

# e-maritime

JUNE 2021

SHIPYARDS, MARITIME INDUSTRY AND CONSTRUCTION IN MALTA



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*Magdaléna Sobotková*

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Front Cover: Installation of the St. Elmo Bridge  
Photo Credit: Héctor Beade Pereda

International, online magazine about ports, docks, vessels and maritime equipment. Peer-reviewed.

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Back Cover: Valletta Waterfront, Malta  
Photo Credit: Valletta Cruise Port

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Dear Readers

This special issue is dedicated to **Shipyards, Maritime Industry and Construction in Malta**.

In the first article, you can read about the mission and activities of **Malta Maritime Forum**. **Kevin J. Borg**, CEO of Malta Maritime Forum, provides an overview of the development, investment strategy and future prospects of the maritime industry in Malta.

The second article of this issue was prepared by **Valletta Cruise Port**, a major port of call and a thriving homeport with record passenger movements in 2019. You can find information about the port, key facts, current activities and also its development, and how the company is turning the COVID-19 crisis into an opportunity.

This article is followed by an **interview with Mr. Stephen Xuereb**, CEO of Valletta Cruise Port and COO of Global Ports Holding, which was lead by **David Stork**. They discussed the details of some port activities, covid-19 related issues and some recent projects.

The next article brings information about **The Centre for Maritime Studies (CMS)** which forms part of the Institute of Engineering and Transport (IET) of the Malta College for Arts Science and Technology (MCAST). The Maritime Centre offers a range of educational maritime programmes at different qualification levels, supporting both local and international demands in the maritime industry through proven qualified, experienced lecturers and mentors. This article was prepared by **Eugenio Busuttil**, Deputy Director of CMS and **Godwin Caruana**, Coordinator of Deck Courses.

Design and Construction of **St. Elmo Bridge** together with a focus on St. Elmo breakwater and Lighthouse is provided in the last article of this issue. This article is also accompanied with drawings, and both historic and recent photos.

On the following pages, you can also find more information on both magazines (e-maritime and e-mosty) and also our Partnership offer.

We would like to thank all authors and people and companies that helped us prepare this issue and also to our partners.

The next Issue will be released on 20 September – together with e-mosty magazine – and will focus on BIM for Infrastructure Projects (Bridges) and Port Operations and on Caissons for Bridge Construction.

Magdaléna Sobotková

Chief Editor



June 2021



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ABOUT PORTS, DOCKS, VESSELS, MARITIME EQUIPMENT AND CONSTRUCTION AT SEA

# e-maritime

The magazine **e-maritime** is an international peer-reviewed online magazine about ports, docks, vessels, maritime equipment and construction at sea.

It is published at [www.e-maritime.cz](http://www.e-maritime.cz) three times a year:

30 March, 30 June and 30 November.

September Issue is shared with the magazine e-mosty (“e-bridges”):  
“BIM / Vessels and Equipment for Bridge Construction.”  
which is published on 20 September at [www.e-mosty.cz](http://www.e-mosty.cz).

It can be read free of charge (open access) with possibility to subscribe.

The magazines stay **available online** on our website as pdf.

The magazine brings **original articles about design, construction, operation and maintenance of ports, docks, vessels, maritime equipment and construction at sea** from around the world.

Its electronic form enables publishing of high-quality photos, videos, drawings, links, etc.

We aim to include **all important and technical information** and show the grace and beauty of the structures and vessels as well.

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# e-mosty

The magazine **e-mosty** (“e-bridges”) is an international, interactive, peer-reviewed magazine about bridges.

It is published at [www.e-mosty.cz](http://www.e-mosty.cz) and can be read free of charge (open access) with possibility to subscribe.

It is published quarterly: 20 March, 20 June, 20 September and 20 December.  
The magazines stay **available online** on our website as pdf.

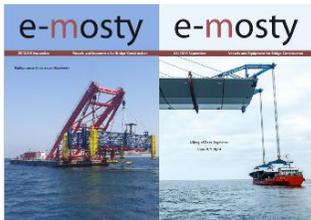
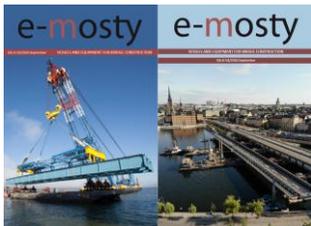
The magazine **brings original articles about bridges and bridge engineers** from around the world. Its electronic form enables publishing of high-quality photos, videos, drawings, links, etc.

We aim to include **all important and technical information** and show the grace and beauty of the structures.

We are happy to provide media support for important bridge conferences, educational activities, charitable projects, books, etc.

Our **Editorial Board** comprises bridge engineers and experts mainly from the UK, US and Australia.

**The readers** are mainly bridge engineers, designers, constructors and managers of construction companies, university lecturers and students, or people who just love bridges.



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More information please find at our [website](#). Both the price and the extent of cooperation are fully negotiable.

Please [contact us](#) for more details and partnership arrangement.

The magazine e-mosty was established in April 2015 and its first issue was released on 20 June 2015 as a bilingual English – Czech magazine aimed mainly for Czech and Slovak bridge engineers.

Since 2016 the magazine has been published solely in English.

In 2018, we established another magazine, e-maritime, with a focus on Design and Construction of Ports, Docks, Vessels, Maritime Equipment and Construction at sea.

Both magazines are Open Access with the possibility to subscribe (free of charge).

They both have very quickly reached an international readership.

Each issue now has thousands of readers worldwide.

It is important that the readership covers the target segment – designers and engineers, construction companies, ports, shipyards, universities and other related experts.

We also know that the readers usually go back to older issues of both magazines.

The number of readers and is constantly increasing.

# THE MALTA MARITIME FORUM – A BEACON FOR PLAYERS IN THE MARITIME INDUSTRY

*Kevin J. Borg, CEO of Malta Maritime Forum*

As part of its mission, the Malta Maritime Forum strives to “fly the flag” of the maritime industry as a whole which incorporates port and terminal operators, vessel towage providers, ship agencies, bunkering operators, pilots, tank-cleaning facilities, docking operations mooring-personnel, dockers, cargo hauliers, professional services providers and suppliers of yachting services amongst many other activities.

These players form a chain of inter-related activities which, in turn, interact with a much wider



*Figure 1: Maltese Flag with Valletta in the background*

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network of economic providers in related sectors to offer the client on the international market a complete, professional and attractive proposition.

According to a recent study commissioned by the Malta Maritime Forum and performed by E-Cubed Consultants in 2019, the Maltese Maritime Industry generated €855million worth of direct economic activity which rises to almost €2.2billion when considering indirect and induced effects.

Furthermore, the Industry provided almost 12,000 direct jobs a figure rising to 20,515 when account is taken of both indirect and induced effects. This was equivalent to roughly 10% of the gainfully occupied population in 2018.

The same study highlighted close economic multiplier effects generated in the financial and insurance sectors. In that year, the Maritime Industry also contributed approximately €25m to the government coffers.

Moreover, it is pertinent to note a general positive trend in the Industry's contribution to the economy's total output - climbing from 5.3 to 7.4 per cent during a seven-year period to 2018.

The Industry grew at an average growth rate of 12 per cent in terms of value added – 2 percentage points higher than the aggregate growth rate registered across the entire economy.

In terms of competitiveness and productivity, the study also points out that per capita value added in the Maltese economy stood at €47,000 compared to €72,000 within the Maritime Industry.

The latter indicators are symptomatic of the fact that the Maritime Industry is highly capital-intensive and the Forum has recently had occasion to celebrate important renewed investments made both by the private and public sector.



June 2021

Figure 2: Superyachts in Grand Harbour  
Photo Credit: Mediacoop Ltd

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These included the announced investment in six megamax quay cranes by Malta Freeport Terminals and the modernisation of the Tug Malta fleet with the addition of 4 new technically advanced vessels.

Such important decisions are complemented by public-sector investment in the ship-to-shore power project and the further upgrading of infrastructure which is mainly part of, but not limited to, the Grand Harbour Regeneration initiative.

Nevertheless, as the Island's foremost Maritime cluster, the Malta Maritime Forum cannot concede that the future is all rosy. In fact, like many others, it sees, at best, an unclear future ahead unless the industry and stakeholders plan, prepare and take the necessary strategic decisions.

Of course, our country and the maritime corporations that operate from within it have no say whatsoever on the depressed market conditions on a global scale that have been exacerbated by a prolonged pandemic situation.

Coupled to that, the industry in Malta is a “price-taker” when it comes to the highly volatile political situation in the region to our South, the consistent moves towards vertical integration by the global industry giants, the rapid strides in digitalisation and the challenges of decarbonisation in terms of



Figure 3: Aerial View of Malta Freeport

Photo Credit:  
Daniel Cilia

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obligations to the IMO and the EU environmental policy agenda.

