CANAL DE PANAMÁ

The Panama Canal Expansion Program

Agenda

- Panama Canal Performance in FY-2012
- Expansion Program Update

Panama Canal Profile

Panamá – Logistic Center of the Americas

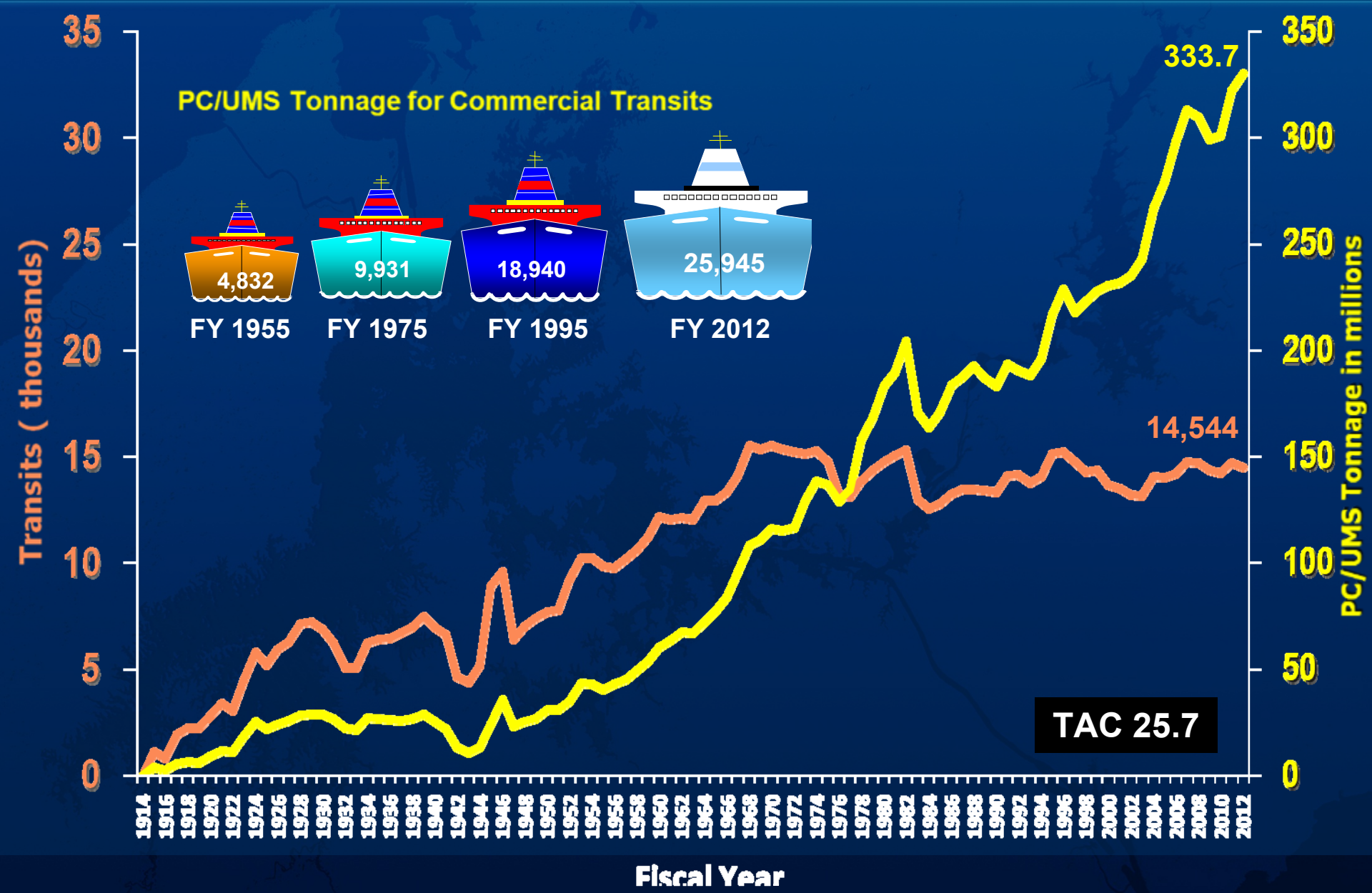
Reaching the full potential of its geographical position

The Panama Canal
1914

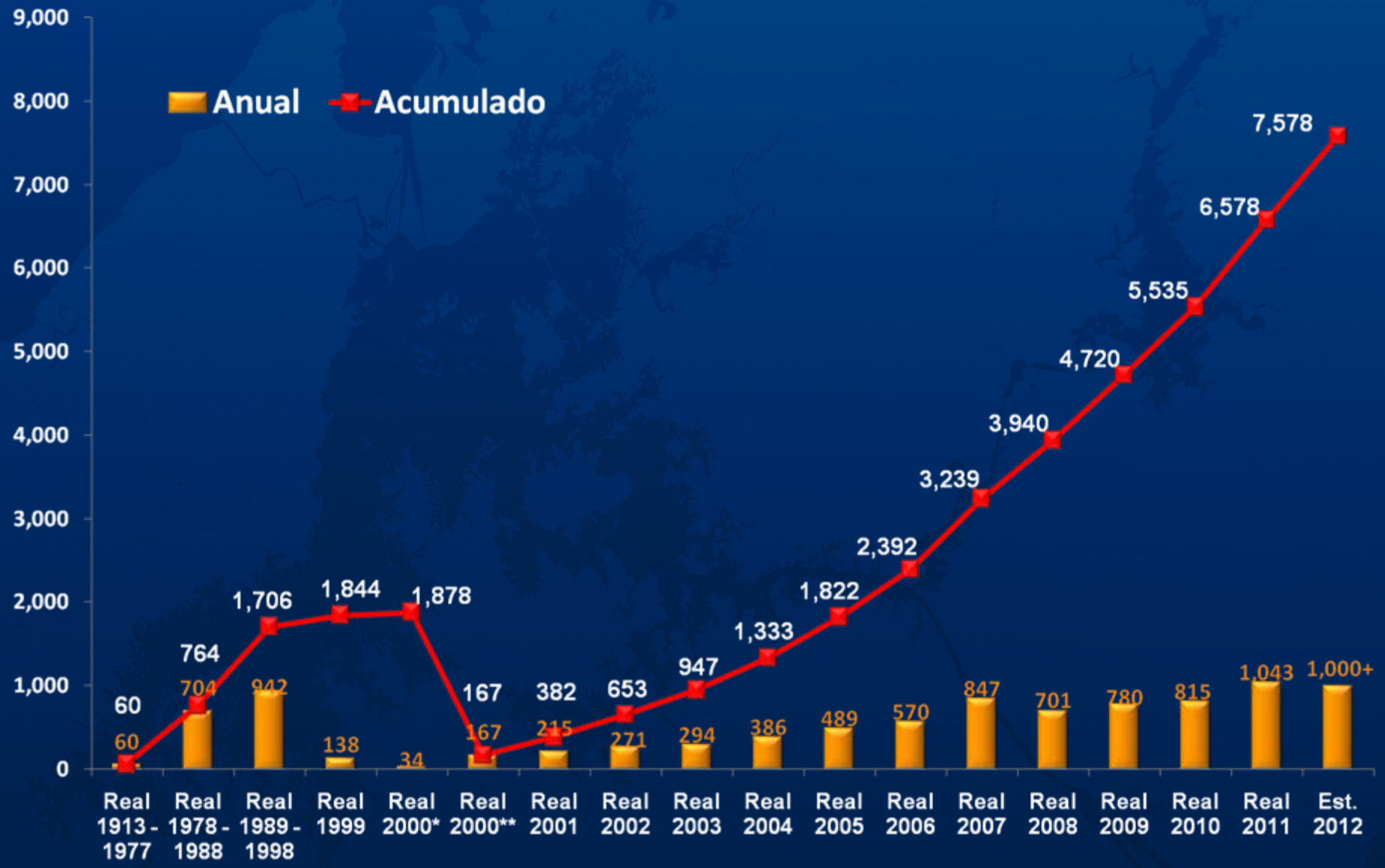
The Panama Canal Today

Transits vs. PC/UMS Tonnage

FY 1914 – FY 2012



Contributions to the Republic of Panama
(In USD Millions)



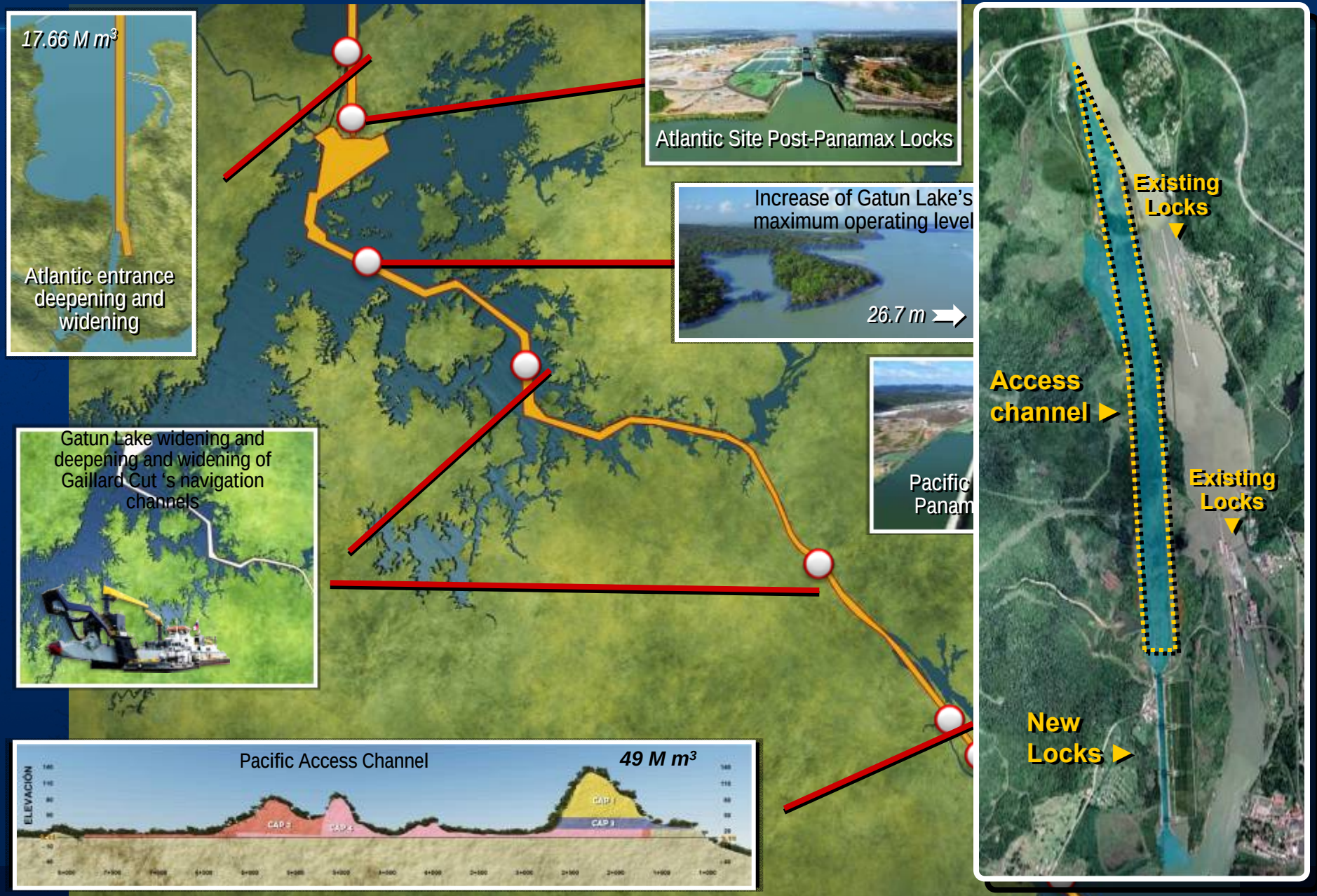
* Three months under the Panama Canal Comission.
** Nine months under the Panama Canal Authority.

