

# Case of success: *Metro of Panama Line 1*

*Basorplast PVC cable trays*







**15.078** meters of PVC cable trays  
**10.322** union joints  
**27.000** screws

### The Panama Metro Line 1

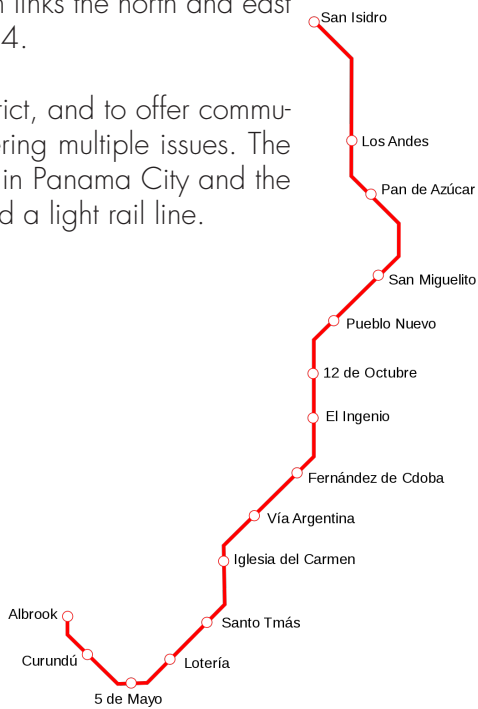
Rapid transit system in Panama City, Panama. It is the first metro system in Central America.

The Panama Metro is a rapid transit system in Panama City, Panama, which links the north and east sides of the metropolitan area to the city center. It was inaugurated on April 5, 2014.

It was built to relieve the traffic congestion between the city and San Miguelito District, and to offer commuters a viable alternative to road transport, as the Metrobus transport system is suffering multiple issues. The Panama Metro is part of a major "National Master Plan" to improve transportation in Panama City and the west side of the country, which includes the construction of four more metro lines and a light rail line.

Characteristics:

- Type: Metro rail system
- Location: City of Panama
- Construction started: February 2011
- Estimated investment: 1.8bn USD
- Length Line 1: 13.7 km
- Gauge: 1,435mm (standard)
- Lines: 4
- Stations: 12 shelters
- Contractors: Linea Uno Consortium





Line 1 is 13.7km-long with 12 stations, comprising seven underground and five elevated. The stations include 12 de Octubre, F. de Córdoba, Vía Argentina, Iglesia El Carmen, Marañón, Curundú, Plaza 5 de Mayo, Pan de Azúcar, San Miguelito, and Pueblo Nuevo. Line 1 included the construction of 7.3km of tunnels, 1.5km of trenches and 4.9km of viaducts.

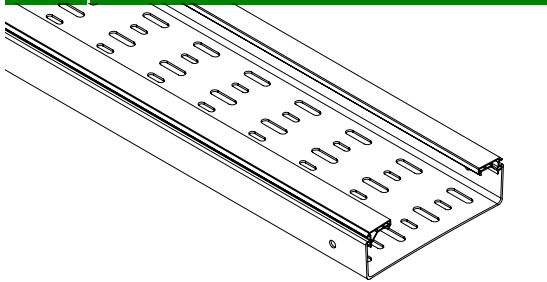


# BASORPLAST BPE

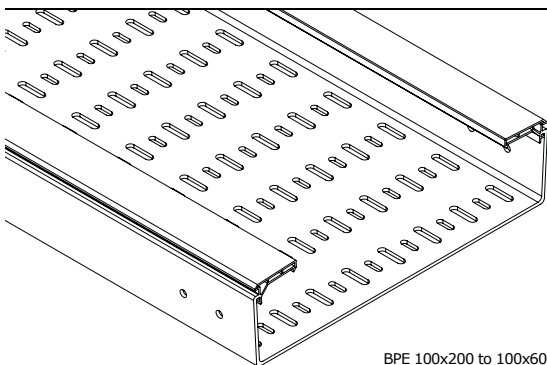
UL 568

DATA SHEET INSTALLED PRODUCT

## BPE



BPE 60x100 to 60x300



BPE 100x200 to 100x600

Models (HxB):  
60x100; 60x150; 60x200; 60x300; 100x200; 100x300; 100x400; 100x600.

Types: Slotted or solid bottom.

