



BIMP-EAGA
MARITIME 2023

SESSION 5
Breakthrough Innovations for Ports Infrastructure and Performance

Use of Composite & Steel
Materials and Precast Technology
in Marine Structures



FEATURED SPEAKER
Julien Raybaud-Gines,
General Manager - Bar Systems, Dextra Group

40 FORWARD

Started in 1983 by French entrepreneurs, Dextra has grown to be one of the biggest globally recognized names in the engineering and construction industry.

2023 marks the 40th year of existence of the Dextra Group.

Dextra recognized the ongoing change in expectations and needs within the industry and thus, places great focus on specialized resources to better current solutions as well as creating and delivering new products and solutions to an ever changing market whilst keeping sustainability of both resources and environment at heart.

This continuous growth of the group, and its unmatched ability to service a global network is directly attributable to its values and mission to quality, performance, integrity and engineering of new solutions

This is why, for our 40th anniversary, we focus on “forward”.

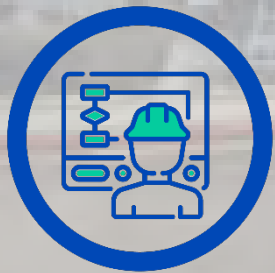
What is to come will be more important to drive both the construction industry, as well as the human ability to thrive, work, create new ideas and reach new milestones than what has passed.

We focus on the future and align our business in this way.



Leader in design and manufacturing of engineered solutions

Over 40 years of experience on the world's most prestigious projects



Integrated engineering
& manufacturing
products & equipment



80+ fabricators &
distributors worldwide



International
& local contractors

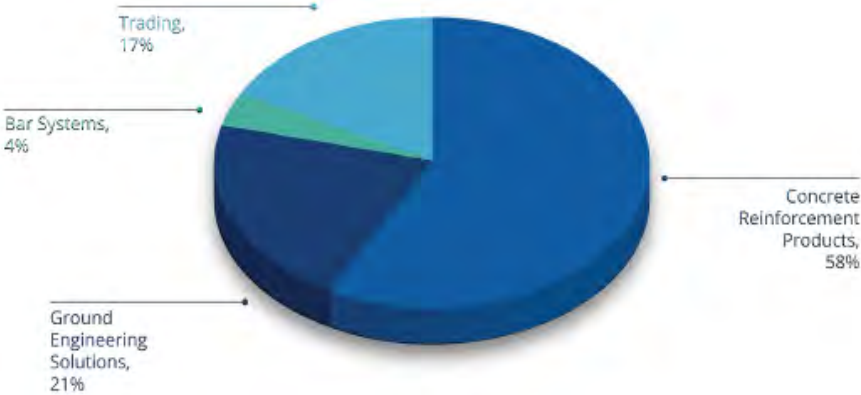
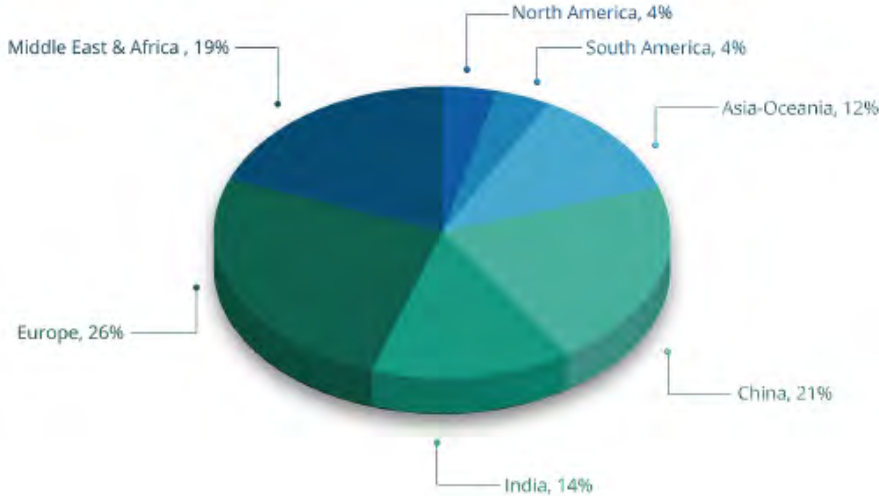


