.



**Zoom out (Ctrl-1)**

REGISTROS	TUBERÍAS	SOLUCIÓN	NÚMERO DE SELLOS
Registro 14 a 13	87-103mm	A-75 RS75/4	8
Registro 13 a 14	87-103mm	A-75 RS75/4	8
Registro 15 a 16	87-103mm	A-75 RS75/4	8
Registro 16 a 15	87-103mm	A-75 RS75/4	8
Registro 15 a Registro principal sistema A BAF 1 y 2 nivel andamio	57-63mm / 87-103mm	A-75 RS75/4 / A-100 RS100/4	8 / 8
Registro 16 a Reg. principal	27-30mm	A-75 RS75/4	2
Registro 17 a 16	87-103mm	A-75 RS75/4	8
Reg. Principal Reg. 20	57-63mm	A-100 RS100/4	8
Registro 20 a 5	87-103mm	A-100 RS100/4	8
Registro 21 a 5	27-30mm	A-75 RS75/4	2
Registro Principal a Reg. 13	87-103mm	A-75 RS75/4	8
Registro 13 a 2	27-30mm	A-100 RS100/4	2
Registro 2 a 13	27-30mm	A-100 RS100/4	2
Registro 2 a 13 a 2	27-30mm	A-100 RS100/4	2
Registro 2 a 13 a 2	27-30mm	A-100 RS100/4	2
Registro 4 a Registro 2	27-30mm	A-75 RS75/4	2
Registro 5 a Registro 4	27-30mm	A-75 RS75/4	2
Registro 5 a Registro 2	27-30mm	A-75 RS75/4	2
Registro 2 a Reg. 8	87-103mm	A-75 RS75/4	8
Registro 8 a Reg. 2	87-103mm	A-75 RS75/4	8
Registro 11 a 13	47-53mm	A-75 RS75/4	4
Registro 13 a 11	47-53mm	A-75 RS75/4	4
Registro 13 a 4	27-30mm	A-100 RS100/4	2
Registro 4 a 13	27-30mm	A-100 RS100/4	2
Detalle 1	87-103mm	A-75 RS75/4	8
Detalle 2	27-30mm	A-75 RS75/4	2
Detalle 3	47-53mm	A-75 RS75/4	4
Detalle 4	27-30mm	A-75 RS75/4	2
Detalle 5	27-30mm	A-75 RS75/4	2
Detalle 6	87-103mm	A-75 RS75/4	8
Detalle 7	87-103mm	A-100 RS100/4	8
Detalle 8	87-103mm	A-100 RS100/4	8
Detalle 9	27-30mm	A-100 RS100/4	2

**CEDULA DE SELLADO**

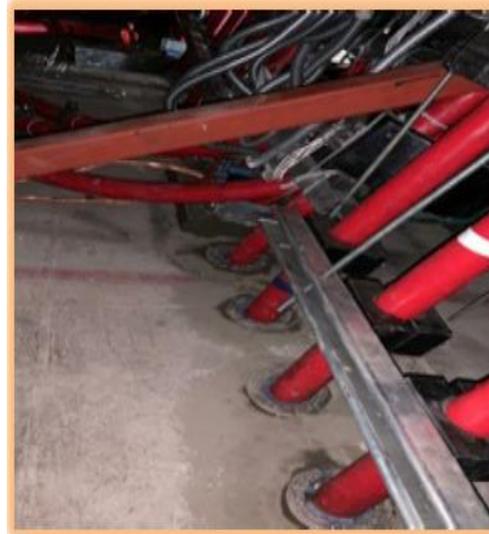
EN LA PARED DE CONCRETO TALADRE EL ORIFICIO DEL "AMAÑO DEL DIAMETRO DEL SELLO MAX 2MM MAS ANCHO. TAMBIEN SE PUEDE PONER UN MOLDE DE VACIADO

**NOTAS**

- TODAS LAS DIVISAS ESTAN EN "EXCEPTO LAS SIGUIENTES"
- LAS COTAS Y MEDIDAS DE CERTIFICADA VERIFICADA FLORESA
- LAS COTAS NO DEBE AL DEBIDO EXCEPTO LAS SIGUIENTES EN EL
- LOS CARLOS DE BALA TENSION DE 22 mm+0 MAYORES SERAN CON CONDUCTORES DE ALUMINIO Y DE DIAMETROS MENORES SERAN DE COBRE APLICANDO LA INTENSIDAD DE CORRIENTE
- LOS CONDUCTORES DEBERAN AMARRARSE DE TAL FORMA QUE QUEDEN DESEMBAJADOS PARA ESTAR CONFUSIONABLES
- LOS CONDUCTORES DE COBRE DEBERAN TENER ABLANQUEO
- TERMINACIONES DE CABLE TIPO ZINCO O OTRA DE ACUERDO A LA NORMA
- LOS CONDUCTORES DE ALUMINIO CALIBRE NO. 6 Y MAYORES SERAN LIBRE DE HALOGENOS TIPO ANILIN, BREVILACION, DE BOCAL Y OTRA DE ACUERDO A LA NORMA PREVIA AUTORIZACION DE
- LOS TABLEROS OPERARAN EN LA SISTEMA 208/127 V. 3 FASES 4 HILOS NEUTRO
- ESTOS TABLEROS SERAN DEL TIPO SOBREPONER, EN GABINETE
- LA ESTRUCTURA DE LOS TABLEROS DEBERA SER DE LAMINA DE ACERO PULIDO EN PAÑO DE 276 mm DE ESPESOR (CALIBRE 16 USG)
- EL ARBOLITO DE LOS TABLEROS DEBERA TENER TAPAS DE GERMEN MUEBLES
- EL ACABADO DE LOS TABLEROS DEBERA SER EN COLOR GRIS ANTRACITA
- EL DIAMETRO DE LA TUBERIA NO INDICADA SERA DE 21 mm
- ESTE PLANO DE CONSTRUCCION CON TODOS LOS DETALLES, DECLARACIONES Y MEMORIAS DE TUBERIAS DEBERAN SER REVISADOS POR EL COMITÉ DE CONSTRUCCION ANTES DE INICIAR LA CONSTRUCCION
- TODAS LAS MANIFIESTACIONES DEBEN INDICAR COMO SON HECHOS Y PODRAN SUJETARSE POR PRODUCTOS

