

FIDIC Latin America Users' Conference

Lima, Peru
12 & 13 September 2017

Antonio Betti



International Federation of Consulting Engineers



Matanza-Riachuelo Basin Sustainable Development Program Lot 3 Riachuelo Plant Emissary - IBRD Loan No. 7706 – AR

RIACHUELO – LOT 3 (Argentina)

OUTFALL TUNNEL AND DIFFUSER PROJECT

- Contractual Works
- Proposal Targets and Contractual Reference
- Design Variation
- Variation Achievements
- Construction Challenges
- Contractual Challenges
- FIDIC Training Course on site
- Dispute Adjudication Board

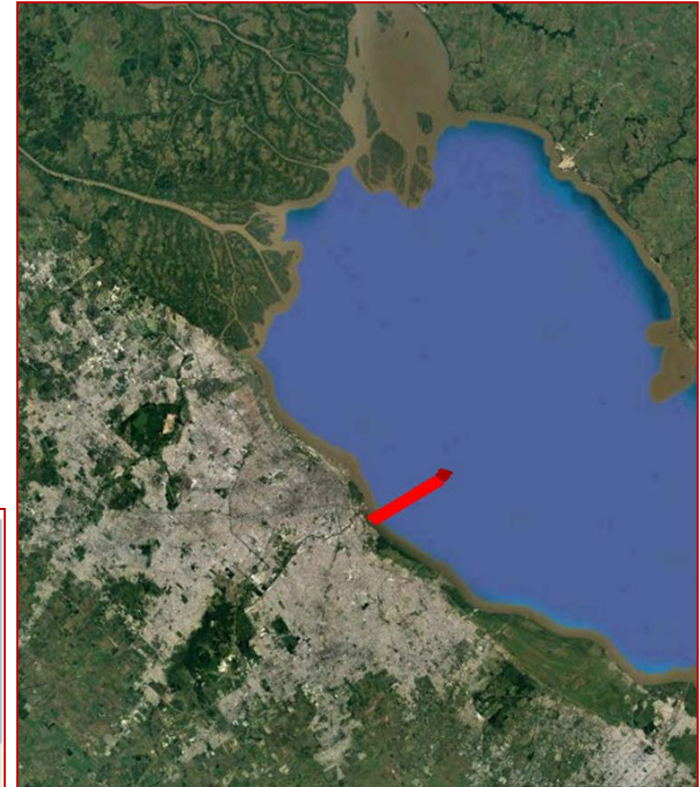


Matanza-Riachuelo Basin Sustainable Development Program Lot 3 Riachuelo Plant Emissary - IBRD Loan No. 7706 – AR

Argentina Republic

Buenos Aires Province

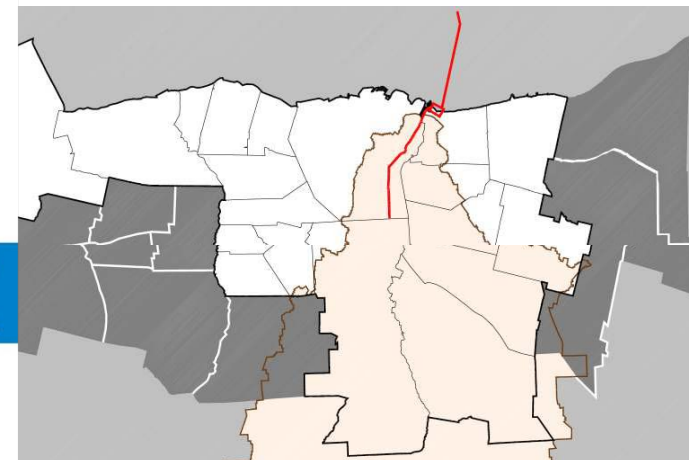
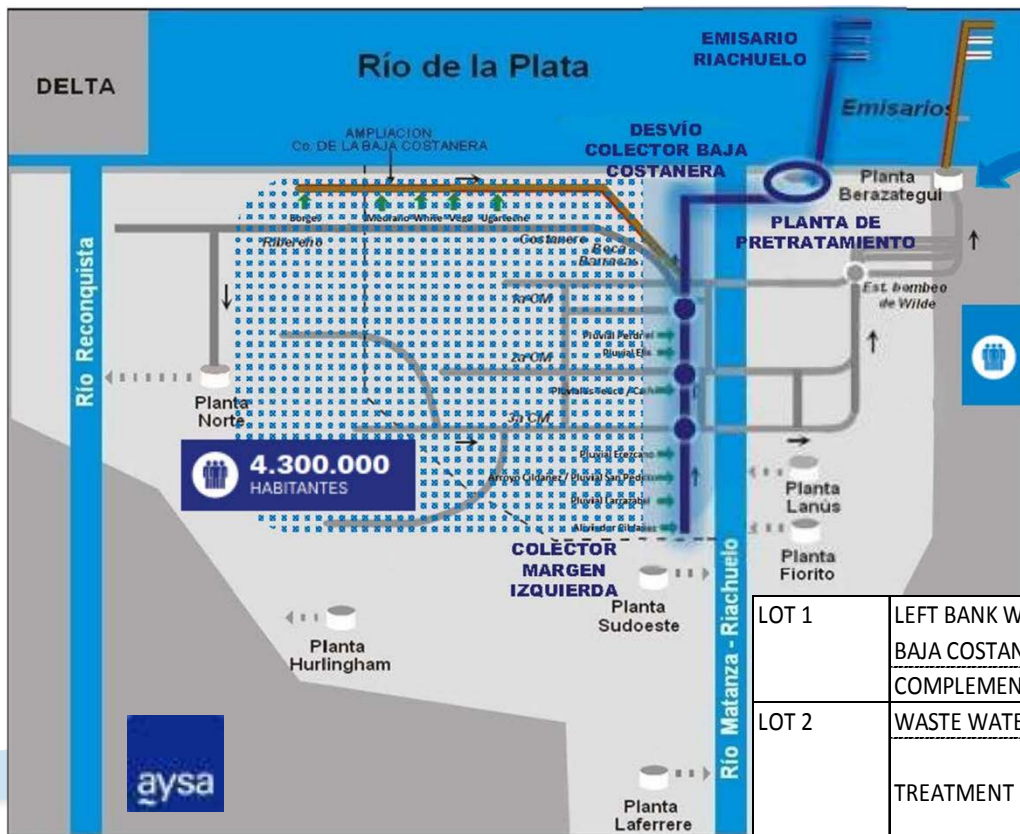
Matanza Riachuelo Basin