Landmark projects:
high-rise, infrastructure
and energy projects



Compliance with
international standards,
approved by major
consultants

Global Presence & Activities in 2023



Manufacturing Capabilities



Bangkok, Thailand



Mumbai, India



Guangzhou, China





Speed of execution & increase in productivity



Quality & Safety

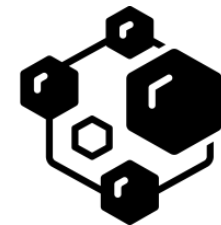
INNOVATION

Applications
&
Materials

Production processes



Sustainability & Durability



Modularity

DEXTRA Fiber Reinforced Products



Fibers

Resin



The perfect Alternative To Steel



Stronger & Lighter than steel

- 2x the tensile strength of steel
- 1/4 weight of a steel bar of same diameter



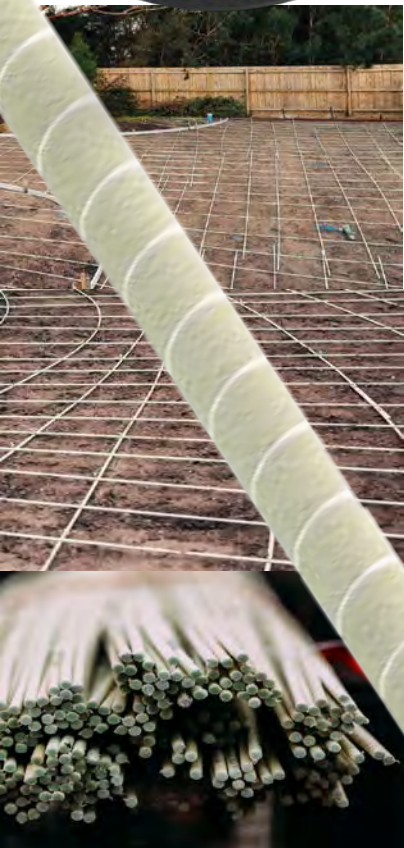
Non-corrosive, non-conductive

- Material doesn't corrode and offer high resistance to chlorides and alkali. Particularly suitable for environments exposed to water, salt, & humidity.
- Non-conductive. It's the perfect reinforcement solution for high voltage currents and magnetic fields.



Simplified Installation

- Delivered in straight bars up to 11.8m or in coils.
- Labor required for installation reduced by 2x to 3x.



Material is safe & easy to handle, requiring much less labor for installation, generating both time & money saving.

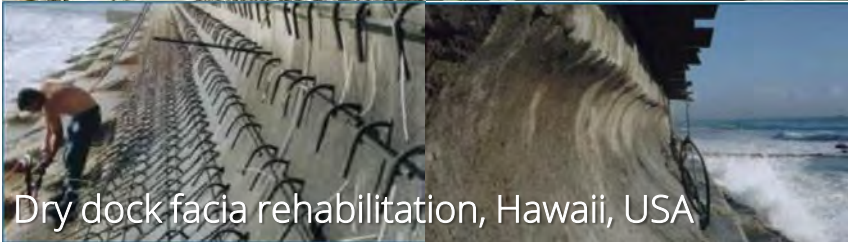


Durable material, allowing to design for a longer lifetime of the structure. As no maintenance nor repair work is needed, ASTEC generates savings during the whole project life.



Sustainable material, with significantly less energy required & CO₂ emission, both at production stage and for its transportation & installation.