Agenda

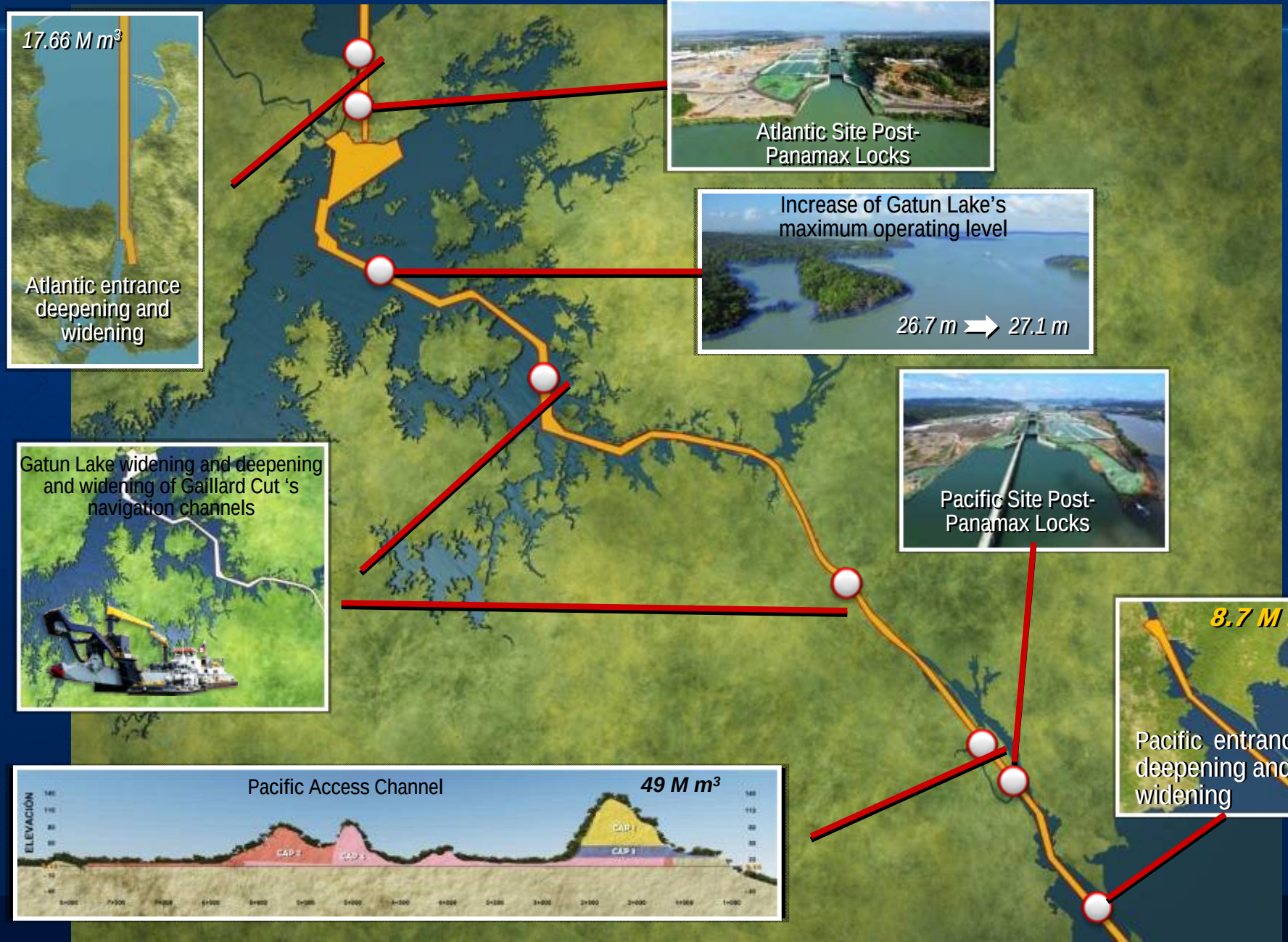
- Panama Canal Performance in FY-2012
- Panama Canal Expansion Program Update

The Panama Canal - 2015
It's all about economies of scale!

Program Components



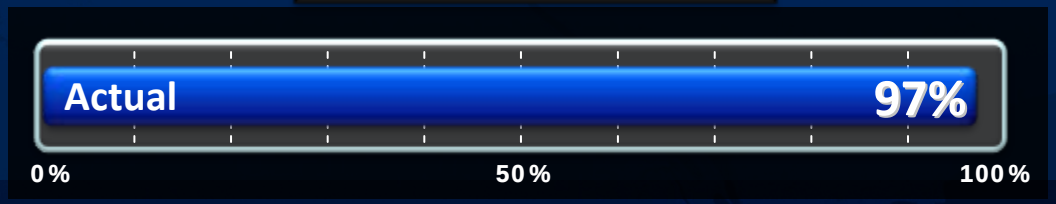
Program Components



Deepening and widening of the Pacific entrance

- Scope of Contract: 8.7 M m^3
- Award: April 1, 2008
- Amount: B/. 177,500,676.78
- Company: Dredging International
- Amendment No. 12 : February 10, 2012
  - Expansion Program deliveryable: Dec 31, 2012
  - Termination of Contract: June 30, 2013

8.9 M m^3 dredged

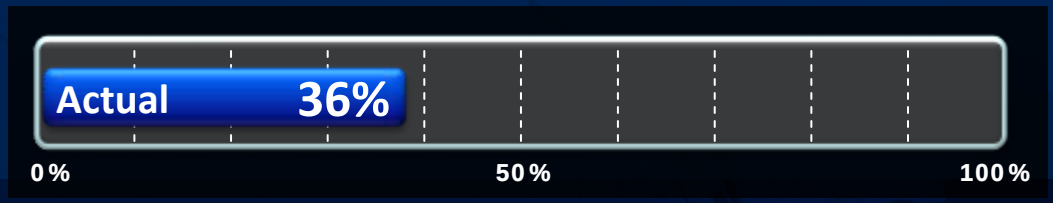


Deepening and widening of the Pacific entrance (8.7 M m^3)

Locks Design and Construction

Volume excavated and dredged:
34 M m^3 / 46.5 M m^3

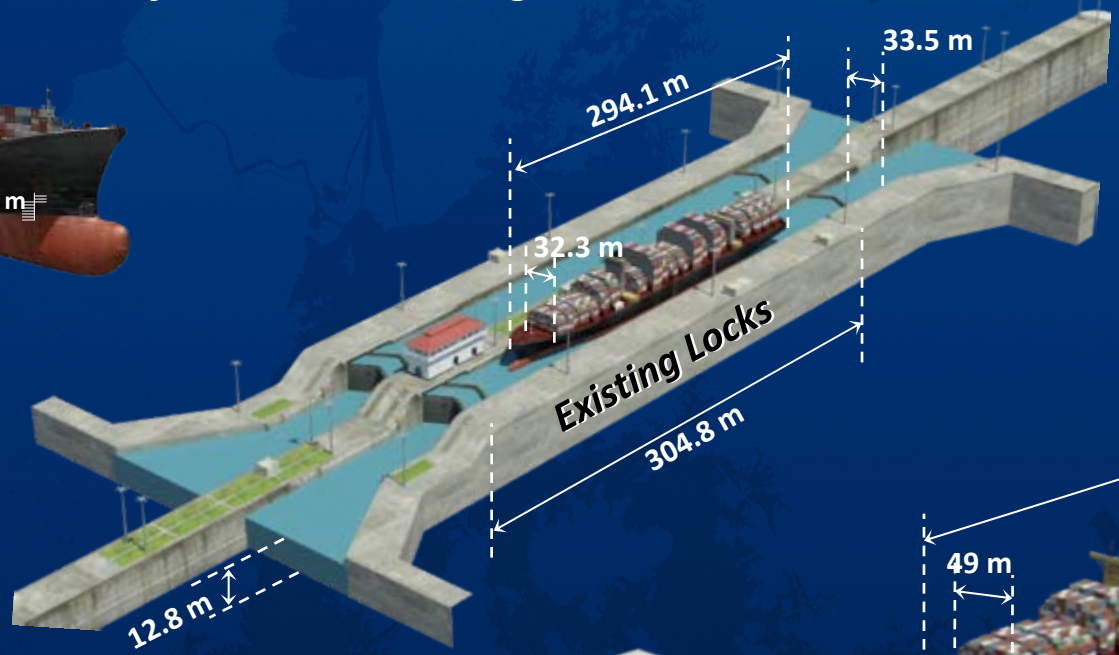
- Scope of Contract: Design and Construction of Locks
- Award: July 15, 2009
- Order to Proceed: August 25, 2009
- Initial Amount + options: B/. 3,158,600,059
- Consortium: Grupo Unidos por el Canal S.A.
  - Sacyr Vallehermoso – Impregilo – Jan De Nul - CUSA
- Conclusion of the contract: October 21, 2014

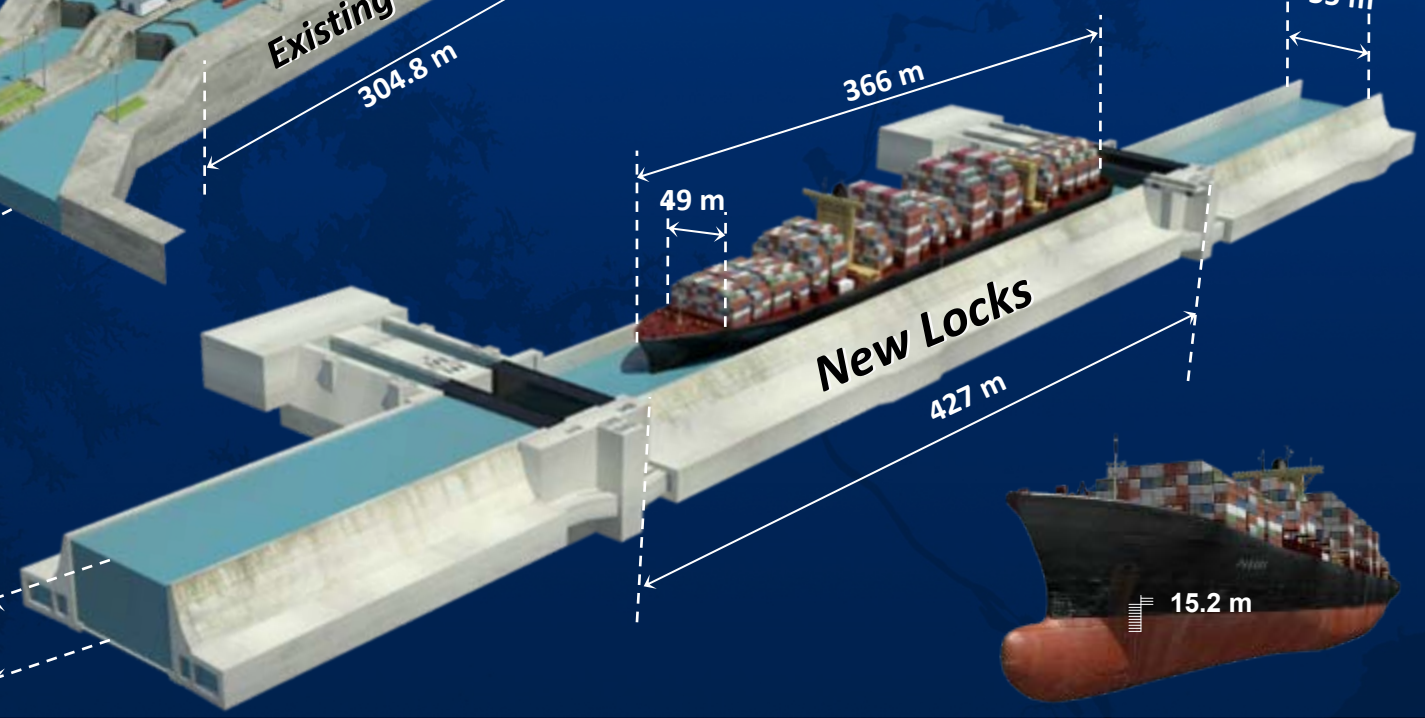


Locks Design and Construction

Dimensions of Locks and Ships

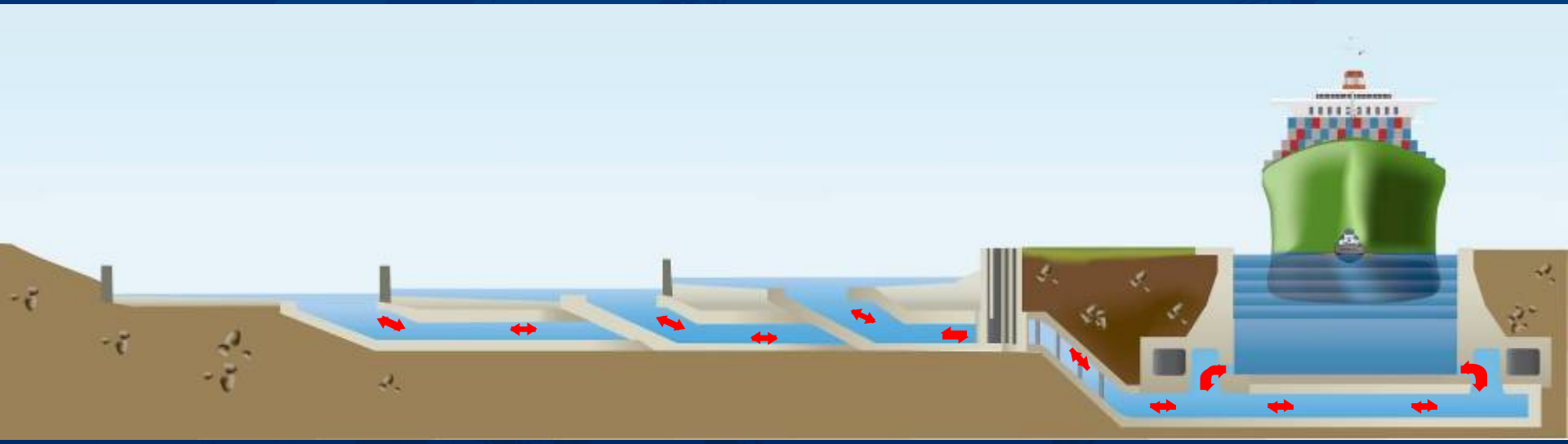
Maximum size of vessels in existing Locks: ***4,400 TEU***