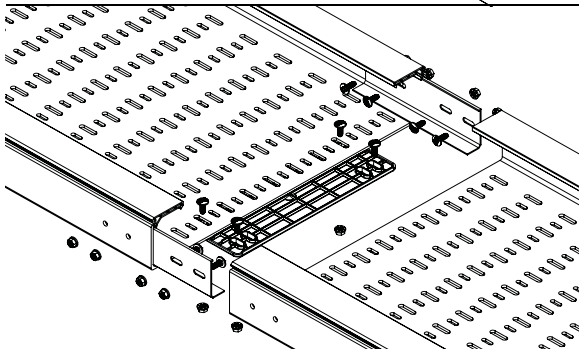
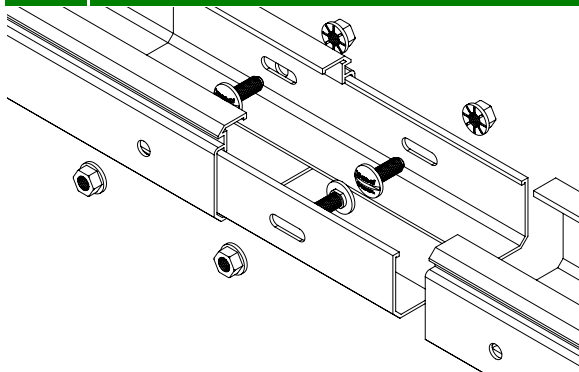
Finishes: PVC M1 UV RAL 7035

Characteristics of the tray:

- Non metallic system
- Resistant to UV radiation. Excellent behaviour in outdoor installation.
- Impact Strength: 20J, except 60x100 with 10J
- Minimum temperature: -4 °F
- Maximum temperature: 140 °F
- Non-flame propagating component
- Without electrical continuity
- Electrical insulating component
- Dielectric Strength 18 +/- 2 kV/mm
- High protection inside and outside against corrosive substances
- Plastic system resistant to humidity/salty and chemical environments according to DIN 8061 and iISO/TR 10358
- M1 reaction to fire acc. to UNE 23727
- Glow wire test degree 1760 °F, EN 60695-2-11
- Flammability UL 94-VO, ANSI/UL 94-1995
- Limiting Oxygen Index LOI > 50%, EN ISO 4589
- Comply with RoHS directive, 2011/65/UE
- Raw material without silicone



## ASSEMBLING INSTRUCTIONS



- For the assembly, two union joints and four M8 Bolt sets are needed for each stretch (8 for H100 models). For trays with a width  $\geq 400$  mm it is necessary to use the JUBPE-C base joint to accomplish the requirements of full load transverse arrow indicated by IEC 61537. This union requires 4 screw set CTBP M8 PVC, and it can be placed inside or outside the cable tray.
- Tray installation for electrical systems should NOT run under other types of canalizations such as water, vapour or gas canalizations.
- To guarantee a good ventilation, we recommend installing the trays keeping a minimum distance of 250 mm between each tray.
- Suitable for wet, salty and chemical aggressive environments.
- To assure good performance under expansions, the increase in temperature must be noted, between the installation and the maximum temperature expected. Depending on the expected growth in the temperature ( $\Delta T$ ) leave a gap (h) between cable trays according to the following table :

$\Delta T$ (°F)	h (mm)
68	5
86	7
104	9
122	11

## TESTS RESULTS ACCORDING TO UL 568

- Safe working load:

SWL values for 104 °F

NEMA classification	MODEL	Safe Working Load - kg/m (lb/ft)		
		2,4 m (8 ft)	1,8 m (6 ft)	1,5 m (5 ft)
-	BPE-60x100	3,1 (2,1)	5,5 (3,7)	8 (5,4)
-	BPE-60x150	4,2 (2,8)	7,6 (5,1)	10,9 (7,3)
-	BPE-60x200	19,3 (13)	34,3 (23,1)	49,5 (33,2)
5AA	BPE-60x300	21,2 (14,2)	37,8 (25,4)	54,4 (36,5)
5A	BPE-100x200	33,1 (22,3)	59 (39,6)	84,9 (57,1)
8AA	BPE-100x300	52,4 (35,2)	93,2 (62,6)	134,3 (90,2)
8A	BPE-100x400	81,3 (54,6)	144,6 (97,2)	208,3 (140)
8B	BPE-100x600	121,7 (81,8)	216,5 (145,4)	311,7 (209,5)