La Plata River



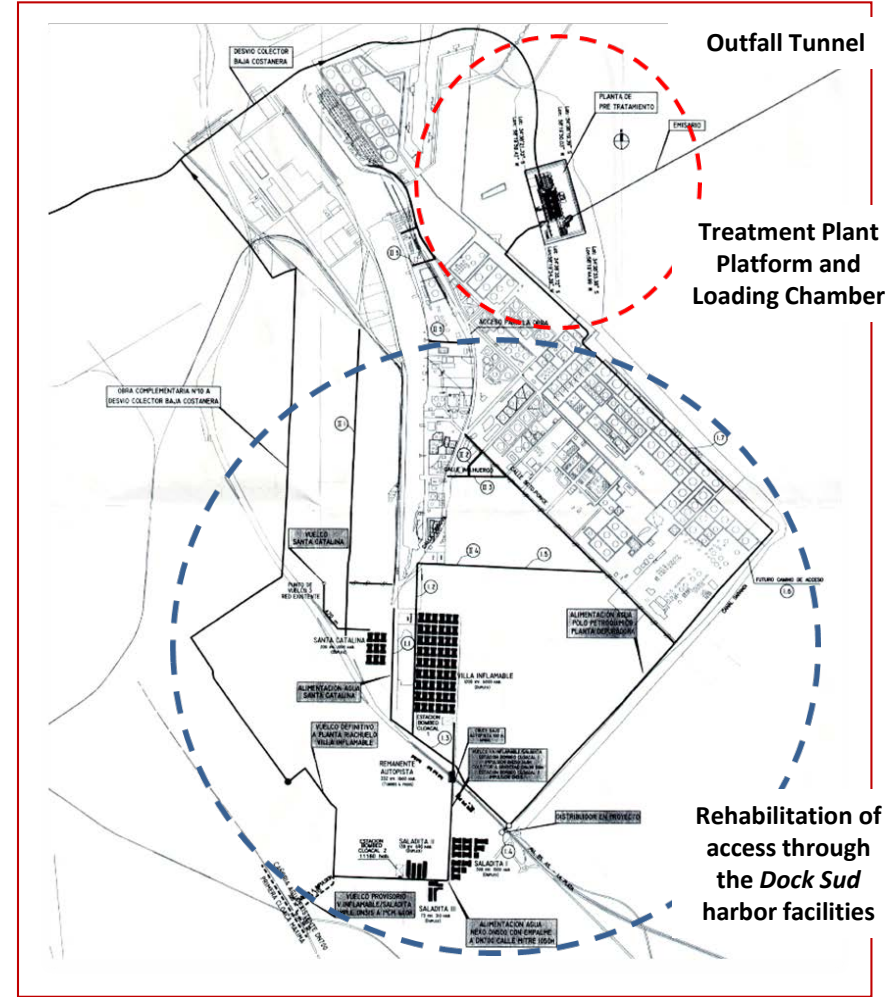
Matanza-Riachuelo Basin Sustainable Development Program Lot 3 Riachuelo Plant Emissary - IBRD Loan No. 7706 – AR



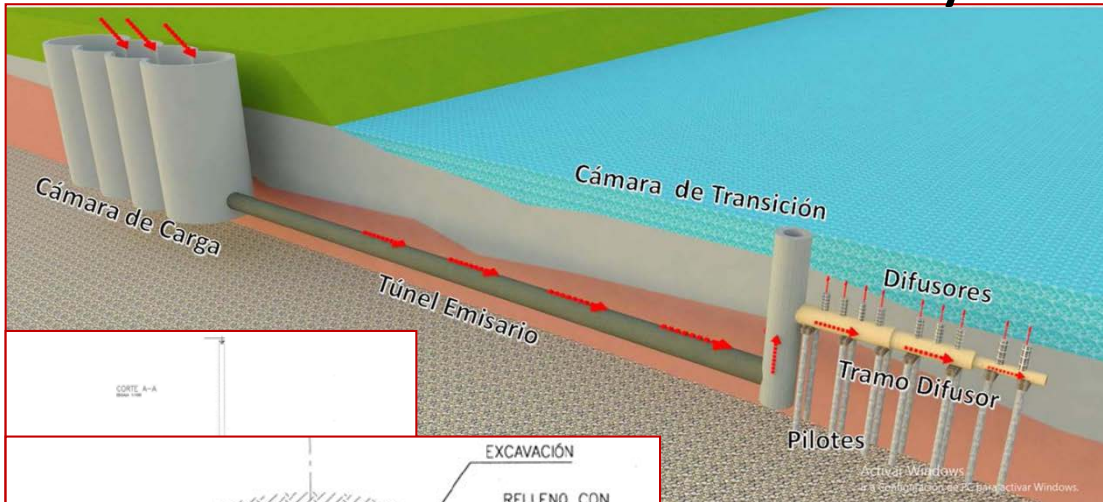
LOT 1	LEFT BANK WASTE WATER PIPE BAJA COSTANERA DIVERSION COMPLEMENTARY WORKS	INTERCEPTION & TRANSPORT	Buenos Aires waste water effluent Conurbation waste water effluent Connection with existing sewage conduits
LOT 2	WASTE WATER LIFTING STATION	PUMPING	
	TREATMENT PLANT	TREATMENT	Removal of coarse solids Medium and fine mechanical screening Separation of sands and floating material
	OUTFLOW PUMPING STATION	PUMPING	
LOT 3	TREATMENT PLANT EMISSARY	TRANSPORT DIFFUSION	Transportation of pretreated effluents Effluent diffusion into the river flow within environmentally acceptable parameters



