

SANEAMIENTO DE LA CIUDAD Y DE LA BAHÍA DE PANAMÁ

Project Name	SANEAMIENTO DE LA CIUDAD Y DE LA BAHÍA DE PANAMÁ (PANAMA CITY AND BAY CLEANING UP PROJECT)
Focus	TBM-EPB INTERCONNECTION TUNNEL AND 3 PITS OF THE PUMPING STATIONS OF THE PLANT FOR THE WASTEWATER TREATMENT (PTAR).
TBM EPB	EXTERNAL DIAMETER 3.4 m INTERNAL DIAMETER 3.0 m AVERAGE DEPTH 27 m
Tunnel length	8 km
Project location	PANAMÁ
Client	CENTENO-RODRIGUEZ & ASOCIADOS SC, CARACAS-VENEZUELA-PANAMA
Local resident engineer	ING. FRANCISCO CENTENO PULIDO
Contractor	CONSTRUTORA ODEBRECHT S.A.



SOME INFORMATION ABOUT THE PROJECT

The cleaning up project of Panama City and Bay includes:

- Construction of Health Service networks
- Construction and rehabilitation of Collectors and Drive lines
- Interceptor system
- Plant for wastewater treatment.

These elements will be developed to collect, transport and treat wastewater of Panama City which is currently discharged directly into the bay or rivers and streams in the metropolitan area.

General purpose

Recover the rivers and creeks areas which currently represent a risk for public health and impossibility of urban development and good quality of life of its inhabitants.

Specific purpose

Larger the collection systems and construction of a wastewater treatment system to minimize the risks for health.

Clean up the Bay of Panama City and give to the World a new image of a City/Country that respect the sea, the environment and its resources.

Installed Instruments	
TILLI portable tiltmeter measuring points	No. 120 (Sisgeo models SCLIN)
Inclinometer tubes	No. 12 tubes (Sisgeo model S131)
V.W. strain gauges	No. 26 (Sisgeo model VK40)
BRS settlement columns	No. 40 columns, 25m/each (Sisgeo model D111)
Tape extensometer	No. 2 complete systems (Sisgeo model DNP0)
Wire deformometer	No. 12 (Sisgeo model D313F)
Water level indicators	No. 2 (Sisgeo model C112)
Hydraulic anchor load cells	No. 12 (Sisgeo model L2M0)



Chanis pumping station pits - May 2011



Aerial view of Chanis pits



Pumping station - May 2011



Pit of Santa Elena excavation – April 16th 2011 - 2011 17,8 meter depth (approx.)



Inclinometer measurements close to the Pit of Santa Elena



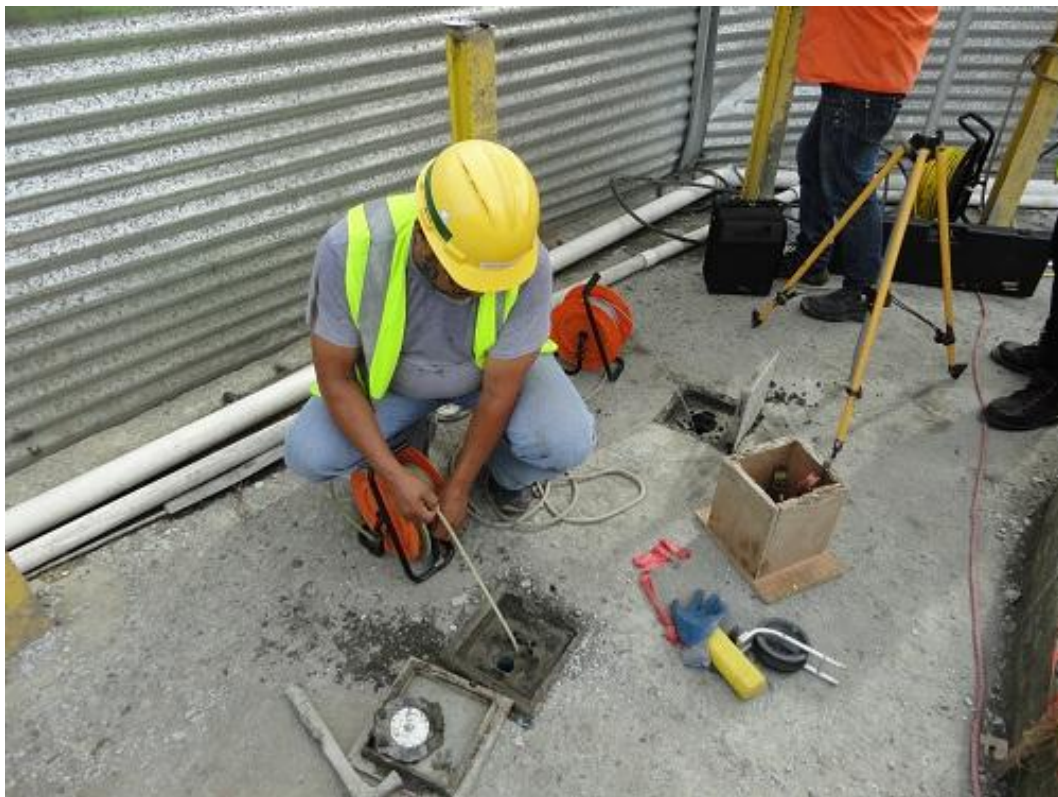
Panamá TBM EPB SBP Tunnel



Inclinometer measurement with new Archimede readout



Inclinometer measurement at Pozo Santa Elena Panama City SBP



Water level measurement at Foso Santa Elena