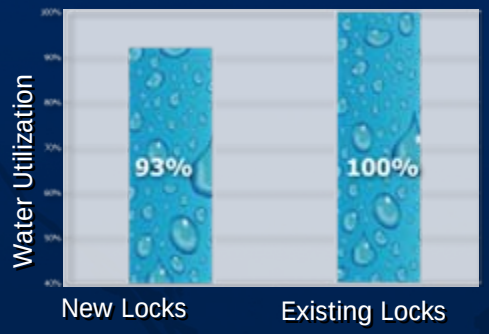


Maximum size of vessels in new Locks: ***13,000 – 14,000 TEU***

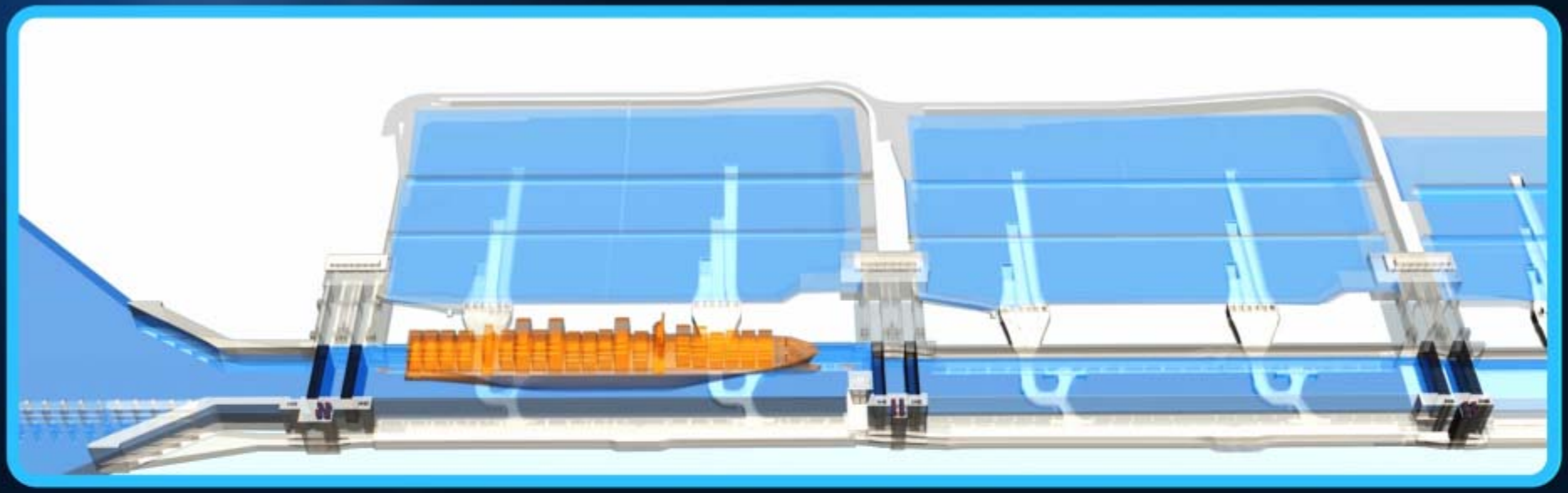
PostPanamax Locks Operation
GUPC's Proposal



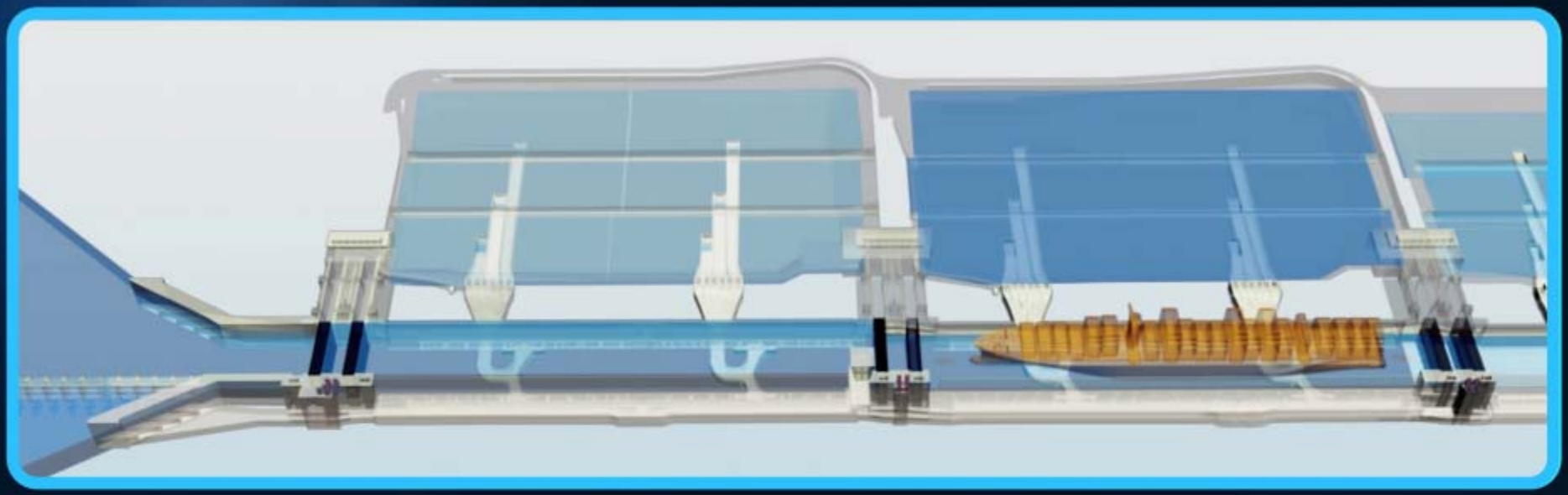
With the water saving basins
the new locks will use 7% less water
than the existing locks



Locks Filling and Emptying System



Locks Filling and Emptying System



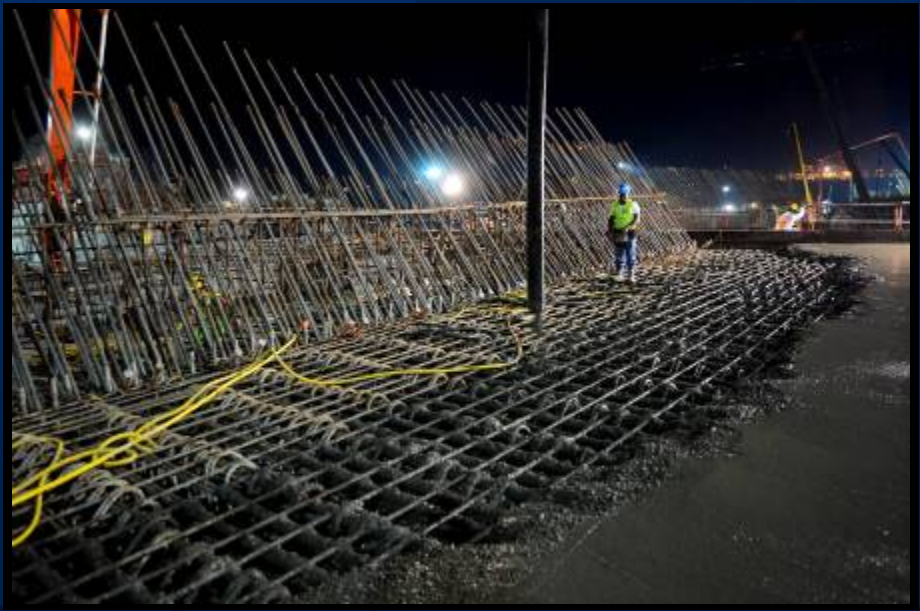
1939 Excavations – Pacific Site

Locks – Industrial Area, Pacific Site

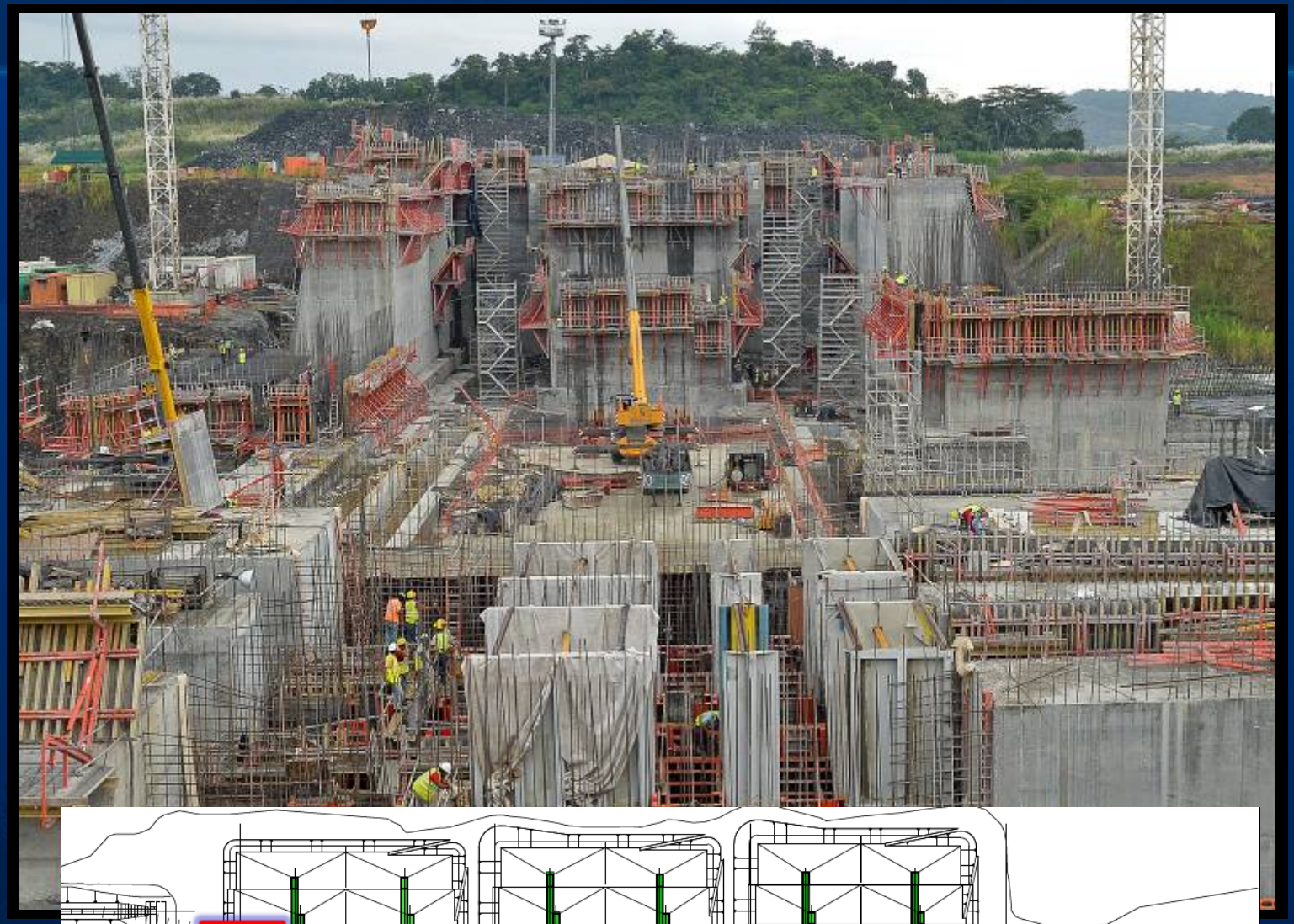
Concrete Plant with a 570m³/hr.-capacity