SWL values for 140 °F

NEMA classification	MODEL	Safe Working Load - kg/m (lb/ft)		
		2,4 m (8 ft)	1,8 m (6 ft)	1,5 m (5 ft)
-	BPE-60x100	2 (1,3)	3,6 (2,4)	5,2 (3,5)
-	BPE-60x150	2,7 (1,8)	4,9 (3,3)	7,1 (4,7)
-	BPE-60x200	12,6 (8,4)	22,4 (15)	32,2 (21,6)
-	BPE-60x300	13,8 (9,3)	24,6 (16,5)	35,4 (23,8)
5AA	BPE-100x200	21,6 (14,5)	38,4 (25,8)	55,3 (37,1)
5A	BPE-100x300	34,1 (22,9)	60,7 (40,8)	87,4 (58,7)
8AA	BPE-100x400	53 (35,6)	94,2 (63,3)	135,7 (91,1)
8A	BPE-100x600	79,3 (53,3)	141 (94,7)	203 (136,4)

NOTE: Tests according to UL 568 Method A (Load Before Destruction), with 1.5 Safety factor

- Water absorption: The absorption of water by the material is minor than 0.5 percent.
- Dielectric strength: There is no dielectric breakdown in the material after conditioning.
- Weathering: The material retain more than 75% of the original recorded flexural strength.
- Combustibility of cable tray assemblies: Not emit flaming or glowing particles or dropping particles that ignite the cotton layer situated below the flame application point
- Flame spread: Material meet a flame spread index lower than 25.



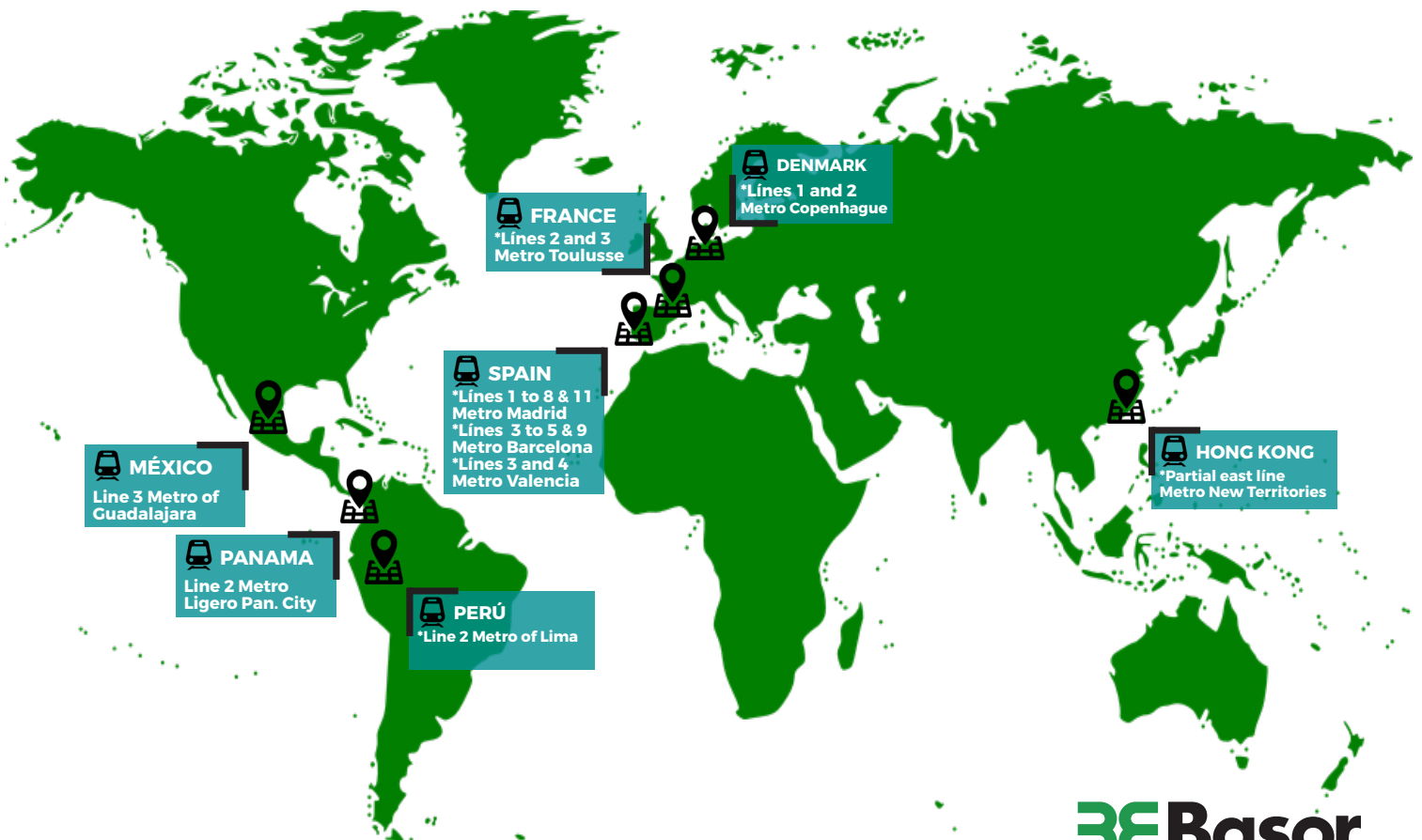
Sizes & quantities  
 60x150: 3.588 meters / 60x300: 6.420 meters  
 100x300: 5.070 meters

