Base Load Power Hub (BLPH)

CONSTRUCTION EXECUTION PLAN

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Attachment 1

1 INTRODUCTION

1.1 PROJECT OVERVIEW

Crosswind, a Shell and Eneco joint venture, was awarded the tender to develop the offshore Hollandse Kust Noord (HKN) wind farm, located 18.5km off the coast of Netherlands near the town of Egmond aan Zee. The consortium plans to have HKN operational in 2023 with an installed capacity of 759MW generating at least 3.3TWh per year. This is sufficient renewable power to supply more than 1 million Dutch households with green electricity.

Offshore wind farms produce intermittent electricity and balancing these dips and peaks and integrating this electricity into the national energy system requires new technologies. For this reason, the offshore wind farm will include several new technologies that could be implemented at full-scale in the future. The new technologies being explored include a floating solar park, a short-duration battery storage as well as long-term storage via green hydrogen produced by water electrolysis and subsequently consumed in a fuel cell. The combination of these individual measures, herein referred to as the Base Load Power Hub (BLPH) will ensure a continuous power supply regardless of the wind situation.

1.1.1 PROJECT LOCATION

The Hollandse Kust Noord (HKN) wind farm is located 18.5km off the coast of the Netherlands near the town of Egmond aan Zee.

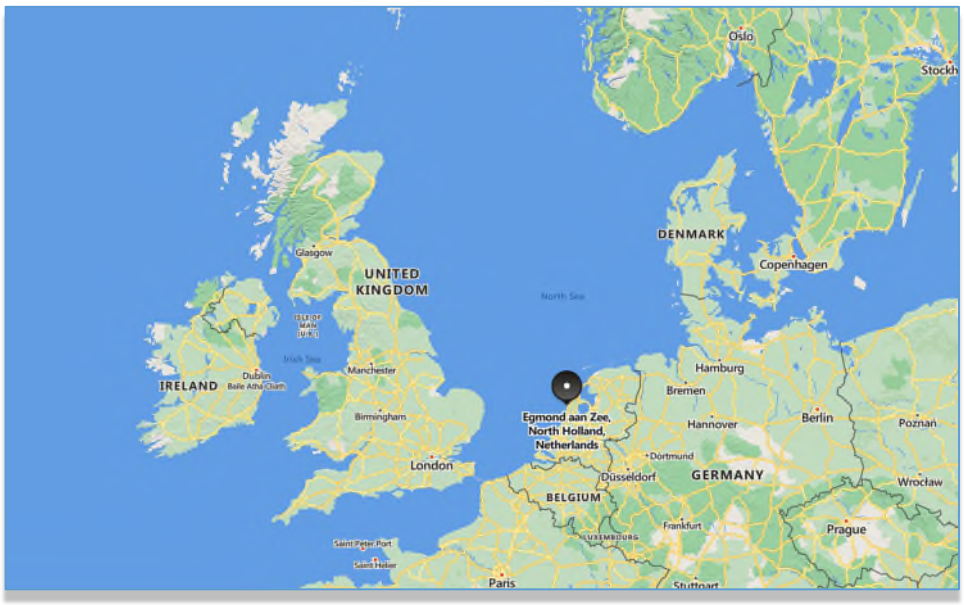


Figure 1 HOLLANDSE KUST NOORD WIND PARK Location Map

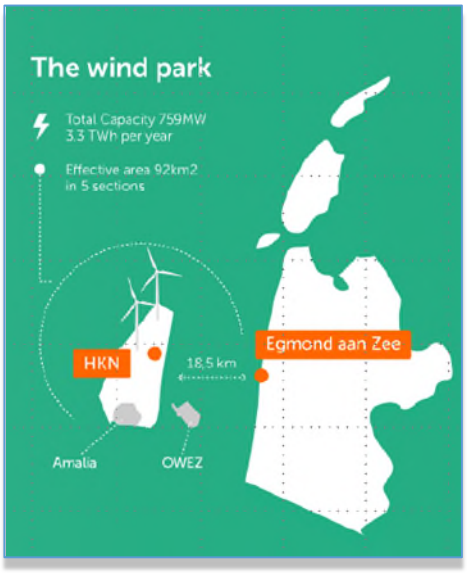


Figure 2 - Wind Park Details

The wind farm will consist of No. 69 x 11.5MW wind turbine generators each to be installed on a dedicated monopile structure. A 70th monopile located on coordinates E 590719.1, N 5841602.3 is reserved for installing the platform accommodating the BLPH. The monopile structure was designed and installed by Van Oord Offshore Wind (VooW) and therefore not part of the BLPH scope.

1.1.2 PROJECT CONCEPT

All components included in the BLPH will be integrated onshore on a topsides and installed in an offshore location within the boundaries of the HKN wind farm. At its simplest, the BLPH will store energy during periods of high electricity generation from renewable sources (a wind turbine generator and the floating solar PV farm) and release it during periods of low generation. In practice. It is expected that the energy stored will supplement generation from renewable sources to ensure that at least 1.0MW of power is exported to the electrical grid regardless of wind/solar availability.

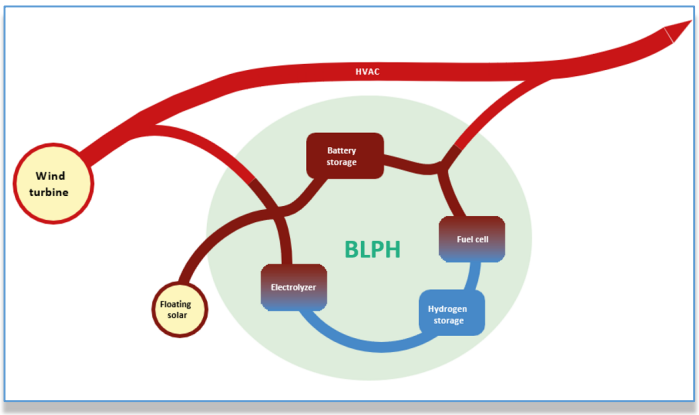


Figure 3 – BLPH Concept

Electricity in the BLPH will be stored in the form of electrons in a battery energy storage system (BESS) as well as converted into green hydrogen via water electrolysis. When the power output from the connecting wind turbine drops to below 1 MWe, the BLPH will return its stored energy to supplement the remaining power output. This will be by discharging the BESS, while stored hydrogen will be converted back into electricity using a fuel cell to extend the discharge duration.

The purpose of the BLPH s to function as a testbed for the integration of energy storage technologies with renewable generation. It is expected that equipment installed on the BLPH will operate as Normally Unmanned Installation for at least two (2) years with no or minimal maintenance and it will have its own independent control room with the ability to communicate with Crosswind's control room.

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2 DOCUMENT SCOPE

Scope of the Construction Execution Plan (CEP) is to identify and define the main activities required during construction phase. As well as to explicit the way they are intended to be carried out, with a view to achieve the successful completion of the project. The CEP presents a detailed description of the construction Health, Safety & Environment policy, mobilization in its various phases; temporary site facilities; construction activities and their various sequences; information management; site organization; subcontracting plan and control; Human Resources strategy; Procurement activities. This procedure is aimed to bring as guideline the Project Execution Plan, utilizing all the Constructability Review Meeting's (CRM) as updating of the CEP itself in accordance with Project Requirements and Contract exhibits (if applicable).

Constructability Review Meeting (CRM) will be the master document to how review the Construction Execution Plan in details for all the construction phases.

2.1 REFERENCES

Doc. No.	Description
123A90- PML-PM-PL-00001	Project Execution Plan

Table 1 - Reference Documents

2.2 DEFINITIONS AND ABBREVIATIONS

COMPANY or Client (CPY):	Crosswind
CONTRACTOR (CTR):	ROSETTI MARINO S.p.A.
PROJECT:	HOLLANDSE KUST NOORD WIND PARK Project

Table 2 - Definitions and Abbreviations

3 ROLES AND RESPONSIBILITIES

The CONTRACTOR herein identifies the Project's key persons that will be part of the Project Management Team (hereinafter PMT)and that will be the principal responsible for the success of the Project.

3.1 Project Manager

The CONTRACTOR's Project Manager has direct line responsibility for the safe and timely performance of all WORKS under the Contract in accordance with the applicable specifications.

The Project Manager responsibilities include but are not limited to:

Continuous management, reporting and control of the Works in accordance with the

Project Execution Plan and all other requirements of the Contract.

Interface with the other Company's contractors involved in the Project.

Contractor internal coordination between Contractor departments involved in the Project execution.

Contractor management and coordination of all its subcontractors and vendors providing services and/or materials for the Project.

Implementation of an effective Quality Management System in accordance with the requirements of the Contract.

Implementation of an effective Health, Safety & Environmental Management System in accordance with the requirements of the Contract.

Encourages co-operation organization within his organisation and towards the other functions and Group Companies.

3.2 Project Control Manager

The CONTRACTOR's Project Control Manager is responsible to guarantee a high level of Project Control by way of effective planning using various established techniques, proper monitoring of the various activities through controlled feedback and predefined communication procedures, with the purpose of improving the latest development techniques.

The aim of the Project Control function is to monitor all identified Project targets within pre-defined limits of the schedule, budget costs and quality and inform the management about its current status and expected development.

The mission and responsibilities of the Project Control Manager are, but not limited to:

Draw Project weekly and monthly reports

Collect progress documents related subcontracting activities

Control work progress status reports

Take part and co-operate with the Project Manager in the arrangement of the Kick-off meeting

Co-operate with the Project Manager as to the preparation of Project initial plans, as far as the following is concerned:

Initial planning;

Procurement Plan;

Take part in the most significant project meetings

Propose and arrange possible re-scheduling upon instruction of the Project Manager

Co-operate with the Project Manager in preparing the Close-Out Report

Prepare the Work Packages considering the relevant physical quantities involved, and gather the progress data to fill in Work Packages.

A dedicated Project Control Plan will be issued in order to define a consistent method of planning, measuring and reporting work progress in line with CLIENT project control management.

3.3 Project Quality Manager

The CONTRACTOR's Project Quality Manager and its Team are fully committed to:

Ensure that the Quality System procedures and all the documents issued are in compliance with the project;

Ensure that the organization on-site complies with the Quality System and the project;

Prepare the Project Quality Plan and the quality related project procedures and work instructions.

Liaise with the Client and subcontractors, together with the Project Manager as to all quality-related aspects.

Prepare and/or to verify the quality-related documents to be included in the material requisition of supply.

Verify, comment and approve supplier's quality-related documents.

Develop an internal audits plan as well as a plan of eventual audits to be carried out on the main Project Processes and at subcontractors' and vendors' premises.

Verify that the Quality Plan is implemented and effective in all the work sites.

Request any possible corrective actions; follow the relevant implementation by cooperating with the Project Manager (PM) and the Project Engineering Manager (PEM) in the resolution of contractual nonconformities, deviation and concession requests.

Handle the project quality control reporting to the PM, highlighting criticalities whenever quality-related problems arise.

Verify, during the different work phases, the execution of inspections as required by the ITP.

Interface with and supervise the quality control inspectors' activities both at yard and at vendors' and subcontractors' premises.

Co-ordinate, all the activities needed for products final testing.

Liaise with the Client Quality Rep, Inspectors, the CVA (Certified Verification Agent) as to all Quality Assurance and Quality Control-related activities.

Ensure that Client's Inspectors, the CVA Representatives are duly notified in advance to witness those specific operations and test according to the approved Inspection and Test Plans.

Make sure that the quality record books and the final dossier are prepared in compliance with the project requirements and the corporate standard.

3.4 Project HSE Manager

The CONTRACTOR's Project HSE Manager and its Team are fully committed to:

Facilitate implementation of the Project HSE plans, project specific procedures and to revise them when necessary.

Identify and evaluate risks and propose preventive measures.

Review and approve Subcontractors HSE plans when such plans must comply with the Project HSE plan; perform Subcontractors HSE audits and inspections.

Ensure HSE program is comprehensive and effective in communication of hazards and preventive measures to be taken to ensure safe construction and actions to be taken in an emergency.

Review the organization and implementation of information and training on HSE relative to the site activities (such as toolbox talks, work permits etc.).

Supervise the installation in respect of all safety and environmental protection measures.

Ensure regular monitoring and inspections to detect potential hazards.

Stop any work whose execution is deemed dangerous or likely to imperil the health and safety of personnel.

Perform reporting and investigation (or assist with) of accidents, incidents and near misses and ensure that all accidents, incidents, and near misses are reported.

Maintain records of all accident reports and investigations on site and monitor remedial actions being implemented because of accident investigation.

Participate in the weekly coordination meetings with all construction supervisory staff and subcontractors representatives to discuss safety.

Conduct the induction meeting for all new employees (including subcontractors).

3.5 Project Engineering Manager

The CONTRACTOR's Project Engineering Manager will be responsible of the design of the Project.

Project Engineering Manager will be responsible to ensure all project needs are effectively and timely and result in a pro-active and added value cooperation to confirm an integrated engineering team.

Unless agreed otherwise, Project Engineering Manager is the point of contact for CLIENT and all other contractors and/or third parties selected by CLIENT for all kind of engineering support is may needed.

The CONTRACTOR's Project Engineering Manager and its Team are fully committed to:

Manage the scope of contract relevant to Engineering, ensuring the performance of the activities in compliance with contractual and legal requirements, engineering best practices, timing, QHSE requirements and budget.

Ensure the respect of the global engineering budget, to manage with the support of Engineering Project Controlling, the definition of the estimation to completion and to verify the correct structure of the engineering team workforce; to report promptly any potential gap from the budget, suggesting corrective actions to the Project Manager.

To promote alternative technical solutions that can generate advantages for both CLIENT and CONTRACTOR.

Co-ordinate the resources in the execution of the Engineering and to manage the relationship with Client and other external parties; to ensure the integration with other services/department involved to the Project;

Ensure the management and the approval of incoming and outgoing engineering documentation, and to co-ordinate the Document Controller in filing, communication and transmission to the personnel involved, keeping proper records through documents lists;

Ensure and co-ordinate design review, verification and validation CONTRACTOR's Project Engineering Manager liaise with CONTRACTOR's Construction Manager and CONTRACTOR's Q-HSE Manager to guarantee the best in class services in full respect of the Q-HSE rules.

The Project Engineering Team shall support the Construction Team during fabrication, construction, mechanical completion and commissioning phases.

The main objectives of the Project Engineering Teams are:

Assess CLIENT documentation and/or perform a site survey to understand the existing scenario

Define the engineering requirements prior to commencing the fabrication works

Define the assembly areas, assembly sequences, lifting and handling Engineering, load out studies, and erection

Develop the standards, procedures, and method statements to perform the fabrication Activities

Develop all documentation to perform the fabrication activities, i.e.

- Workshop spools drawings, structural drawings, piping supports, shop drawings, piping isometrics
- calculations; structural analyses; stress analyses
- pre-fabrication feasibility and piping assembly;
- Constructability and erection sequence
- Load-out and transportation and installation requirements;

Issue as-built documentation

Support the Project Team during the process for selection of the best sub-contractors for fabrication activities

Support the Project Manager, the PQM, and the Construction Manager in solving nonconformities identified during the construction phase proposing and carrying out suitable actions for their resolution

Encourage cooperation and teamwork within his organization and towards the other functions and Group Companies

The CONTRACTOR's Project Engineering Manager shall also manage changes and shall be involved timely in the decision-making process.

3.6 Project Procurement Manager

The CONTRACTOR's Project Procurement Manager and its Team will be responsible of the Procurement activities for the Project.

The CONTRACTOR's Project Procurement Manager and its Team are fully committed to:

Collaborate with the Project Manager based on contractual requirements of the Clients, in elaborating the project procedures and project documents (Purchase Order and other forms) that are needed to manage the procurement activities, in compliance with the project requirements;

Prepare the project's vendor list, interacting with the Suppliers Qualification & Evaluation Function, starting from the contractual vendor list. Submit it to the Project Manager and to the Procurement Manager for approval;

Ensure the execution of the criticality rating process for materials by collaborating with the Project Team Members according to their responsibilities;

Collaborate with the Project Team in defining the strategy and planning of the procurement activities taking part in the compiling of the relative works program (Project Procurement Plan and Contract Master Schedule). Prepare, with the collaboration of functional responsible, the estimation of necessary man-hours for procurement, subcontracting, expediting and logistic activities, submitting them to Procurement & Logistics Service Director;

Collaborate in the elaboration of the Subcontracting Plan supporting the Project Team (especially PEM and CM) in the definition of the main subcontracts and acting as an interface with the Subcontract Responsible with regard to PO issuing, criticalities and budgets.

Collaborate with the Project Manager and PCM in defining the Project Budget for material purchasing and Procurement, subcontracting, expediting and logistics activities (manhours).

Act as interface, within the Project Team, with the Procurement & Logistics Service and the relative Functions, for the coordination of all procurement activities (from the issue of Material Requisition up to the delivery at site) notifying the Project Manager about possible criticalities and proposing alternative solutions;

Monitor and approve the issuing of the project Request for Quotation on Athena and sign the final Economical Bid Evaluation, before submitting them to the PM for approval;

Support the Project Manager during Project Coordination Meetings with the Client acting as an interface for all the aspects related to Procurement;

Giving priority to the management activities, can cover also the role of buyer. In this case, the final EBE relevant to those bids that have been followed by him, shall be signed by the Procurement Manager.

Collaborate with the Project Manager in compiling claims and/or formulating proposals relevant to the variations to be submitted to the Client, for all the aspects that concern procurements, subcontracting, expediting and logistic, in collaboration with the Procurement & Logistics Service Functional Managers, if needed;

Collaborate with the Procurement Manager and Project Manager in defining strategies to manage the relationship with project suppliers in terms of changes to the order, penalties on deliveries, possible charges to supplies, resolution of controversies.

Ensure the updating of the Project Procurement Plan/Subcontracting Plan by collecting information about criticalities and delays from suppliers and other Team Members;

Monitor and solicit the progress of the bidding phase, ensuring the transmission of the information to the Project Team and helping in re-planning the activities when needed;

Monitor and solicit the expediting activities, ensuring the transmission of the information to the Project Team and helping in re-planning the activities when needed;

Revise the estimation for the Procurement & Logistic Service man-hours, submitting them to the Procurement & Logistic Director and to the PM and PCM, on monthly bases;

Support the Project Manager in the compilation of the Close Out Report.

3.7 Construction Manager

The CONTRACTOR's Construction Manager will direct, coordinate and control all construction activities related to the project, according to CLIENT rules, corporate standards and contractual conditions as far as Quality and HSE are concerned and to ensure that scheduled targets relevant to delivery terms and costs are met.