Despite having little or no say in all the above, there is certainly no denying that such factors are strongly shaping Malta's future success in the maritime industry in the years to come.

That said, there has never been a better time for all stakeholders connected to the industry to come together to design and implement their renewed vision, objectives, strategies and plans aimed at ensuring that we prevail irrespective of the changing environment and new realities around us.

Serving as a common platform for all Malta-based entities involved in the maritime, logistical and transport sector in Malta, the Malta Maritime Forum already contributes to sector-specific fora and supports the formulation of national maritime policy.

As a direct representative of the main players in the national maritime transport industry, the Forum strives to be more active in policy consultation processes which are of direct relevance to the Maritime Industry with a view to contribute its vision and expertise in the national interest.

Of course, the interests and objectives of the Industry and those of the policy maker are very well aligned because each side only desires future smart and sustainable growth across the entire value chain for the common good.

Like the policy maker, the Forum strives to overcome those obstacles that stand in our

way to achieve such growth, not least the skills and information gaps, the deficiencies in the maritime legal structures and bureaucratic procedures, the breakthroughs required in short-sea shipping, the adequately planned and timely completion of public infrastructural projects, as well as ongoing progress in terms of our environmental obligations.



Figure 4: Cruise liner in Grand Harbour

## VALLETTA CRUISE PORT, THE GATEWAY TO MALTA'S CAPITAL – VALLETTA, WELCOMES MORE THAN HALF-A-MILLION CRUISE PASSENGERS INTO A CITY CONSIDERED TO BE AN OPEN-AIR MUSEUM

*By Valletta Cruise Port*

### INTRODUCTION

Malta sits at the heart of European cruising with its central location offering cruise lines and passengers multiple options for almost any itinerary whether to the East or West Mediterranean.

With one of the most scenic backdrops of any port worldwide, Valletta Cruise Port ushers passengers into Malta's historical and cultural experience from the moment the ship docks into port.

Valletta Cruise Port is the only licensed cruise and ferry port in Malta, a major port of call and a thriving homeport. Valletta itself is reason enough for a visit, with this compact island with a multitude of facets easily accessible for either a brief stay or an extended stopover.

→ *Figure 1: Aerial View of the Grand Harbour and Valletta Cruise Port with three cruise liners berthed there*



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## VALLETTA CRUISE PORT PLC

Valletta Cruise Port Plc took over the cruise and ferry terminal operations in 2001 after being awarded a 65-year concession from the Government of Malta.

The concession includes the lease of 48,000 square meters of land and buildings adjacent to the quays. Valletta Cruise Port invested over €40 million in developing one of the few dedicated cruise and ferry terminals in the Mediterranean.

The company also restored the historic vaults in the area, constructed by the Knights of Malta in the late 18<sup>th</sup> century which were heavily bombed during World War II.

These were returned to their former glory and now branded as the Valletta Waterfront housing 13 restaurants, and a number of offices and retail outlets.

### DISTANCES TO VALLETTA in Nautical Miles



Figure 2: Location of the Port and distances to major Mediterranean Ports

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The Valletta Waterfront has matured into one of the Island's most sought after business and entertainment destinations, and a key welcoming element of Valletta Cruise Port.

In 2015, Global Ports Holding Plc completed the acquisition of a majority stake in Valletta Cruise Port.

Global Ports Holding (GPH) is the world's largest cruise port operator, with an established presence in the Caribbean, the Mediterranean and the Asia-Pacific regions. To date GPH operates 19 cruise ports, in 13 countries across 4 continents.

This agreement brings a lot of synergies to Malta, and provides Valletta Cruise Port with the opportunity for knowledge transfer, partnerships and exchanges, allowing contributions to the whole group and the wider sector in terms of human talent and best practices.



Figure 3: Stephen Xuereb, CEO of Valletta Cruise Port and COO of Global Ports Holding

Valletta Cruise Port's CEO Stephen Xuereb is also Global Ports Holding COO.

Having been part and parcel of the 20-year story of Valletta Cruise Port, Stephen Xuereb has grown into the role of CEO, after spending many years as the CFO of the company. Five years ago, Mr. Xuereb was also appointed Chief Operating Officer of GPH.

Wearing the GPH hat, he is responsible for the overall performance of both cruise and commercial

port operations of all the 19 ports falling under the GPH portfolio.

GPH is a dynamic company keeping its core value of accountability, excellence, respect and valuing teamwork, in all its endeavours.

Valletta Cruise Port has made a name for itself in the cruise industry, not least because of the very positive close links it has nurtured with all of the cruise line companies that call Malta.



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Figure 4: A cruise liner berthed at the Port

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These relationships were all built on a solid reputation for service delivery, and have been centred around a modus operandi of flexibility, reliability and commitment.

Over the years Valletta Cruise Port's efforts have been recognized by a number of awards including *Best Terminal Operator* by *Cruise Insight* for two consecutive years, and *Top-Rated Mediterranean Cruise Destination* in *Cruise Critic Cruisers' Choice*.

The pride in these awards is that the former is voted for by cruise operators whereas the latter is voted for by the cruise passengers themselves.

Such awards and others recognize the flawless service delivered by the port, and the continued development and investment in its facilities in the last several years.

This has been appreciated by both passengers and the cruise trade at large, culminating in over 900,000 passenger movements in 2019.

## PORT FACTS

The port is built around a natural deep-water harbour and can accommodate the cruise industry's diverse sized ships and support them with 24/7 services.

Furthermore, Valletta Cruise Port's quays are ISPS-compliant.



- PINTO WHARVES**
- QUAYS 1-2
  - QUAY 3
  - QUAYS 4-5
  - WINE WHARF QUAY
- SPILL-OVER QUAYS**
- DEEP WATER QUAY
  - BOILER WHARF QUAY
  - LAB WHARF QUAY

- MAX. LENGTH**  
360m\*
- MAX. WIDTH**  
No restrictions
- MAX. BEAM**  
No restrictions
- MAX. DRAUGHT**  
12m
- MAX. PASSENGERS**  
No restrictions
- TIDE VARIATION**  
Negligible

	PINTO WHARVES				SPILL-OVER QUAYS		
	Quays 1 - 2	Quay 3	Quays 4 - 5	Wine Wharf Quay	Deep Water Quay	Boiler Wharf Quay	Lab Wharf Quay
Length of quay	307m	171m	252m	73m	488m	383m	443m
Maximum vessel LOA	360m	220m	360m**	135m	333m	294m	360m
Minimum depth of water	11m	9.8m>11m	11m>12m	8m	9m	6.6m>8m	7.6m>15.7m
Height of quay above chart datum	2.2m	2.2m	2.2m	3.3m	3.14m	2.3m	2.2m
Number of bollards	16	8	13	5	33	17	12
Space between bollards	20m	20m	20m	15m	15m	9.8m>34.4m	20m
Fender type	cylindrical (foam-filled) 6m x 1.5m	V-type	cylindrical (foam-filled) 6m x 1.5m	cylindrical 1m x 0.8m	cylindrical 1m x 0.8m	cylindrical 1m x 0.8m	cylindrical 1m x 0.8m

\*to date

\*\*Increased after the planned structural changes

Figure 5: Key Facts

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## OPERATIONAL ACTIVITY AT VALLETTA CRUISE PORT

Until COVID-19 hit, the local cruise industry had been booming, with both 2017 and 2019 being record years for Valletta's cruise industry. Homeporting - cruises that start and end in Malta - has become a crucial part of the business with around 31 percent of VCP's operations falling into this category in 2019, up from 22 per cent in 2018.

Passenger movements totaled 778,596 in 2017, rising to a high of 900,000 in 2019.