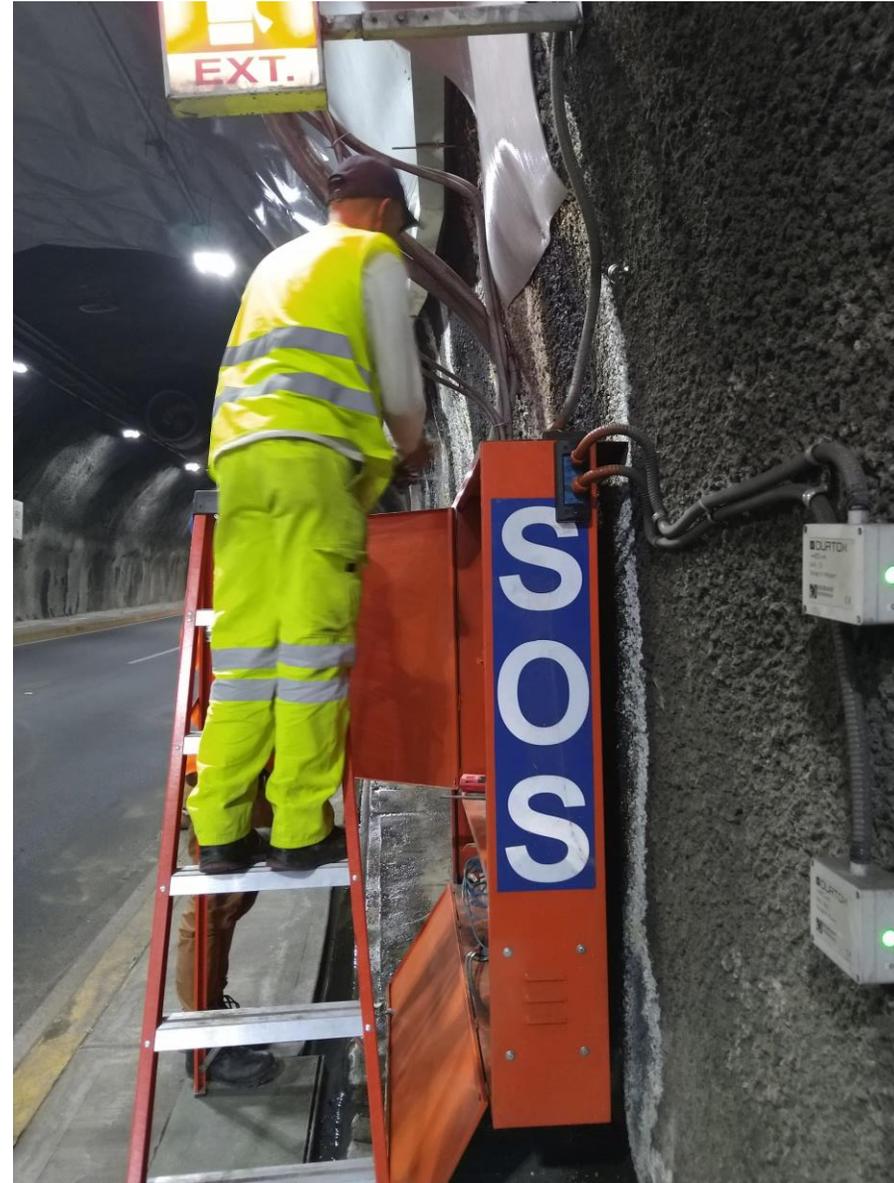
# Protección contra incendios

- Un incendio destruyó la subestación principal, se instalaron sellos Roxtec en la subestación alterna para reanudar el servicio.



# Peaje y túneles

- Vía de cuota.
- Aplicaciones: gabinetes dentro de los túneles (ventilación y SOS), site principal y cámaras de vigilancia.



# Sebastiaan Veldheer comparte su pasión por la instalación de sellos Roxtec | Roxtec México



# Protecting life and assets

**Martha Muñoz**

Outdoor Sales Manager I&I  
Rail Infrastructure and Rolling Stock

[martha.munoz@roxtec.com](mailto:martha.munoz@roxtec.com)

Roxtec México  
Ciudad Universitaria 286-101 A Pedregal de  
San Angel, Álvaro Obregón. CDMX  
[www.roxtec.com](http://www.roxtec.com)