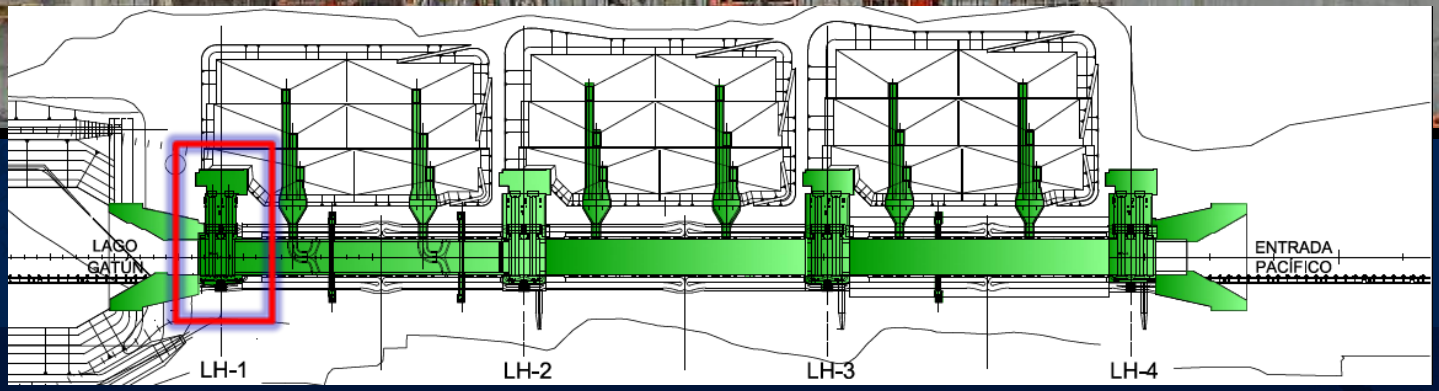
Locks – Pacific Site

Locks – Pacific Site

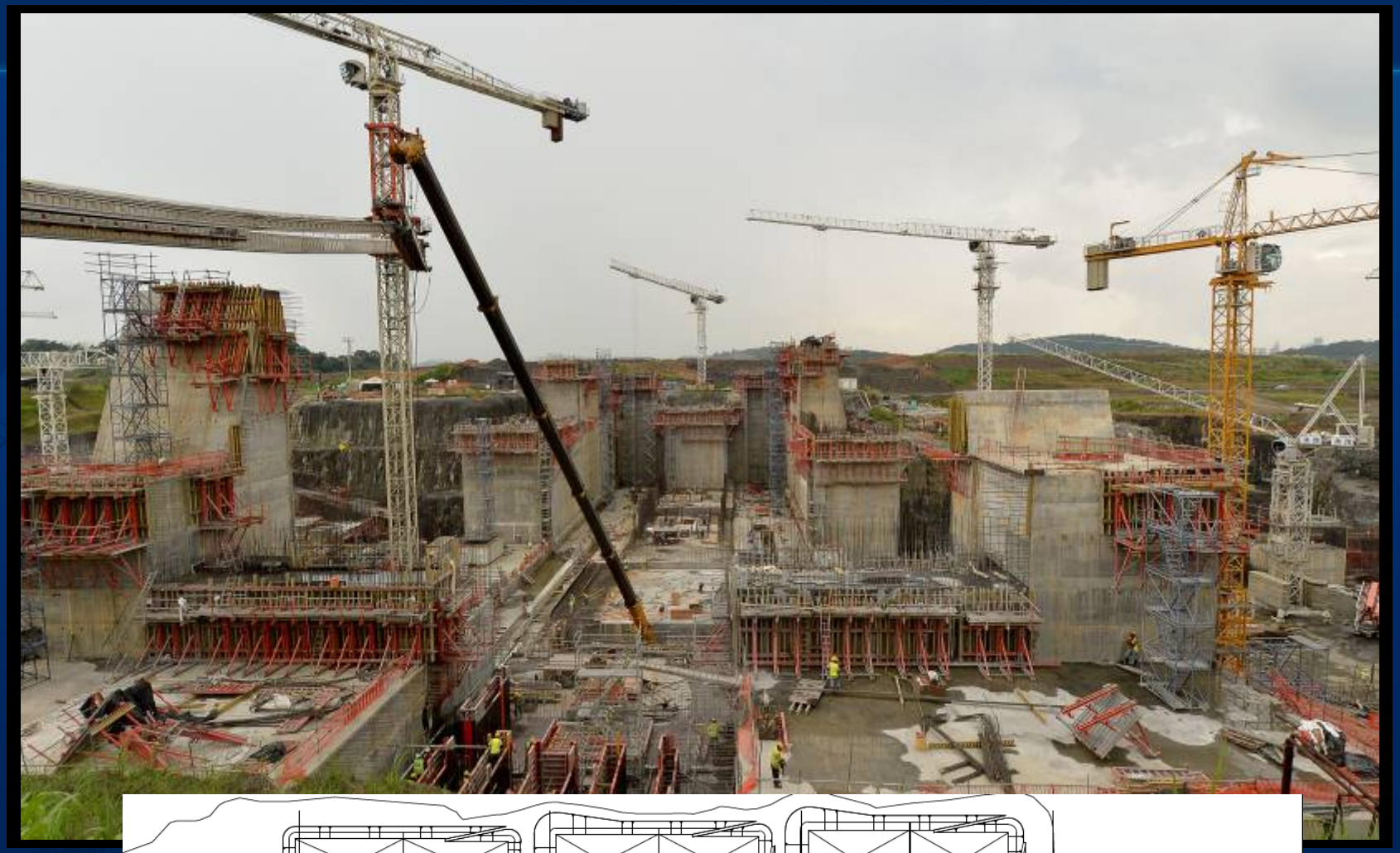


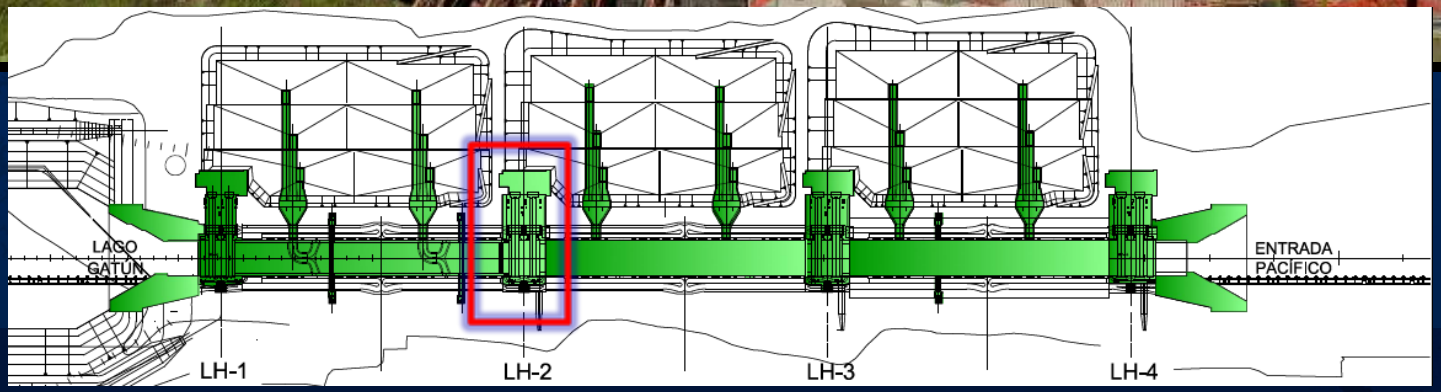
Lock head # 1 – Pacific Site



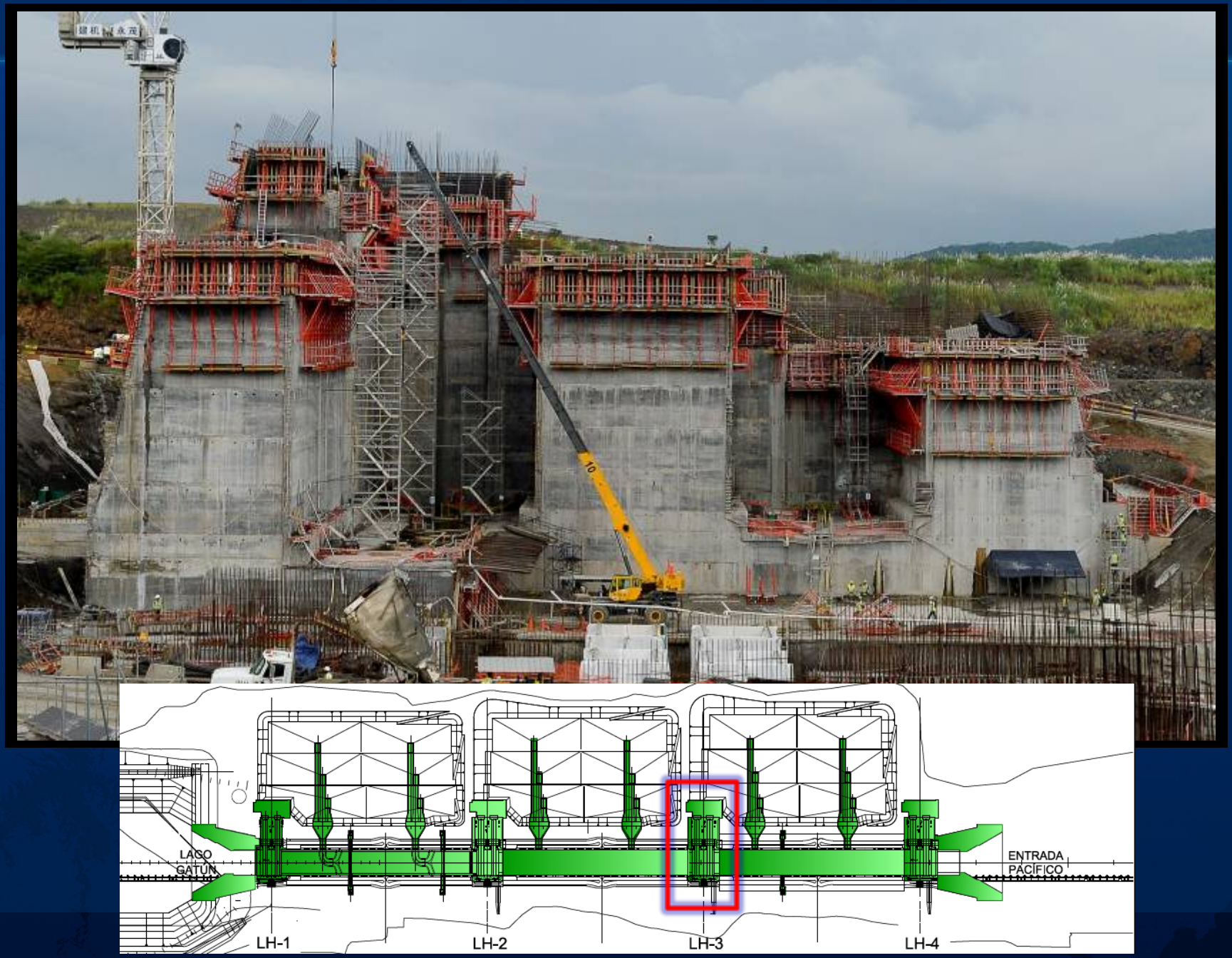


Lock head # 2 – Pacific Site

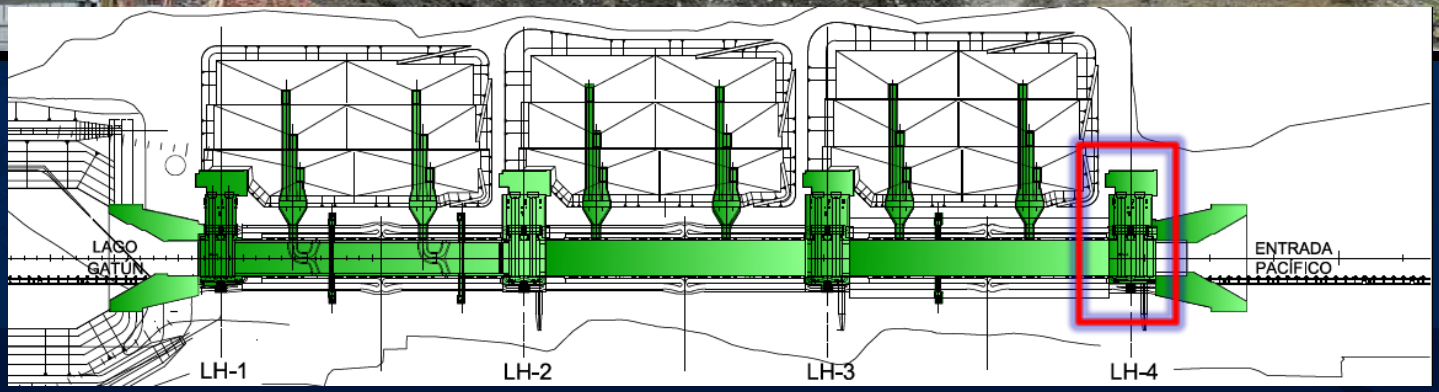


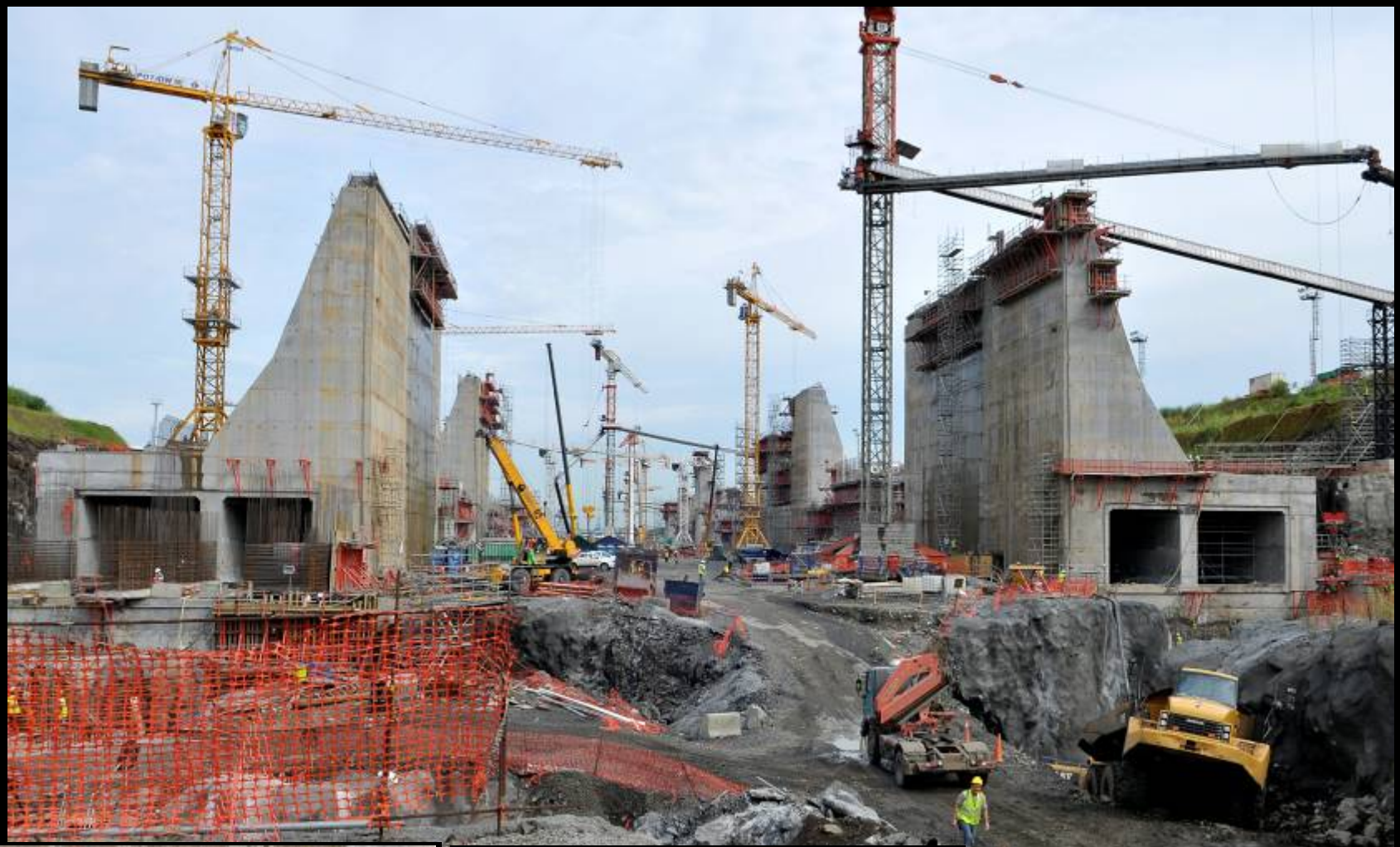


Lock head # 3 – Pacific Site



Lock head # 4 – Pacific Site





Locks – Pacific Site

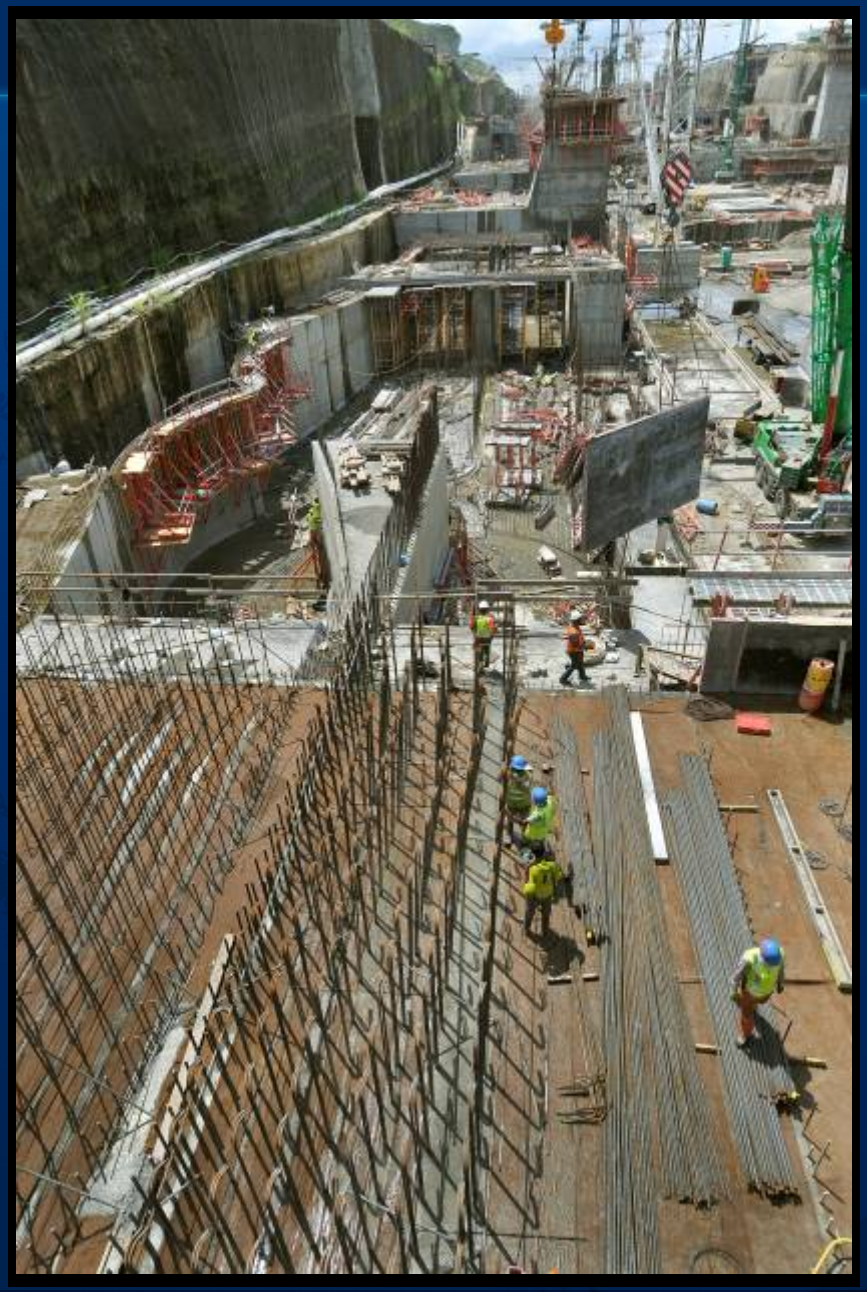
Locks – Pacific Site

1939 Excavations - Atlantic

Locks – Industrial Area, Atlantic Site

Concrete Plant with a 570m³/hr.-capacity

Locks – Atlantic Site



Locks – Atlantic Site

Locks – Atlantic Site

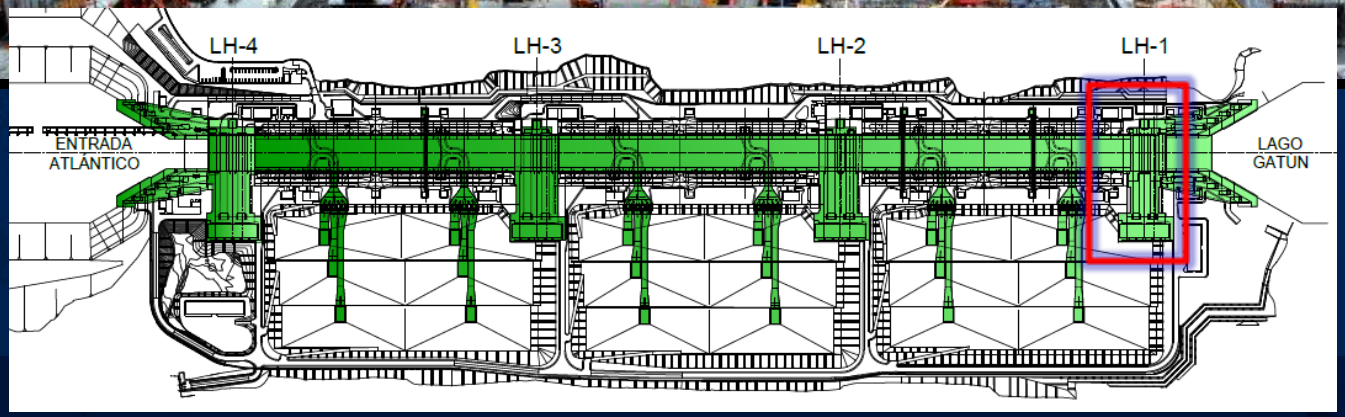
Locks – Atlantic Site

Locks – Atlantic Site

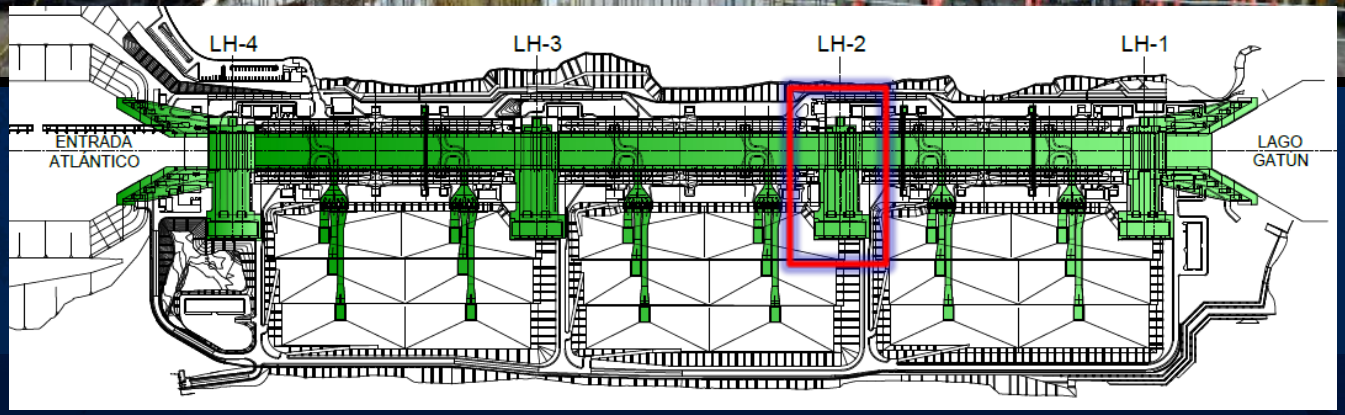