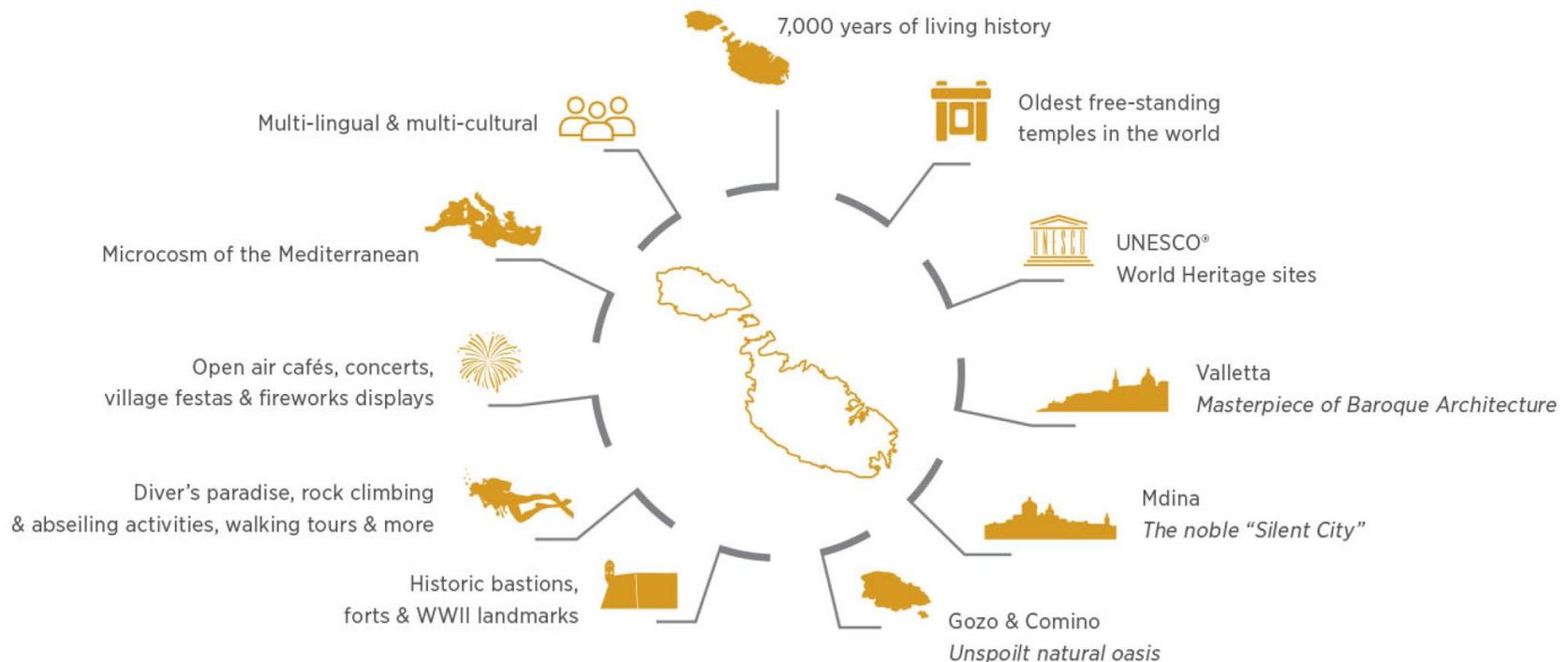
COVID-19 represents an unprecedented challenge to the record years previously registered by the cruise industry.

The fact that demand has kept up with supply, even during periods of major global distress, augurs well for the future of the industry and demonstrates the historical resilience as well as the untapped future potential of the industry.

The Cruise Lines International Association (CLIA) and the individual cruise lines have successfully worked on journey protocols both aboard and

The main terminal is housed in the historic Magazino Hall and together with further facilities can process several hundred passengers an hour with simultaneous onboard registration and check-in. Valletta Cruise Port is also perfectly set up for turnaround operations, with Malta International Airport just a short 10-minute drive away.

Valletta Cruise Port is within walking proximity from the UNESCO World Heritage City of Valletta, a city boasting a myriad of attractions: palaces, churches, theatres, gardens and more, see Figure 6 below.



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onshore covering from booking to disembarkation to ensure a safe and pleasant experience for guests, crew, as well as the communities visited.

Research and best practices to battle COVID-19 are constantly changing, with cruise ship protocols being constantly updated to reflect this changing knowledge.

Cruising is expected to gradually pick up again, as restrictions are lifted, the vaccine rolls out, and operators deploy vessels into the market in the months to come.

The actual realisation of planned calls is based on a number of factors such as vaccine take-up, changing regional and national travel restrictions and appetite for travel by source markets.

As part of GPH, Valletta Cruise Port commenced preparations for the post-COVID cruising reality way back in January 2020, at the first sightings of the pandemic.

The actions taken were to revise the *Emergency Response Plans* and the *Health and Safety Protocols* for all of the 20 ports forming part of the GPH network, inclusive of Valletta Cruise Port.

In addition, Valletta Cruise Port obtained the *Safe Travels* stamp from the World Travel and Tourism Council, based on the reinforced protocols.

This process meant that Valletta Cruise Port was well prepared to welcome back the first cruise calls in August 2020, with cruise calls ongoing weekly as the situation allowed, and in 2021 as well.

Valletta Cruise Port continues to work with all stakeholders to ensure the team is ready to increase the operational capacity when the time is right.

Together with local authorities and partners Valletta Cruise Port has worked on *COVID-19 Cruise Operations Guidelines for a Safe Continuation of Cruising in Valletta* with the aim of facilitating operations in this transitional phase.

These operating guidelines have been prepared and forwarded to the health authorities, with approval received recently.

The guideline document establishes, embodies and merges Valletta Cruise Port's operational plans, procedures and guidelines with cruise line protocols to ascertain the safe continuation of operations.



Figure 7: Cruise liners berthed alongside the Terminal

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The compilation of these guidelines is based on the results of facility assessments within the context of recent and current regional events brought about by the pandemic.

With the right frame of mind challenges can be turned into opportunities. All is only possible with the drive, flexibility and perseverance of the people at Valletta Cruise Port and that of the supporting stakeholders.

Working in synergy is the key to success. Operators frequently highlight the need for a coordinated and collaborative joint approach in destinations.

Valletta Cruise Port works closely with all local partners from the handling agents to authorities. Indeed, the Malta Cruise Network Forum meets on a monthly basis, involving essentially Valletta Cruise Port, the Ministry of Tourism, Malta Tourism Authority, Transport Malta and the Police, and involving other stakeholders who form part of this Forum on a case-by-case basis in order to look into pertinent matters.

Where once the industry's primary message was about providing passengers with affordable vacations, relaxation and fun, today that message is all about 'creating safe guest experiences'.

Valletta Cruise Port's ability to work in synergy with all stakeholders is key to that so the destination can provide passengers and crew with a seamless experience.

*Valletta Cruise port was the first port to welcome an international cruise call post the first pandemic wave in 2020.*

*Check-out Valletta Cruise Port's first resumption call in August 2020*



Digitalisation, IoT and AI offer a lot of interesting areas to explore going forward in terms of planning and logistics, product development and customer satisfaction.

The cruise industry “processes” people and not boxes. The industry deals with the human aspect and the delivery of experiences.

There is no limit to technology and it is vital to stay ahead of the curve.

COVID-19 has seen the cruise industry face unprecedented challenges, and digitalising the passenger experience may be one way how to

← Video: Thanks to strict MSC Cruises health and safety protocol to protect local communities, Valletta Cruise Port welcomes MSC Grandiosa

(Click on the image to play the video)

*Starting from July 2021, Valletta Cruise Port will be the homeport base for Viking Cruises' Viking Venus and Viking Sea which will be sailing two different 11-day roundtrip itineraries in the Mediterranean for vaccinated guests. Valletta Cruise Port is looking forward to a stepped approach to operations where for the rest of the year it is estimated that it will welcome around 150,000 passenger movements on over 100 calls.*

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surpass them: from replacing in-person interactions and public kiosks with the ability to interact via individual devices including wearable technology, the industry will be able to continue to engage fully with customers whilst respecting distancing and sanitisation requirements, simultaneously enhancing the guest experience and the 'wow' factor.

Tags can be used to optimise guest flow, identify bottlenecks to ensure safety of guests and crew, and do contact tracing if required.

Furthermore, digitalisation will lead to streamlining of processes, reducing costs and minimise contact points through the guest journey.

Nonetheless the months during which the destination was devoid of any business due to COVID-19 served as a time for Valletta Cruise Port to further invest in projects with the aim of further enhancing the appearance of this iconic Maltese destination.

Of note is the inauguration of a €2m investment in bespoke canopy structures respecting the historic fabric of the Valletta Waterfront promenade, see Figure 8.

Valletta Cruise Port's projects team was over the last years working relentlessly with the architects and catering tenants to developing a solution which addresses the practical needs of an outdoor destination, whilst respecting the historic and aesthetic values of the destination.

The resulting canopy project enhances the atmosphere and comfort of the outdoor areas of this iconic destination, with the new structures presenting an interplay between old and new, between function and context, with positive feedback about the simple lines and lightness

that the new canopies afford in the venue's historical setting, whilst being practical for the everyday activities of a multipurpose destination.

Sustainability is also a key concern, and cruise lines around the world are investing vastly in environmental technology, including technologies



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Figure 8: The iconic Valletta Waterfront destination with canopy structures

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pioneered by the cruise industry. Areas of action include air emissions reduction, advanced wastewater treatment systems, solar panels, heating, ventilations and air conditioning systems (HVAC) and, most notably, technologies for use of LNG as an alternative fuel.