The mission and responsibilities of the Construction Manager are but not limited to:

Liaise with CLIENT's organization at yard as to aspects related to construction activities and to keep the PM informed

Supervise the construction activities, carried out both from internal staff and subcontractors, ensuring the coordination among prefabrication, erection, commissioning, yard logistic, guaranteeing an efficient and effective use of human resources and equipment given to him;

Verify that workers employed by both the Company and any Subcontractor are informed and trained in order to carry out the jobs in a safety way

Monitor the Construction progress, informing permanently the Project Manager upon it, upon the possible problems detected and to propose preventive, corrective and improvement actions

Support the Project Manager and the PQM in solving non-conformities identified during construction phase proposing and carrying out suitable actions for their resolution

Co-operate with Company HSE Function in the implementation of Company HSE-related rules

Implementation of an effective Quality Management System in accordance with the requirements of the Contract

Implementation of an effective Health, Safety & Environmental Management System in accordance with the requirements of the Contract

3.8 Project Commissioning Manager

The CONTRACTOR's Project Commissioning Manager and its Team, are fully committed to:

Take part, during the Project Execution Plan drafting phase, in the definition of the Project strategy, by becoming the reference as to all the aspects related to Mechanical Completion, Precommissioning and Commissioning activities;

Arrange, together with the Project Team, the Project overall planning as to every aspect dealing with Mechanical Completion, Precommissioning and Commissioning activities;

Prepare, together with Project Specialist Leaders, subcontract specifications by defining the scope of work of the different companies as to Mechanical Completion, Precommissioning and Commissioning activities;

Prepare, together with the Project Engineering Manager, the Design Documents List of documents related to Mechanical Completion and Commissioning activities, including the definition of the relevant milestones;

Define the plan and sequences of commissioning activities, by identifying internal and/or external resources (contracting companies and Vendors' personnel) and/or assets necessary for the execution of activities in compliance with contractual requirements and with the project plan;

Define, together with the Project Engineering Manager, the list of critical supplies for which the Commissioning Manager is required to witness the Factory Acceptance Test;

Take part in engineering, either developed internally or supplied by Client, from the very first steps, by liaising with the Project Engineering Manager and the Engineering Service as to explanations, changes and/or optimizations aimed at the definition of increasingly correct commissioning sequences;

Take part in Constructability Meetings so as to highlight, since the very first stages of the Project up to the construction phase, the obligations to be fulfilled as to commissioning activities, in order to optimize activities themselves, prevent any operational problems and foster a safe execution; said obligations shall be acknowledged starting from the engineering phases;

Define, together with Project Specialist Leaders, the list of materials needed for the execution of commissioning activities, and to prepare the relevant purchase request in accordance with the commissioning activities schedule;

Support, from a technical/operational and HSE point of view, the Construction Manager during Mechanical Completion, Pre-commissioning and Commissioning activities, by previously notifying any possible criticalities;

Keep informed, with the support of the Construction Manager, the Project Engineering Manager and/or the Project Specialist Leader of the Engineering Service as to any technical issues possibly arising;

Co-operate with the Project Quality Manager in liaising with the Client, by becoming the main technical reference as to all Commissioning-related and product performance problems;

Prepare the Close Out Report, with reference to the Mechanical Completion,

Pre-commissioning and Commissioning sections, by cooperating with the Project Quality Manager and the Construction Manager.

3.9 Project Interface Manager

The CONTRACTOR will appoint a Project Interface Manager to facilitate and improve the communication with Client and all other Contractors selected by Client as well as third parties involved into the Project.

The mission and responsibilities of the Project Interface Manager are but not limited to:

Develop the Project Interface Management Plan

Play an active role in managing and keeping updated the interface management tools

Support the Project Manager to identify the map of the stakeholders and the associated communication workflow

Define, communicate and monitor the communication work process and tools to the CONTRACTOR's Project Team and the Project's stakeholders to ensure a fair, active and effective communication

Avoid potential disputes between various project stakeholders.

Provide an escalation route for issues that cannot be closed between the direct parties involved.

Highlight any potential implications of interface issues such as schedule delays etc. to the Project Management team.

Reduce risk by minimizing the possibility of miscommunication along with use of incorrect data and assumptions.

Provide a tracking and recording mechanism for Issues occurs and help ensure a robust audit trail for the Project.

3.10 Onboarding new project team members

The integration process of new project team members is considered of primary importance to the CONTRACTOR. CONTRACTOR shall implement a new team member induction program for each execution site and phase. The induction program is an important process for bringing staff into an organization. Personnel introduction includes information on the working environment and the set-up of the employee within the organization and will include the following:

A safety briefing, including: office layout and facilities local to place of work, Medical emergency, evacuation, environmental and Hazard and near miss reporting;

introduction to project team members – CONTRACTOR's, Principle Subcontractor's and Company personnel as necessary;

Project briefing: Scope of Work, project status, IT systems, etc.

4 HEALTH, SAFETY, AND ENVIRONMENTAL (HSE) MANAGEMENT SUMMARY

CONTRACTOR's HSE Policy, Objectives and Strategy for the Project execution will ensure the commitment, organization, systems, and resources necessary to meet the COMPANY's HSE Expectations, to comply with the CONTRACTOR HSE system and to ensure full compliance with current HSE legislation.

The project HSE system will also support project critical activities during construction, commissioning load out and T&I in which most of the risks and hazards are concentrated.

CONTACTOR, together with the support of COMPANY, will develop a SAFE LIFE program aimed to consolidate a shared safety culture through all project team member and reinforce the commitment to the elimination of all incidents, injuries. This commitment is not a merely commitment to a reduction of accidents but is a commitment about dignity and respect for people and for the environment.

4.1 CONSTRUCTION HSSE PLAN

To endorse contractual HSE requirements stated in SECTION VIII - HSSE REQUIREMENTS, CONTACTOR will issue the Contract HSSE Plan.

This Plan defines the health, safety, and environmental protection program to be implemented by CONTACTOR and Subcontractors during the Project, in order to ensure full integration with CONTRACTOR's HSE Policy and SAFE LIFE program.

The rules and programs outlined in the Contract HSSE Plan also aim to ensure both compliance with International Standard IOGP report n.577 and the contractual and legislative HSSE standards during the various phases of the project.

When contractual requirements differ from CONTRACTOR standards, the more stringent HSE requirements (if reasonable and applicable) shall be applied.

The Contract HSSE Plan defines:

- Principal roles involved in the management of health, safety, and environmental aspects during project activities.
- The CONTACTOR's policy on health, safety, and environmental protection.
- Project Goals;
- The infrastructures and equipment for the project;
- The regulation of contracting and subcontracting activitie;
- Coordination of activities and SIMOPS risks management;
- Education, Information and Training Program;
- HSSE Key Performance Indicator;

- Audit and inspections program;
- Safe System of Work;
- Welfare;
- Emergency and management of unplanned events.

CONTACTOR will ensure through periodic verification that the Contract HSSE Plan is being implemented as planned, is effective and continually improving.

Wherever feasible, the benefits of HSE auditing are taken to combine and rationalize the arrangements required.

4.2 Facilities & Work Locations

The scope of work includes Detail Engineering, Construction Engineering, Procurement and Construction activities to be performed in the following main sites:

- Detail Engineering activities: RM's Engineering Offices & Tecon Engineering Offices, located in Milan (Italy);
- Construction Engineering activities: RM's Offices at Piomboni Yard, located in Marina Ravenna (Italy). The specific activitiy of construction shop drawings will be subcontracted
- Procurement: RM's Offices, located in Ravenna (Italy) and Milan (Italy);
- Fabrication activities: RM's Workshop, located in Ravenna (Italy) and external subcontractors' workshop.
- Construction site: RM's Piomboni Yard, located in Marina di Ravenna (Italy).

RM Fabrication Worksite

RM's Workshop is located in the headquarter. The workshop is equipped with specific machines for fabrication (described more in details in the following paragraphs) and external storage area with overhead crane.



Figure 4 - Rosetti Marino Headquarter- Ravenna

Piomboni Yard (located around 12km from Headquarter) is approx. 110.000 sqm and includes, besides external assembly area, 3 covered workshops, covered warehouse, and 3 painting workshops.



Figure 5- Rosetti Marino Yard – Marina di Ravenna

Below YPB yard layout showing Crosswind locations:

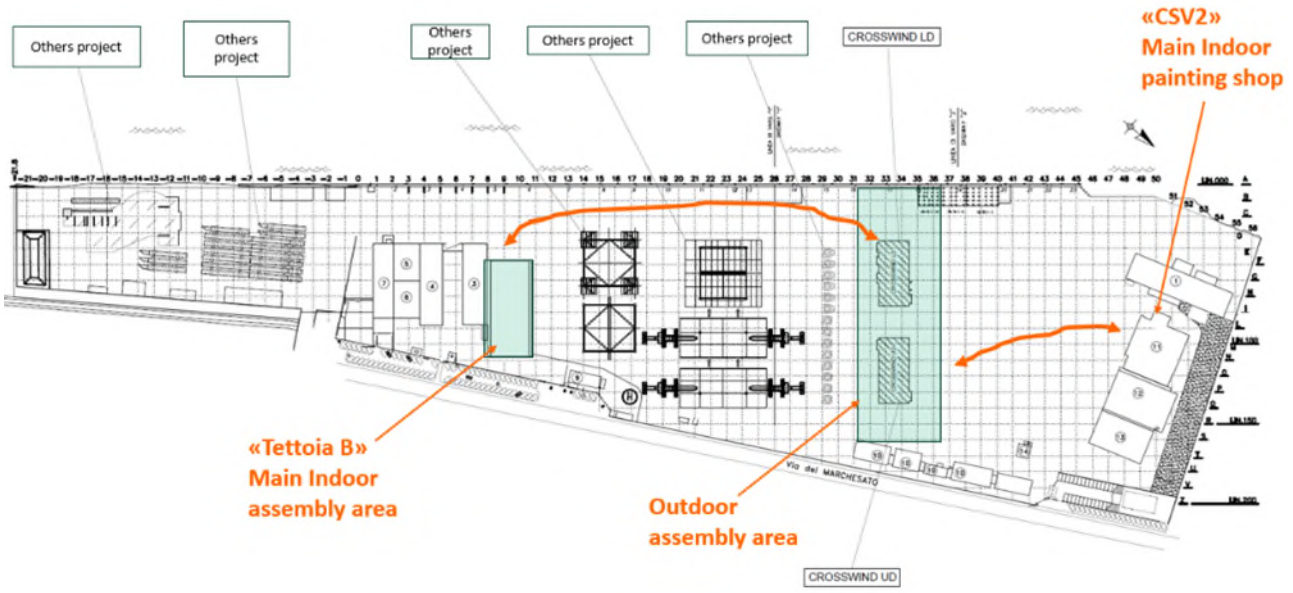


Figure 6 - Yard Layout (Updated August 2023)

4.3 Rosetti VTS Workshop facilities

Fabrication activities are performed both in Rosetti VTS and external subcontractors' workshop. During the fabrication activities, Rosetti Marino production dept. is responsible for the control and supervision. A dedicated production superintendent, together with a QC inspector, will supervise the activities carried out to ensure project specifications and HSE requisites are complied. The QC inspector is also in charge of the release of the items before they are delivered to the yard. Rosetti VTS workshop will be utilized to carry on mainly the following activities:

- Plate cutting

Cutting activities on plates are performed by a "standard" plate-cutting pantograph, for big plates to be rolled, and by a Numeric Controlled pantograph, when specific shapes of plate are required (for stiffeners and gussets for example).

The cutting technique is oxygen/propane (oxy-cutting) for both the machines, but the NC pantograph have also a plasma cutting tool that can be used. The choice between the two cutting systems is done on the basis of the type and thickness of the plates. Plasma is used normally for thicknesses not exceeding 40 mm or details requiring particular accuracy (small stiffeners, gussets, etc.). Oxycutting is used for cutting plates of thickness up to 150 mm. The choice between the two systems may be also driven by the work-load.

The piece obtained is checked by the cutting operator to ensure that it complies project dimensional tolerances and presents no relevant defects. Then the weld edge will be prepared by grinding, in order to remove carburized metal and all possible imperfections. The final preparation of the weld edge is usually done before welding, to remove possible rust formed.

The mentioned activities are regulated and described in a dedicated corporate working instruction.

Below some pictures of the cutting machines:



Figure 7- NC Machine Plate Cutting

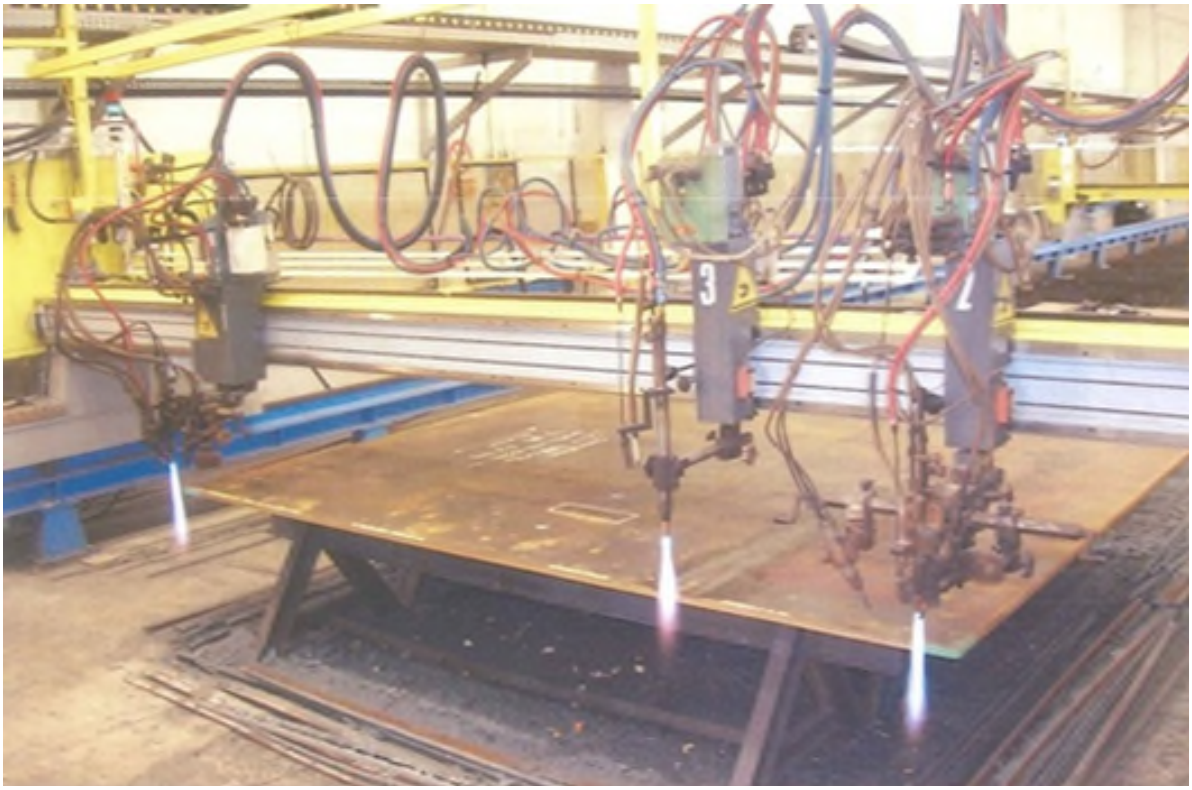


Figure 8 - Plate Oxy-Cutting Pantograph

- Plate rolling

Rolling activities are performed by means of Rolling Machines:

4 cylinders SERTOM Rolling Machine is used to roll plates of thickness up to 110mm and for cans of diameter range between 1100 and 4500 mm. Maximum plate width allowed is 3500mm.

3 cylinders SERTOM Rolling Machine is used to roll plates of thickness up to 60mm and for cans of diameter range between 800 and 4500 mm. Maximum plate width allowed is 3000.

One smaller rolling machine is used to roll plates of thickness up to 20mm and for cans of diameter range between 500 and 800 mm.

In some cases (depending on tubular thickness and diameter to be obtained) before final forming is developed, a preliminary rolling is performed on the first part of the plate to 'start' the activity and allow to the can to assume the proper shape; this operation will be carried out by the same rolling machine.

Below picture of the rolling machine:



Figure 9 - Plate Rolling

- Tubular Preparation

Cut and prep of tubulars are performed with NC machines (SPC 1200, SPC 2000) supplied with oxy-cutting tools (oxygen-propane):

- SPC 1200 performs all type of pipes cutting (pipe on pipe, pipe on plate) including double bevel cut (AWS) with diameters from 88,9 mm up to 1200 mm.

- SPC 2000 performs all type of pipes cutting (pipe on pipe, pipe on plate) including double bevel cut (AWS) with diameters from 114,3 mm up to 2000 mm.

The mentioned activities are regulated and fully described in a dedicated corporate working instruction.

Below pictures of cutting machine:



Figure 10 - SPC 2000

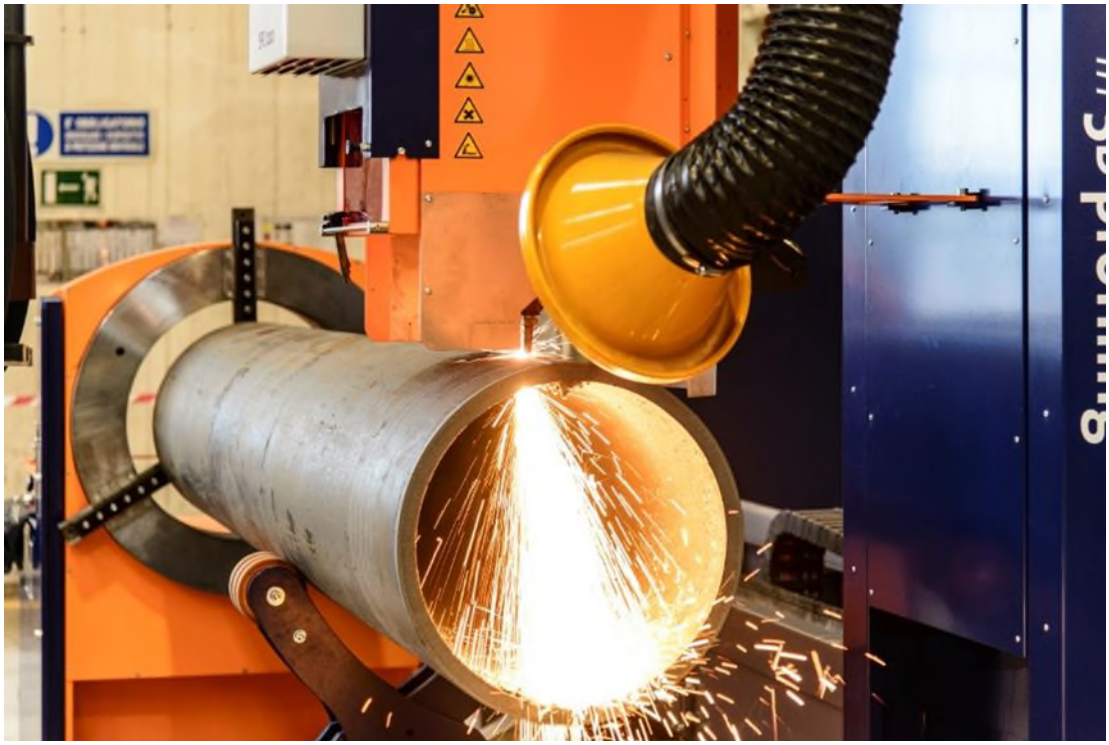


Figure 11 - Cutting with SPC

5 SUBCONTRACTING STRATEGY

All CONTRACTOR' subcontractors are qualified according to the internal corporate system procedure for suppliers/subcontractors: qualification procedure evaluates suppliers/subcontractors both on the quality and the HSE aspects.