Locks – Atlantic Site

Locks – Atlantic Site

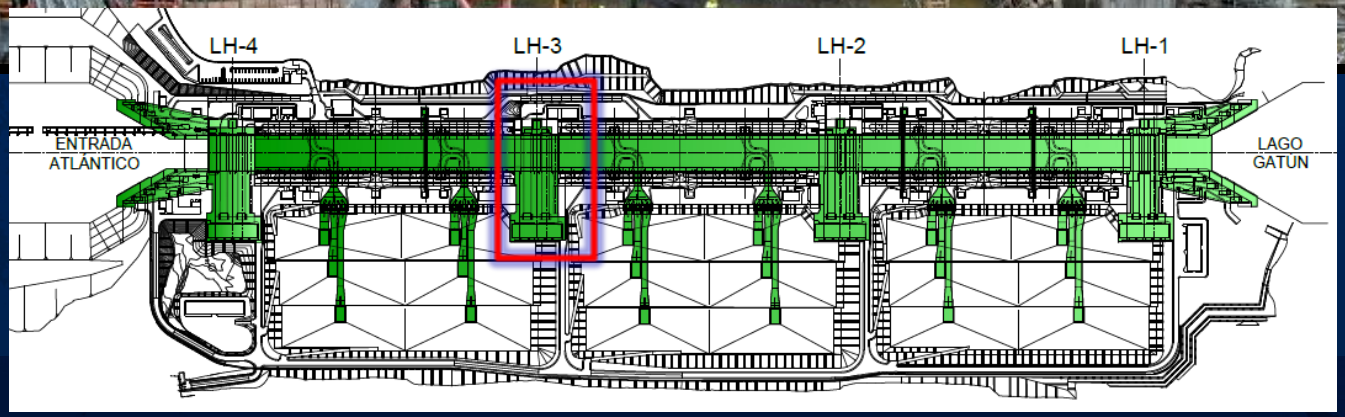
Lock head # 1 – Atlantic Site



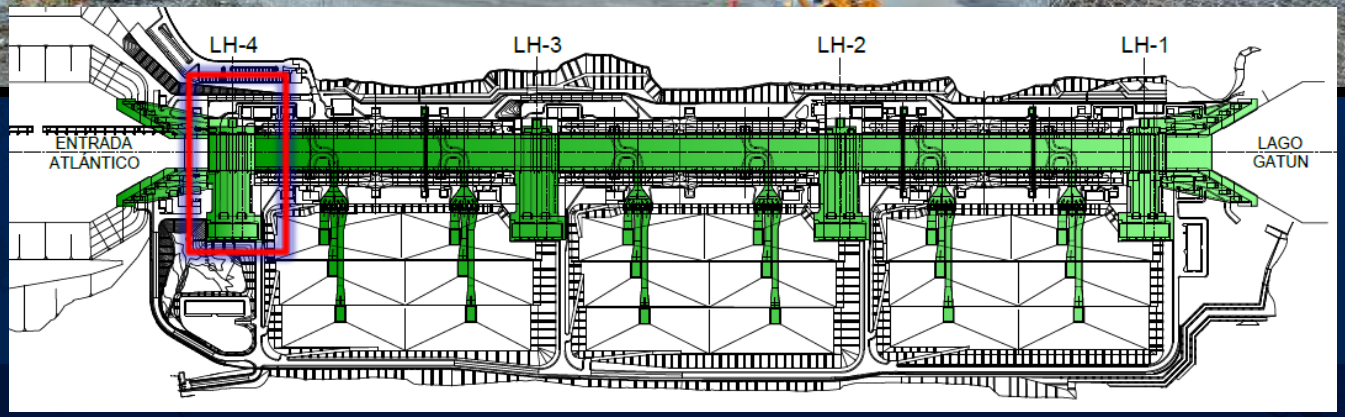
Lock head # 2 – Atlantic Site



Lock head # 3 – Atlantic Site



Lock head # 4 – Atlantic Site



Locks – Atlantic Site

Locks – Atlantic Site

Locks – Atlantic Site

Locks – Atlantic Site

CANAL DE PANAMÁ

Valves - Manufacturing

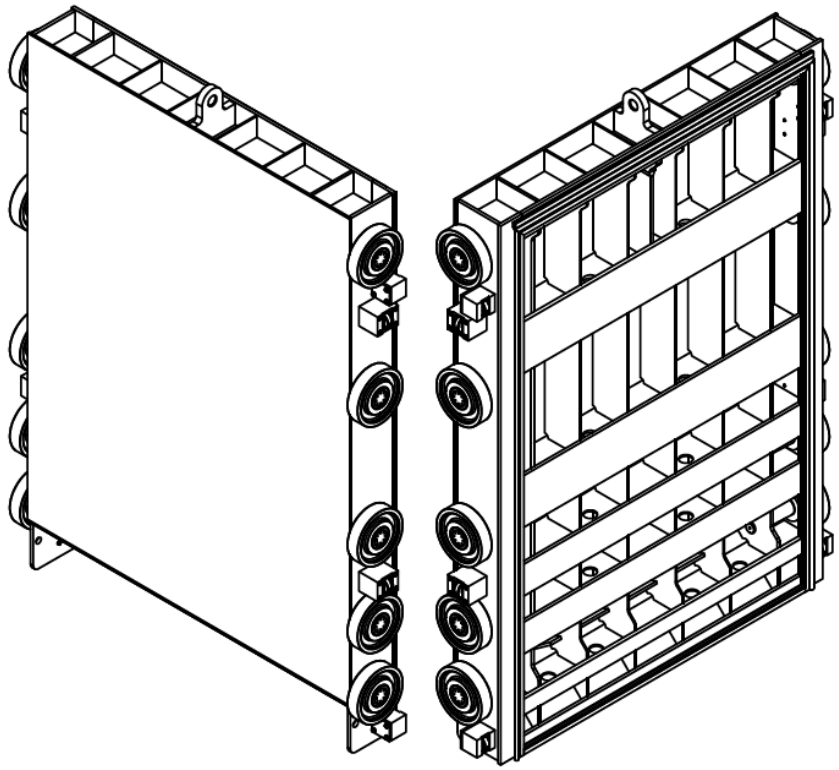
Hyundai Samho Heavy Industries, South Korea

Locks Valves

Total operating valves: 152

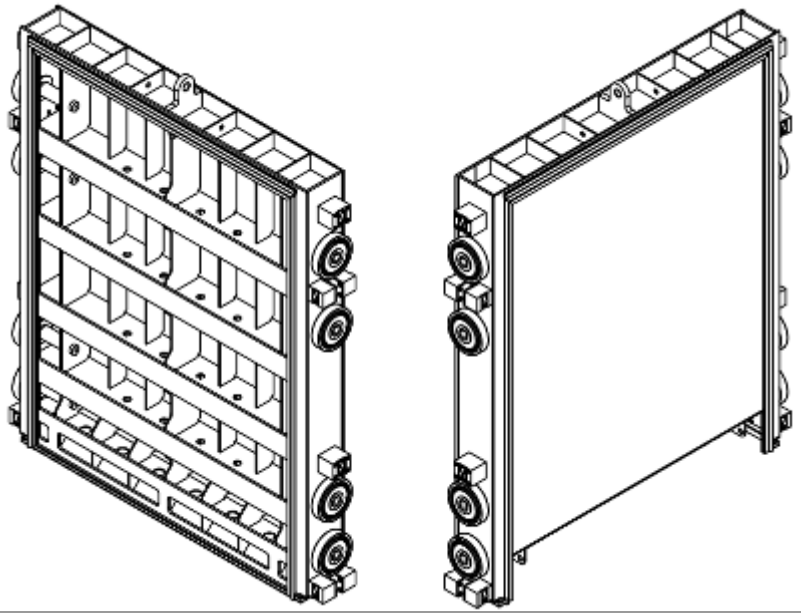
First batch will arrive on November 2012 with 40 valves

Main Sewer Valves 4.69m x 6.786m



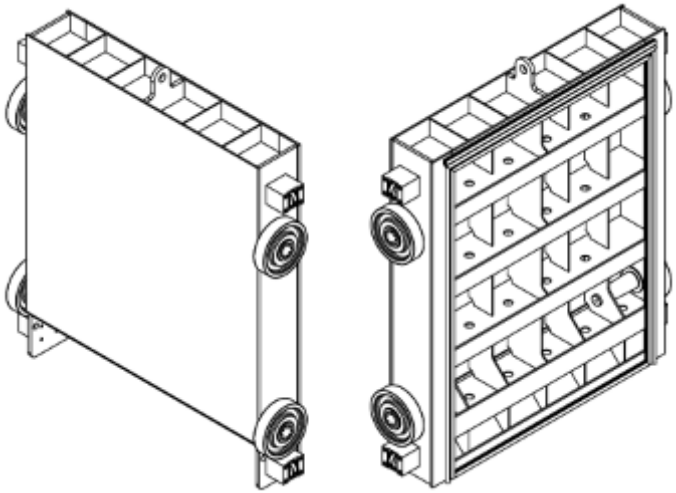
64 + 2 (replacement)

Pipeline Valves 4.69m x 6.786m



72 + 2 (replacement)

Equalization Valves 3.545m x 4.285m



16 + 2 (replacement)