Valletta Cruise Port is proud to be a part of this mood. Indeed, it is supporting a €49.9 million initiative spearheaded by Infrastructure Malta and Transport Malta to develop shore-side electricity infrastructure as part of the Grand Harbour Clean Air Project (GHCAP).

The first of this two-phased project includes a €37 million investment to provide shore power on the five main cruise ship quays of the Grand Harbour by the end of 2023.

Excavation works have commenced for the underground electricity cables that will distribute electricity from an existing distribution centre to the quays at Valletta's Grand Harbour.

Over eight kilometres of a 22-kilometre network of cables is already in place.

Each quay will be supplied with shore-side transformers and shore-to-ship connection panels that enable ships to turn off their combustion engines and switch to electrical power as soon as they berth.

To this effect works are currently in progress on various quays around the Grand Harbour.

## CONCLUSION

Valletta Cruise Port is proud of its position in the market today, as one of the top 14 ports of call in the Mediterranean.

The drive continues to strengthen business relationships with the cruise lines coming into Malta, as well as with the local stakeholders that are so crucial to the smooth execution of the industry's success.

Valletta Cruise Port's mission for the next decade and beyond is clear: that to continue to lead the cruise and ferry passenger business sector in Malta, and maximise the benefits this industry generates to the economy and country as a whole.

↓ *Figure 9: A busy day in port*



## INTERVIEW WITH MR. STEPHEN XUEREB

CEO of Valletta Cruise Port and COO of Global Ports Holding

*By David Stork*

It's interesting that Valletta Cruise Terminal is part of GPH. How has Valletta Cruise Port benefited from being part of GPH, can you give examples of the benefits? How has GPH benefited from the port being part of the group and can you give any examples? Where does the terminal sit in terms of its passenger numbers compared with your other terminals?

*Global Ports Holding Plc is the world's largest independent cruise port operator with an established presence in the Caribbean, Mediterranean and Asia-Pacific regions with 19 ports in 13 countries over 4 continents.*

*This agreement brings a lot of synergies to both Valletta Cruise Port and Global Ports Holding, and provides both parties with the opportunity for knowledge transfer, partnerships and exchanges, allowing contributions to the whole group and the wider sector in terms of human talent and best practices.*



*Stephen Xuereb, CEO of Valletta Cruise Port  
and COO of Global Ports Holding*



*David Stork, Member of e-maritime  
Editorial Board.  
Until 2019 he was Project Director  
Ports, Coastal & Offshore at Mott  
MacDonald*

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*Wearing the GPH hat of Chief Operating Officer for the last five years, I am responsible for the overall performance of port operations of the 19 ports falling under the GPH portfolio.*

*GPH is a dynamic company keeping its core value of accountability, excellence, respect and valuing teamwork, in all its endeavours, values also reflected in Valletta Cruise Port's modus operandi. GPH's performance in 2020 was overshadowed by the recent worldwide developments, a crisis causing unprecedented disruption to global economies especially the global travel sector.*

*Valletta is today a marquee port with an allure and a location that is difficult to directly replace with any other.*

*Indeed it ranks as one of the top fifteen Mediterranean ports, and is recipient to numerous awards and high ranking both from the trade and passengers. 2019 was a record year for the local cruise industry with 900,000 passenger movements and a growth of 27% over the previous year.*

*In 2019 Global Ports Holding as a group welcomed a whopping 9.3 million passengers. Indeed during 2019, we were successful in expanding the global reach of our portfolio.*

*We grew our network in the Caribbean, winning the cruise port concessions for Nassau Cruise Port in the Bahamas and Antigua Cruise Port in Antigua.*

*We also added to our presence in Asia, with a management contract for Ha Long Bay in Vietnam. We also acquired the operator of La Goulette Cruise Port in Tunisia and more recently Taranto Cruise Port.*

*We look forward to transforming the passenger experience at these ports and increasing the volume of passenger numbers in the years ahead.*

How has the number of cruise liners calling at the port changed over the last 5 years? Assuming the pandemic is controlled how do you see the cruise terminal developing?

*The last years have been extremely positive ones for Valletta Cruise Port bar the challenges brought about by the pandemic.*

*Both 2017 and 2019 were record years for Valletta's cruise industry. Passenger movements totalled 778,596 in 2017, reaching an all-time high of 900,000 in 2019.*

*Looking at the future we are cautiously optimistic.*

*We believe that 2022 will present a good recovery period with bookings for 2023 being at par with those of 2019. This of course depends on a number of factors such as the vaccination program worldwide.*

I see there are 5 main quays on Pinto Wharf and 3 spill-over quays available for the cruise liners. Are these only used by cruise liners? What is the maximum number of cruise liners that the port could handle with its available resources and what are the constraints that determine this? Are there any plans to increase the number of liners in the port at any one time?

*The all-time record for the port of Valletta in terms of ship numbers was eight ships in a single day in October 2007. On that day more than 70 coaches and mini-vans all entrusted with tourist guides and 28 jeeps were busy from the early hours of the morning serving the more than 7,250 cruise passengers that visited the Port of Valletta.*

*The average cruise ship size in the latest decade is over four times the size of the average cruise ship in the 80's now carrying in the region of 4,000 passengers, sometimes more.*

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*Nonetheless whether we are speaking about individual guests or cruise operators, we aim to pre-empt every challenge to ensure that guests enjoy an efficient, professional and courteous transfer to or from their ship, whether in terms of more efficient check-in, reduced embarkation times or improved baggage handling.*

*We understand that guests are after a pleasant, seamless and personalised experience and we do our utmost to provide individual attention to all our guests.*

*As Valletta Cruise Port we believe that the Valletta Waterfront side should continue to be developed for tourism and leisure purposes, with a logical extension of the cruise terminal towards the Valletta – Floriana - Marsa side of the Harbour.*

Can you provide some detailed examples of how the cruise industry is implementing COVID safe practice? What COVID safe practices has the port developed and implemented?

*Unlike any other time in the industry's history, cruise lines, ports and destinations are experiencing entirely new challenges that require new or different solutions, which has increased creativity and innovation.*

*The cruise industry is continuously adapting to the current worldwide circumstances, with a cautious stepped approach.*

*Crew and passenger pre-boarding Covid-19 testing, reduced ship capacity, rigorous hygiene practices, social distancing and pre-boarding vaccination are some of the measures that will ensure the long-term continuity for the industry, and above all a pleasant, safe and enriching experience for guests into the future.*

*Valletta Cruise Port has been proactive in its approach and together with a number of stakeholders has worked on a clear roadmap to resumption providing clearer operational requirements as embodied in the ' COVID-19 Cruise Operations Guidelines for a Safe Continuation of Cruising in Valletta'.*

*The guideline document establishes, embodies and merges Valletta Cruise Port's operational plans, procedures and guidelines with cruise line protocols to ascertain the safe continuation of cruising.*

*The compilation of these guidelines is based on the results of facility assessments within the context of recent and current regional events brought about by the pandemic, and covers areas like*

*embarkation and disembarkation processes, testing procedures, emergency response plans, as well as land-based activities and training of landbased personnel.*

*As a destination we need to be agile, able to evolve and adapt to the situation and easy on our feet.*

In what ways do you see digitalisation, IoT and AI helping the terminal to deal with the pandemic and post pandemic? How is this implemented whilst still maintaining the personal touch that cruise liner passengers demand?

*The travel and tourism sector is particularly well-placed to reap benefits from digitalisation, IoT and AI allowing further automation, more personalisation, and a greater customer experience leading the way for more efficiency and targeting.*

*Digital COVID certificates and passports will facilitate safe and efficient movement of citizens with such a document being a digital proof that a person has either been vaccinated against COVID-19, received a negative test result or recovered from COVID-19.*

*Another practical use of such systems can be a seamless check-in process using sensors and*

# e-maritime

*sending messages to guests' mobiles directly without having to stop at a check-in desk for example. Smart energy saving might be another plus offering ports substantial environmental and financial benefits.*

Looking at the photograph of the canopy it looks really appropriate for the location. What challenges were there in developing the structure? How were these overcome whilst maintaining the historic and aesthetic values? Who were the Architects, Structural Designers and Contractors?