Table below provides the work execution overview; in particular, it defines the Subcontractor strategy for the development of the Project specifying which activities are performed directly by CONTRACTOR and which activities are performed by its Subcontractors.

Discipline/Activities	CONTRACTOR	Subcontractor	Note
Detail Engineering	X	Specialized consultant (ABB)	
Construction Engineering	X		
Procurement	X		
Expediting	X		
Fabrication	X	X	Fabrication activities can be partially subcontracted
Erection			
Structures	Lead and Supervision	X	Erection in RM's Yard
Piping	Lead and Supervision	X	Erection in RM's Yard
Mechanical	Lead and Supervision	X	Erection in RM's Yard
Architectural	Lead and Supervision	X	Erection in RM's Yard
HVAC	Lead and Supervision	X	Erection in RM's Yard
E&I System	Lead and Supervision	X	Erection in RM's Yard
NDT	Lead and Supervision	X	Erection in RM's Yard
Painting/Insulation/PFP	Lead and Supervision	X	Erection in RM's Yard
Load Out	Lead and Supervision	X	Erection in RM's Yard
Onshore Mechanical Completion	Lead and Supervision	X	Erection in RM's Yard
Onshore Precommissioning	X		
Onshore Commissioning	X		
Mechanical Hook-Up	Lead and Supervision	X	C-Ventus
Offshore Completion	Lead and Supervision	X	C-Ventus
Offshore Commissioning	X		

Discipline/Activities	CONTRACTOR	Subcontractor	Note
Transportation	Lead and Supervision	X	Hebo Maritime Service
Installation	Lead and Supervision	X	Deme Offshore NL B.V.

Table 3 - TOPSIDES SUBCONTRACTING STRATEGY

For the erection activities, the subcontracting strategy relies upon the involvement of specialized Subcontractors, qualified according to CONTRACTOR's internal procedure, who are familiar with CONTRACTOR's approach and standards thanks to a long-term relationship. Thanks to these approaches, CONTRACTOR has a prompt, efficient and reliable availability of qualified Subcontractors covering all the construction phases of CONTRACTOR's tasks.

This assures the following benefits:

prompt mobilization;

in-depth knowledge of Energy and CONTRACTOR's standards in terms of HSE, Quality, management of the activities (e.g. planning, controlling, reporting);

a proactive approach especially in the case of any critical conditions (e.g. manpower peaks, SIMOPS).

During Project execution, Subcontractors will comply with CONTRACTOR's QHSE procedures and work instructions. To ensure compliance with CONTRACTOR QHSE management system, periodical inspections and audits will be carried out. Moreover, a Quality and HSE coordination meeting will be held once a week involving the supervisors of each Subcontractor.

CONTRACTOR will complete Subcontractors' Audits on defined basis and will follow up on audits to confirm the closing of Audit observations. COMPANY can attend these Audit.

CONTRACTOR retains the responsibility of clearly defining and monitoring the various Subcontractors' Scopes of Work, including but not limited to:

battery limits & interfaces;

Quality and HSE requirements;

project and/or yard operating procedures;

overall planning and control.

CONTRACTOR remains the only party responsible for undertaking these relevant items of the SoW, in order to assure Subcontractors or Suppliers will conduct their activities properly, in their own area of expertise and always under CONTRACTOR's supervision and responsibility.

6 FABRICATION AND ERECTION MANAGEMENT

6.1 SCOPE OF THE SECTION

CONTRACTOR'S approach to construction is specifically aimed at maximizing productivity; the main phases of construction are defined as follows:

- Fabrication/Prefabrication refers to manufacturing of single items such as beams, plates, nodes, pipes, fittings, special items, minor/tertiary items, appurtenances and minor subassemblies which are normally indicated and detailed individually on drawings.
- Erection consists of assembling prefabricated items, coming from CONTRACTOR or SUBCONTRACTORS workshops and transferred to the construction yard. Items of the same Sub-assembly are assembled in the erection area, according to the erection sequence. This phase includes all relevant welding work and its controls.

The construction method, the erection sequence and the yard layouts are studied and defined in order to minimize the assembly, erection, handling activities and to optimize quality and HSE performance.

The assembly of prefabricated items are done either indoor or inside temporary facilities according to CONTRACTOR's workload.

A weekly construction meeting with COMPANY and CONTRACTOR representatives, construction manager and other relevant persons is organized on construction yard. Relevant minute of meeting (MOM) is prepared and signed runtime. The ongoing weekly activities, progress and the 2 weeks look-ahead are the main subjects of this meeting.

The construction activities are performed according to the Project schedule, on single shift or double shifts. Overnight and over weekends shifts are organized when needed and only for special activities (NDE on welds, fireproofing, hydrotests, leak tests) or in case of recovery plan.

6.2 PREFABRICATION

CONTRACTOR generally prefabricates structural and piping items in CONTRACTOR or SUBCONTRACTORS' workshops and Yard.

All items prefabricated in-house (e.g., structural items or piping spools) will be NDE examined and tested in-house with dedicated SUBCONTRACTOR and either stored in segregated areas or transported to the assembly areas ready to be erected, according to the Project schedule and the erection sequence.

Most of the fabricated items will be made in transportable sizes (no outsize loads will be expected) and marked with markers, punching, stickers or tag plates before transport to the construction yard, with information of drawings, marks and position.

The level of prefabrication that it is possible to perform in workshops is as follow:

- Cones by plates;
- Legs: made from plates, cut, rolled, welded and bevelled in order to fabricate tubular elements of 3 meters length up to realize complete elements of length maximum of 12 meter;

- Preassembly of legs in sections up to 12/15 m long;
- Horizontal bracings cut to length and beveled;
- Beams cutting and prefabrication (including stiffeners, etc);
- Plate cutting;
- Structural nodes including stiffeners;
- Columns and diagonal bracings cut to size and beveled;
- Minor Sub-assemblies prefabrication;
- Ancillary structures prefabrication (stairs, walkways, ladders, equipment supports, tertiary structures);
- Piping Spools.

Shelters (Instrument Room, LV and HV Switchgear rooms) will be fabricated to the SUBCONTRACTORS workshops or in yard in transportable sizes (outsize loads will be expected), ready to be erected and filled with necessary equipment. Due to long time delivery of shelters equipment, the installation on the Topside will proceed even if equipment will not be available on time.



Figure 12 - Yard Prefabrication 1



Figure 13 - Yard Prefabrication 2

6.2.1 TOPSIDE AND TRANSITION PIECE

The prefabricated and loose items will be transported to yard (Piomboni Yard - YPB) where the deck levels (including elevation columns, bracings and walls, if any) will be assembled at ground level or on temporary supports (e.g., totem, concrete's blocks, etc.), possibly inside the "block fabrication workshop" or external area, in order to build "erection sub-assemblies" whose dimensions and weight are mainly driven by the painting shop dimensions and the yard cranes capacity.

More in details, the following activities will be performed in order of execution:

- preparation of temporary supports and staging on yard;
- preliminary setup of primary structures sub-assembly;
- adjustment and positioning of primary structures;
- dimensional control of primary structures sub-assembly;
- assembly of secondary structures;
- assembly of additional steelwork (e.g., tertiary, ancillary, equipment supports, etc.);
- pre-welding inspection;
- welding of structures;
- deck plating (if any) installation and welding;

- installation of appurtenances. These normally include the maximum amount of drain boxes available from Engineering Department, supports for walkways, piping supports, instrument supports, supports for cable trays, sockets and kick-plate for handrails, pins, blast wall attachments etc.;
- overall NDE and dimensional control.

6.2.2 PIPING

The Material Management, spools feasibility, welding procedures, traceability, dimensional controls and NDEs, Quality Controls will be managed and executed by CONTRACTOR.

Piping will be able to be cut and beveled in headquarter workshop (Ref. Figure 4Figure 3) or SUBCONTRACTOR premises, depending on CONTRACTOR workload.

Piping spools will be fitted-up and welded in YPB workshop or SUBCONTRACTOR premises, depending on CONTRACTOR workload.

Workshops potentially dedicated to piping fabrication activities are:

- Carbon Steel workshop
- Exotic material workshop
- Cutting and beveling of pipes will be performed by cutting and beveling machine or by manual grinding machines.



Figure 14 - YPB White Area

Pre-heating, fit-ups, welding activities and NDEs will be carried out according to the Project Welding Book and Execution Test Plan. Figure 8 shows NDEs PAUT (Phased Array Ultrasonic Testing) on piping spools.



Figure 15 - PAUT on CRA piping spool

A Piping Spool will be fabricated by CONTRACTOR considering:

- fabrication spool's shop drawings including piping support welded to piping: pads or trunnions;
- fabrication piping support's shop drawings;
- pipes will be marked before cutting, each fit up, weld, welder's identification number will be identified and readable to keep its traceability;
- erection welds allocation; dimensional control will be carried out for each single spool;
- each spool after completion and before the transportation, will be plugged and blinded off for preservation purposes;
- all NDE examinations will be performed and registered before transportation;
- pickling and passivation (if required) will be executed in specialized SUBCONTRACTOR's facilities in different tanks, considering: austenitic stainless steel, ferritic stainless steel, duplex or super duplex as per Figure 9, which shows a typical super duplex pickled and passivated piping spool treated in accordance to ASTM A380 and ASTM A967 where the heat tints are absent, having been completely removed.



Figure 16 - Pickling and passivation

Piping support fabrication is typically divided into two types:

- supports that are welded to the piping spools, these supports are fabricated and welded in the piping or structural workshops;
- supports that are not welded to the piping spools, these supports are supplied fully fabricated within subcontractor's workshop.

Hereinafter other specific objects relevant to piping discipline are addressed:

- CONTRACTOR is familiar with Project Material and welding techniques which have been developed and used for years. Copies of these welding procedures are available in the welding department;
- CONTRACTOR is familiar with flange management: torque wrench, both pneumatic and hydraulic torque wrenches are commonly used and skilled technicians are available; when bolt tensioners are required, a specialized subcontractor is involved in the Project;
- CONTRACTOR performs pressure test as part of the Piping Mechanical Completion/Precommissioning. Examples of documentation relating to punch listing, flushing, hydro testing, leak testing and drying of a single line of a system on a previous project are available upon request;
- The management of welding consumables (e.g., distribution, handling and storage) is regulated by the Quality Manual. These rules are implemented in relevant procedures issued both for the handling of welding materials and daily monitoring of welding processes. Examples of these procedures are available upon request.
- Material Traceability and Control are regulated by procedures, which assure the traceability of materials during receipt, storage and fabrication phases.

6.3 MOVEMENT TO PAINTING APPLICATION AREA (TOPSIDE AND TRANSITION PIECE)

After prefabrication is complete, fabricated items, piping spools, sub-assemblies will be moved to the paint shop by means of trolleys of adequate capacity.

Painting/Coating will be performed according to COMPANY's procedure.

Areas available for coating activities located at Piomboni Yard are:

- Cabin 1 (Dimensions: w=14,500mm, h=6,000mm (4,500 NET), l=65,000mm)
- Cabin 2 (Dimensions w=25,000mm, h=14,000mm (13,500 NET), l=30,000mm)
- Cabin 3 New (Dimensions w=24,300mm, h=13,500mm, l=30,000mm)

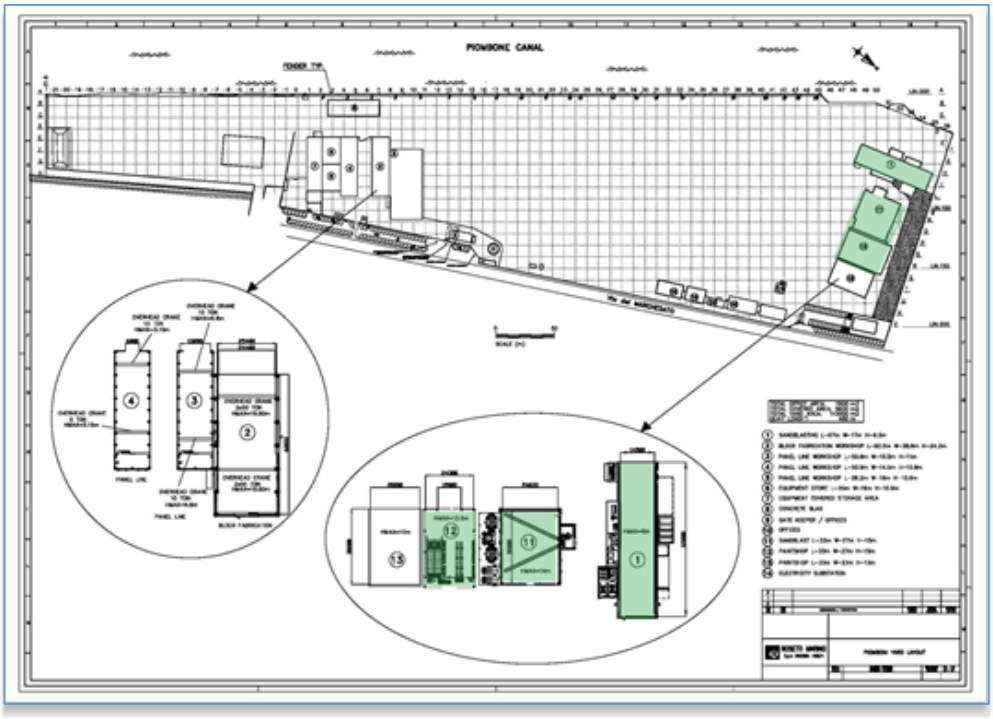


Figure 17 - Rosetti Yard Painting Area

Upon completion, the painted block will be moved to the yard erection area where the overall Topside steel structures will be built by progressively positioning and joining the sub-assemblies according to the selected erection sequence.

6.4 ERECTION

6.4.1 TOPSIDE – STRUCTURE

Once the painting cycle is complete, each Sub Assembly will be moved from the paint shop to the erection area, with self-propelled multi-wheeled trolleys, uplifted and placed on temporary handling supports.

As soon as they reach the erection area, the lift with 1 or 2 crawler cranes (500 tons capacity) will be arranged and the assembly will be lifted into its final configuration on the upper grillage (final supports ready for loadout.

As soon as the dimensional controls and the relative welding which grant the load release are completed, the load from the cranes will be released.

Lift after lift, the Topside structure will be erected joining together the main assemblies independently fabricated, blasted and painted. The preparation of structural items and deck parts will be carried out following a specific sequence, in order to optimize the project schedule.

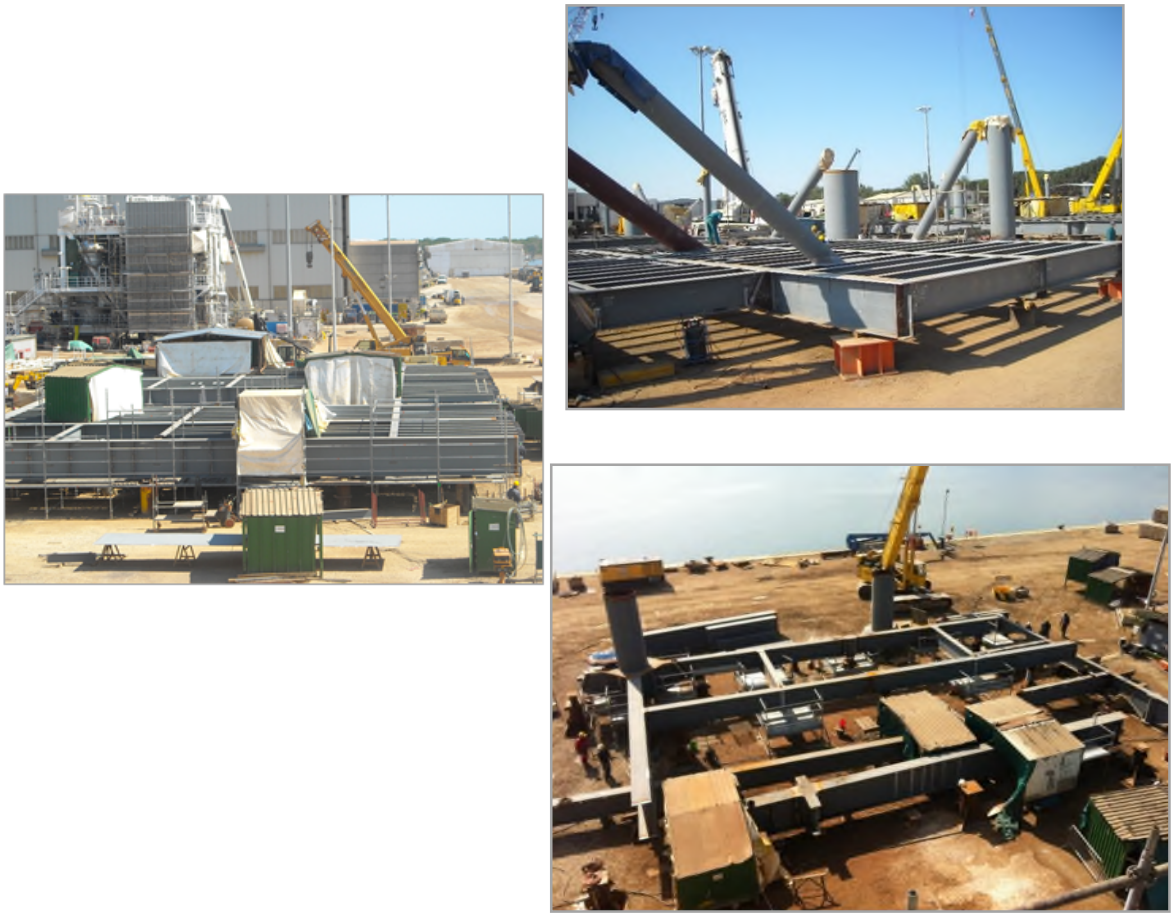


Figure 18 - Typical Sub-Assembly Fabrication



Figure 19 - Lifting of Topside subassemblies 1



Figure 20 - Lifting of Topside subassemblies 2

Erection Sequence

As a preliminary and general erection sequence, COMPANY to refer to the Construction Review Meeting planned at least 2 weeks prior to the model review meeting.