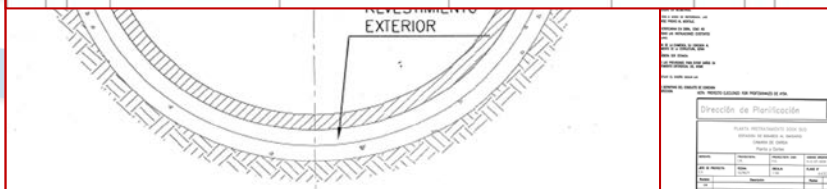
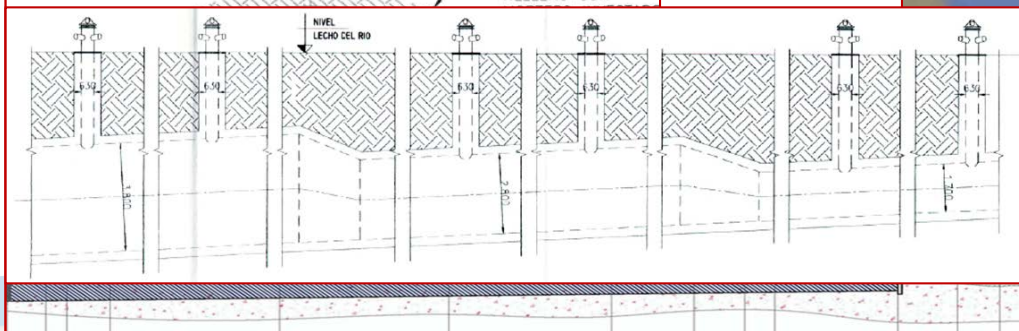
Matanza-Riachuelo Basin Sustainable Development Program Lot 3 Riachuelo Plant Emissary - IBRD Loan No. 7706 – AR



Matanza-Riachuelo Basin Sustainable Development Program Lot 3 Riachuelo Plant Emissary - IBRD Loan No. 7706 – AR



Outfall tunnel
flow rate 25 m³ / sec



Matanza-Riachuelo Basin Sustainable Development Program Lot 3 Riachuelo Plant Emissary - IBRD Loan No. 7706 – AR

PROPOSAL TARGETS

- **RISK MITIGATION**

- Maritime activities – meteo-marine conditions and navigation canals crossing
- Environmental impact – river bed dredging
- Construction activities – maritime placement of heavy precast structures
- Geotechnical - tunnel excavation through a more suitable layer

- **ENSURE**

- Contractual flow rate through risers
- Outfall tunnel water tightness of the permanent lining
- Outfall tunnel durability of the permanent structures
- Project completion
- Cost reduction

- **ACHIEVE**

- Enhance system flow capacity
- Loading chamber feasibility
- Water tightness of tunnel lining rings
- Riser feasibility



Matanza-Riachuelo Basin Sustainable Development Program Lot 3 Riachuelo Plant Emissary - IBRD Loan No. 7706 – AR

DESIGN OF PART OF PERMANENT WORKS

Value Engineering – GC. Cl. 13.2

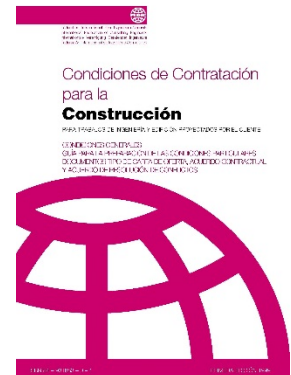
The Contractor may, at any time, submit to the Engineer a written proposal which (in the Contractor's opinion) will, if adopted:

- Accelerate completion
- Reduce the cost to the Employer of executing, maintaining or operating the Works
- Improve the efficiency or value to the Employer of the completed Works
- Otherwise be of benefit to the Employer

The Contractor shall design this part.



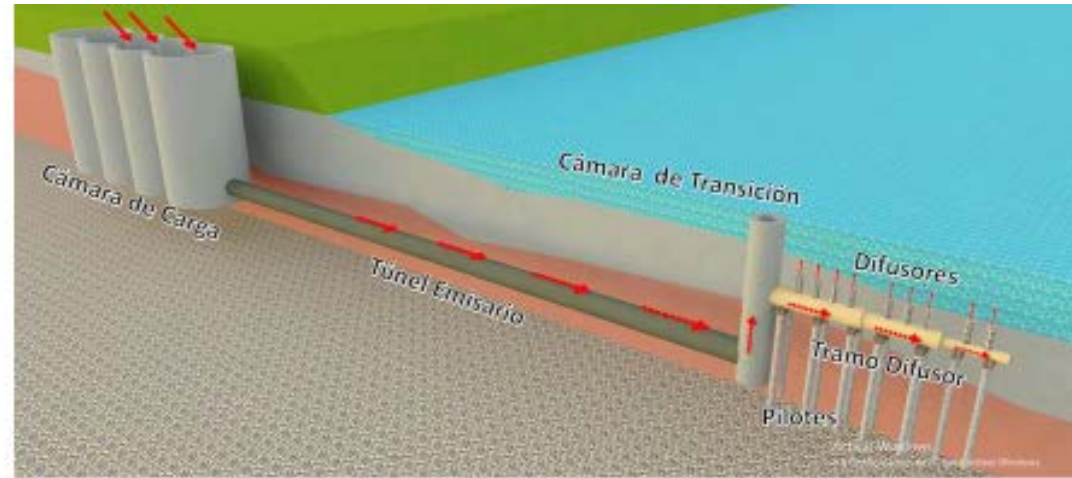
International Federation of Consulting Engineers