*Indeed, Valletta Cruise Port invested €2million in bespoke canopy structures respecting the historic fabric of the Valletta Waterfront promenade.*

*Over the last years, together with our projects team, our architects and our catering tenants, we have worked on developing a solution which addresses the practical needs of an outdoor destination, whilst respecting the historic and aesthetic values of our destination.*

*The design was by architects AP Valletta. Beyond the planning application per se which was a lengthy process taking years until all parties were happy with the design, additional challenges included the alignment of the project timelines to the downtime for our tenants' business operations.*

*That was the main reason behind the project window chosen namely January to April 2020, which eventually turned out to be a challenging time because of the COVID-19 pandemic.*

*With a foreign workforce on site for such a long period with COVID-19 restrictions including travel to and from their country and quarantine periods*

*following any travel, the downtime was further extended with the imposed measures in relation to restaurant outlets.*

*Our focus for this project remains to deliver a quality experience for all our patrons and together with all involved we got it all together for the reopening of restaurants in Malta in late May 2020.*



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The installation of the shore side supply for the cruise liners has to be applauded as it shows a commitment to helping towards making the cruise industry environmental friendly.

Can you give some technical detail of the equipment such as capacity of the electrical system, typical loads that the cruise ship imposes on the system, type of control equipment, backup arrangements and the designer/supplier?

Do all cruise vessels have the capability to accept shore side power supplies? How has the installation of the installation of the 22km of cabling been managed so that its impact on the historic port infrastructure has been minimised?

*The Grand Harbour is not just a passenger port: it is a multi-use destination.*

*It is home to many residents, the workplace of many others and a place of relaxation for locals and tourists alike - there are age-old historical sites, walking promenades, entertainment zones, office buildings and even beaches in this strategic port.*

*This project spearheaded by Infrastructure Malta and the Ministry for Transport, Infrastructure and*

*Capital Projects, Transport Malta and supported by Valletta Cruise Port aims to juggle all these uses together.*

*It fulfils an International and European objective: MARPOL Annex VI, Energy Efficiency Design Index (EEDI), Noise Emissions (WHO), Directive 2012/33/EU, Directive 2014/94/EU, Blue Growth Strategy.*

*With this project Valletta's Grand Harbour will be one of the European leaders in shore supply provision for cruise ships.*

*Work commenced in November 2020, and is ongoing on a number of quays around the port.*

*The project will result in major air quality improvements with drastic reductions in emissions in the Grand Harbour.*

*Two frequency converter buildings (33kV to 11kV) are being developed with selectable output (11kV or 6.6kV at 50/60Hz). Work on them commenced in November 2020 as well.*

*A trench of a metre in depth was cut, through which cables with a voltage of 33kV will pass and supply electricity to the wharfs. It is estimated that a total of about 22 kilometres of cables will be laid.*

*Well over eight kilometres is already in place. Work is ongoing in earnest on Quays Pinto 4/5, Gun Wharf and Wine Wharf.*

*Thank you very much for your time and cooperation.*

# MCAST CENTRE FOR MARITIME STUDIES

*Eugenio Busuttil, Deputy Director CMS*

*Godwin Caruana, Coordinator Deck Courses*

The Centre for Maritime Studies (CMS), or Maritime Centre as it is commonly referred to, forms part of the Institute of Engineering and Transport (IET) of the Malta College for Arts Science and Technology (MCAST), which is the principal institution in Malta providing vocational education.

For many decades and since the amalgamation with MCAST in 2001, the Maritime Centre has offered a range of educational maritime programmes at different qualification levels,

supporting both local and international demands in the maritime industry through proven qualified, experienced lecturers and mentors.



→ Figure 1: MCAST Campus



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CMS offers students both full time and part time courses. One of the full time courses is an introductory course leading to a Diploma in Deck Operations (MQF Level 3) with a study period of one academic year.

Successful students may progress to higher level leading to qualification as navigating officers.

This latter course entails spending two academic years at the Centre with the third year undertaking 12 month sea-time training on board ocean going ships around the world.

This will lead to an internationally recognised qualification, the maritime Certificate of Competency issued by the Shipping Directorate of Transport Malta Authority.

The Maritime Centre is accredited by this Institution (Transport Malta Authority represents the International Maritime Organisation).

Further training leads the prospective student to the higher rankings of Chief Mate and even to Master Mariner (Captain).



Figure 2: Simulator room



Figure 3: Electronic Chart Display Information System

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Concurrently with deck courses, the Maritime Centre also offers Marine Engineering courses, where one can commence with an Advanced Diploma in Marine engineering and continues stepping up to BSc (Hons) in Marine Engineering.

Each course occupies three years of academic studies, where workshops are also available for students to carry out practical exercises and their thesis.

Whilst students spend time in classrooms attending regular lectures, simulation exercises are offered as a crucial element to understand and familiarise students with real operations before moving on to actual life at sea.

This gives opportunities to exercise in difficult and/or emergency situations where strict control of the vessel comes into force.

MCAST has invested and set up three simulators, state of the art Bridge, GMDSS and ECDIS.

The Maritime administration is now considering setting up a maritime engine room simulator for the engineering department.

A significant number of students, averaging 55 candidates, are reading the deck courses and 30 candidates in the engineering courses annually.



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Figure 4: Seamanship workshop

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In addition, the maritime Centre offers STCW ancillary short courses and licences required to operate sea craft in local waters.

These include licences for owners and operators of all kinds of boats. Other short courses are intended for port workers and local maritime entities where a significant training level is required.

Apart from that, MCAST CMS is currently building capacity to be able to deliver three suites of courses related to the super yacht industry, with an Advanced Diploma in Deck Operations, an Advanced Diploma in Marine Engineering and an Advanced Diploma in Yacht Interior and Hospitality Operations.

These courses will be pegged at MQF level 4 and will be delivered in both face-to-face and in blended learning modes.

The Centre for Maritime Studies is committed to support and develop careers in the Maritime Industry including Navigation, Marine Engineering and Ship Management and other positions within the maritime industry.



Figure 5: Lifeboat training



Figure 6: Nautical courses and fast rescue boat exercises

# ST. ELMO BRIDGE, BREAKWATER AND LIGHTHOUSE MALTA

*Magdaléna Sobotková*



*Figure 1: View of St. Elmo Bridge, breakwater and lighthouse*

# e-maritime

## GRAND HARBOUR (PORT OF VALLETTA)

The Grand Harbour has been used as a port for thousands of years thanks to its strategic position and its natural characteristics.

It is a natural deep-water harbour and it extends for about 3.6 kilometres inland. Its two-arm breakwater renders it a safe, all-weather port throughout the year, open on a 24 hour basis, although entrance may be restricted during strong Easterly winds.

Megalithic remains which were found on its shores show that the area has been settled since prehistoric times.

Over the centuries various buildings have been built on its shores. Between 1530 and 1798 it served as a naval station for the Knights of Saint John who settled in Birgu (also called Vittoriosa).

They improved its fortifications which later proved very beneficial as they provided protection during various raids on Malta, mainly by Barbary corsairs and the Ottoman forces.

At these times, Fort Saint Elmo and Fort Saint Michael were built and Senglea was founded. On the peninsula between Marsamxett and Grand Harbour the capital city of Valletta was built.

Over the years, more fortifications and settlement were founded around the inlets, including Fort Ricasoli and the city of Floriana which is bordering Valletta.

Cospicua was also founded which is the third of the “Three Cities” together with Senglea and Birgu which lie in the southern-east part of Grand Harbour.

During the 19<sup>th</sup> century Grand Harbour served as a British strategic naval base in the Mediterranean. Between 1903 and 1909 a breakwater consisting of two arms was constructed.

The aim was to improve the already excellent natural conditions and to protect the port from strong northern and north-eastern winds in winter.

Thanks to the construction of the St. Elmo breakwater the port and its facilities can be fully utilised in all weather conditions.



Figures 2 and 3:

*Location of St. Elmo Bridge on the map,  
and its position in the Grand Harbour*

*Source: maps google*

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Today the Port of Valletta is a multi-purpose port equipped to offer a large spectrum of maritime services including:

- Various cruise/ferry and cargo berths
- Specialised grain and cement silos
- Petroleum installations, bunkering facilities
- Ship repair and building yards
- Ship chandelling
- Reception facilities
- Other ship related services

Warehousing and open storage facilities are available throughout the port area.

## CONSTRUCTION OF THE BREAKWATER, LIGHTHOUSE AND THE FIRST ST. ELMO BRIDGE

The first studies of the strength of the winds and their impact on the port and possible location and size of a breakwater were started in 19<sup>th</sup> century.

Between 1900 and 1903 all necessary studies required to enable commencement of the design and construction of the breakwater were undertaken.

On 20<sup>th</sup> April 1903, during King Edward VII's visit to the Maltese islands, a foundation stone laying ceremony took place.

Underneath the first stone, a copper casket with copies of contemporary papers was embedded.

The breakwater has two arms constructed of limestone and concrete bricks.