6.4.2 MULTIDISCIPLINARY ACTIVITIES

Once the Topside structure is complete, the multidisciplinary installation activities will be able to start.

Process and utility equipment (e.g., vessels, pumps, compressors, filters, skids, manifolds) will be installed to allow a smooth piping installation.

The piping erection sequence will start from large diameters and long spools of pipe in the most congested area. Some flanged piping spools could be flushed and hydro tested during the fabrication phase.

Electrical and instrumentation installation will proceed with piping erection.

The electrical & instrument cable trays will be erected following the criteria of minimizing the interfaces with piping works (erection by areas).

The instruments and tubing will be installed as late as possible to avoid any possible damage during the erection works.

Documents describing the main complex lifting, as per internal procedure, will be prepared before performing each significant operation, including calculations and details of any temporary attachment (lifting lug, temporary reinforcements) that may be needed to perform the operation; these documents will be submitted to Company for approval/review.

6.4.3 SHELTERS FABRICATION

Platform Facilities will include different Shelters to be installed in the Lower deck of the Platform.

The Shelters could house the following items (according with drawings):

- Air Lock;
- Fire and Gas system;
- HVAC system;
- Electrical and mechanical equipment;
- Technical Room.

Shelters will be fabricated at SUBCONTRACTOR or CONTRACTOR's workshops, including all the appurtenances and will be delivered at CONTRACTOR's Yard. Shelters will be installed during the onshore construction before the lifting of the upper level or in later stage.

SUBCONTRACTOR's scope includes but not limited to the following supply, detail design, fabrication, assembly and testing of:

- Shelter structure;
- Steel painting;
- Architectural construction, insulation, finishing and furniture described on drawings or throughout this document;
- Lifting aids;
- Lighting and power sockets;
- Fire and gas detectors;
- Life-saving equipment;
- All necessary cabling and fittings;
- MCT;
- Installation, assembly, connection of HVAC System.

6.4.4 PIPING

The installation of pipe spools will start as soon as possible after the erection of supporting structure and after the placing of the equipment to be connected by the piping line.

If and where valves will not be available when piping lines will be erected, CONTRACTOR may be able to put in place "dummy spools", in order to proceed with piping erection.

CONTRACTOR will perform piping hydro-tests as part of the pre-commissioning and leak test as part of the commissioning, short after the piping mechanical completion, including most of the lines having the same testing pressure.

6.4.5 EQUIPMENT

CONTRACTOR will incorporate the equipment in the plant by installing, aligning and fixing all relevant items in accordance with detail engineering and VENDORS instructions. Whenever possible all equipment on each level will be installed prior to piping erection.

The equipment erection will be performed on each level before the lifting of the upper level.

6.4.6 E&I INSTALLATION

Electrical, Instrumentation & Telecom (E&I) activities follow a proper sequence to fulfil the objectives of mechanical system completion and onshore commissioning, thus achieving the critical success factors of the Project.

During the execution of the project, CONTRACTOR will develop a work program which contains a sufficient level of detail to enable the completion of mechanical works in each area (i.e., Structural, Mechanical & Equipment, Piping). The schedule will show all major activities in each area (i.e., outstanding mechanical work for electrical, cable ladder installation, cable rack installation, glanding & terminating, testing) and then relates the completion of these activities to the mechanical completion of each system.

In order to have an effective look-ahead, dedicated KPI will be used to monitor the progress and to estimate the remaining activities, as an example:

- cables to be pulled by week;
- cables to be terminated by week.

During installation, all the Equipment will be adequately protected and covered with non-flammable tarpaulins.

6.4.7 PAINTING TOUCH-UP & INSULATION

Touch up of field weld will be performed according to relevant contractual requirements and dedicated procedures, during the erection activities.

Installation of:

- Insulation (if requested and only where necessary) of all piping, valves, in-line instruments and special piping items as defined in the line list and P&ID;

- Insulation of pipe supports as indicated on the design drawings (if requested);
- Insulation of mechanical packages (If required).
- For piping installation, painting and insulation (If required) will be finalized after mechanical Completion.

6.4.8 BRINE AND SEAWATER CAISSONS

CONTRACTOR strategy is to carry out the supply and complete fabrication of Brine and Seawater Caissons at the SUBCONTRACTORS and/or CONTRACTORS' workshops and/or yard.

The welding procedures and traceability, dimensional control and NDE, Quality Control will be performed directly by the SUBCONTRACTOR, supervised and managed directly by CONTRACTOR personnel dedicated to the Project, or by the CONTRACTOR.

The transportation up to offshore site will be performed along with Topside and Transition Piece.

6.5 SUPPORTING ARRANGEMENTS

The structures inside the workshop will be supported by means of steel supports in order to allow the positioning of trailers for movement to the paint shop.

Scaffolding will be tailored based on material availability during the erection stage. The scaffolding erection sequence of the sub-assemblies will be defined based on the level of completion when leaving the coating area.

Final position in yard erection area will be arranged with the employment of both concrete blocks and steel supports placed to ensure structural integrity. This supporting arrangement will be designed in order to perform both weighing and load-out operations.

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7 MECHANICAL COMPLETION, PRE-COMMISSIONING, COMMISSIONING

This section defines the strategy to plan and execute successful the Mechanical Completion and Pre-Commissioning activities.

A key objective is the safe and efficient planning and execution of the activities, including the process of handing over the completed assets to the operator with the assurance of technical integrity and full operation ability after Commissioning.

The main objective is to maximize onshore Mechanical Completion, Pre-Commissioning and punch list closure and leaving only minimal necessary for hook up phase. To achieve that, it is mandatory to establish an interface and excellent interaction between Engineering, Construction, Commissioning and Operations.

Meeting schedule will be defined with occurrences relative to project phase and criticality. The Pre-Commissioning Team will prepare and issue the minutes of interface meetings for all the interfaces that will be held on the Project (Conference calls and face to face meetings).

7.1 BOUNDARIES

7.1.1 MECHANICAL COMPLETION

This is the verification of the construction phase. Completion is the process used to log and record the technical data and verification information for equipment and plant that will be pre-commissioned and commissioned.

It is the inspection and testing of the workmanship to prove and validate the complete and correct execution of the construction in accordance with the scope and specification for the work. It is documented by the completion of the check sheets. These work instructions define the mechanical completion testing and inspections to be undertaken, depending upon the equipment items contained within a system/sub-system.

The Discipline Acceptance Certificates (DAC) and the System/Sub-system Completion Certificate, with associated punch list and outstanding work list, will be raised by the Construction Manager with verification of QC inspector.

It is commissioning representative responsibility to accept the subsystem and transfer if from construction into commissioning.

7.1.2 PRE-COMMISSIONING

This is the activity to prove and validate the correct functionality of equipment. The nature of the testing to be undertaken is defined on a series of check sheets, with each item of equipment having a number of tests identified against it.

The Pre-Commissioning Certificate, and associated punch list, will be raised by the commissioning representative with verification by the QC inspector.

It will be responsibility of the CONTRACTOR Commissioning Manager issues for each system or subsystem the RFCC.

7.1.3 COMMISSIONING

Commissioning covers the testing and verification activities carried out to ensure that equipment and systems perform in accordance with specified requirements, bringing them safely into operation. Aim of Commissioning is to verify dynamically the functionality of the equipment and facilities by bringing grouped systems/sub-systems into operation in readiness for handover to the operations group.

Furthermore, the commissioning team is responsible for undertaking all preparation and execution of Commissioning scope of work. Commissioning team will be responsible for the successful Handover of all systems and sub-systems to the COMPANY. It will be responsibility of the CONTRACTOR Commissioning Manager asking for Company signature of the relevant RFSUC.

Scope of commissioning is constantly reviewed and challenged where necessary, in order to keep a clear focus on the overall project in accordance with the project schedule.

8 PRELIMINARY ERECTION SEQUENCE

8.1 INTRODUCTION

All structures will be erected at Rosetti Marino Yard Piomboni (YPB) using indoor or outdoor areas.

Principles of Constructability review process will be followed during all phases of the project, with a continuous and mutual exchange of information between the members of the project team, including but not limited to the early stage of the project.

Project Constructability meetings periodically scheduled are a consolidated practice for Rosetti and their outcomes are typically reported and shared throughout the Company, in order to integrate construction knowledge, design, planning for a continuous improvement in terms of safety, quality, accuracy and cost-effective skills.

Hereunder is described CONTRACTOR's preliminary approach to erection activities, dividing main structures into Sub-assemblies as follows:

1. Lower Deck A
2. Lower Deck B
3. Upper Deck A
4. Upper Deck B
5. H2 Vessel (PAU) (to be defined in later stage)
6. Transition Piece (TP)

The assembly of the above will be done either indoor or inside temporary facilities according to CONTRACTOR workload.

Documents describing the main complex lifting, as per internal procedure, will be prepared before performing each significant operation, including calculations and details of any temporary attachment (lifting lug, temporary reinforcements) that may be needed to perform the operation; these documents will be submitted to Company for approval/review.

The erection sequences will be executed according to the above description and following a schedule which ensures completion of each item prior to its erection.

Structural erection of Topside will be done in two stages:

1. Fabrication and painting of sub-assemblies, starting from prefabricated items (i.e. nodes, beams, columns, bracings, PG and deck plates...) cut to measures;
2. Final erection of Sub-Assemblies to complete Topside structure in upright position.

Once completed, the Sub-assemblies will be transferred, typically by trailers, to the yard painting workshop or in a temporary encapsulated area where sandblasting and painting activities will be performed.

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8.2 FABRICATION OF SUB-ASSEMBLIES

Primary beams/PG of each Sub-Assembly will be placed on temporary yard supports in horizontal position and fitted-up, secondary beams will follow. NDE will be performed subsequently (x-rays and/or gamma-rays overnight). Stiffeners and supports will be welded to reduce the workload after the lifting of the Sub-Assemblies.

Purpose is to complete a sub-assembly including all the appurtenances in order to avoid future abortive works (e.g., lifting trunnions, pad-eyes, walkways) and all the temporary supports, if necessary, for the successive installation of the scaffolding

At this stage the sub-assemblies will be moved to the paint shop on trailers of adequate capacity.

In case of contemporary activities due to CONTRACTOR's workload, as a common practice temporary shops with all facilities will be arranged at Construction Yard.

Installation aids if any and upon availability, will be installed on Sub-Assemblies prior to painting.

Deck plates and penetrations are planned to be installed before coating, if available on time.

8.3 PRELIMANRY ERECTION SEQUENCE

After the completion of painting activities, Sub-Assemblies will be moved from the paint shop to a dedicated area for the final assembly.

Dedicated area will be arranged with temporary supports, upper grillage and other items suitable for installation completion, weighing and Loadout activities.

Sub-Assemblies will be moved from trailers on the upper grillage or temporary supports by lifting.

Connection joints between Sub-assemblies will be designed in order to minimize welding activities during the erection phase.

The preliminary study for erection sequence of Topside could foresees two different ways of installation.

A combination of both solutions may be applied.

8.4 INSTALLATION: FIRST OPTION

Lower Deck A with legs and columns will be lifted in his final position on the upper grillage. Subsequently Lower Deck B will be lifted, fitted-up and welded with Lower Deck A.

After the assembly of the first level, CONTRACTOR will lift and place all the equipment available on it. Shelters will be fabricated maximizing their level of completion before lifting activities and placed as well, even if the internal equipment will not be received. The equipment installation inside the Shelters will be done in later stage.

Due to long delivery times of few equipment, CONTRACTOR should install in later stages some items (i.e., bracings, portion of Stair Towers, etc.)

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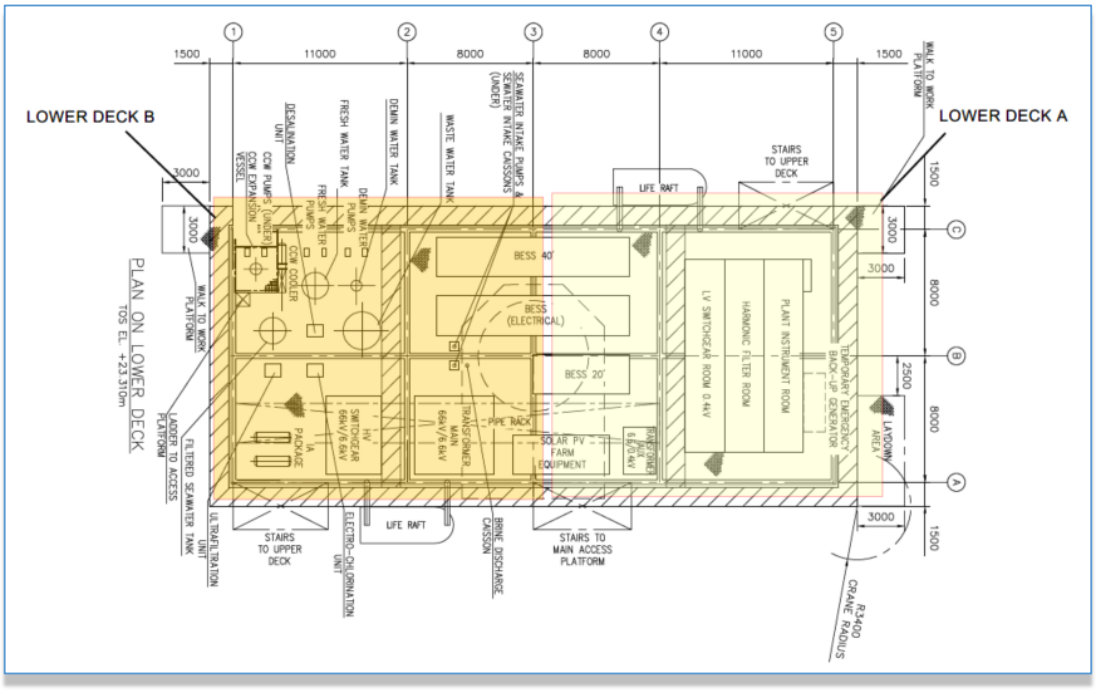


Figure 21 - BLPH Topside Erection Sequence (Lifting of Lower Deck A and B)

Same configuration is hereunder represented for the Upper Level. Upper Deck A will be lifted in his final position on the Lower Deck. After the completion of welding and NDEs activities between Upper Deck A and Lower Deck, Upper Deck B will be lifted, fitted-up and welded with Upper Deck A and Lower Deck.

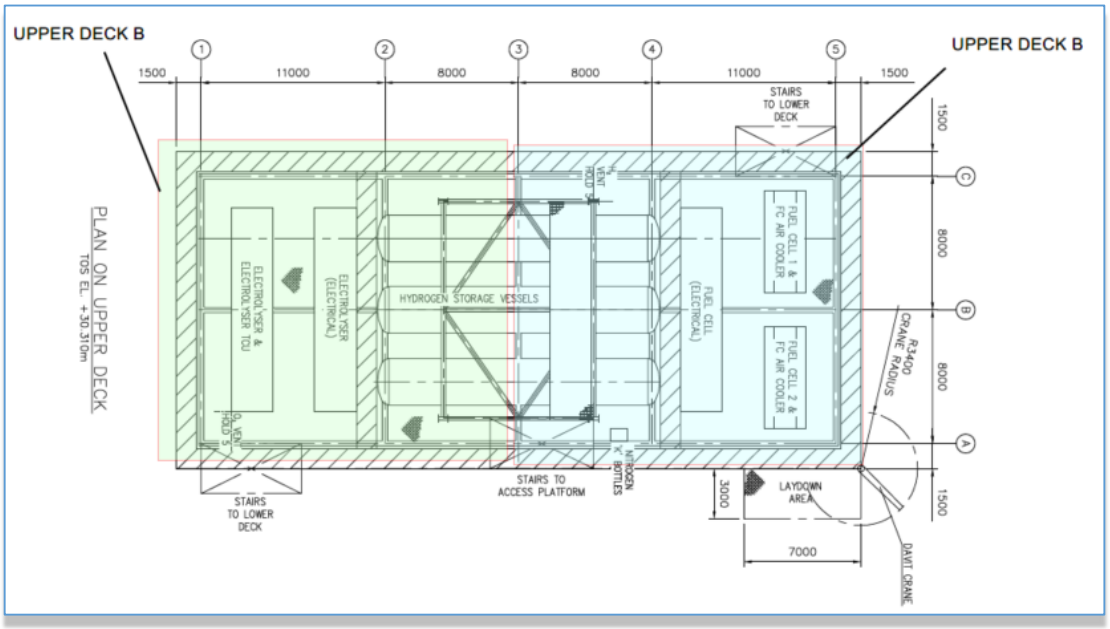


Figure 22 - BLPH Topside Erection Sequence (Lifting of Upper Deck A and B)

After the completion of the welding activities of the Upper Level, the H2 Vessel (PAU) will be lifted and installed on the BLPH Topside.

H2 Vessel Sub-assembly will be defined in later stage, in order to optimize the lifting and installation of H2 storage tanks.