**15.078 meters**

METRO GLOBAL PROJECTS



TYPE	CITY	COUNTRY	LINE
Metro	Copenhaguen	Denmark	1
Metro	Copenhaguen	Denmark	2
Metro	Toulouse	France	2
Metro	Toulouse	France	3
Metro	Guadalajara	Mexico	3
Metro	Guadalajara	Mexico	3
Metro	Quito	Peru	1
Metro	Lima	Peru	2
Metro Light	City of Panama	Panama	2
Metro	Madrid	Spain	-
Metro	Madrid	Spain	1
Metro	Madrid	Spain	2
Metro	Madrid	Spain	3
Metro	Madrid	Spain	4
Metro	Madrid	Spain	5
Metro	Madrid	Spain	7
Metro	Madrid	Spain	8
Metro	Madrid	Spain	11
Metro	Barcelona	Spain	3
Metro	Barcelona	Spain	4
Metro	Barcelona	Spain	5
Metro	Barcelona	Spain	9
Metro	Valencia	Spain	3
Metro	Valencia	Spain	4
Metro	Bilbao	Spain	1
Metro	Bilbao	Spain	2



STATION PROJECTS



metro bilbao



metrovalencia



TYPE	CITY	COUNTRY	LINE
Station Metrosur Parque Oeste	Madrid	Spain	12
Station Metrosur Alcorcón Central	Madrid	Spain	12
Station Metrosur Parque Lisboa	Madrid	Spain	12
Station Metrosur Puerta del Sur	Madrid	Spain	12
Station Metrosur San Nicasio	Madrid	Spain	12
Station Metrosur Leganés Central	Madrid	Spain	12
Station Metrosur Hosp. S. Ochoa	Madrid	Spain	12
Station Metrosur Casa del Reloj	Madrid	Spain	12
Station Metrosur Julián Besteiro	Madrid	Spain	12
Station Metrosur EL Carrascal	Madrid	Spain	12
Station Metrosur EL Bercial	Madrid	Spain	12
Station Metrosur Los Espartales	Madrid	Spain	12
Station Metrosur EL Casar	Madrid	Spain	12
Station Metrosur Juan de la Cierva	Madrid	Spain	12
Station Metrosur Getafe Central	Madrid	Spain	12
Station Metrosur Alonso Mendoza	Madrid	Spain	12
Station Metrosur Conservatorio	Madrid	Spain	12
Station Metrosur Arroyo	Madrid	Spain	12
Station AVE Joaquín Sorolla	Valencia	Spain	1
Station AVE Las Delicias	Zaragoza	Spain	2
Station AVE EL Prat	Barcelona	Spain	3
Station AVE Can Tunis	Barcelona	Spain	3
Station Fo Tan	Hong Kong	China	East Line
Station Iglesia Mayor	Barcelona	Spain	9
Station Can Zam	Barcelona	Spain	9
Station Singuerlin	Barcelona	Spain	9
Garage AVE Cerro Negro	Madrid	Spain	1
Garage Metro Toulouse	Toulouse	France	2
Garage Metro Toulouse	Toulouse	France	3
Garage Zona Franca	Barcelona	Spain	2
Interchange area Diagonal	Barcelona	Spain	3 y 5
Station de Sants	Barcelona	Spain	-
Metro	Málaga	Spain	1 y 2



**BEGREEN**  
CableManagementSystems

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CABLE TRAY SPECIALIST

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