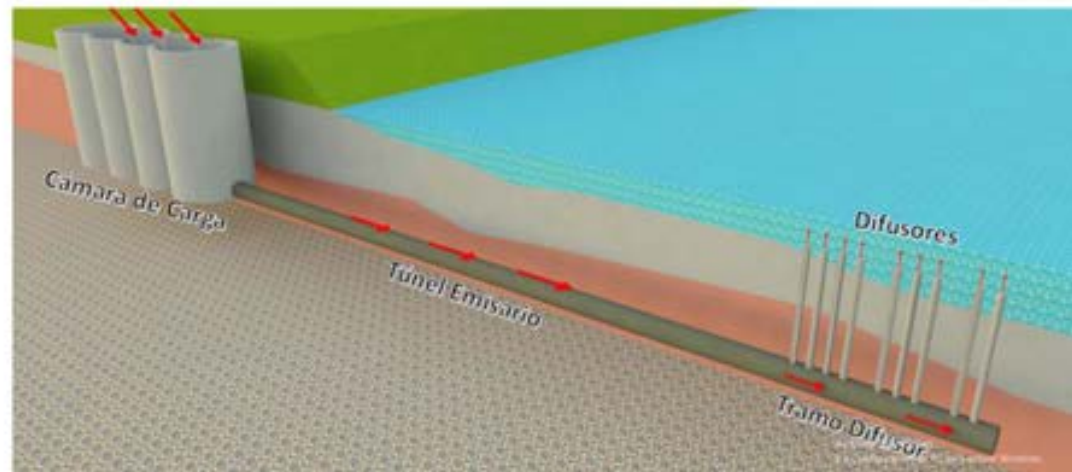
Lima, Peru
12 & 13 September 2017

Matanza-Riachuelo Basin Sustainable Development Program Lot 3 Riachuelo Plant Emissary - IBRD Loan No. 7706 – AR

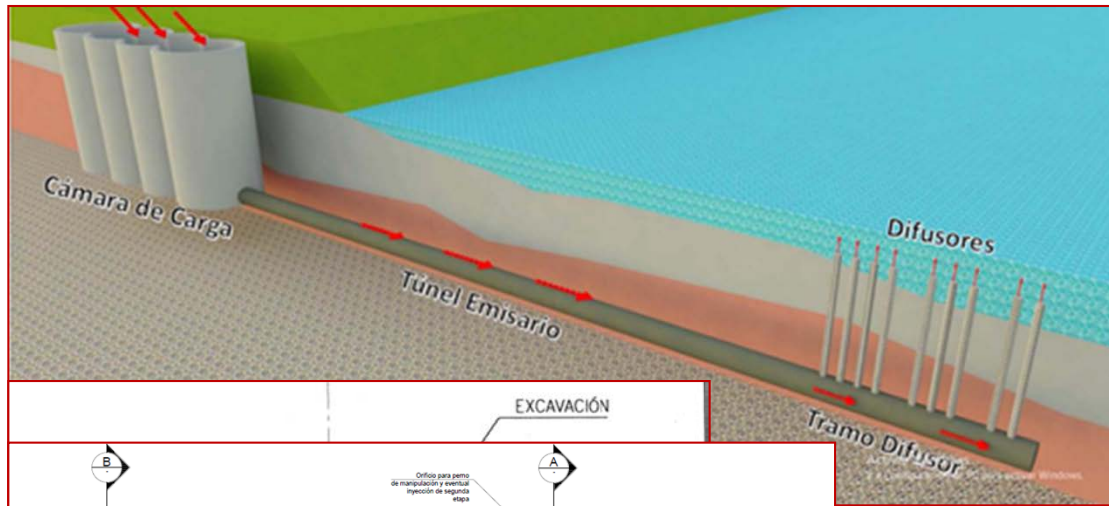
Riachuelo Project
Preliminar
CONTRACTUAL DESIGN