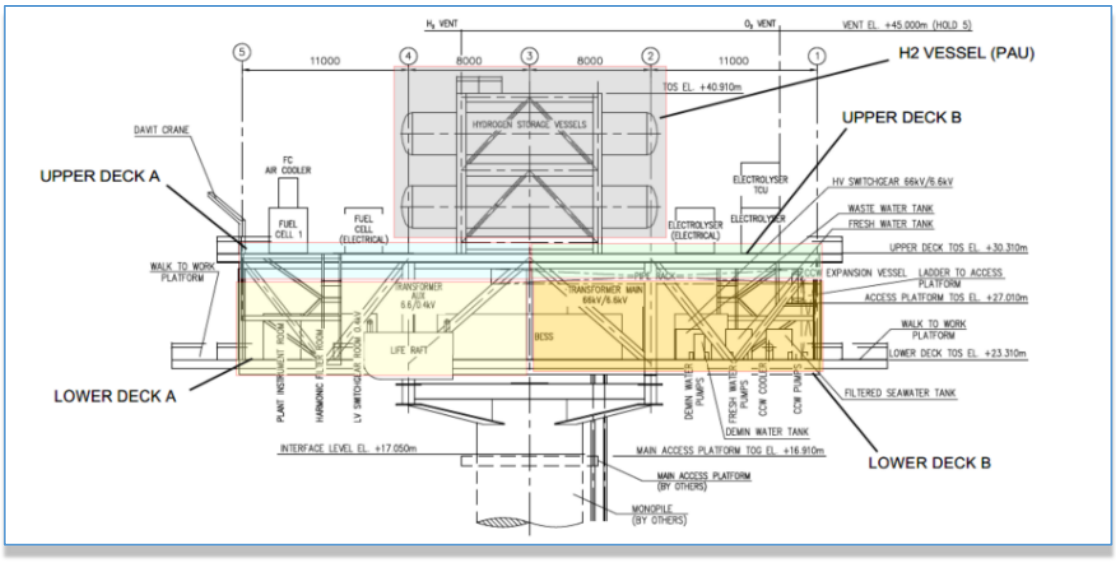


Figure 23 - BLPH Topside Erection Sequence 1st Option (EAST View)

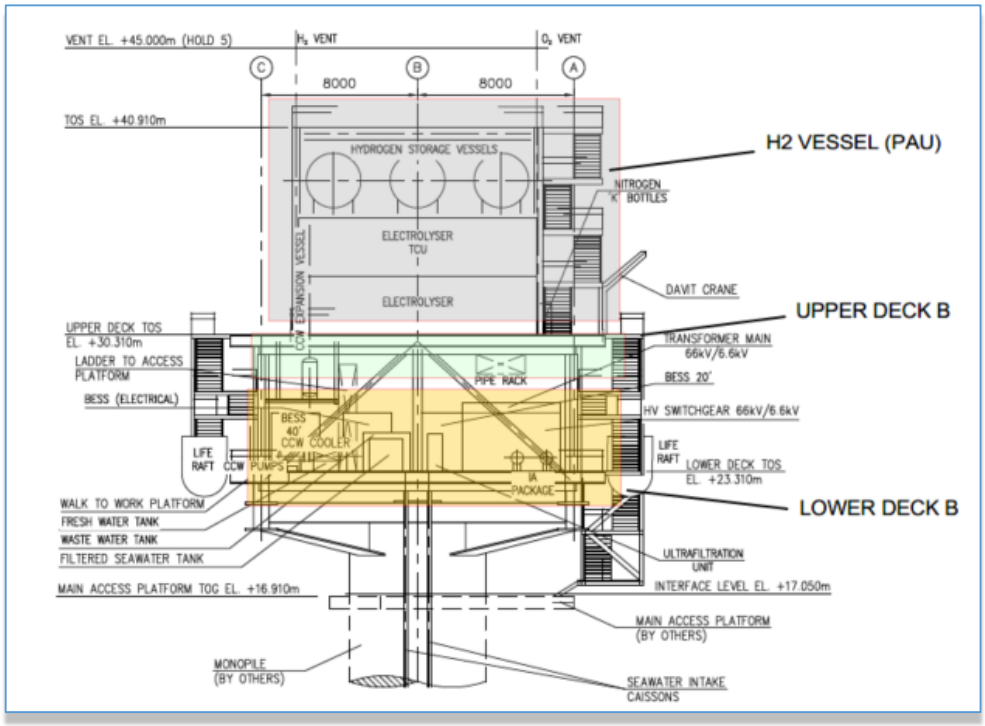


Figure 24 - BLPH Topside Erection Sequence 1st Option (NORTH View)

8.5 INSTALLATION: SECOND OPTION

Both Lower Deck A and Lower Deck B will be placed on temporary supports and will be fitted-up and welded together. Therefore, Lower Deck may be assembled on ground level in order to optimize the assembly activities.

Once the welding and NDEs activities are complete, Lower Deck may be lifted in his final position on the Upper grillage.

This installation case feasibility required to be verified in later stage due to higher weight to be lifted on the upper grillage.

After the assembly of the first level, CONTRACTOR will lift and place all the equipment available on it. Shelters will be placed as well, even if the internal equipment will not be received. The equipment installation inside the Shelters will be done in later stage.

Due to long delivery times of few equipment, CONTRACTORS should install in later stages some items (i.e., bracings, portion of Stair Towers, etc.).

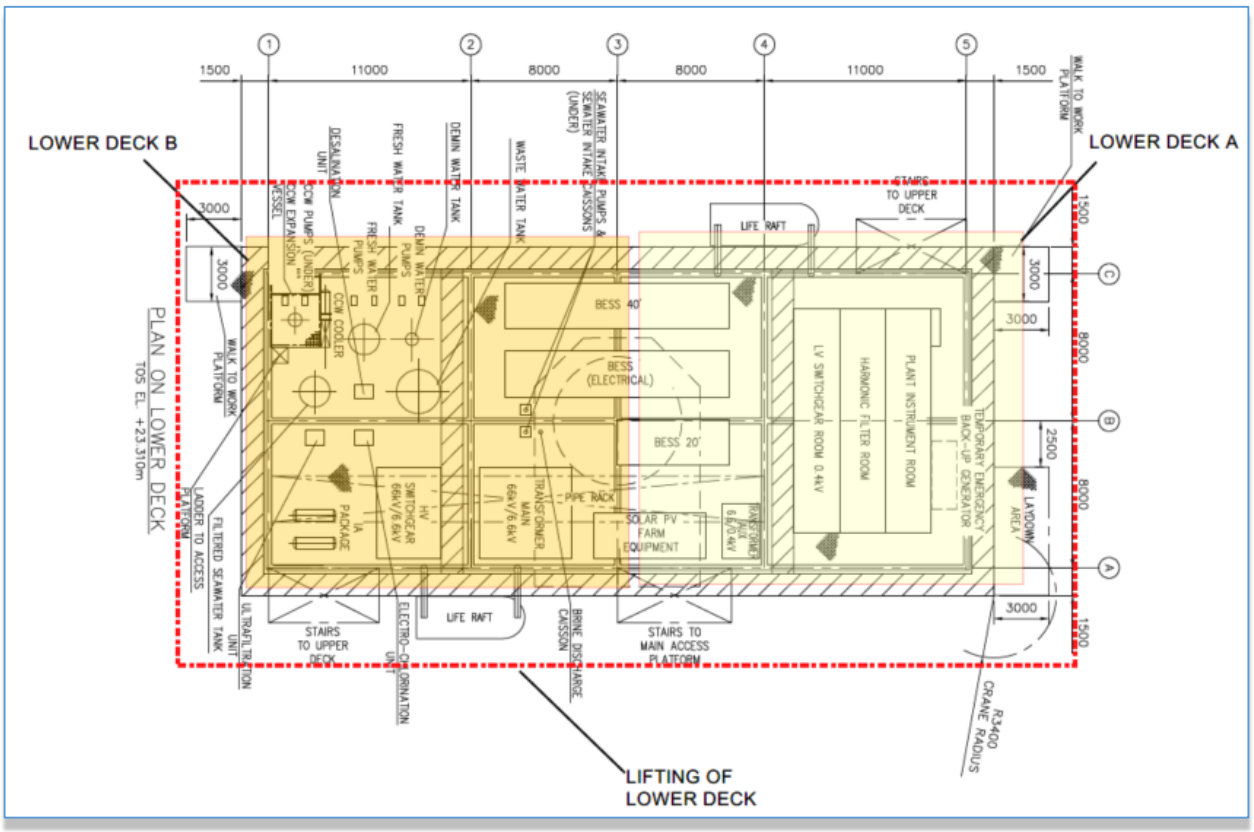


Figure 25 - BLPH Topside Erection Sequence (Lifting of assembled Lower Deck)

As per Lower Deck, both Upper Deck A and B will be placed on temporary supports, fitted-up and welded together.

Once the welding and NDEs activities are complete, Upper Deck may be lifted, fitted up and welded in his final position on the Lower Deck

Figure 8 - BLPH Topside Erection Sequence (Lifting of assembled Upper Deck)

After the completion of the welding activities of the Upper Level, the H2 Vessel (PAU) will be lifted and installed on the BLPH Topside.

H2 Vessel Sub-assembly will be defined in later stage, in order to optimize the lifting and installation of H2 storage tanks.

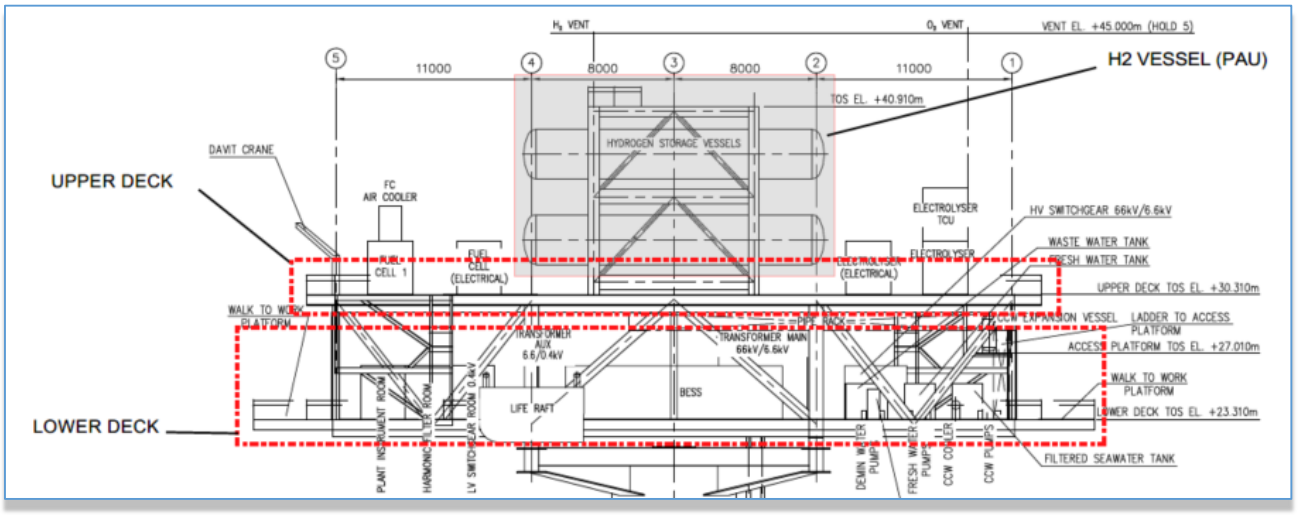


Figure 26 - BLPH Topside Erection Sequence 2nd Option (EAST View)

8.6 TRANSITION PIECE

Structural and piping items will be fabricated in CONTRACTOR or SUBCONTRACTOS' premises, depending on CONTRACTOR's workload.

The level of fabrication that it is possible to perform in workshops or yard will be as follow:

Plates cutting

Rolling, fit-up and welding of plates for the fabrication of rolled tubulars

Main rolled tubular (basement of Transition Piece) will be made from three or more rolled plates due to transport limitation

Fabrication of main flange

Fabrication of PGs, BGs and Beams

Fabrication of stairs, walkways and ancillaries

The assembly of the transition piece in CONTRACTOR or SUBCONTRACTOR's yard may foresee the following steps:

Assembly of main rolled tubular in horizontal or upright position

Assembly of Joints PGs, BGs and Beams

Assembly of top plates

Assembly of stairs, flange, walkways and ancillaries

After the assembly is complete, Transition Piece will be moved to the paint shop by means of trolleys of adequate capacity.

Once the painting cycle is complete, the Transition Piece will be moved from the paint shop to the erection area, with self-propelled multi-wheeled trolleys, uplifted and placed on final handling supports.

As soon as they reach the erection area, the lift with 1 or 2 crawler cranes (500 tons capacity) will be arranged and the assembly will be lifted into its final configuration on the upper grillage.

As soon as the dimensional controls and the relative welding which grant the load release are completed, the load from the cranes will be released.

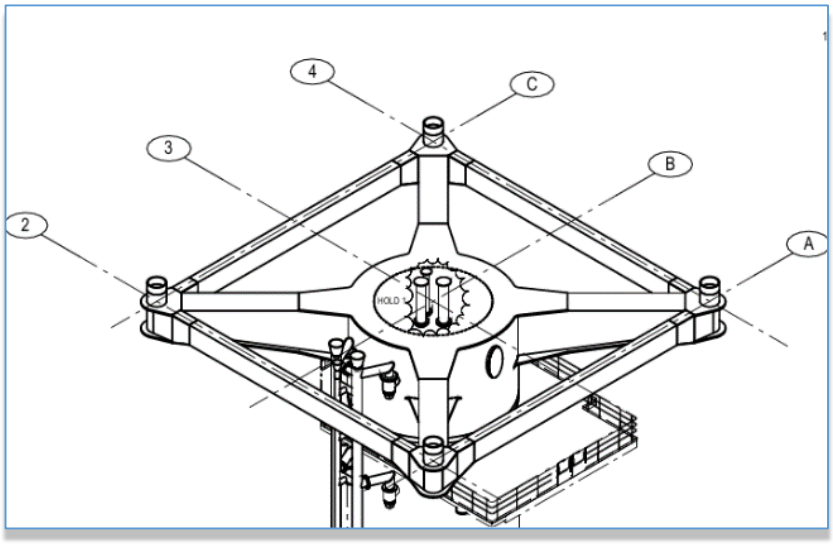


Figure 27 - BLPH Transition Piece

9 WEIGHING

EPCI CONTRACTOR for BLPH will operate a Weight Control program throughout the Project duration and will provide a continuously updated best estimate of the dry, operational, lift and load out weights (net & gross) and centers of gravity. The Weight Control will be in accordance with ISO-19901-5, Class A.

The BLPH TP and Topside will be physically weighed to verify the calculated weight and location of the Centre of Gravity. The weighing will be carried out within 7 days before the load out and with less than 1% of the total weight of temporaries.

EPCI CONTRACTOR selects the most suitable weighing configuration and quantities of equipment based on the following:

- Predicted Weight and Predicted Centre of Gravity;
- Number of Weighing Points/Calculated Max reaction loads related to:
  - Bearing Capacity of the ground/foundations under each weighing point;
  - Structural capacity of the Jack Support stools/bearing points;
  - Both local and global Structural integrity at each reaction point.
- Installation Clearance;
- Overall Size (for hose and cable lengths);
- Support Point Details;
- Shim and Packaging.

Jacking equipment and load cells will be sized to ensure that all lifting and measuring equipment is operating within the range of 20-80 % of its rated capacity. The system as a whole is accurate to within +/- 0.5 % over its full Working range. All equipment to be used in the weighing operation will be calibrated and certified within one month of the proposed weighing date.

All equipment will be function tested and where pressure testing is required, pressure test and related Pressure Test Certificates will be issued.

10 LOAD OUT, GRILLAGE AND SEA FASTENING

The load out method, considered by EPCI CONTRACTOR, considers the use of Self-Propelled Multi-wheel Trailers (SPMTs).

Load out will be carried out in accordance with the Load Out procedure developed during the Project execution, after its approval by Company and MWS and operations shall be carried out according to the following sequence:

- No. 1 dedicated approx. 300' barge will be made available by T&I Contractor at EPCI CONTRACTOR YPB, Italy for Topsides, TP and caissons.

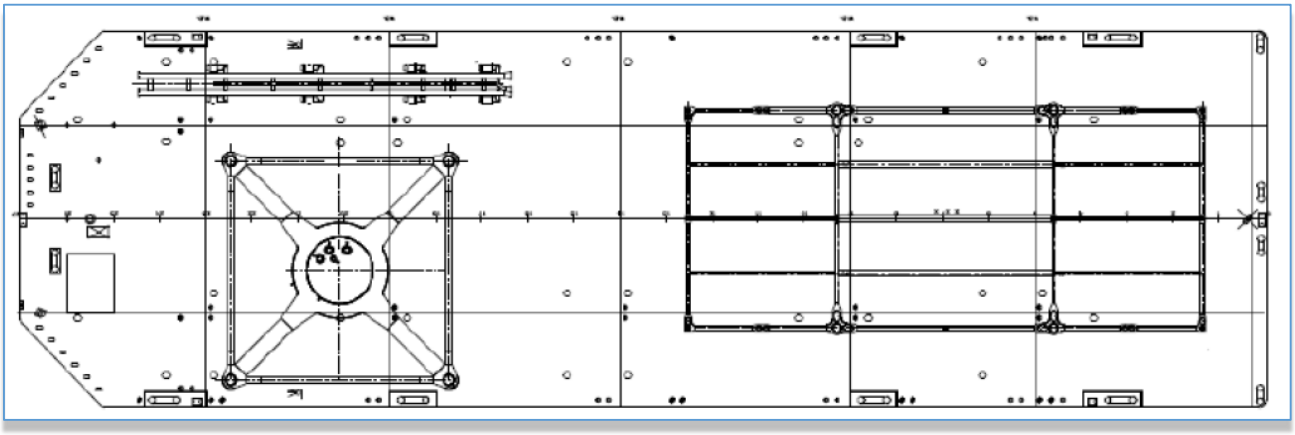


Figure 28 - Layout on Standard barge

EPCI CONTRACTOR will perform the following activities:

- load out engineering activities such as:
  - the detail design of load out grillage and barge grillage;
  - the detail design of sea-fastening.
- detail design of yard movement;
- the design of load out sequence;
- grillage and sea-fastening prefabrication and erection.

The load out methods will be described in the Load Out procedures that will be issued during the Project execution phase.

Here below a brief description of the main operations:

- Barges, once arrived, will be moored along the quay;
- Before the load out execution, lower grillage will be installed on barges;
- The day before load out execution the dedicated barge will be moored perpendicular to quay along the selected load out ways;

- The Topside will be loaded onto transport trailers by jacking up trailer platform, using the hydraulic stroke of same trailers;
- Barge will be rotated back parallel to quay after the completion of minimum SF of topside
- TP will be loaded out by SPMTs or Crawler crane.

In detail the loading sequence will be the following:

- SPMT units will be transferred from their assembling area to the Platform erection area;
- Loading of Platform will start only after MWS authorization;
- SPMT units will be manoeuvered into position beneath the support point and will be positioned according to the transportation arrangement drawings to ensure accurate positioning. Make sure that trailers are hydraulically connected in the right way so that stability is grant and no overstress is induced in the steel structure of the Deck;
- SPMT units will be gradually elevated to take the load by raising the SPMT's stroke till they are in contact with the bottom of the Jacket or Topside upper grillage. Shim with plywood as required to have full contact between SPMT's and the contact point;
- Continuously check that the pressure in the hydraulic circuits is in agreement with the predicted values;
- Check that the Deck structure has no abnormal deflections;
- Another careful check will be made on the pressure of the hydraulic supporting groups and the level of the platform, before starting the lifting operation;
- Lifting of the Deck, by hydraulic stroke of trailer, up to suitable height in order to prepare the transport manoeuvre;
- Check if the SPMT spine beam deflection is in accordance with the predicted calculation;
- Lashing material will be installed;
- Yard movements.

The heavy transport operations shall be executed under the supervision of the Construction Manager, according to the transport drawings and Method Statement "approved for execution".

The Transport Superintendent will be constantly monitoring the operations for conformity with information elaborated during the engineering phase.

The Construction manager and Transportation Superintendent will be in contact by radio with the SPMT operators to instruct them during the operation.

Load-out

The Load-out commences after the barge has been ballasted to the required draft. The barge will be moored with stern to quay side. When the barge mooring will be ready the barge bridge plates will be installed.

In charge of the load-out will be the Construction Manager who will be in constant radio contact with the barge load-out engineer and Transportation Superintendent. Construction Manager /Transportation

Superintendent will be in constant radio contact with the experienced SPMT Operators who will steer and adjust SPMT height/elevation.

The barge moorings will be continuously checked by visually inspection reading the line tension in load cells.