Marine Applications



Dry dock facia rehabilitation, Hawaii, USA



Dock of Aramco, KSA



Elizabeth Quay, Australia



Jizan Flood Mitigation Channel, Saudi Arabia

Marine Applications

Construction of Quay & Jetty



Outer skin of wall in contact with sea-water

Marine Applications

Storage of Oil & Gas at Port Terminal



2018 05 23



Marine Applications

Dry-Dock Rehabilitation



**Grid of 19mm (#6) GFRP bars
doweled and epoxied in place**

Marine Applications

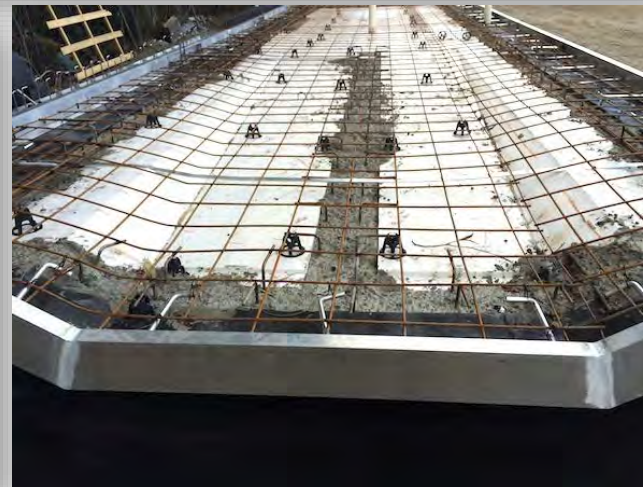
Jetty Repair / External Strengthening



**Concrete with GFRP dowels
& post-tensioned steel bar**

Marine Applications

Platforms and Floating Structures



**Precast and Composite
Materials at glance**

Marine Applications

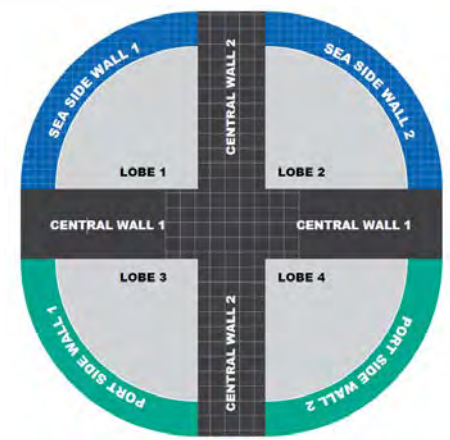
Sea Walls



**Precast and
Composite Materials
at glance**

Marine Applications

Caissons Structures



Dextra Couplers = splicing Systems designed for the connection of concrete reinforcing bars