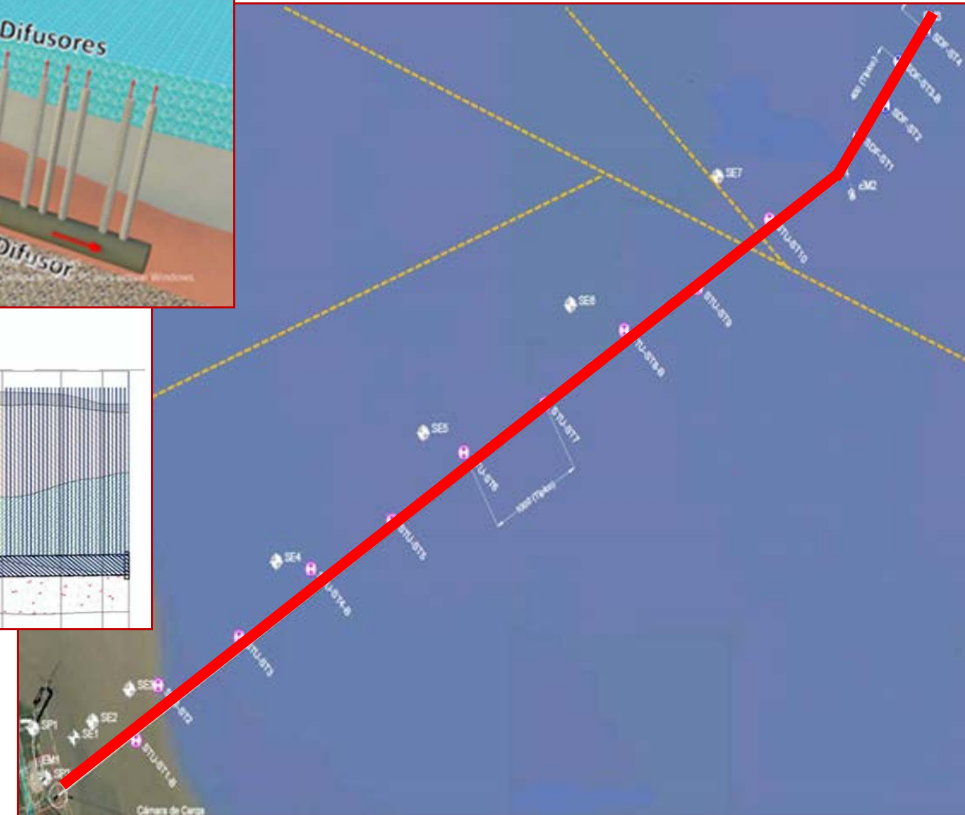
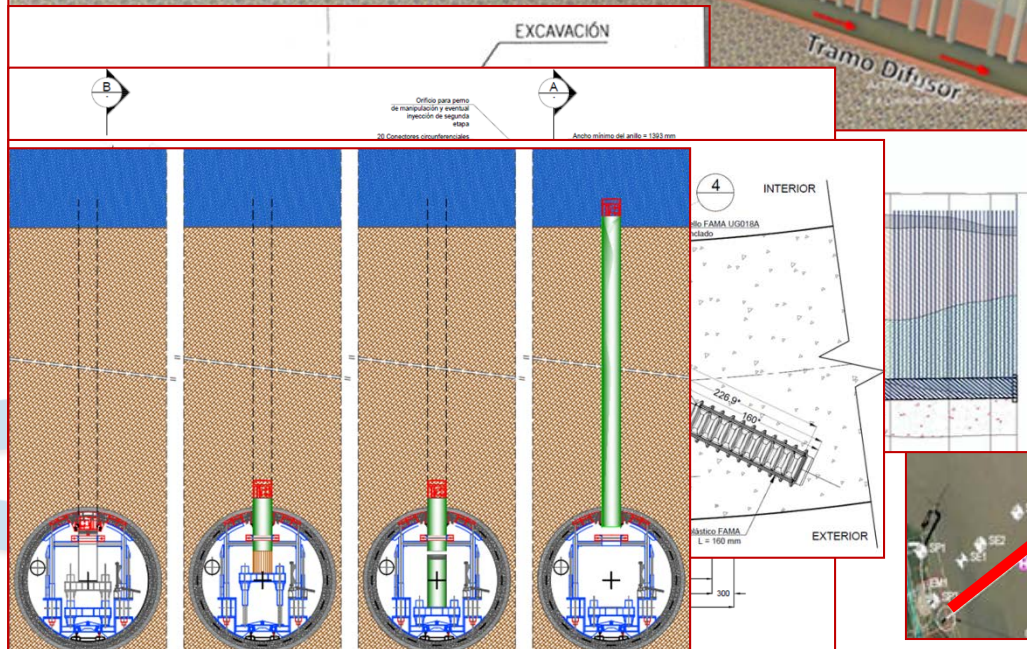
Riachuelo Project
Proposed
DESIGN VARIATION



Matanza-Riachuelo Basin Sustainable Development Program Lot 3 Riachuelo Plant Emissary - IBRD Loan No. 7706 – AR



Outfall tunnel
flow rate 27 m³/s



Matanza-Riachuelo Basin Sustainable Development Program Lot 3 Riachuelo Plant Emissary - IBRD Loan No. 7706 – AR

VARIATION ACHIEVEMENTS

- **OUTFALL TUNNEL DESIGN**

- Greater system's flow
- No tunnel secondary lining
- Greater hydraulic diameter
- Greater depth of tunnel axis
- Better geotechnical conditions

- **DIFFUSER DESIGN**

- Longer tunnel
- Lower risks in maritime operations
- No transition chamber
- No dredging of the pipeline trench
- No submarine foundations of the pipeline
- No supply and placement of concrete precast pipes
- Installing risers from inside the tunnel (innovative solution)
- Greater number of risers



**Matanza-Riachuelo Basin Sustainable Development Program
Lot 3 Riachuelo Plant Emissary - IBRD Loan No. 7706 – AR**

DESIGN OF PART OF PERMANENT WORKS

Value Engineering – GC. Cl. 13.2

The Contractor may, at any time, submit to the Engineer a written proposal which (in the Contractor's opinion) will, if adopted:

- **Accelerate completion:**
 - NO
- **Reduce the cost to the Employer of executing, maintaining or operating the Works:**
 - YES
- **Improve the efficiency or value to the Employer of the completed Works:**
 - YES
- **Otherwise be of benefit to the Employer:**
 - YES

The Contractor shall design this part.