The SPMT's will pause in line with the flow rate of the ballast pumps to maintain the barge level aligned with the quay during all stages of the transfer operation.

Platform lowering phase:

The unloading operation for Platform will start after the convoy will be in final position in accordance with stowage plan. The Platform will be finally seated onto lower grillage by jacking down trailer platform, using their hydraulic stroke.

Unloading operation will be done to remove SPMT.

At the same time the installation of the sea-fastening will start and before rotating the barge, a certain amount of sea-fastening is required to be welded.

The barge will be rotated to arrange it parallel to quay and mooring will be carried out. Final sea-fastening installation and ballasting for transport will be carried out.

Examples of loadout performed by means of SPMTs are given in the following figures.



Figure 29 - Topside Loadout with SPMT



Figure 30 - Topside ready for loadout

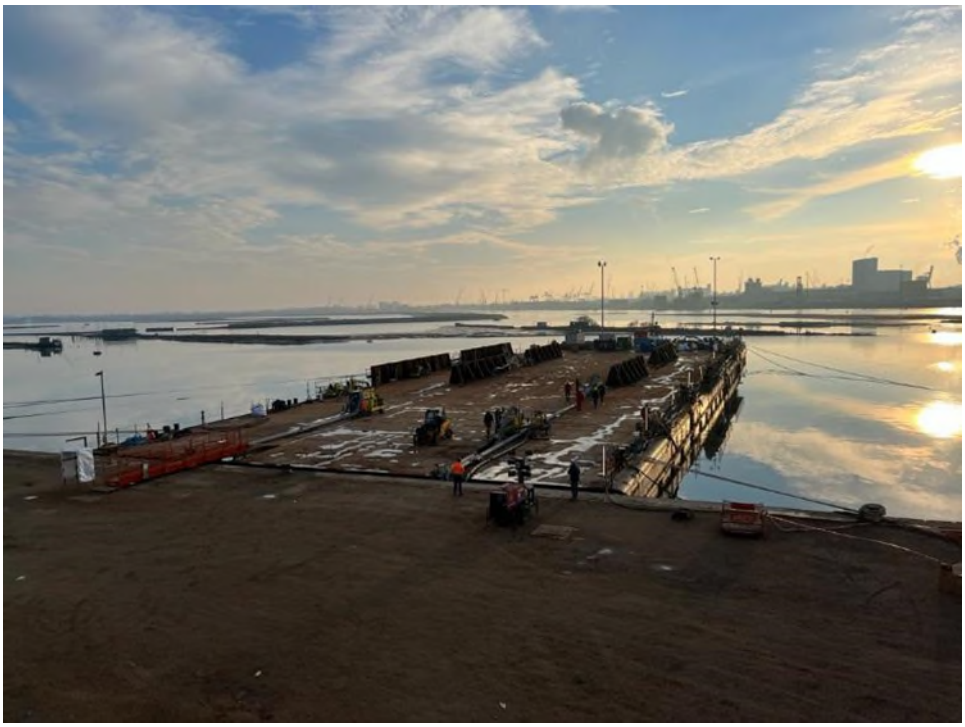


Figure 31 - Barge ready to receive the topside

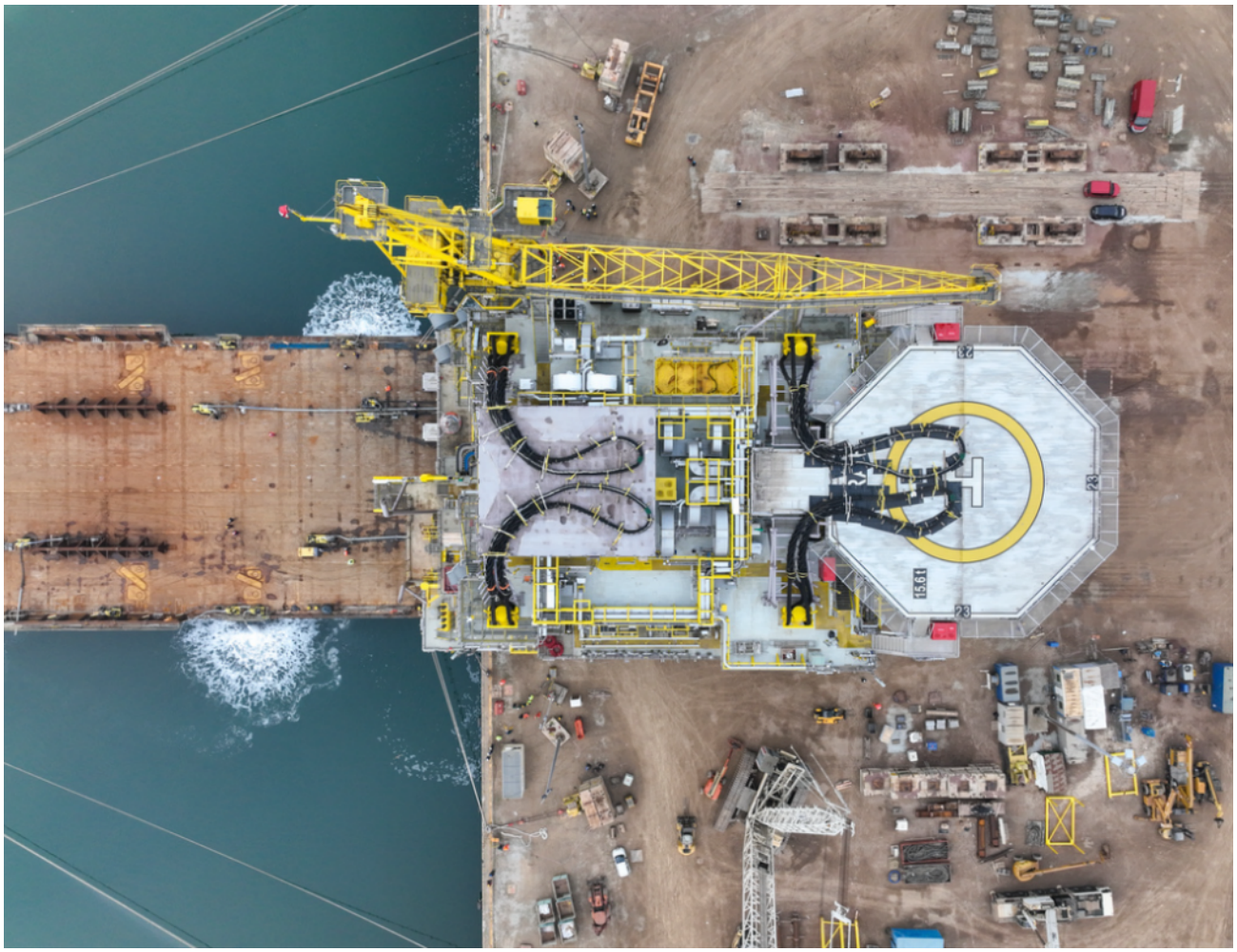


Figure 32 - Loadout crossing the barge perpendicular to quay

11 TRANSPORTATION AND INSTALLATION

Transportation of BLPH components (topside, TP and caissons) will be performed by CONTRACTOR's appointed subcontractor, under CONTRACTOR's responsibility.

The mooring operation of the transportation barge will be performed under transportation Contractor responsibility, agreed with installation CONTRACTOR.

Installation of the BLPH platform TP, Caissons and Topside shall be carried out by EPCI CONTRACTOR's appointed subCONTRACTOR (DEME Offshore).

11.1 TRANSPORTATION PHASE

Prior to sail-away the Tow Master shall agree with COMPANY, MWS and local Pilot a departure procedure showing any tidal/depth limitations alongside the berth or in the channel and connection sequence for the harbor tugs.

Once the tow is in suitable area the main tug will be attached, the harbor tugs will be disconnected, the emergency tow line deployed and the tow to the installation site will commence.

The actual routing will be determined by the Tow Master during the transport based on theoretical route, cargo configuration, work schedule, local weather conditions and long-range weather forecasts.

The towing of the cargo barge is planned to be weather restricted tow. In the event of a forecast for weather conditions which are likely to endanger the transport, safe locations will be sought.



Figure 33 - Transportation route PBY Yard – Offshore Site

12 ATTACHMENTS

12.1 Constructability Review Meeting 1, Already held last 9th August 2023

12.2 Constructability Review Meeting 2, Already held last 6th November 2023

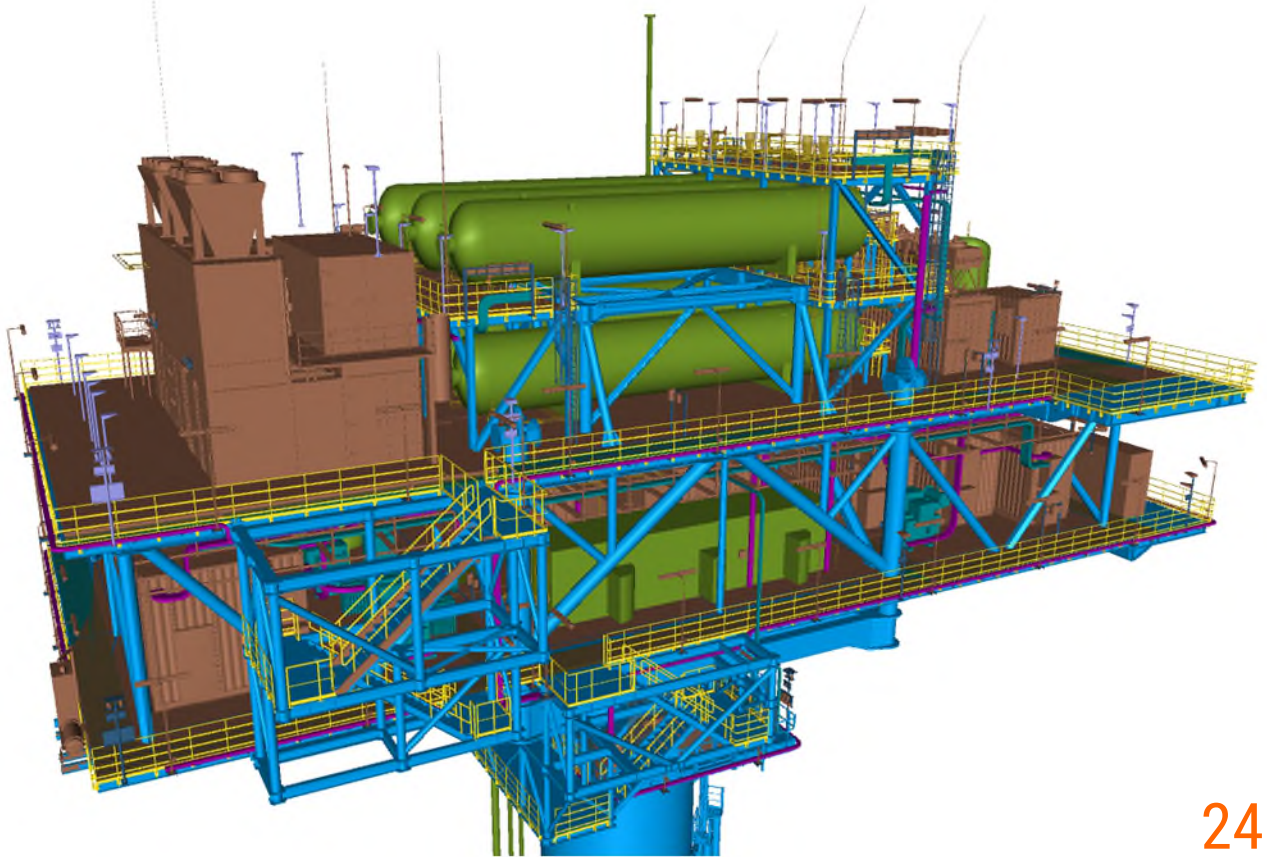
12.3 Constructability Review Meeting 3, held on 31st January 2024

12.4 Constructability Review Meeting 4, Planned 3rd week of May 2024

CROSSWIND

Client: Crosswind, a Shell and Eneco joint venture

CONSTRUCTABILITY REVIEW MEETING 4



24 th April January 2024,
Ravenna

ROSETTI MARINO

123A90 Constructability Review Meeting 4
Base Load Power Hub

CROSSWIND

Meeting Chair	Rosetti – Construction Manager
Attendees	*Rosetti*: Project Manager, Project Engineering Manager, Project Quality Manager, HSE Manager, Project Control Manager, Senior Structural Eng, Procurement Coordinator Manager. *Crosswind*: Project Manager, Construction Manager and the same counter parts as above Ad Hoc: Commissioning Manager(RM)
Meeting Purpose	WORKSHOP AGENDA: 1. Welcome and Safety moment (Construction Manager) 2. General review of the feedback collected during the Constructability Review Meeting 3 (Construction Manager) 3. Checking any Erection Sequence updates, Movement and Confine Space Entry CSE(Construction Manager/Hse Manager) 4. Lifting Plan analysis (Structural Eng.) 5. Out-fitting installation (Construction Manager / Project Engineering Manager) 6. Internal 3D Model review (Construction-Oriented) (Construction Manager and Project Eng. Manager) 7. HSE Review Road MAP H2 (HSE Manager) 8. Preliminary road map of commissioning phases 9. Collection of feedbacks, suggestions, Constructability inputs (Construction Manager)
Frequency and Time	**Time Constructability Review Meeting 4 – 24th April 2024**
Location	Microsoft Teams Meeting + YPB BOX F Ground Floor

Agenda

Activity	Who	Time (mins)
1. Introductions	All	5 mins
2. Talk crossing all agenda points (.ppt)	All	10/15 minutes for each one
3. Summary of Actions plus AOB	All	10 mins

Inputs:
- All developments in term of construction and other disciplines involves

Outputs:
- Consolidation of Construction approach along with Engineering on project
- Overall feedback of other disciplines
- Continue to talk about construction till completion

Rules:
- Respect – Allow everybody to finish

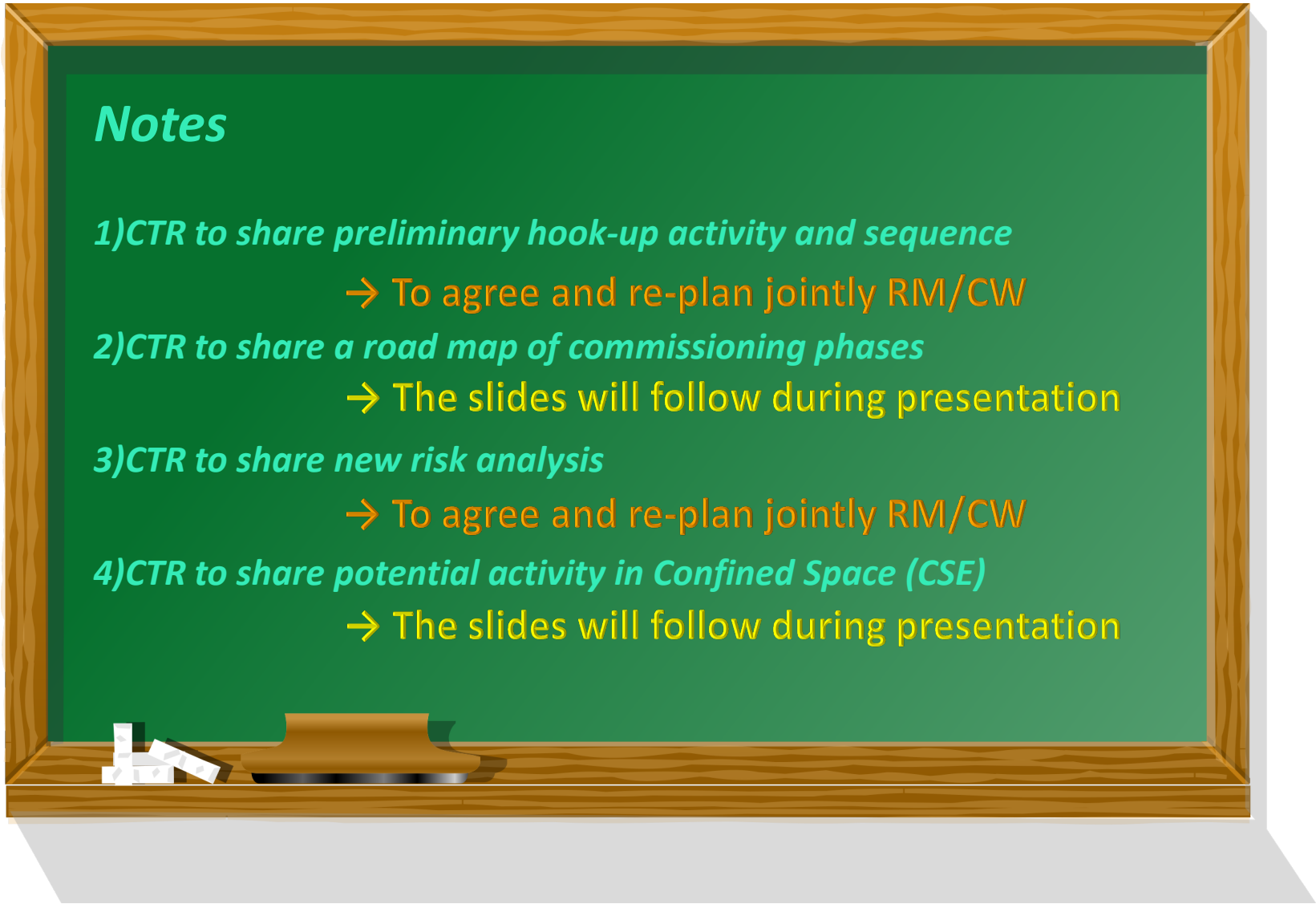
AGENDA

1. WELCOME AND SAFETY MOMENT
2. GENERAL REVIEW OF THE FEEDBACK COLLECTED DURING THE CONSTRUCTABILITY REVIEW MEETING 3
3. CHECKING ANY ERECTION SEQUENCE UPDATES, MOVEMENT AND CSE
4. LIFTING PLAN ANALYSIS
5. OUTFITTING INSTALLATION
6. INTERNAL 3D MODEL REVIEW
7. HSE REVIEW ROAD MAP H2
8. PRELIMINARY ROAD MAP OF COMMISSIONING PHASES
9. COLLECTION OF FEEDBACKS, SUGGESTIONS, CONSTRUCTABILITY INPUTS (CONSTRUCTION MANAGER)