DEXTRA Marine Tie Bars



Short installation time thanks to reduced assembly scope



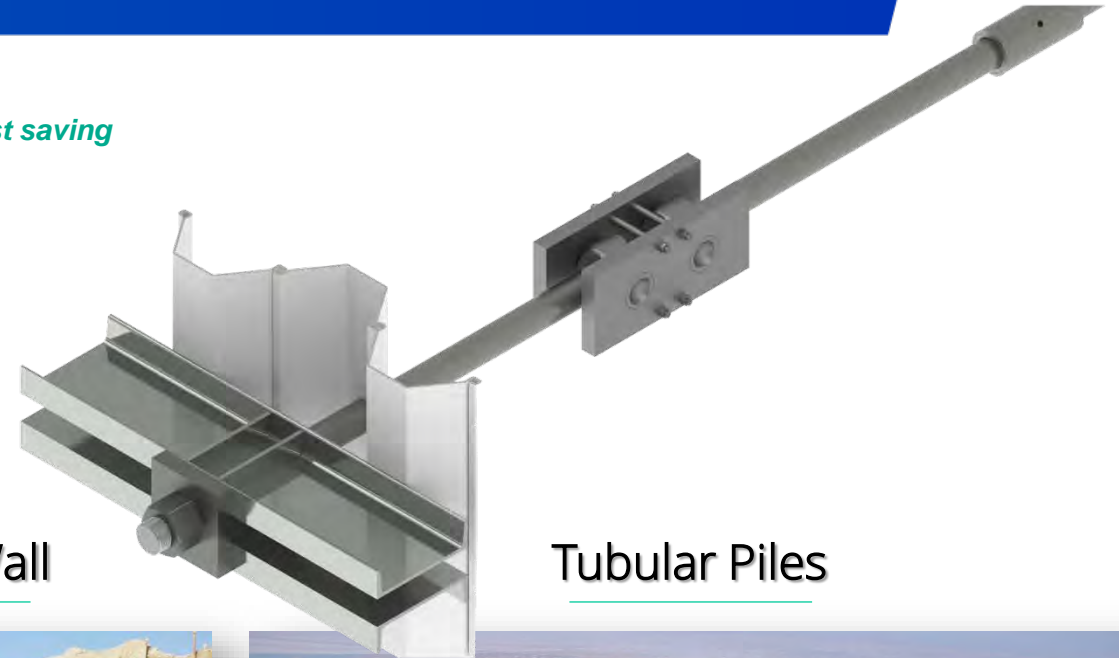
Control over delivery sequence



Overall efficiency in detailed design phase



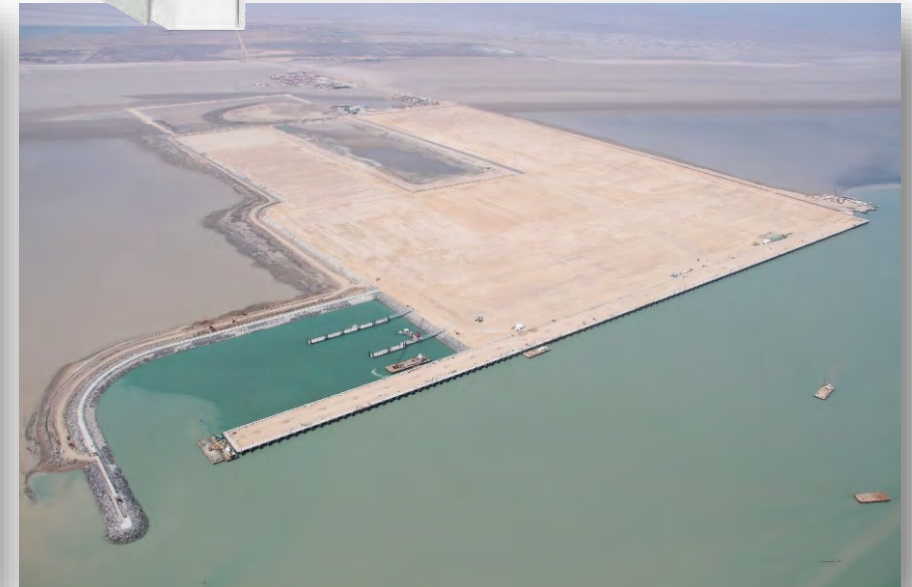
Cost saving



Steel Piles

Diaphragm Wall

Tubular Piles



Increase steel grades, reduce diameters and go
"lighter"



For a given working load of 4,400 kN

Grade	500	700
Diameter	110 mm	95 mm
Weight per 1m	75 Kg	56 Kg

Up to 25-30% savings
for the contractor with Grade 700

CAD & BIM Technical Tools



Get fast and precise 2D & 3D design



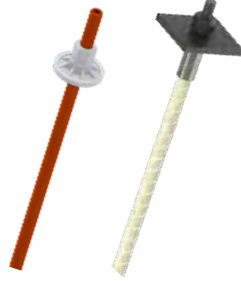
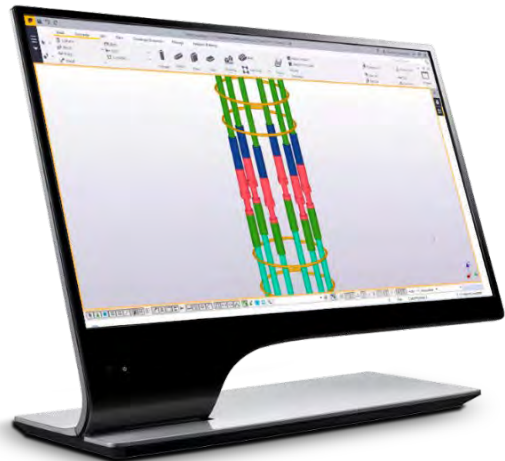
Easy to use



Up-to-date libraries



Dedicated support



Ground Engineering



Tension Rods



PT Bars



Marine Tie Bars



Rebar Couplers



ESG Responsibility



ENVIRONMENTAL POLICY



**COMPLIANCE
WITH LAWS &
REGULATIONS**

Identify and evaluate the requirements of laws and regulations, and implement them within the organization

**POLLUTION
PREVENTION**

Identify and control possible sources of pollution

**CONSUMPTION
& WASTE
REDUCTION**

Improve the comprehensive utilization rate of materials, minimize wastes, and save energy resources

**CONTINUOUS
IMPROVEMENT**

Identify opportunities for improvement and build on them

Producing "smarter"



01

IFC



02

ISO 14001



03

LCA



References



Concrete
Reinforcement
Products



Engineered
Bar Systems



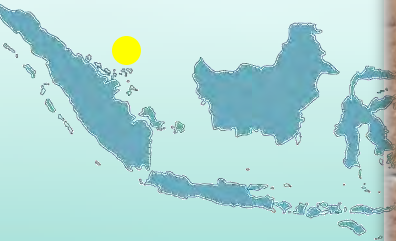
Ground
Engineering
Solutions

Focus on Indonesia & South East Asia



Project References Details

Karimun Service Jetty



Location

Karimun Island,
Indonesia

Contractor

Saipem

Year/Duration

2008-2009

Products (qty)

Tie Rods and
Wailing Beams (22
tons)