The shorter arm, from the Fort Ricasoli side, is 122m in length and has a width of between 11.5 and 12.1m. It faces northwest.

The longer arm northeast from the Fort St. Elmo is 378m long and has width of between 12.8 and 15.2m.



Figure 4: General View of St. Elmo Bridge, Breakwater and the Lighthouse  
(Click on the image, it will download in full size)

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It was constructed with a 70m gap from the coast of Valletta in order to avoid water stagnation and to allow passage of small vessels especially from the neighbouring Marsamxett Harbour.

The foundations of the breakwater are formed by concrete blocks, each weighing more than 40 tons.

They lie on solid rock on the seabed. The construction of the breakwater took over six years to complete and gave work to about 500 workers.

All underwater works were done by divers in standard suits.

The divers were working in large precast concrete caissons, which were filled with smaller blocks which were then concreted together as necessary.

The divers were supplied by air fed from the surface by a manually operated air pump. Concrete works rose from the seabed to about 60cm above mean sea level.

The St. Elmo arm of the breakwater was accessed by a steel footbridge consisting of two isostatic arched-truss beams each of 34.4m.

The trusses were constructed using rolled steel joist. Two steel cylindrical columns filled with concrete provided a central support to the footbridge.

The bridge was about 4.8m high and around 6.4m wide and the overall bridge length was 68.27m. The decking was constructed of timber, with steel grating at each support.



↑ Figure 6: The original St. Elmo Bridge (1909)

↖ Figure 5: Construction of the breakwater and original bridge

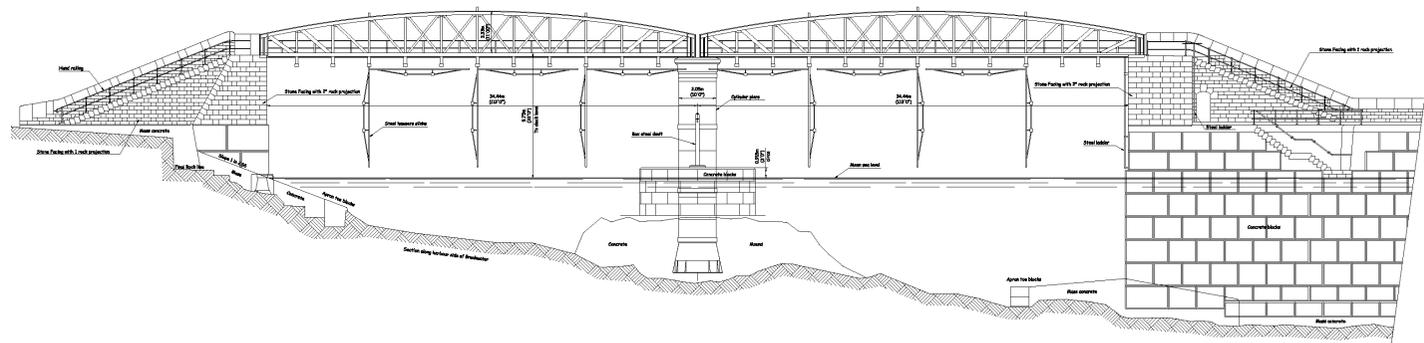


Figure 7: Elevation View of the original bridge  
(Click on the image to open it in full size)

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The construction was affected by inclement weather in 1904 which caused damage to the breakwater and also damaged the bridge. However, the bridge was finished in 1906 and the whole project was declared as successfully completed in 1910.

The bridge was partly destroyed following an attack by an E-boat in 1941 and it was subsequently removed.



*Figure 8: St. Elmo Bridge was partly destroyed during WWII (1941)*

For more than 70 years the breakwater and its lighthouse were isolated, see Figures 9 and 10.

They were only accessible by boat, until the opening of the new footbridge in 2012.

↗ → Figures 9 and 10:

*Breakwater and gap after the collapsed bridge was removed with the original central pier*



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## THE LIGHTHOUSES

At the entry to Grand Harbour, there are two breakwaters, each with a lighthouse at its end: Ricasoli Lighthouse was built on the East breakwater and is characterised by a red lantern; St. Elmo Lighthouse is located on the West breakwater and has a green lantern.

In 2012 replica of the original lantern was installed. It has quick flashing green light with a range of seven nautical miles.

Ricasoli has 9m high tower, St Elmo has 14m high tapered tower with a lantern and a gallery. The towers are stone and unpainted.

Both lighthouses were completed in 1908.



Figure 11: Ricasoli Breakwater Lighthouse in the front with St. Elmo Lighthouse in the back. Credit:e-maritime



Figure 12: St. Elmo Lighthouse. Credit:e-maritime

# e-maritime

## CURRENT ST. ELMO BRIDGE

In 2009 an international design competition for the design, fabrication, transportation and erection of a new footbridge was organised by Transport Malta.

Several design constraints were included in the tender documentation relating to appearance, geometry, materials, durability and operation of the bridge.

It was a requirement that the winning design should be suitable for the location with respect to the historical, social and cultural context and it was to be located in the same position as the original one.

From more than twenty tender submissions, the design of Arenas & Asociados in a Joint Venture with Maltese companies Vassallo Builders (contractor) and Bezzina & Cole (local engineering assistance) was selected.

### Design

The footbridge is placed at the same location as the original one and has similar proportions. The main structural element is a single 70m span classic Pratt arched truss, placed on the open-sea side with a constant-width deck of 5.40m internal and 6.45m external width.

The main truss is aligned with the protection walls which were also the abutments and staircases. The depth of its bottom chord - which is an L-shaped box girder of high-stiffness - is set by the height of these walls.

The top chord with triangular cross-section coincides with the top face of the abutments wall at the bridge ends. The height of the truss varies from 1.83m to 7.20m.

Diagonal and vertical members have symmetrical triangular sections with bases located on the external plane of the truss. Such triangular sections were designed because of their structural efficiency and to prevent rust effects, avoiding water to cumulate in the transition between

diagonal and vertical members with the inferior chord.

The 0.95m deep secondary box-girder has a trapezoidal cross-section and it is filled with non-structural concrete to increase the weight of the structure.

It helps reduce accelerations induced by vertical vibrations without using dampers. The whole structure rests on elastomeric bearings.