SAFETY MOMENT

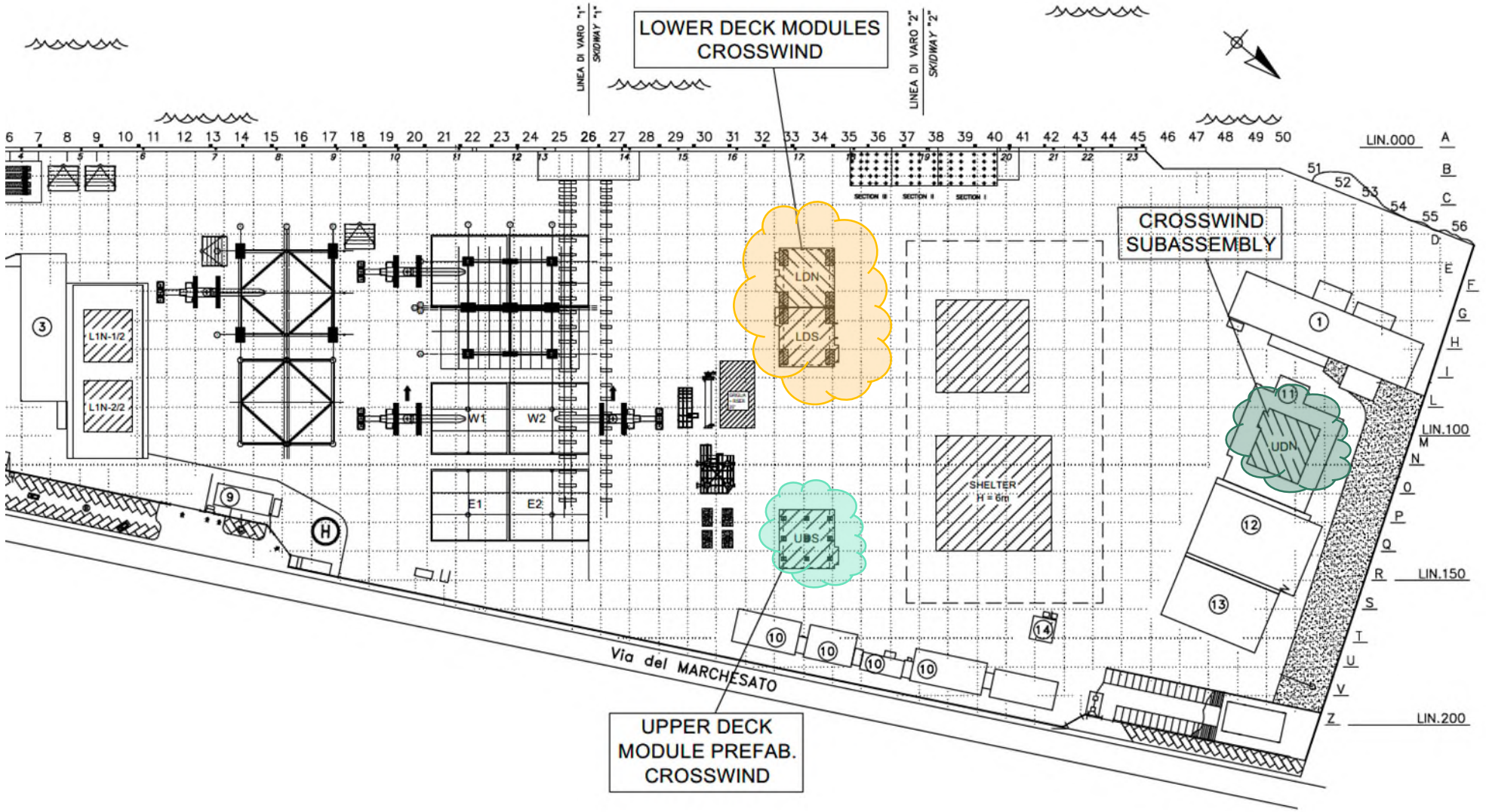


2. GENERAL REVIEW OF THE FEEDBACK COLLECTED DURING THE CRM 3



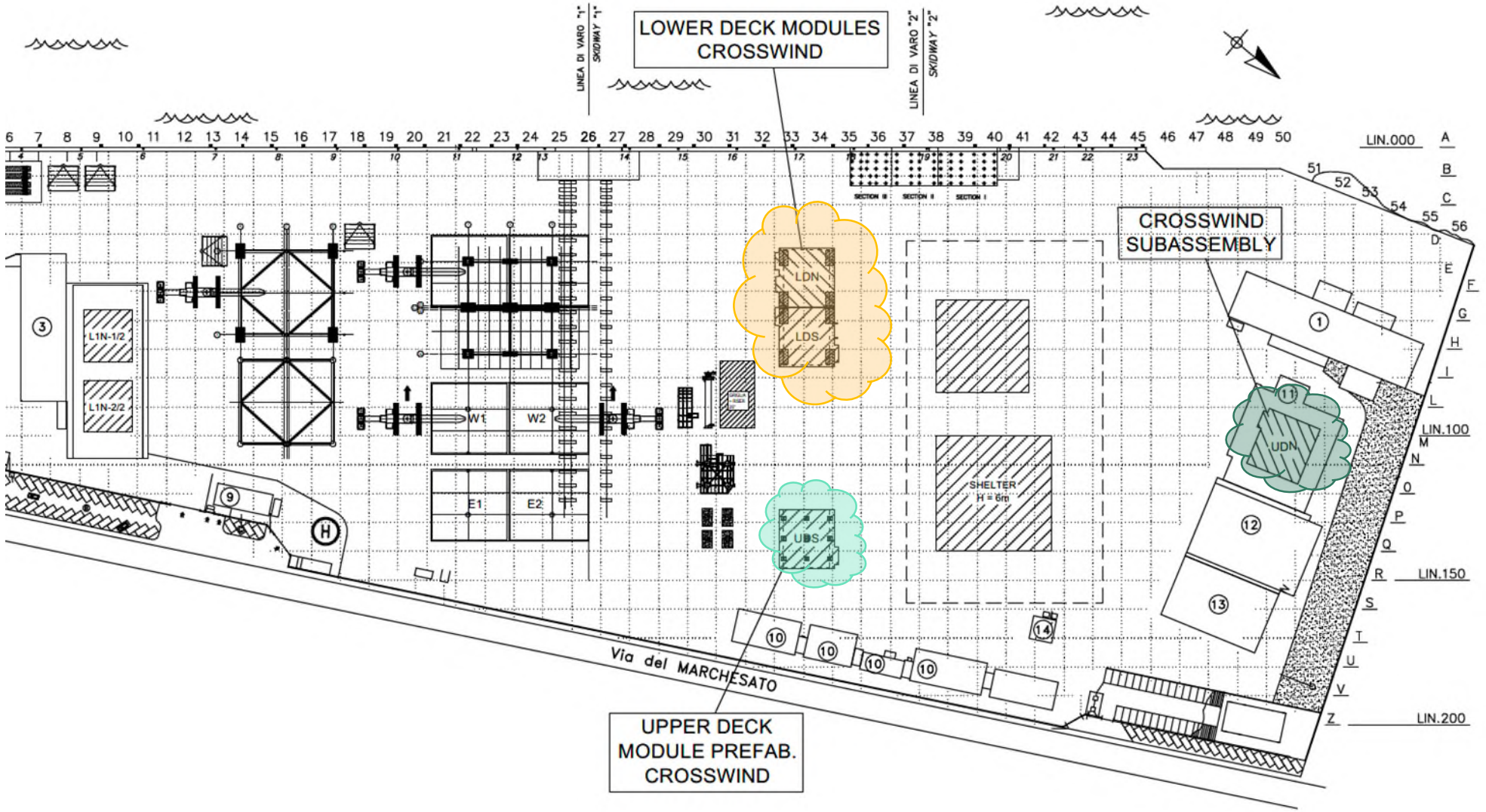
3. CHECKING ANY ERECTION SEQUENCE UPDATES, MOVEMENT AND CSE

YARD – STORYBOARD LOOK AHEAD, April '24



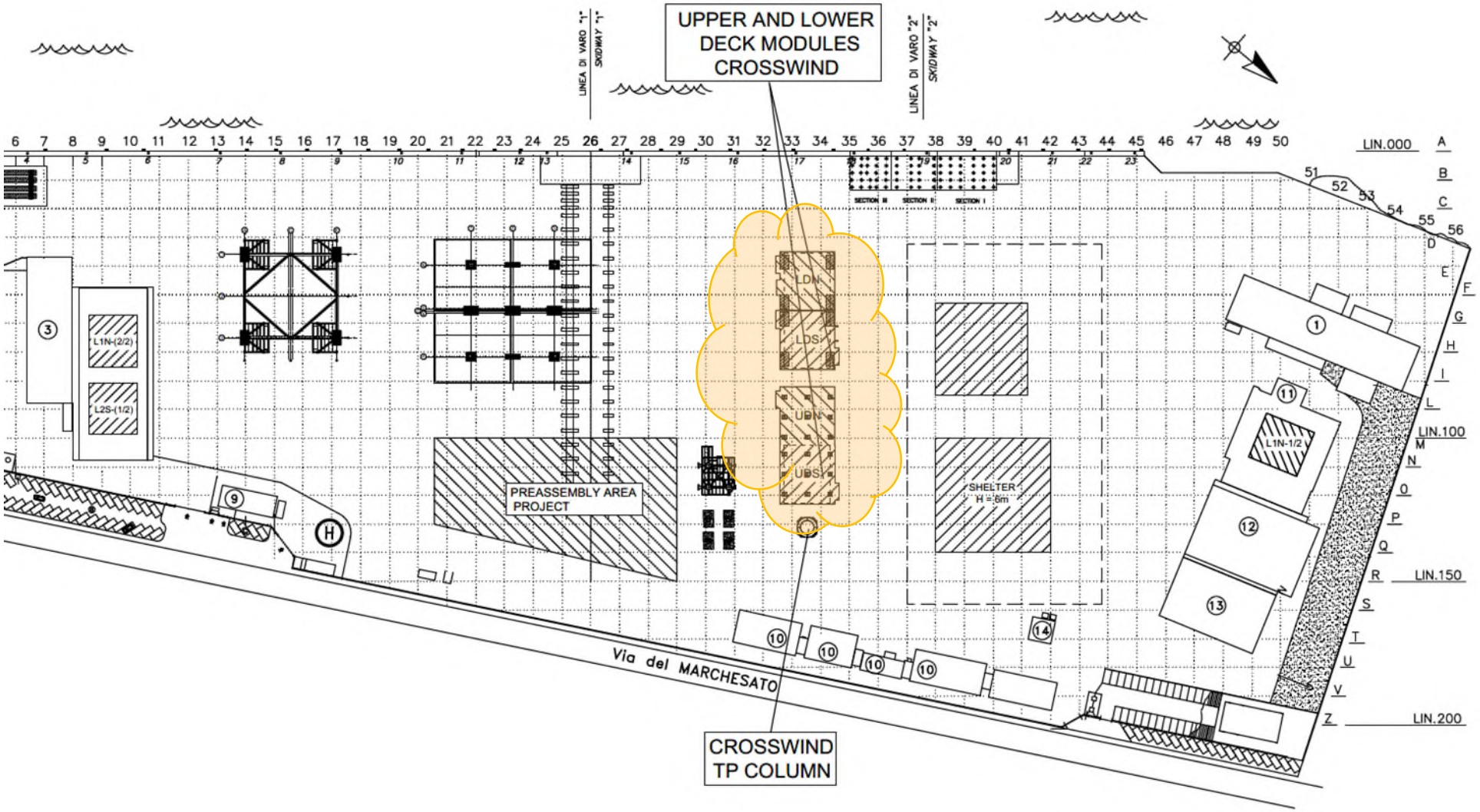
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YARD – STORYBOARD LOOK AHEAD, April '24



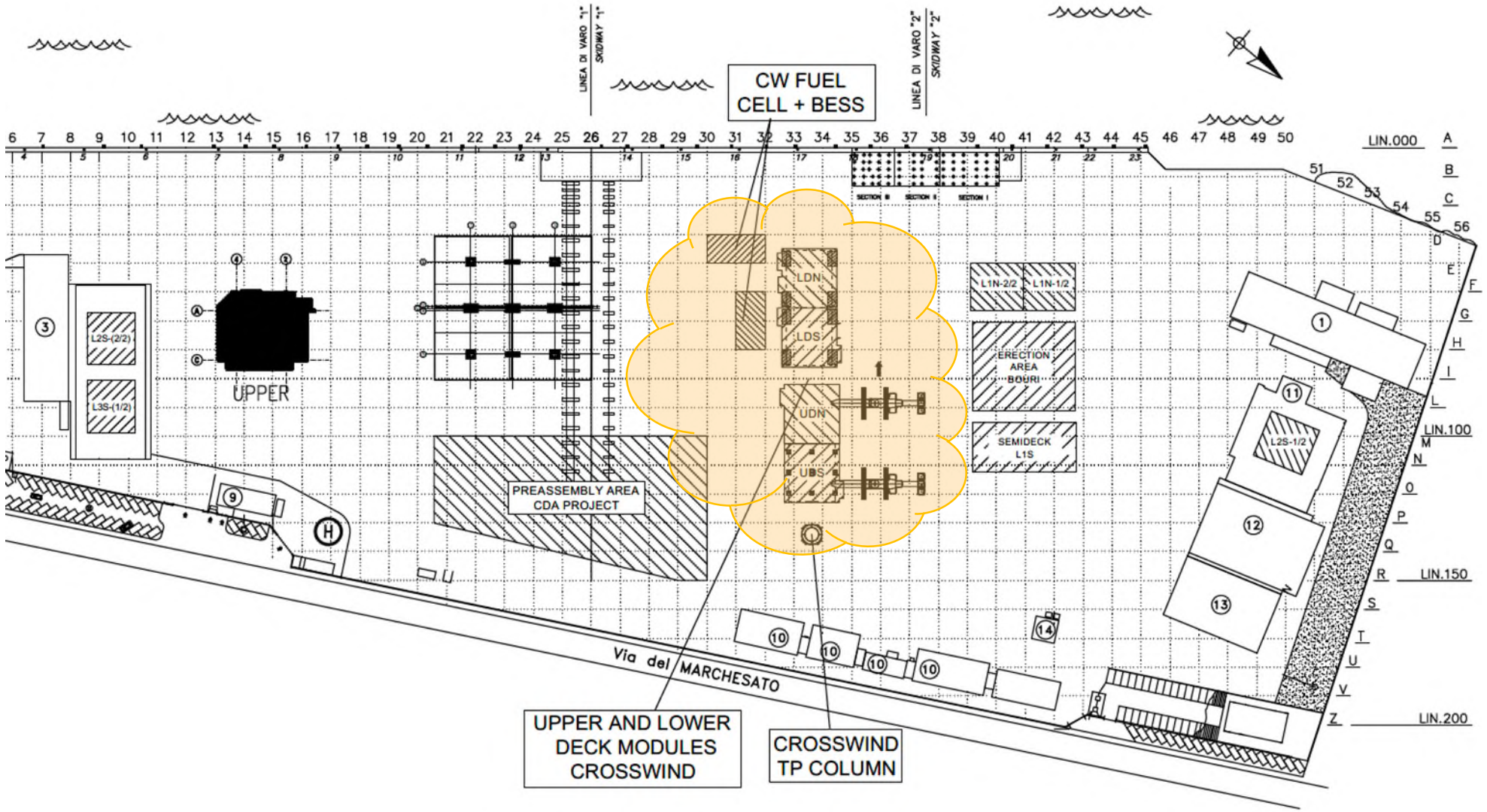
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YARD – STORYBOARD LOOK AHEAD, May / June ‘24



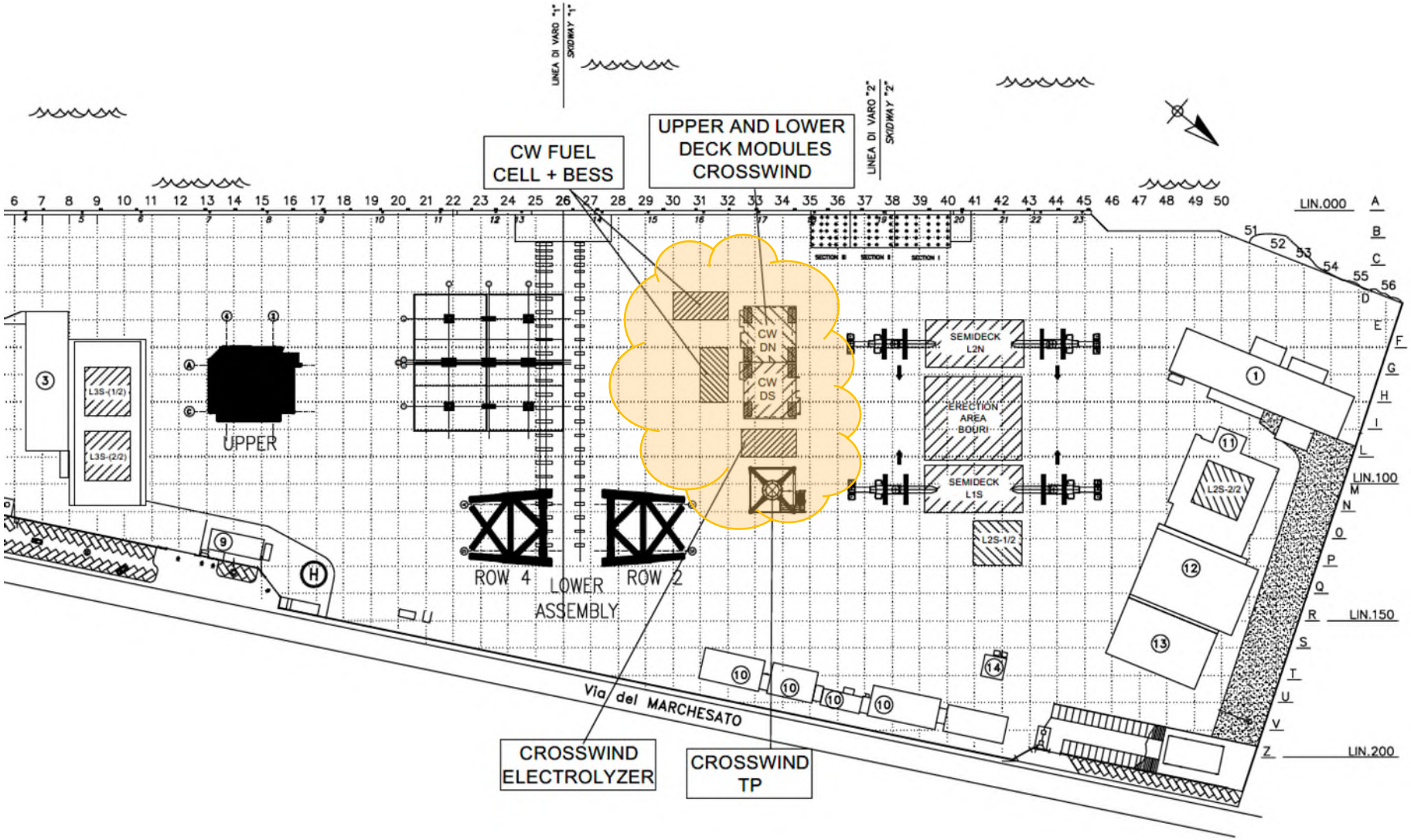
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YARD – STORYBOARD LOOK AHEAD, August '24