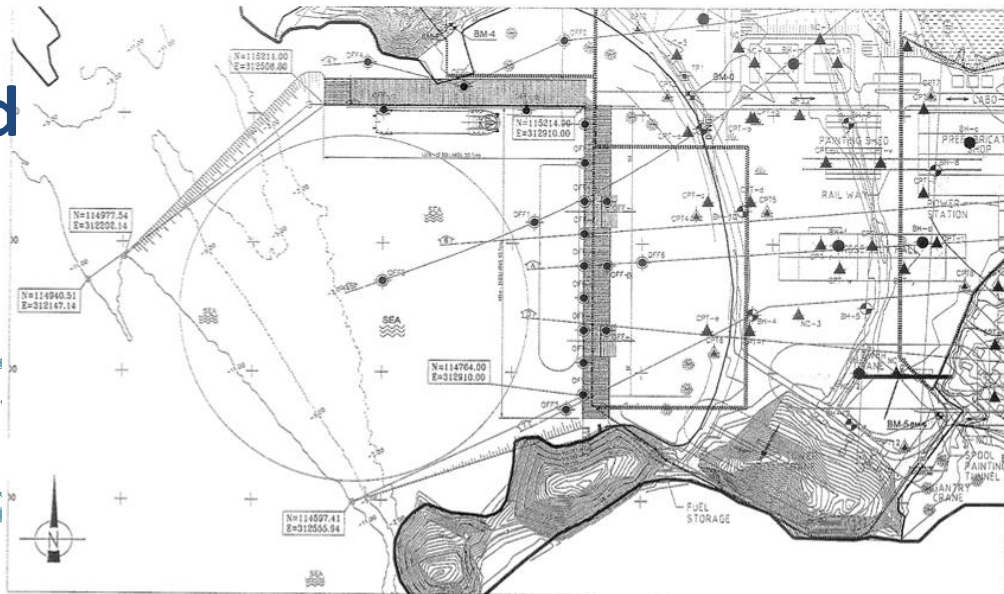
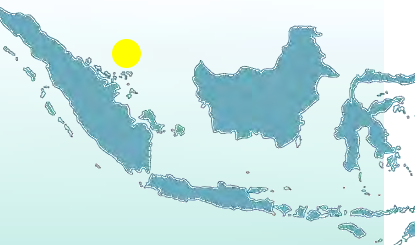




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Project References Details

Karimun Yard Construction



Location

Karimun Island,
Indonesia

Contractor

P.T. Saipem
Indonesia

Consultant

P.T. Saipem
Indonesia

Year/Duration

2009 - 2010

Products (qty)

Grade 700 Tie
Rods and Wailing
beams
(1,400 Tons)



Ball cages to be incorporated into Spiral welded tubes



Hex / Swivel nuts



Bearing / Swivel Plates



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BP Tangguh Expansion Project



LOCATION :

Teluk Bintuni Regency,
Papua Barat Province

CONTRACTOR :

Saipem Indonesia

YEAR/DURATION :

2016 - 2017

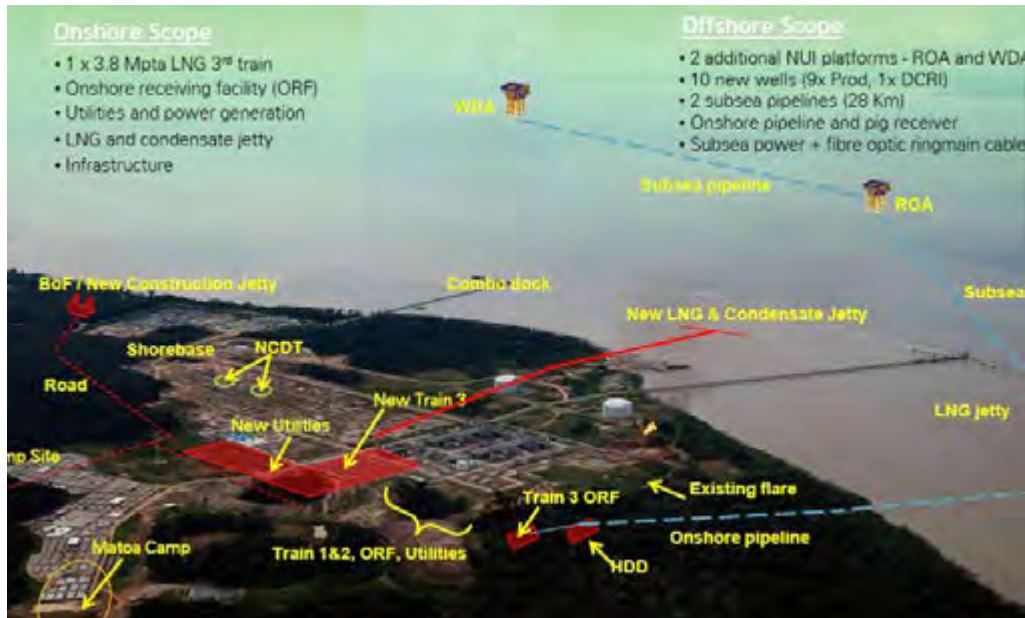
PRODUCTS (QTY) :

- Marine Tie Rods Gr. 700, 136 sets in M60 & M72
- Ball cages anchorage
- Swivel Plates and Waling Beams

APPLICATION :

LNG Terminal Marine Offloading Facility

Project References Details





Project References Details

SHELL HOUDINI-ECC

Land Reclamation



Location

Pulau Ular, Singapore

Fabricator

Penta-Ocean
Construction Co., Ltd.