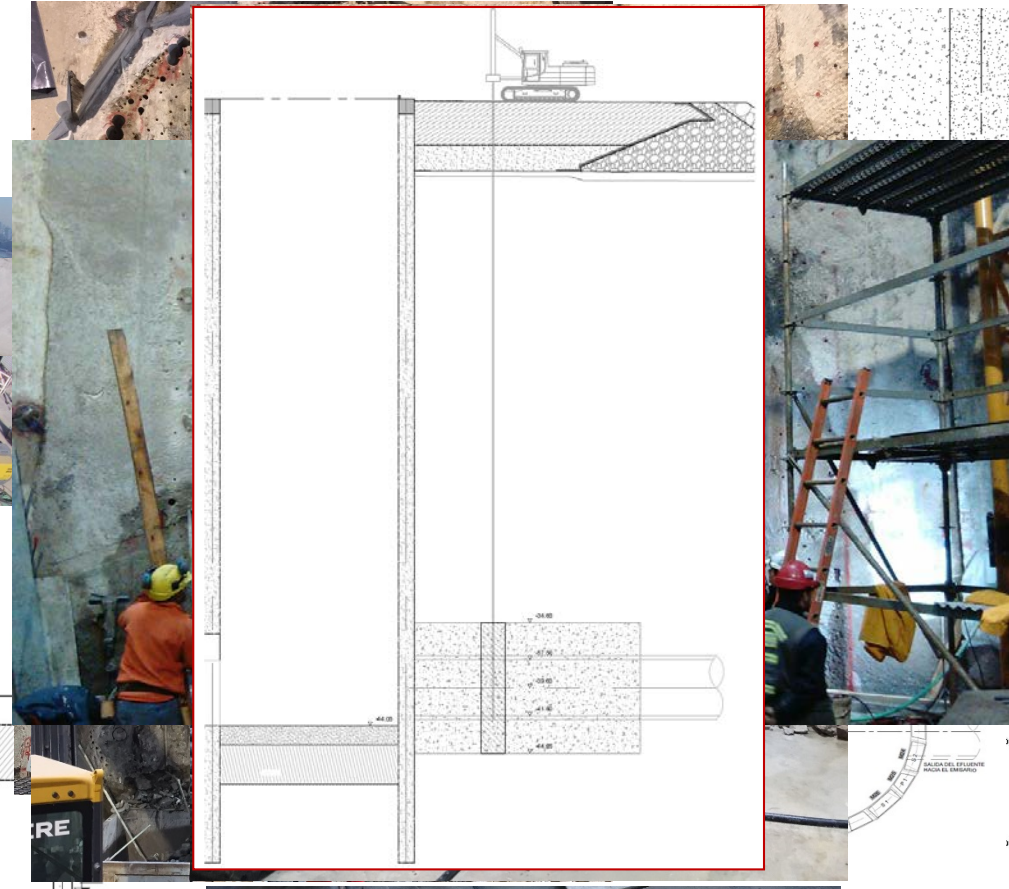
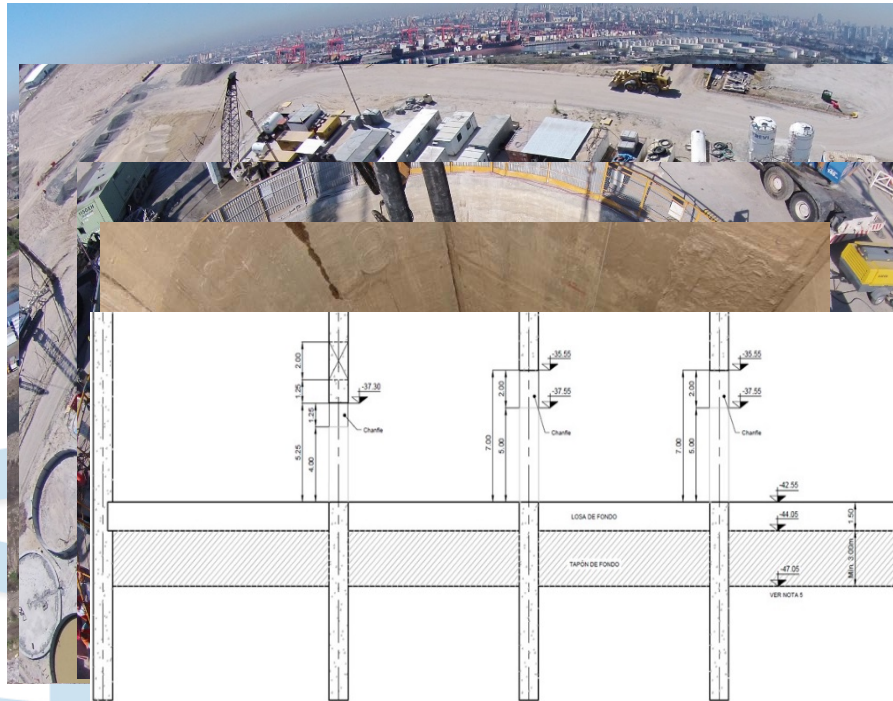


Matanza-Riachuelo Basin Sustainable Development Program Lot 3 Riachuelo Plant Emissary - IBRD Loan No. 7706 – AR

CONSTRUCTION CHALLENGES

LOADING CHAMBER

Hydro-mill technology diaphragm wall



Matanza-Riachuelo Basin Sustainable Development Program Lot 3 Riachuelo Plant Emissary - IBRD Loan No. 7706 – AR