## PROJECT OVERVIEW

Owner: Transport Malta

Architectural and Structural Design: Arenas & Asociados

Local engineering: Bezzina & Cole

Contractor: Vassallo Builders Limited

Steel:	185t
Timber:	10m <sup>3</sup>
Concrete:	19.4m <sup>3</sup>

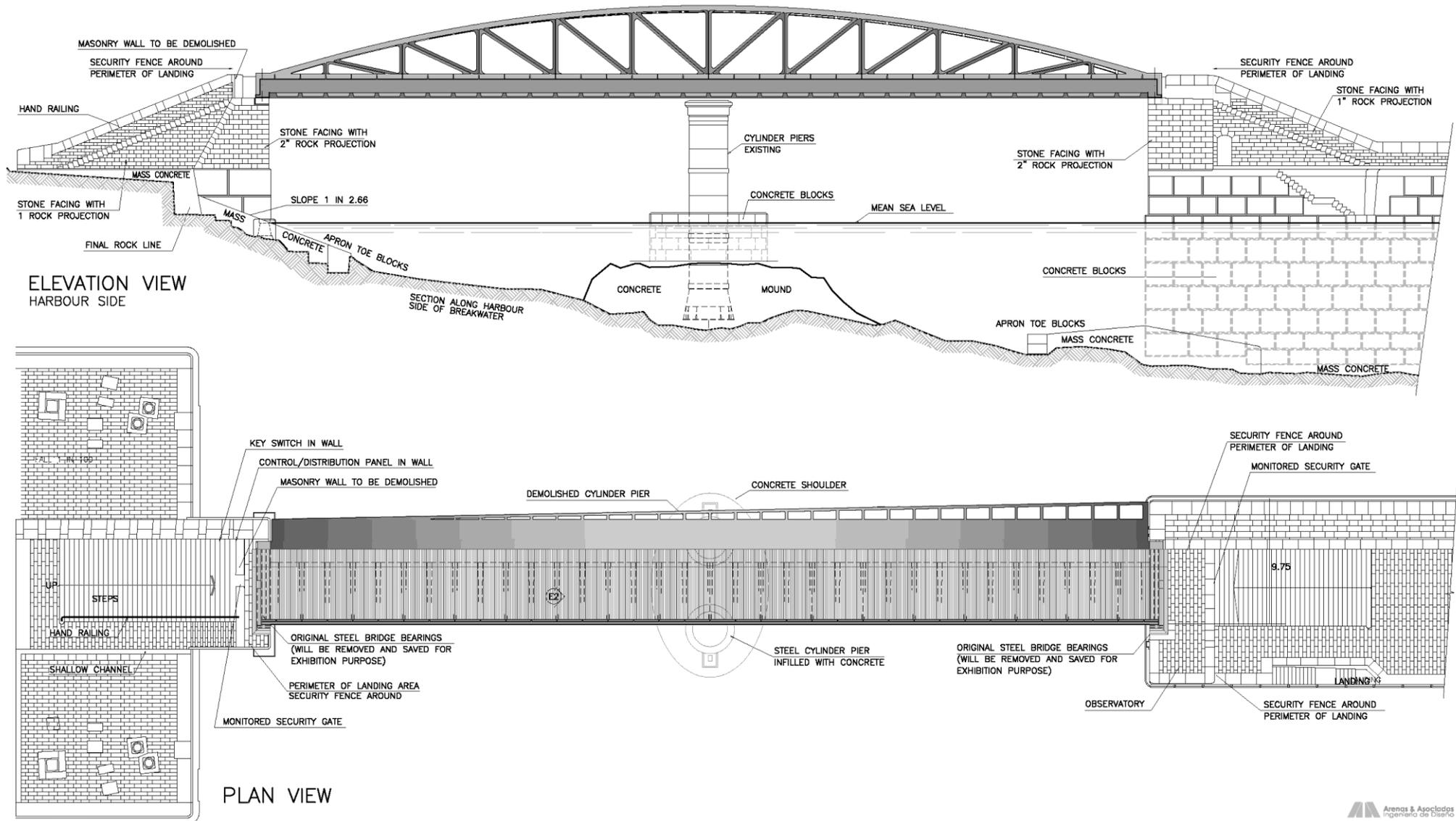


Figure 13: Elevation and Plan View  
Click on the image to open it in full size

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One of the tender conditions was that the original bridge abutments should not be altered in fashion and should form part of the final design concept.

The central piers of the original bridge were not to be used in the design, however, they remain preserved.

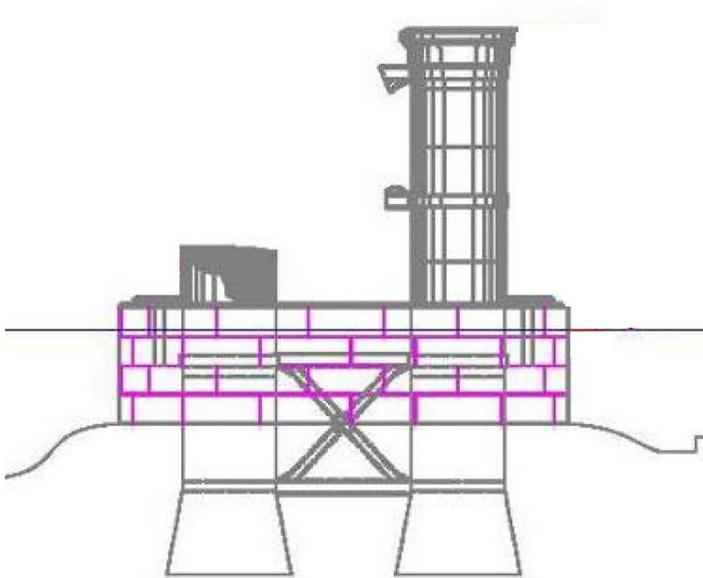


Figure 14: The original bridge piers which remained preserved

The footbridge was designed as asymmetrical in section. The bridge asymmetry reflects many other asymmetries of the location:

- Separation of the breakwater from the shore;
- The existing abutments and staircases with thick wave-protection walls on their open-sea side only;
- The central pier of the original bridge that almost completely lost its sea-side column.

The bridge is vertically anchored to the abutments with four 25mm diameter stainless-steel prestressing bars at each end.

They are 4.25m long of which 1.25m is anchored and remaining 3.0m are free length to allow structure movements.

Longitudinal displacements are allowed by the free length of the anchoring bars.

For aesthetical reasons, the structure has a ladder-like structure on the outside.

Thanks to this, the top chord reaches the wider breakwater-side abutment with its same width, but not adding an additional weight to the structure.

The footbridge deck consists of timber boards, a lighting scheme and navigation lights.

## Structural Behaviour

The structural behaviour of the footbridge is affected by its transverse asymmetry and the design of its cross-section which results in possible deformational loads of the two longitudinal structural elements of the bridge (truss and the secondary girder).

This is different in many aspects from other truss bridges. Also the use of a single truss, without its top chord transversally braced, makes it susceptible to second-order effects.

As a result, the out-of-plane buckling load of this top chord had to be allowed for in the design.

The footbridge was designed in accordance with Eurocodes 3 and 5. Comprehensive calculations were made including plate-thickness optimisation.

The design also had to allow for the steelwork being manufactured outside the country, transported and lifted at sea with the associated global weight limitations.

Several three-dimensional FEM models were run for checking the structures design details, and a second-order analysis was also carried out.

The induced vibrations from pedestrians walking across the bridge were studied with special care required due to the span, slenderness and asymmetry of the bridge.

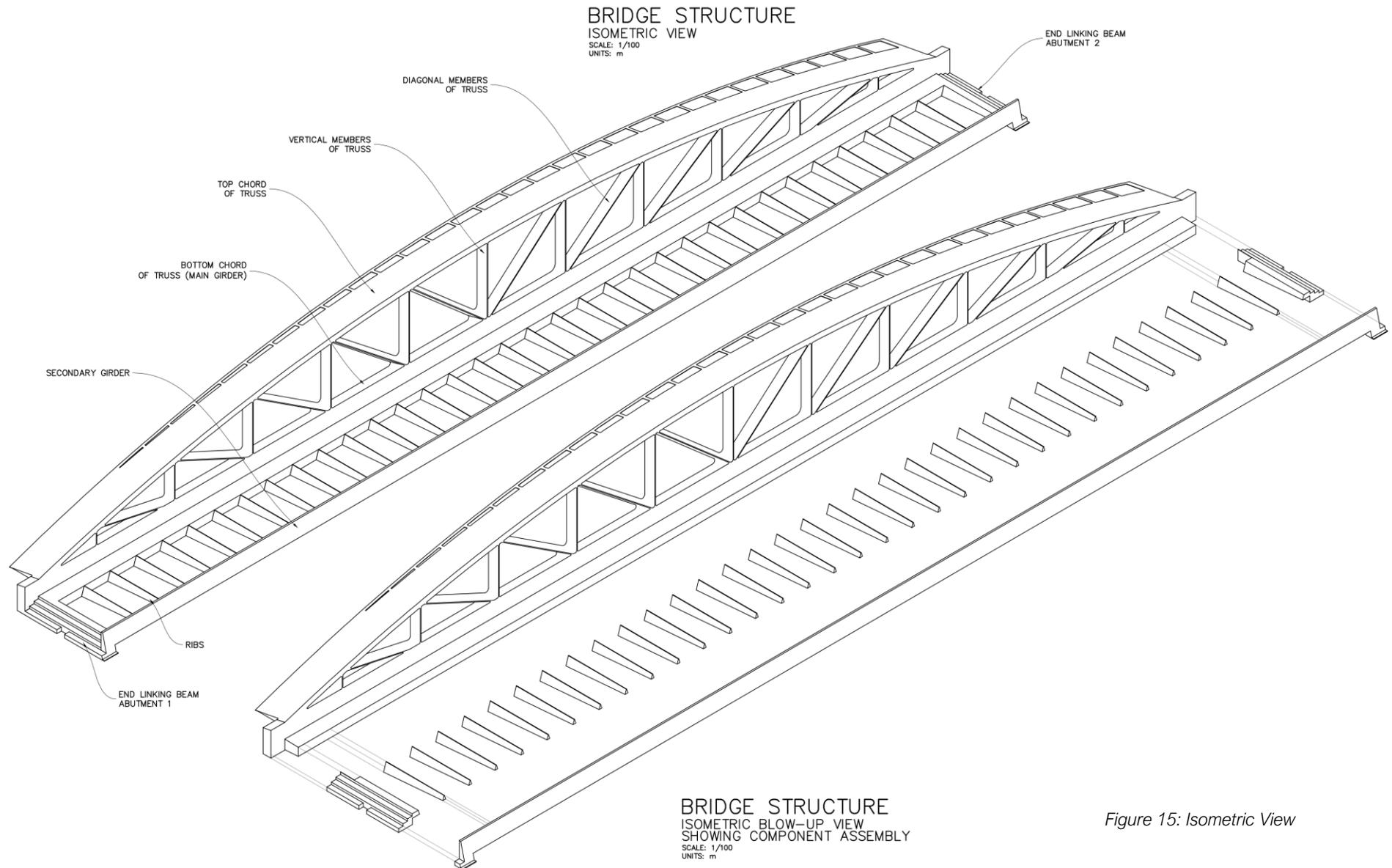
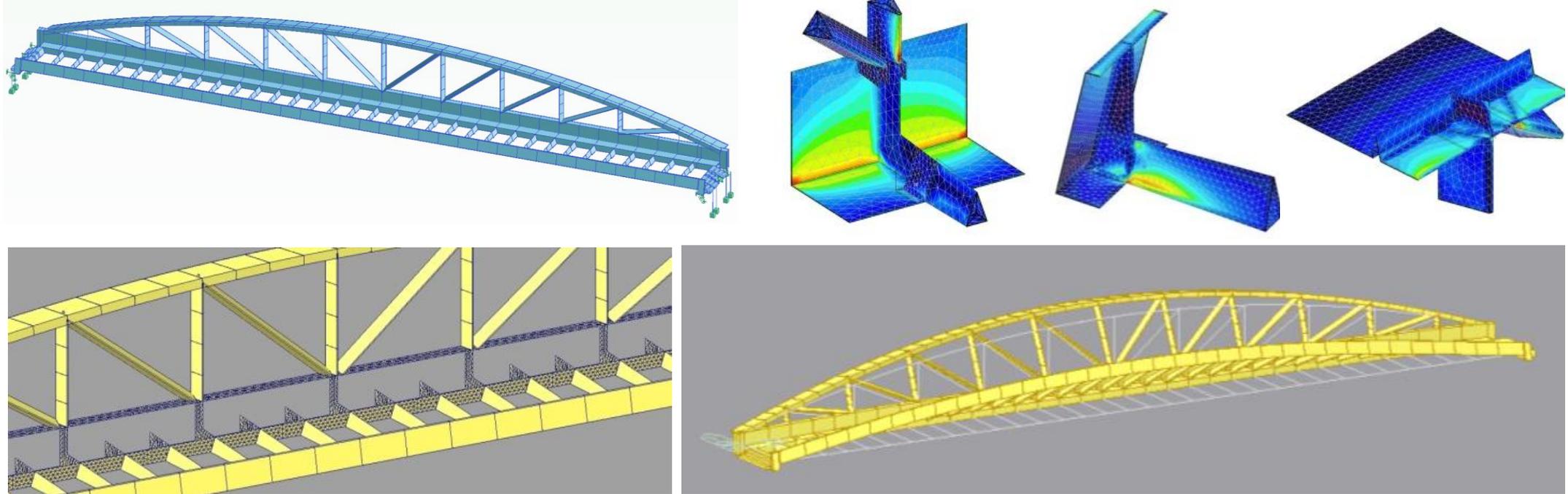