Valve Fabrication

Valve Fabrication

Valve Fabrication
Completed Culvert Valve

CANAL DE PANAMÁ

Gates - Fabrication

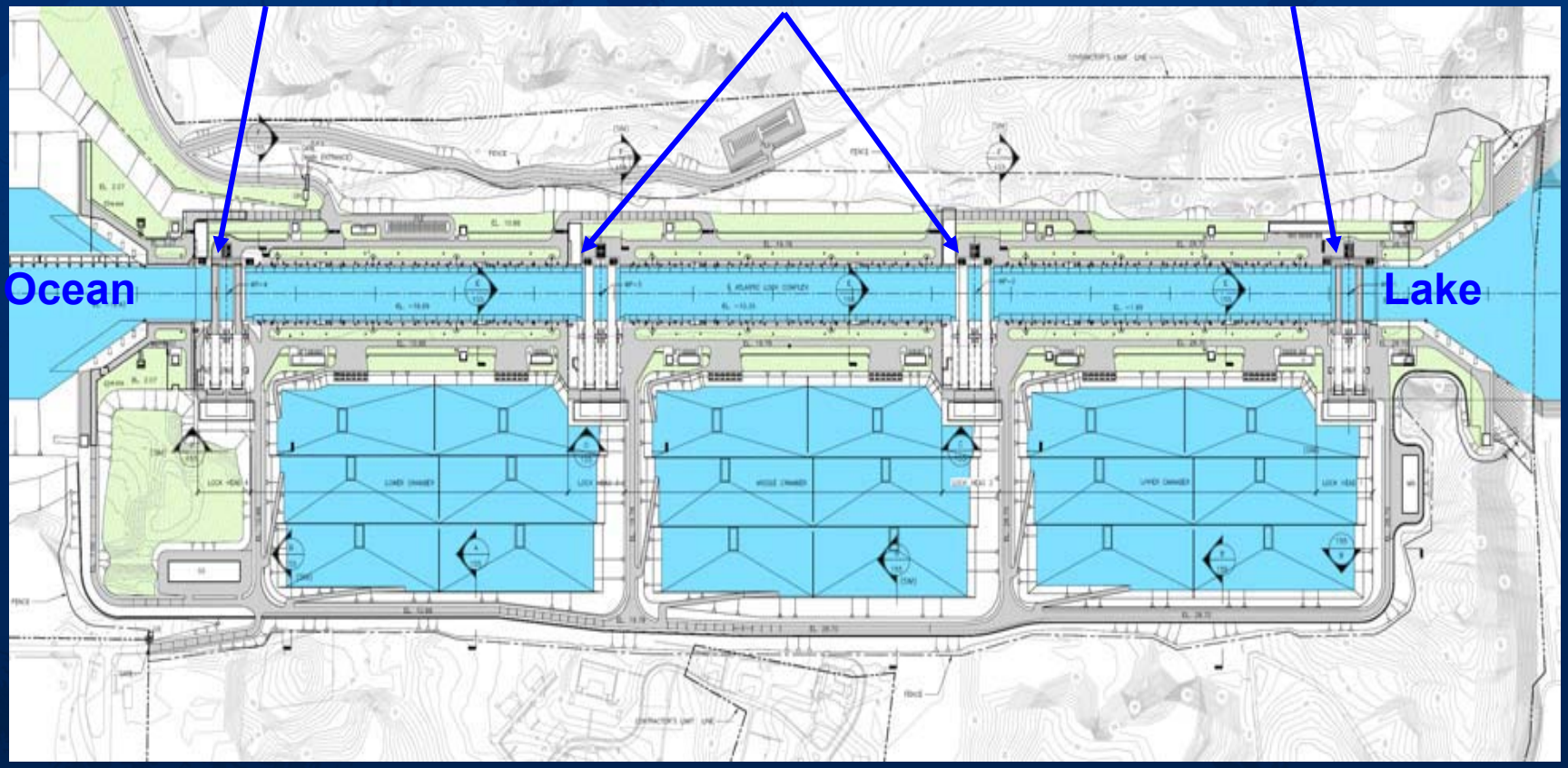
Cimolai Spa, Italia

Locks Gates Location

Atlantic– type D
Pacific – type E

Atlantic – type B
Pacific – type C

Atlantic – type A
Pacific – type F



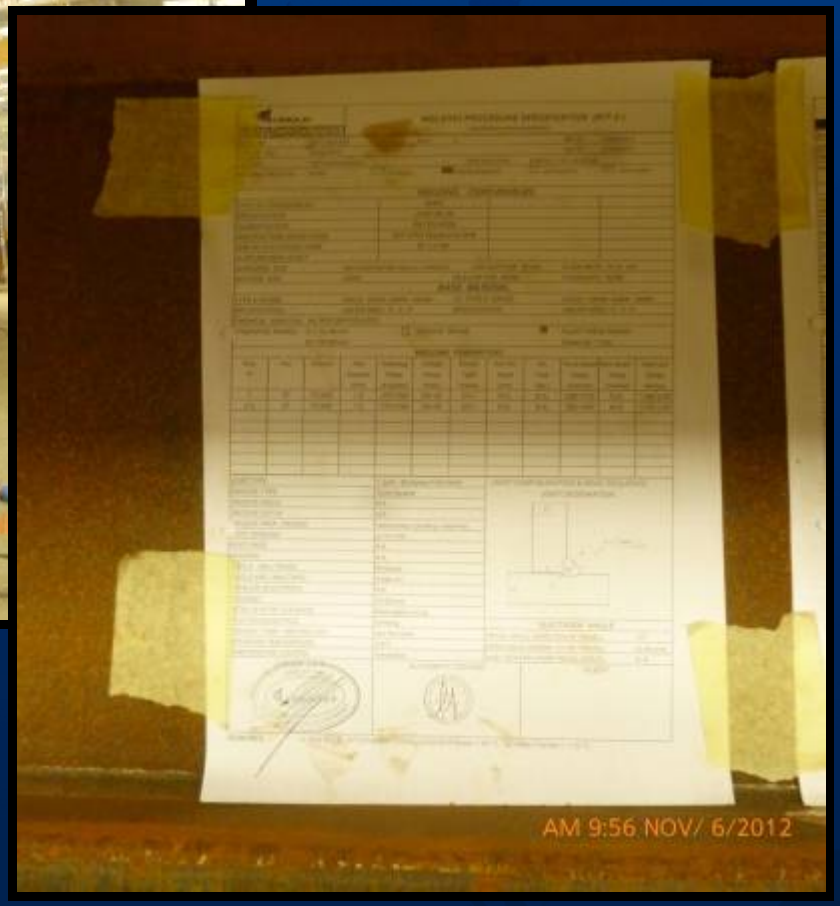
Gates Transport

Gates Transport and Installation

Northeast Aerial View, Pacific Entrance Channel & Main Cofferdam

Gates - Fabrication

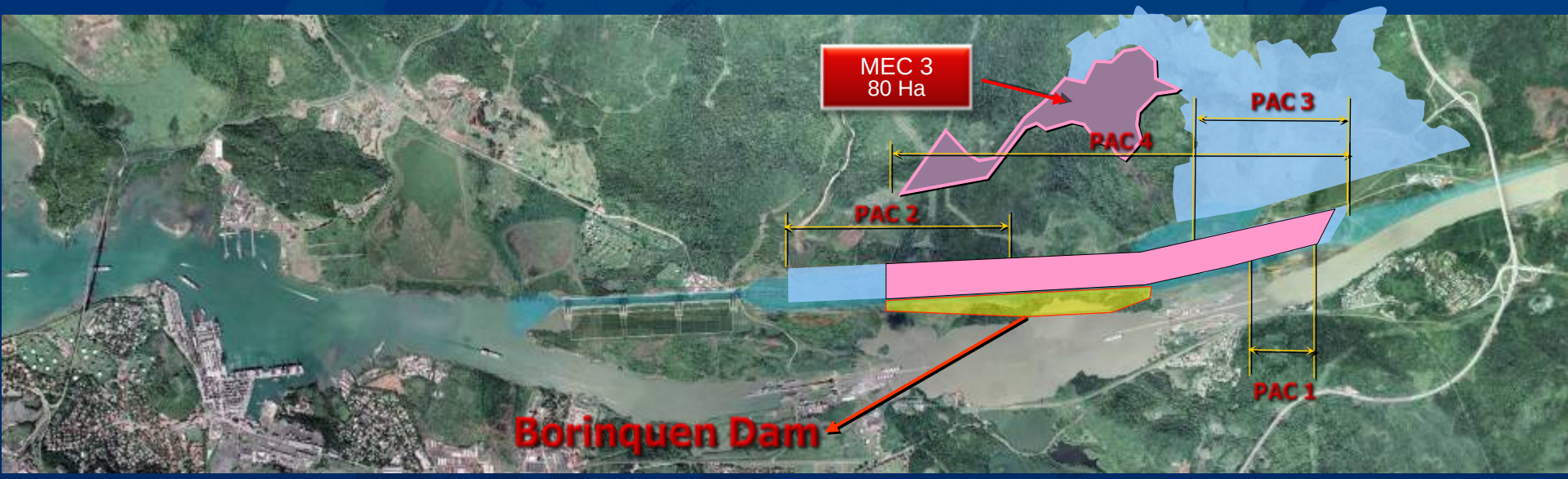
Gates Fabrication - San Giorgio Di Nogaro

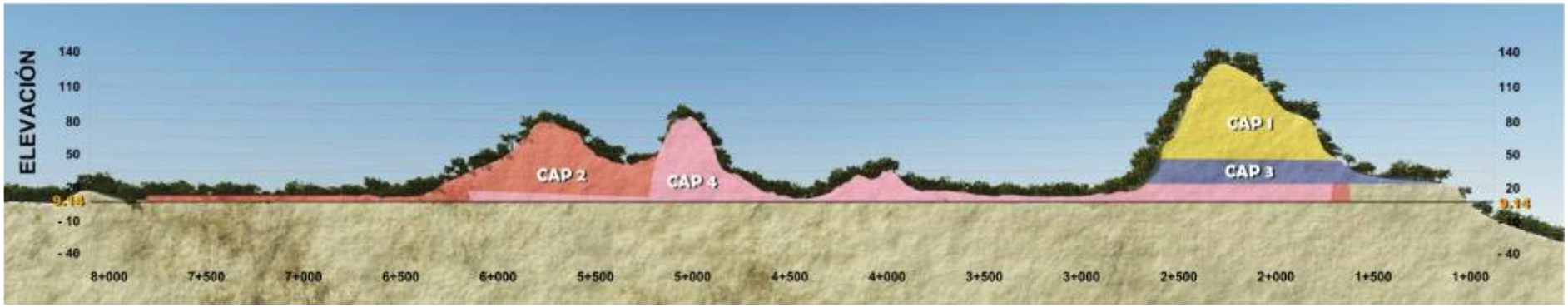


PM 2:18 OCT/15/2012

MARIOTTI
MST 320

Pacific Access Channel





UXO Removal

Pacific Access Channel

PAC-1

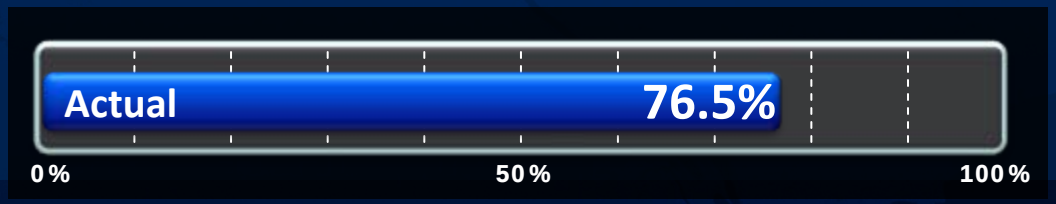
PAC-2

PAC-3

PAC-4

- PAC : last award contract 7-Jan-10
- Company: Consortium ICA-FCC-MECO
- Amount of award: B/. 267,798,795.99
- Order to proceed: 22-Ene-10
- Start date: 27-Apr-10
- Estimated completion date: 31-Oct-13

42.9 M m^3 excavated / 49 M m^3



Borinquen Dam

Cofferdam Construction

Cofferdam Construction

Cells: 58
Arched cells : 57

Nov 2010

Pacific Access Channel – Phase 4

Foundation – Borinquen Dam

Pacific Access Channel – Phase 4

Pacific Access Channel – Phase 4

Pacific Access Channel – Phase 4

Post-Panamax navigational channel

9 m

Miraflores Lake

Excavation and dredging at the northern entrance of the Access Channel to the New Locks

CONCLUDED
17-Oct-2012

- Scope of Contract:
  - Deepening of 27.5m a 9.14m PLD
  - Channel Width = 218m
  - Length = 1.6km
  - Volume approved 4 M m3
- Award: August 16, 2010
- Amount: B/. 54,550,647
- Company: Jan De Nul n.v.
- Concluded: 17 October 2012

Gatun Lake and Gaillard Cut Dredging Areas

Gatún
Actual 100%
Volume: 146K m³/146K m³

Peña Blanca
Actual 100%
Volume: 1.1M m³/ 1.1M m³

Tabernilla
Actual 100%
Volume: 1.9M m³/ 1.9M m³

Mamey
Actual 71%
Volume: 1.9M m³/ 2.6M m³

Bohío
Actual 100%
Volume: 1.8M m³/ 1.8M m³

Buena Vista
Actual 100%
Volume: 913K m³/ 913K m³

San Pablo
Actual 100%
Volume: 4.2M m³/ 4.2M m³

Juan Grande
9% Actual
Volume: 179K m³/ 2M m³

Gamboa
24% Actual
Volume: 821K m³/ 3.4M m³