CONSTRUCTION CHALLENGES

LOADING CHAMBER

Hydro-mill technology diaphragm wall

Shafts excavation sequence

Dobber process of the bottom plug concrete casting

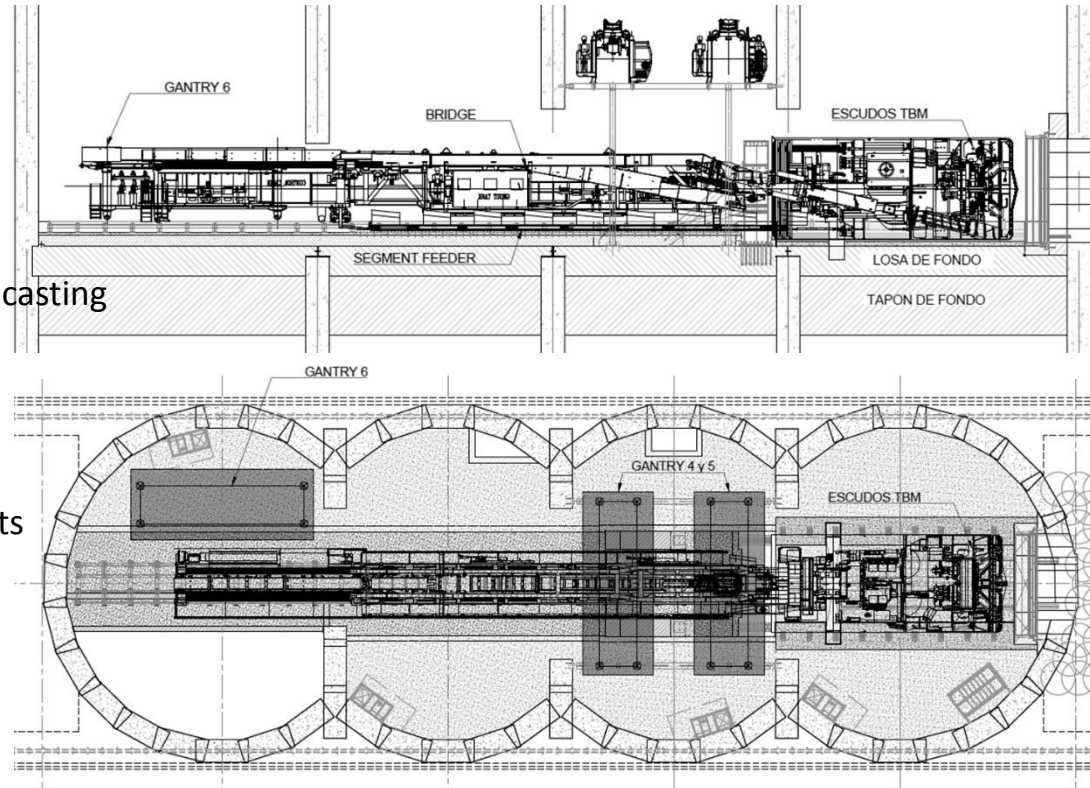
Sequence to empty water from shafts

Concrete casting of bottom slab

Cutting and opening of portals between shafts

Cutting and opening of tunnel portal

TBM assembly



Matanza-Riachuelo Basin Sustainable Development Program Lot 3 Riachuelo Plant Emissary - IBRD Loan No. 7706 – AR

CONSTRUCTION CHALLENGES

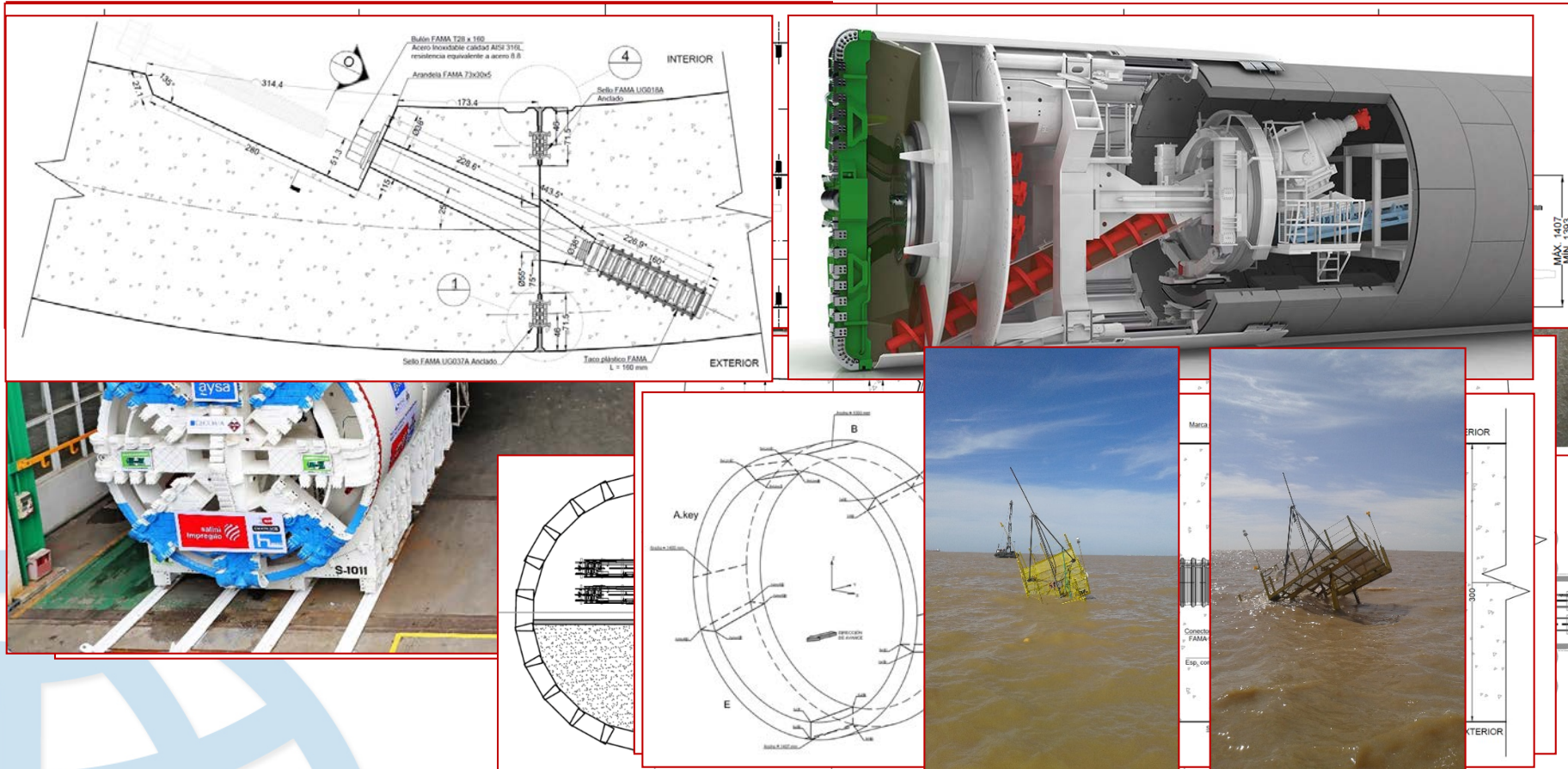


TBM assembly



Matanza-Riachuelo Basin Sustainable Development Program Lot 3 Riachuelo Plant Emissary - IBRD Loan No. 7706 – AR