Contractors

ABB Lumus Global –
Toyo Engineering
Company

Consultants

Delta Marine
Consultants BV
& Engineers 9000 Pte
Ltd

Year/Duration

2007

Products (qty)

Tie Rod dia. 64mm
Gr.700, 121 tons

Applications

Sheet pile walls





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Project References Details

SLNG Berth No.2



Location
Singapore

Developer
Singapore LNG
Corporation

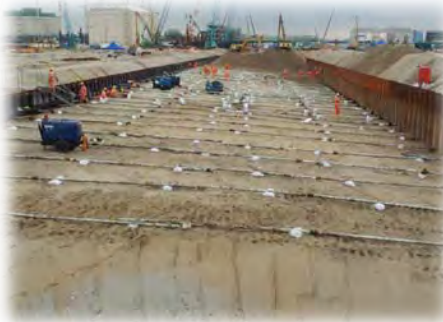
Contractors
Samsung C&T
Corporation

Consultant
Fluor

Year/Duration
2012

Products (qty)
210 tons of Grade 500
tie rods and
accessories

Application
Marine Offloading
Facility





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Project References Details

Laem Chabang

Deep sea port



Location

Chonburi province,
Thailand

Contractor

Italian-Thai
Development PCL

Consultant

Sindhu Maunsell
Consultants

Year/Duration

2000

Products (qty)

Grade 700 of Tie rods
206 tons

Applications

Jetty



Retaining wall
completed



Preparation of
anchoring pile



Anchoring piles
connected



Preparation of bars



Connection of bars



Tightening



Installation complete



Load full completed



Project References Details

TNS Bangpakong

BPK Yard Development II



Location

Bangpakong,
Thailand

Contractor

Italian-Thai
Development Public
Co.,Ltd

Consultant

Sindhu Maunsell
Consultants

Year/Duration

2007

Products (qty)

Tie Rod dia. 64mm
Gr.700, 65 tons,
3,370 BARTEC
couplers

Applications

Jetty



Preparation of bars



Bars connection through
wall



Anchoring plates to
mailand



Anchoring piles connected



Installation complete



Anchoring plates



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Manila International Container Terminal (MICT) - Berth 7



LOCATION :
Manila, Philippines

MAIN CONTRACTOR :
Prime Metro BMD Corporation

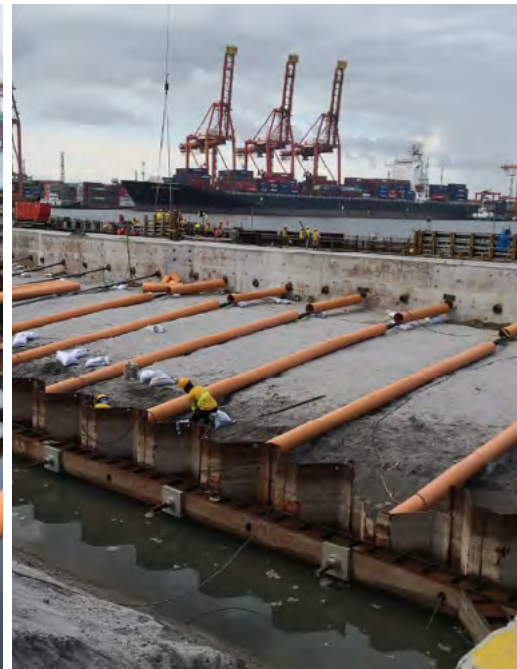
CONSULTANT :
GHD Philippines, AECOM Hong Kong

YEAR/DURATION :
2019 - 2020

PRODUCTS (QTY) :
110 sets of Marine Tie Bars

APPLICATION :
Construction of new berth tie back of
sheet pile wall

Project References Details



THANK YOU.

Name: Julien Raybaud-Gines

E-Mail: jrgines@dextragroup.com



www.dextragroup.com



Thailand@dextragroup.com



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