Chagres Crossing
Actual 100%
Volume: 312K m³/ 312K m³

Actual 81%
0% 50% 100%

21 M m³ dredged / 26.5 M m³

Dredging Areas in the Culebra Cut

Actual 89%
Volume: 584K m³/ 655K m³

Actual 83%
Volume: 254K m³/ 307K m³

Actual 27%
Volume: 35K m³/ 412K m³

Actual 92%
Volume: 219K m³/ 240K m³

Actual 100%
Volume: 664K m³/ 664K m³

Actual 100%
Volume: 512K m³/ 512K m³

Actual 100%
Volume: 204K m³/ 204K m³

Dredging Areas in Gatun Lake

Dredging Areas in Gatun Lake and the Culebra Cut

Critical dredging areas in Gatun Lake

De Lesseps Island

Volumes:

- Dry excavation 533,000 m^3
- Dredging 282,000 m^3

Atlantic Entrance Deepening & Widening

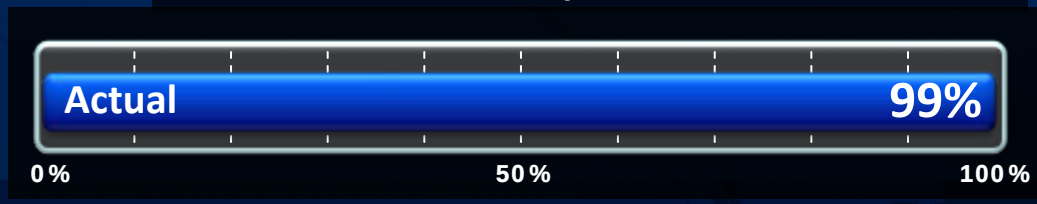
17.5 M m³ dredged and excavated / 17.9 M m³

Award: September 25, 2009

Amount: B/. 144,236,596.44

Company: Jan De Nul NV

Conclusion of contract: April 25, 2013



Atlantic Entrance Deepening & Widening

CANAL DE PANAMÁ

Raising the maximum operating level of Gatun Lake

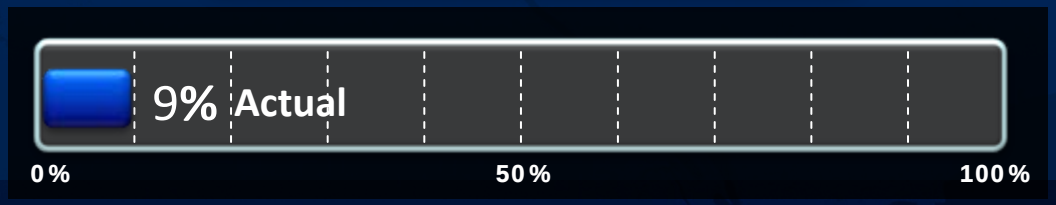
Raising the Maximum Operating Level of Gatun Lake

Extension of Gatun Spillway gates

11 modified and installed gates
4 gates in extension work

Prototype testing of hydraulic cylinders for gates

Bid for the acquisition of 32 hydraulic cylinders.



CANAL DE PANAMÁ

Social and Environmental Aspects

Environmental and Social Monitoring and Control

- Environmental Impact Assessment
- Ecological Compensation paid to ANAM
- Wildlife Rescue Plan
- Archeological Rescue
- Paleontological Resources Studies
- Reforestation
- Monitoring Air and Water Quality
- Monitoring Noise and Vibrations
- Meetings with communities according to project advance
- Report and inspection by independent consultant
- Inspections by ANAM

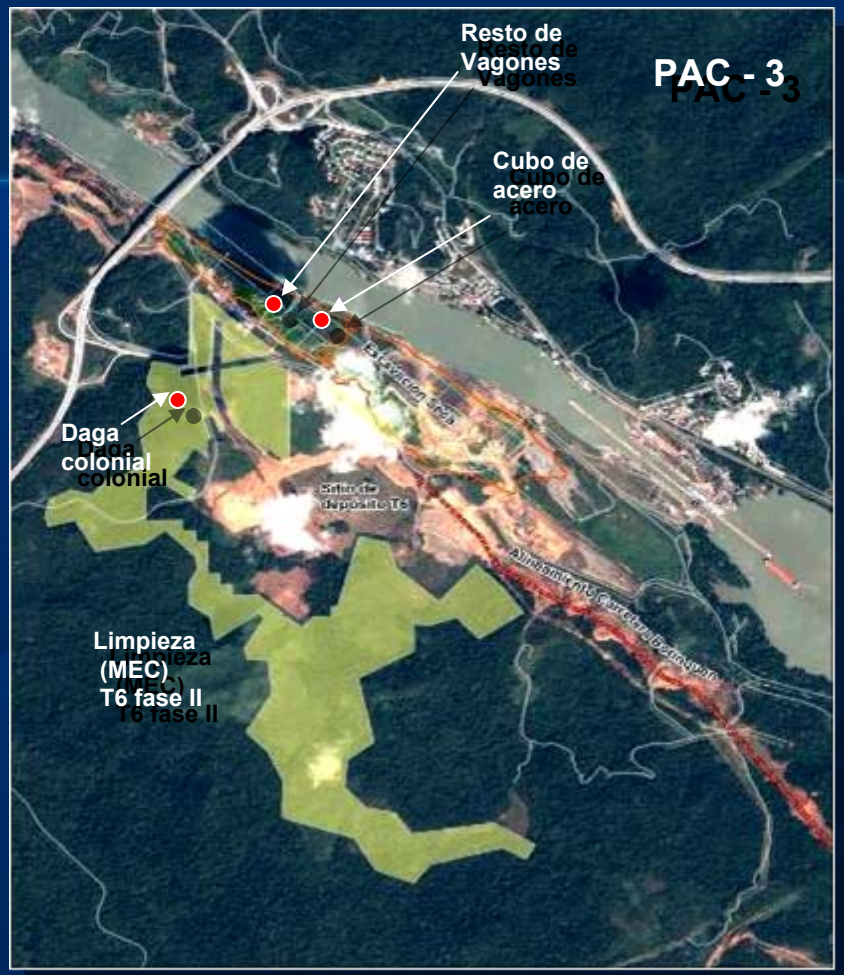
Fauna Rescue

Flora and Fauna Protection Program

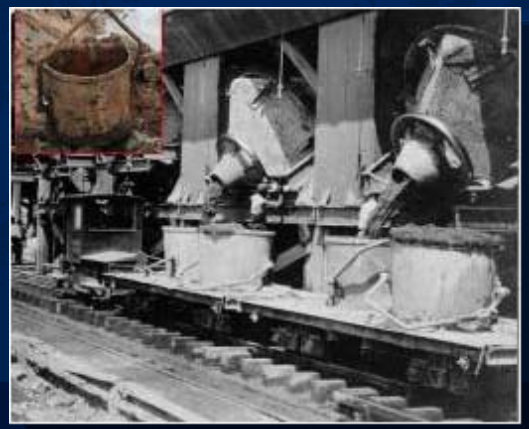
Project	Amphibians	Birds	Mammals	Reptiles	Total
PAC 1	40	0	40	68	148
PAC 2	15	19	108	51	193
PAC 3	70	20	163	167	420
PAC 4	22	7	164	152	345
E y P Pacific	13	0	3	34	50
E y P Gatun Lake	27	1	73	64	165
E y P Atlantic	10	0	287	116	413
Pacific Locks	21	9	184	248	462
Atlantic Locks	46	6	550	423	1025
Total	264	62	1572	1323	3221