CONSTRUCTION CHALLENGES

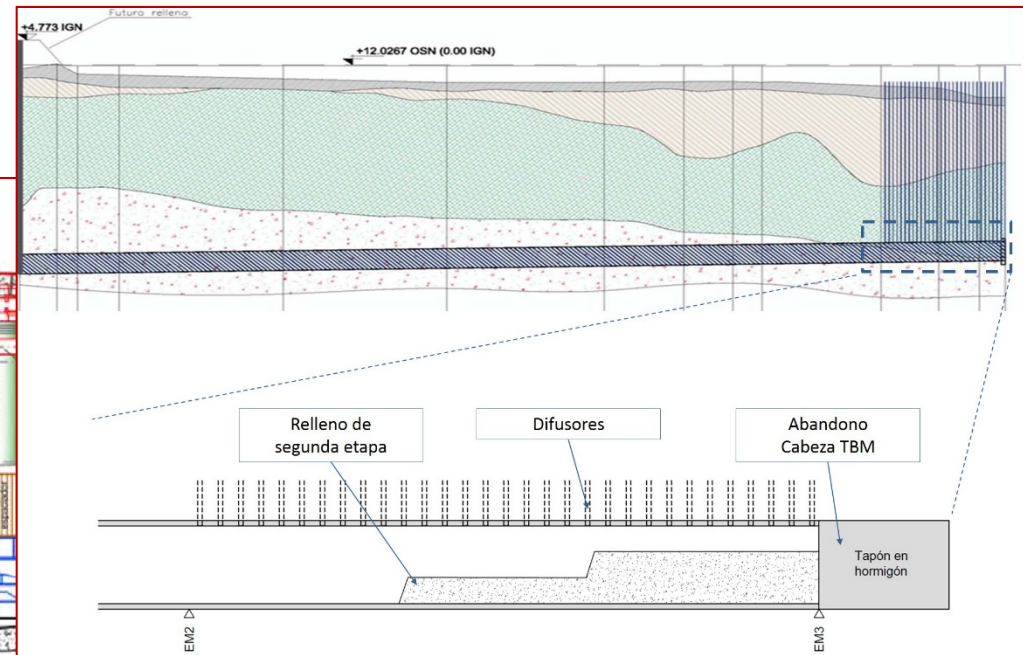
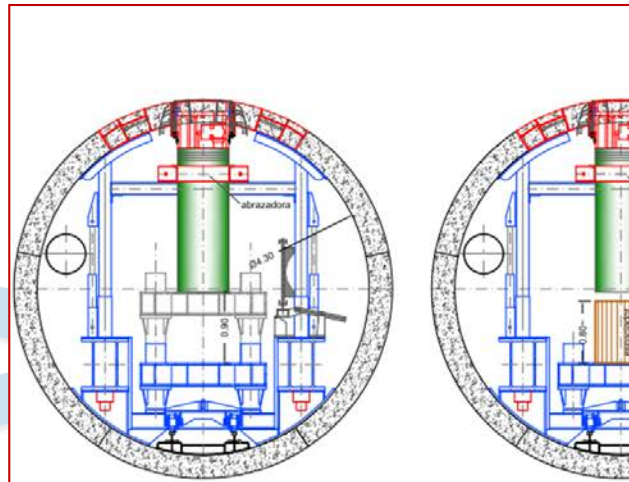


Matanza-Riachuelo Basin Sustainable Development Program Lot 3 Riachuelo Plant Emissary - IBRD Loan No. 7706 – AR

CONSTRUCTION CHALLENGES

- **DIFFUSER**

- Roll control during erection of steel segments to allow verticality of risers
- Installing risers
- Concrete invert backfilling



Matanza-Riachuelo Basin Sustainable Development Program Lot 3 Riachuelo Plant Emissary - IBRD Loan No. 7706 – AR

CONTRACTUAL CHALLENGES

- Engineering Value
- Design Responsibility
- New Technical Specification definition
- Contractual Schedule of Design
- Cost Estimates
- Design Risks



Matanza-Riachuelo Basin Sustainable Development Program Lot 3 Riachuelo Plant Emissary - IBRD Loan No. 7706 – AR

FIDIC TRAINING COURSE ON SITE

July 4th to 6th, 2016

Three-day official training course in Buenos Aires (ARG)

provided by Mr. Pablo Laorden - Lambal Formacion S.L. (FIDIC Accredited Trainer)



FIDIC Contract Module 1: Practical Use of the FIDIC Contracts

Organized by Salini Impregilo S.p.A.

for Riachuelo Project JV staff, Employer and Engineer staff

Great opportunity to agree on a common understanding of the Contract main procedures, sharing and solving doubts, and clarifying criteria.



International Federation of Consulting Engineers

Lima, Peru
12 & 13 September 2017



Matanza-Riachuelo Basin Sustainable Development Program Lot 3 Riachuelo Plant Emissary - IBRD Loan No. 7706 – AR

DISPUTE ADJUDICATION BOARD (DAB)

Tender Offer submission: January 27th, 2012

Contract Signature: April 04th, 2014

Commencement Date: January 15th, 2015

Contractual appointment of DAB: 28 days after the Commencement Date

Actual appointment of DAB: December 01st, 2016

DAB's first visit on site: April 26th, 2017

DAB's second visit on site: September 4th, 2017



Matanza-Riachuelo Basin Sustainable Development Program Lot 3 Riachuelo Plant Emissary - IBRD Loan No. 7706 – AR