Figure 15: Isometric View

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*Figure 16: Structural analysis models.*

*From left to right and from top to bottom:*

*Main FEM model, specific FEM models of some of the joints (every joint has its own), specific FEM model for the analysis of the bottom girder of the truss and third vibration-mode shape*

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## Fabrication, transport and erection

The steelwork was manufactured by Emesa in A Coruña in Spain. For economic reasons, it was transported nearly 1,000km overland to the port of Cartagena, also in Spain, in eight pieces using 35m long trailers.

The bridge was assembled in the port, loaded on board the heavy-lift vessel 'Storman Asia' using the ship's own 4,000kN derricks.

Specific trestle-type supports and a sling-system were designed and used for the transport. This was because the dimensions and asymmetry of the bridge almost reached the maximum capacity of the vessel.

The lashing system was designed to resist the vertical and horizontal forces during transportation.

After reaching Valletta, a wait of two weeks for appropriate weather conditions was required. Weather forecast was carefully studied to do the placement in very good weather and calm sea conditions.

At site, the ship was moored in four different positions and the former pier foundation protected so the vessel could not damage it.

Quality controls were in place especially for the site work at the port; swell was established to be less than 20cm to undertake the final operation.

The bridge was lifted off the vessel and placed on the existing abutments and the new central steel pillar.

The abutments had a specifically designed RC slab on which the bridge sat which is not visible in the final arrangement.

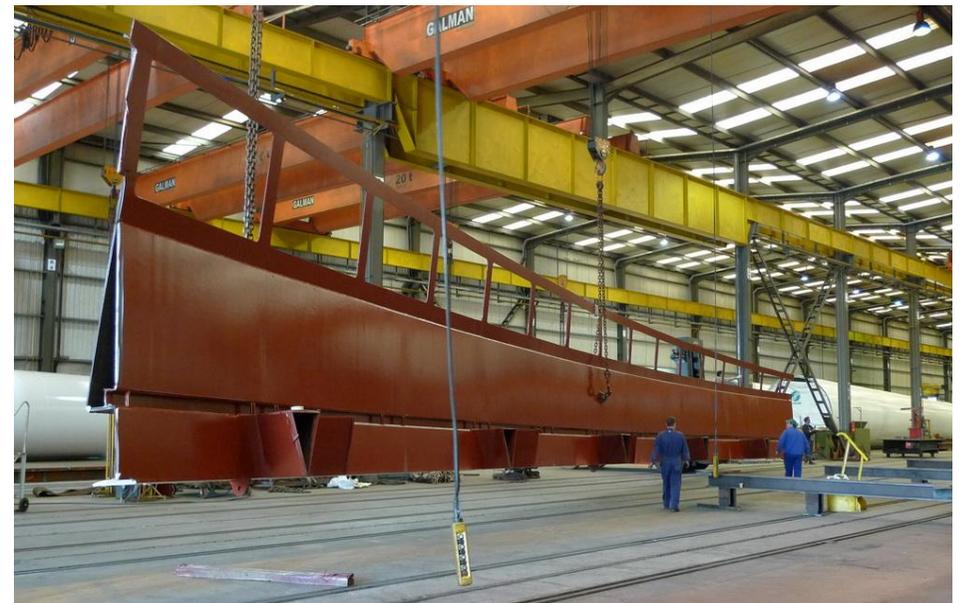
After that, timber decking, handrails and lighting were installed.



*Video: Lifting and placement of the bridge. Credit: Vassallo Builders*

*(We apologize for the lower quality of the video)*

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Figures 17 - 20: Bridge Fabrication Photo Credit: Miguel Ángel González

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*Figures 21 – 23: Fabrication, loading and transport of the bridge*

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Figures 24 – 27: Transport and Lifting of the Bridge

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Figures 28 - 31: Completed Bridge

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## Maintenance of the bridge and the breakwater

The bridge was designed to withstand the harsh environmental conditions, especially direct wave impact together with strong winds. As part of this design philosophy all elements and surfaces are accessible for maintenance.

Closed sections were used and their atypical (triangular) geometries enable water shedding so that it does not accumulate in the structure.

In the contact between webs and bottom flanges of the different structural members webs slightly exceed the edge to avoid water spills and salt accumulations, see Figure 32.



Figure 32: Bottom and inferior view

Thanks to the triangular cross-section of both diagonal and vertical members, the steep transversal slope directs water away from the joint.

With the same aim, the joints of the truss were smoothed with truncated cone transitions, see Figure 33.



Figure 33: Detail of the truss joints

Timber decking is divided in elements with reduced dimensions, movable by a couple of maintenance staff, to easily maintain the decking itself but also to guarantee easy accessibility to the steelwork under it.

Footbridge's timber decking is assigned to service Class 3 according to Eurocode 5; Tali Wood does not require any preservative treatment.

In 2020 Infrastructure Malta, the owner of the asset, commissioned some repair work on the breakwater and the steel bridge.

This work includes the replacement of a large block of the breakwater's deck (seaside overtopping protection wall) which has been dislodged by the impact of large waves over the years.

Before the works started, some of the coping stones which had been dislodged into the sea by the severe storms and which were still in good condition were retrieved by divers. These parts are reused and the missing parts replaced by limestone blocks from an Italian quarry at Trani.

The project also includes cleaning of the masonry of tar stains and other deposit which have accumulated over the years.

The steel bridge has also undergone some repairs, especially the wooden decking which is not in good condition.

Maintenance works involve repairing and repainting the steel structure and replacing the damaged sections of the deck.

New handrails and electrical circuits with an improved lighting system are eventually installed. The central pier remains as it was originally.

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Figure 34: Repairs on the breakwater. Credit: Infrastructure Malta



Figure 35: Repair works on the bridge. Credit: e-maritime

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## Acknowledgement

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## All photos and drawings

*Credit Arenas y Asociados and Héctor Beade Pereda unless indicated otherwise*



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SHIPYARDS, MARITIME INDUSTRY AND CONSTRUCTION IN MALTA