Isthmus of Panama

Archeological

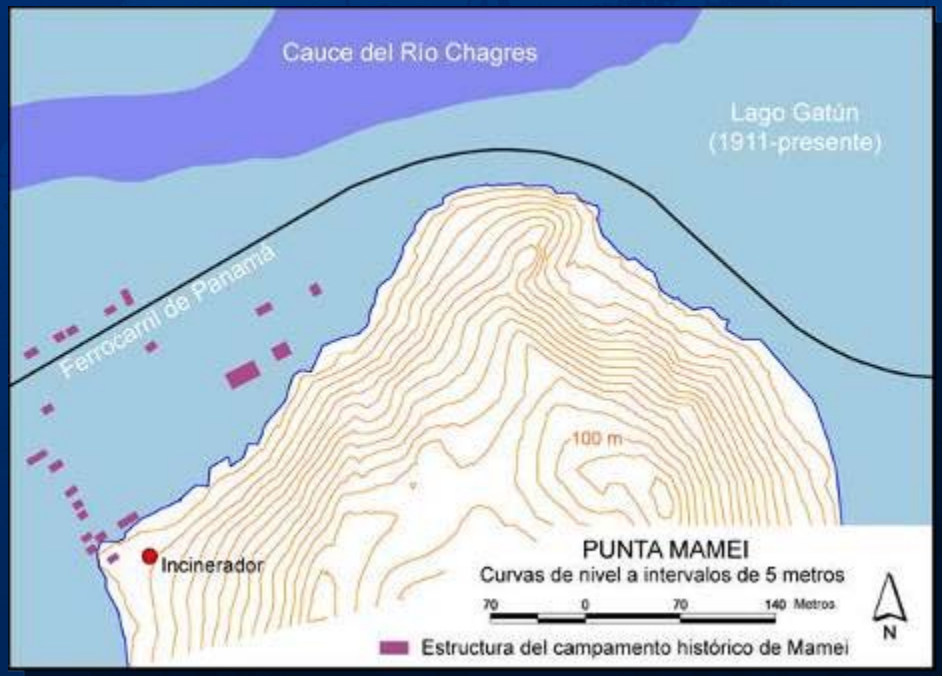


- Archeological surveys
- Archaeological rescue
- Requirement contract in place
- Dagger from the colonial era:
  - Found in the PAC-3 project area
  - Commonly-used weapon during the years 1590 through 1610
  - The restoration process took 3 months
  - Actually part of the Interoceanic Canal Museum's exhibition



Incinerator en Punta Mamei

Map showing Mamei camp during Canal construction at the begining of the 20th Century and the location of the incinerator.

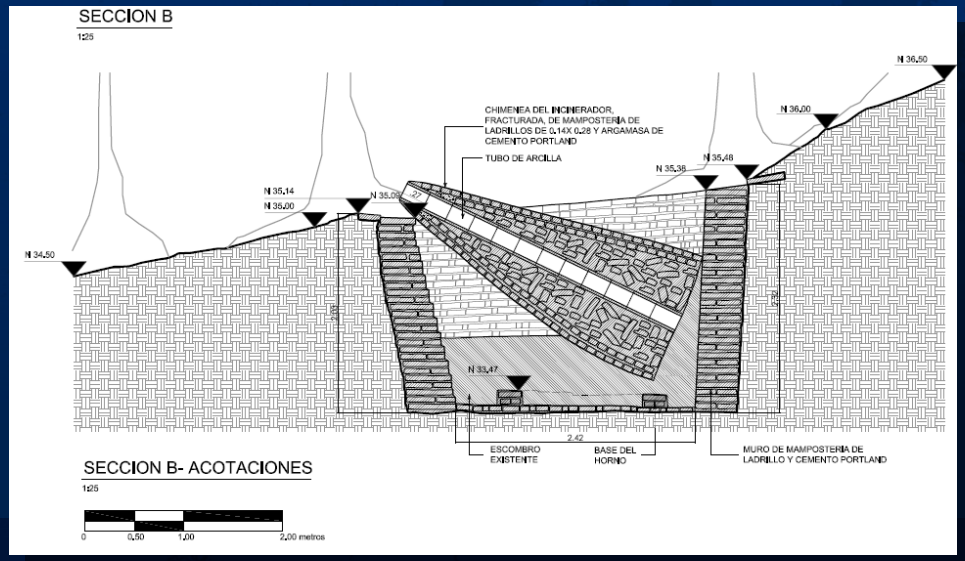


Brick and mortar garbage incinerator built in 1908

Archeological evaluations

Architectural Review

Generates blueprints and an analysis of the structure which provides a framework for the definition of the rescue and preservation actions for the item



Archeological Rescue of Incinerator

Preparation and transfer of the item

Lifting towards floating crane

Delivery to Hisotric Patrimony - INAC

Expansion Program Communication

(January 2008 – August 2012)

COMMUNICATION CAMPAIGN	
Número de visitas al PAC 0	33
Número de visitas al PAC 1	81
Número de visitas al PAC 2	96
Número de visitas al PAC 3	163
Número de visitas al PAC 4	270
Número de visitas al Atlántico (Esclusas y Dragado)	159
Número de visitas al Mirador de Cerro Cocolí	1314
Charlas y Presentaciones	1003

MEDIA CARE	
International Media Care	1086
Local Media Care	152

PUBLIC CARE	
Calls: 800-0714	869
Emails: ampliacion@pancanal.com	362

Centro de Observación del Programa de Ampliación – Atlántico	
Visitantes (Desde 3 septiembre 2012)	8,603

Total persons served: 37,227

Expansion Program Progress Communication

24 quarterly reports

2012

2011

2010

2009

2008

2007

2006

11 reports to the Nation

TU CANAL AL DÍA

Direct Labor Accumulated by Expansion Works

September 2012 Projects	Contractors	Sub-contractors	Total	Active Jobs
Pacific Access Channel Excavation – PAC1	475	214	689	-
Pacific Access Channel Excavation – PAC2	492	620	1,112	-
Pacific Access Channel Excavation – PAC3	345	577	922	-
Widening and Deepening the Northern Reaches in Gatun Lake	185	226	411	-
Pacific Access Channel Excavation- PAC4	713	873	1,586	487
Dredging the Atlantic Entrance	633	416	1,049	80
Dredging the Pacific Entrance	761	502	1,263	165
Third Set of Locks Design and Construction	9,994	4,964	14,958	10,322
Pacific Access Channel Northern Entrance	366	1,575	1,941	276
Reforestation and Wildlife Rescue	763	0	763	184
Heavy-duty Equipment Rental	234	0	234	5
Palentological and Archaeological Services	70	0	70	8
Other Contracts	1,744	87	1,831	258
Subtotal	16,775	10,054	26,829	11,785
ACP			1,058	997
Projection of Total Accumulated Direct Jobs			27,887	12,782

Reforestation Projects Under Execution

These projects, executed in coordination with ANAM and ARAP, include the provinces of Colon, Panama, Cocle, Herrera and Chiriqui.

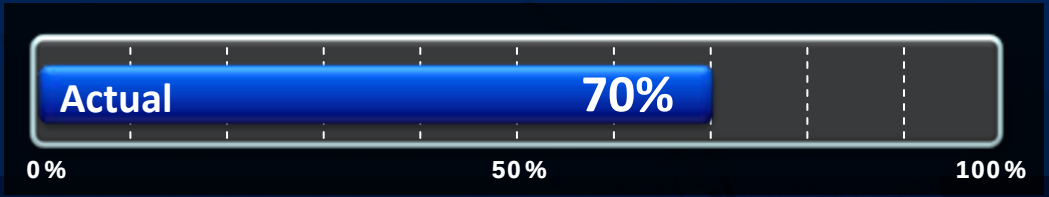
1. Baru Volcano National Park - 30 has
2. Mangrove in Chiriquí Viejo River - 50 has
3. Center for Forestry Research - 100 has
4. Montuoso Forest Reserve - 50 has
5. General Omar Torrijos National Park - 150 has
6. Altos de Campana National Park - 30 has
7. Camino de Cruces National Park - 115 has
8. Chagres National Park - 40 has

9 Tapagra Hydrological Protection Area – Eastern Panama

Reforestation Projects Under Execution

Tapagra, Chepo

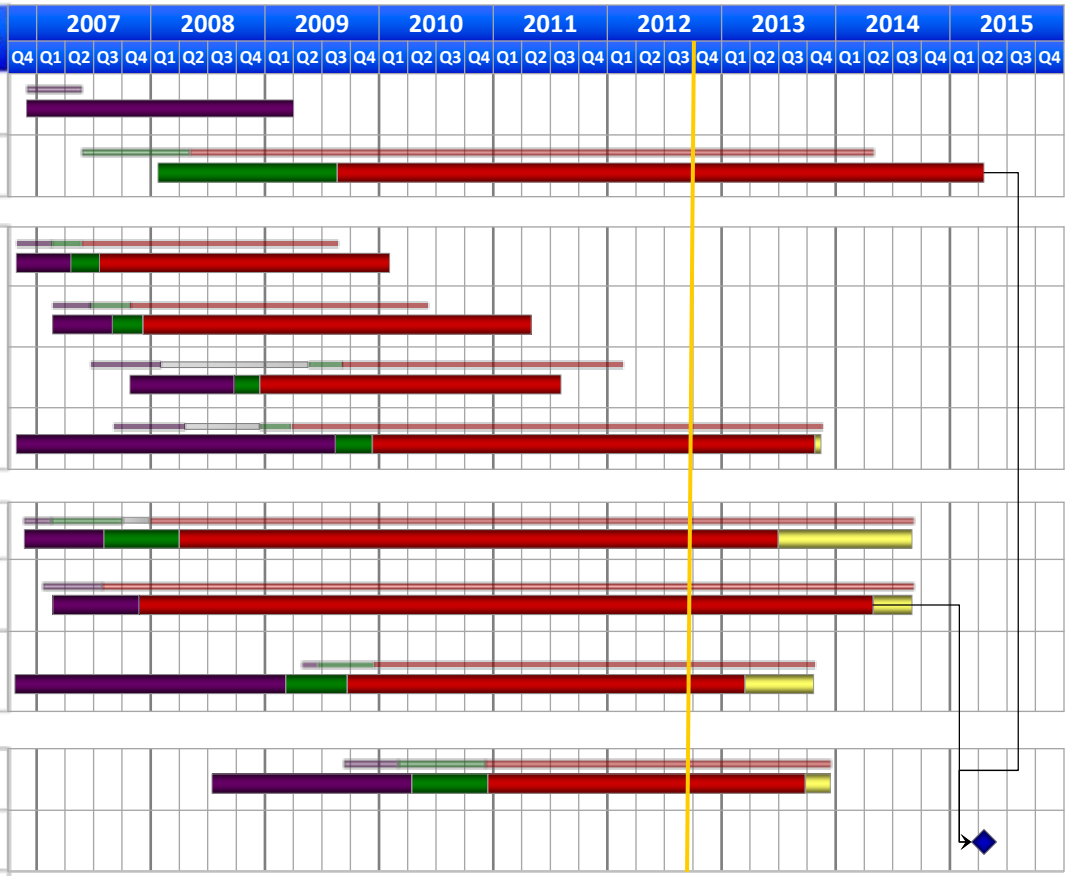
Contractor: Consultores Ambientales y Reforestadores S.A. (CAREFORSA)
Awarded: February 2012
Number of hectares: 61 has
Protected Area : Tapagra Hydrological Protection Area



Summary Schedule of Main Projects with Baseline and Contingency

As of 31 October 2012

	Activity by quarter (Q)		% Progress
Locks	Specifications and locks models	100%	
	Design and build post-Panamax locks	35%	
Access channel	Pacific access channel - phase 1	100%	76%
	Pacific access channel - phase 2	100%	
	Pacific access channel - phase 3	100%	
	Pacific access channel - phase 4	68%	
Dredging	Dredging of the Pacific entrance		97%
	Deepening and widening of Gatun Lake and deepening of Culebra Cut		81%
	Dredging of the Atlantic entrance		98%
	Increase operating level of Gatun Lake		10%
	Expanded Canal begins operations		
	Expansion Program progress		48.9%



Specifications and design — Baseline*

Bidding and contracting — Baseline

Execution — Baseline

Contingency against baseline

Beginning of operations

* Baseline from 31 December 2006 including contingency

CANAL DE PANAMÁ

The Panama Canal Expansion Program