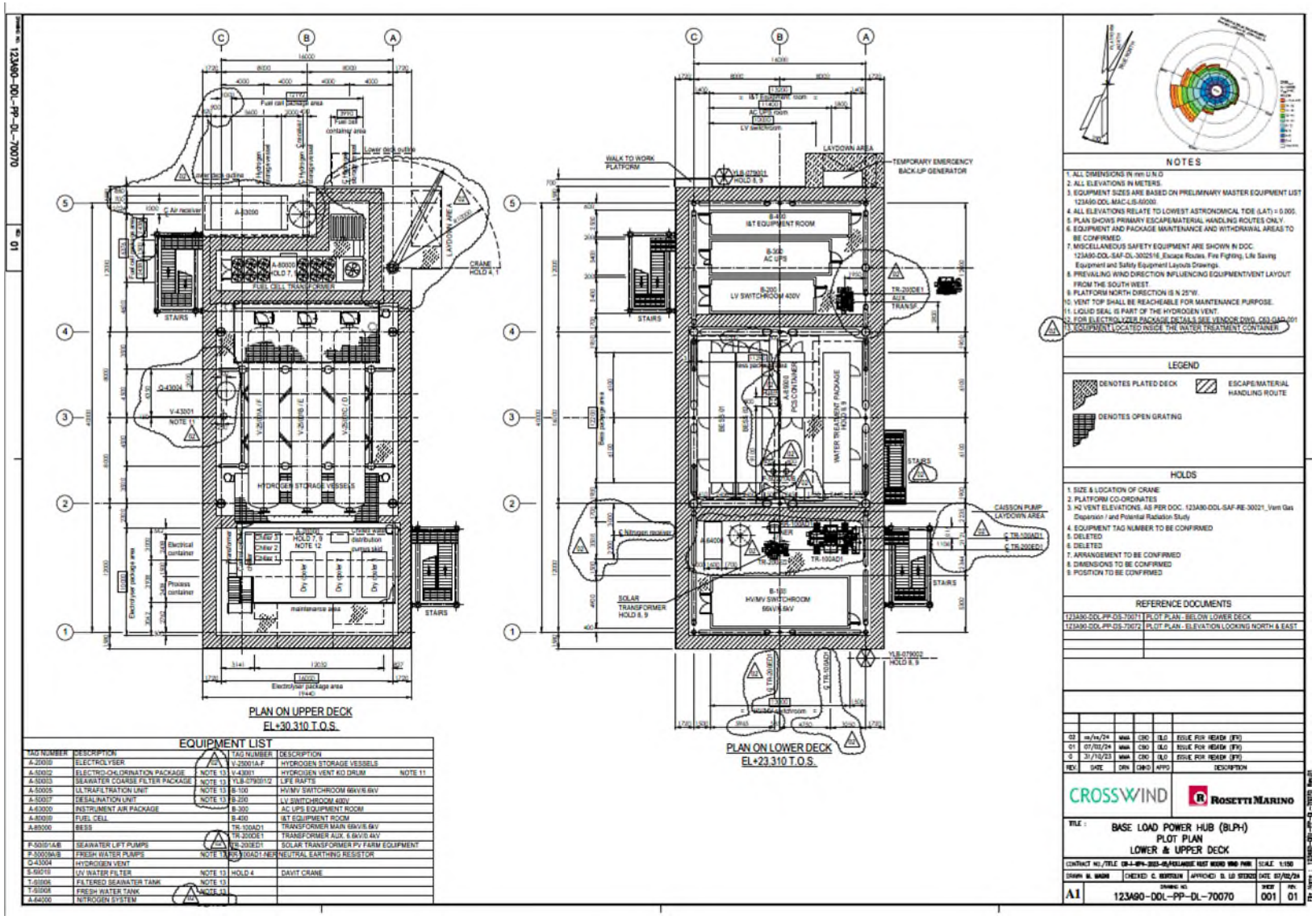
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YARD – STORYBOARD LOOK AHEAD, September ‘24



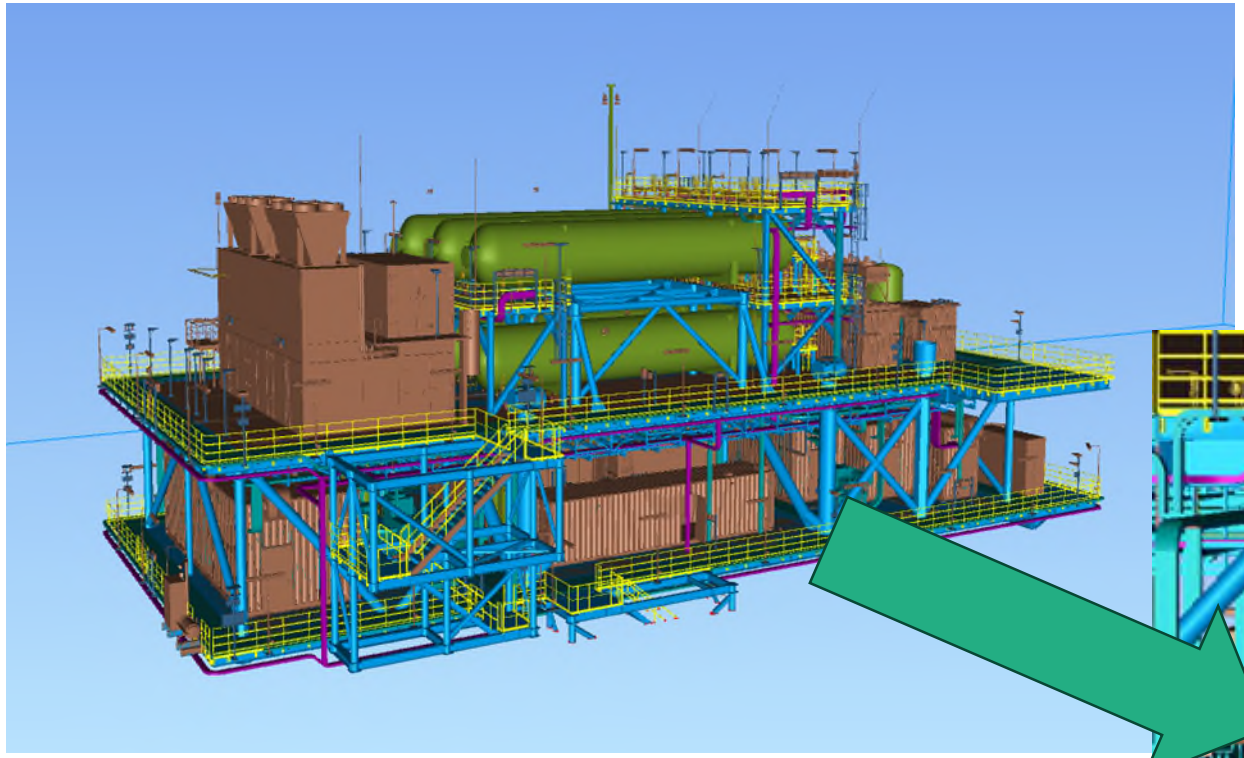
3. CHECKING ANY ERECTION SEQUENCE UPDATES, MOVEMENT AND CSE

LAYOUT PLOT PLAN



3. CHECKING ANY ERECTION SEQUENCE UPDATES, MOVEMENT AND CSE

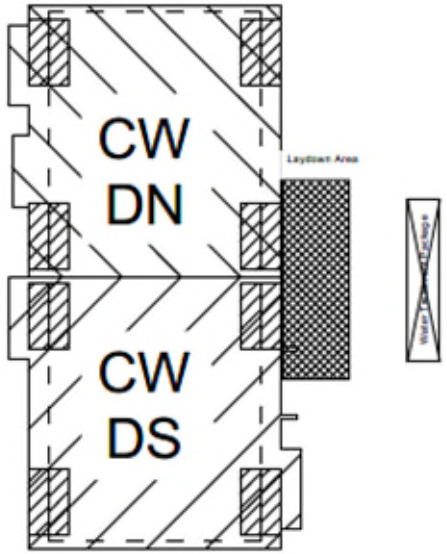
INSTALLATION WATER TREATMENT PACKAGE

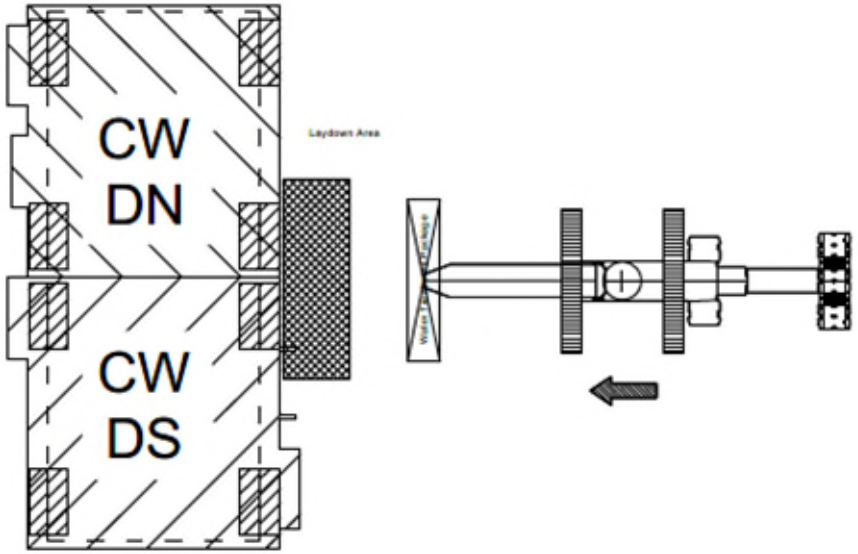


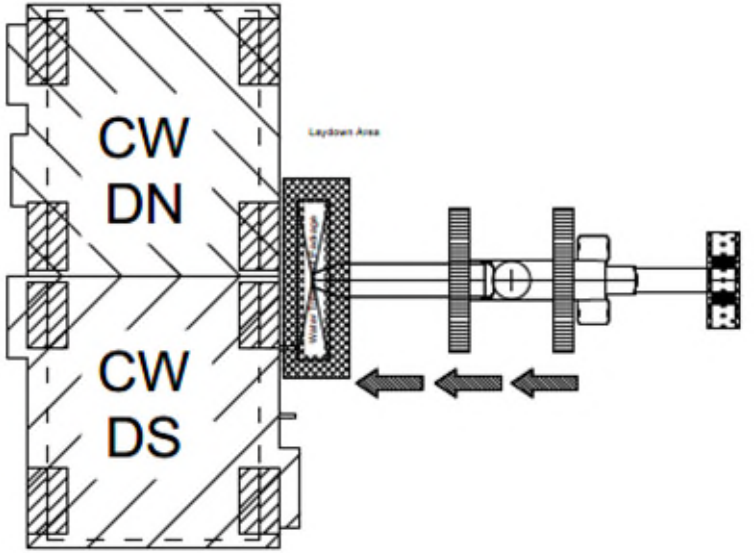


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INSTALLATION WATER TREATMENT PACKAGE

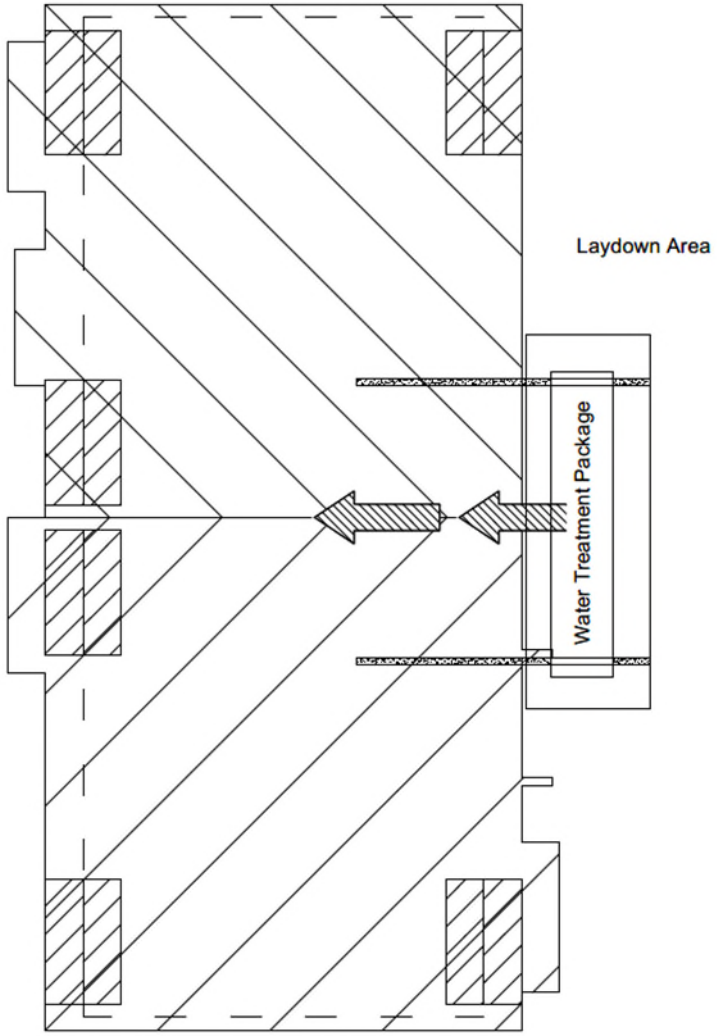






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INSTALLATION WATER TREATMENT PACKAGE

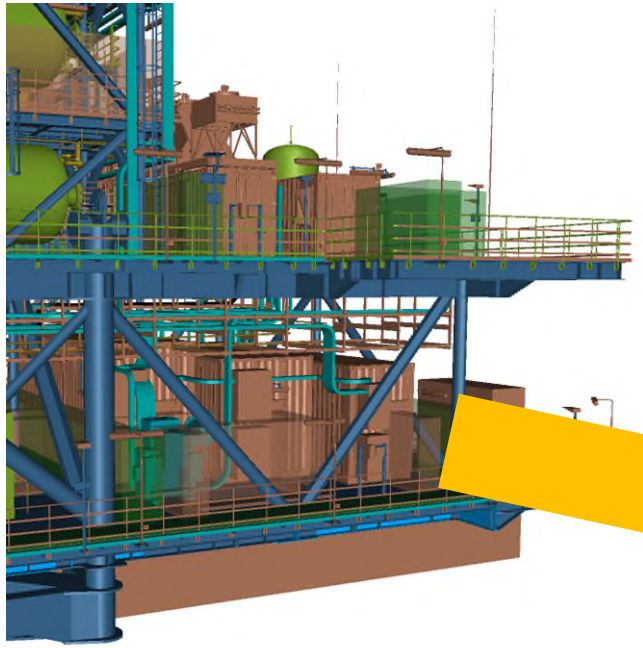


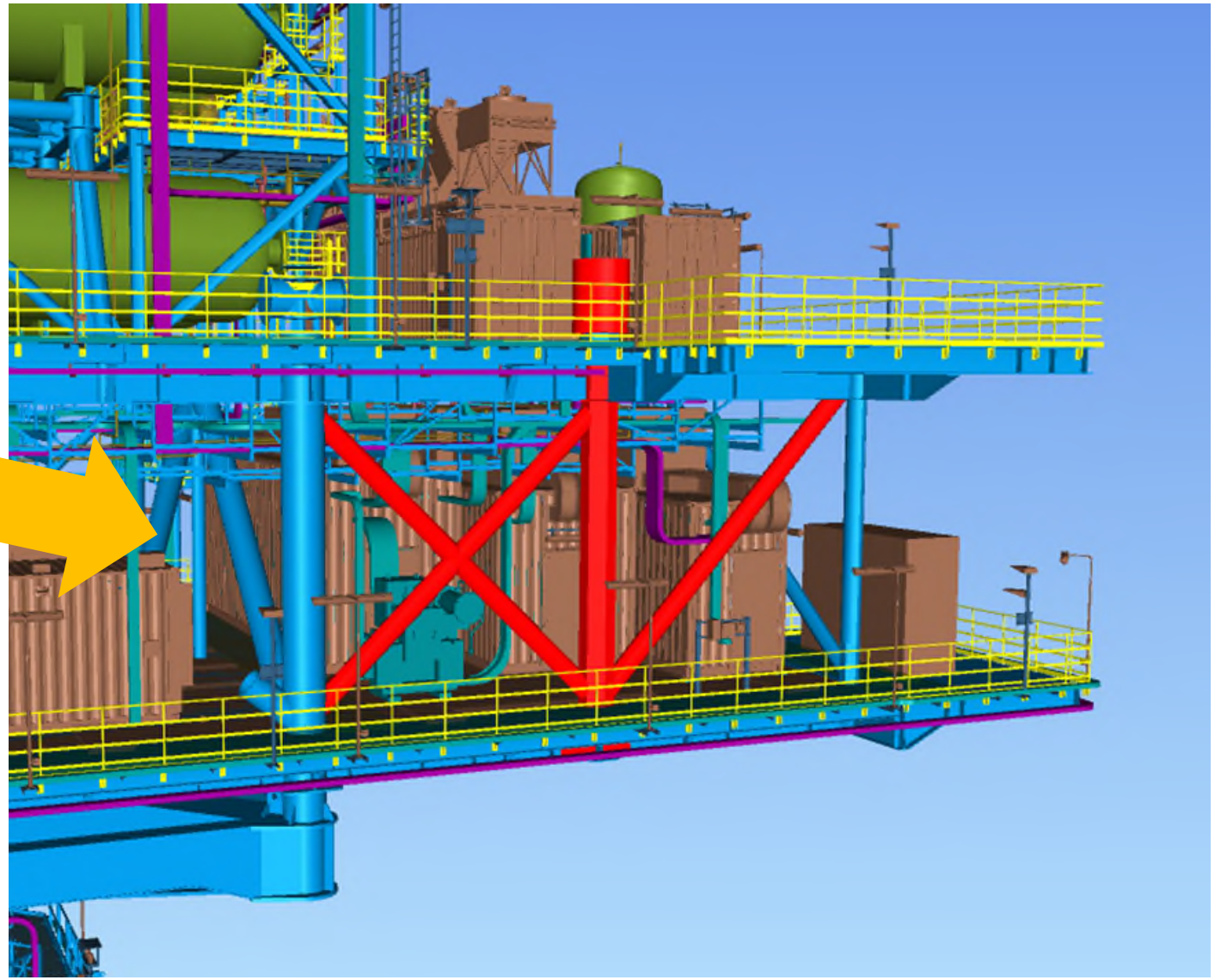




3. CHECKING ANY ERECTION SEQUENCE UPDATES, MOVEMENT AND CSE

CRANE UPDATING





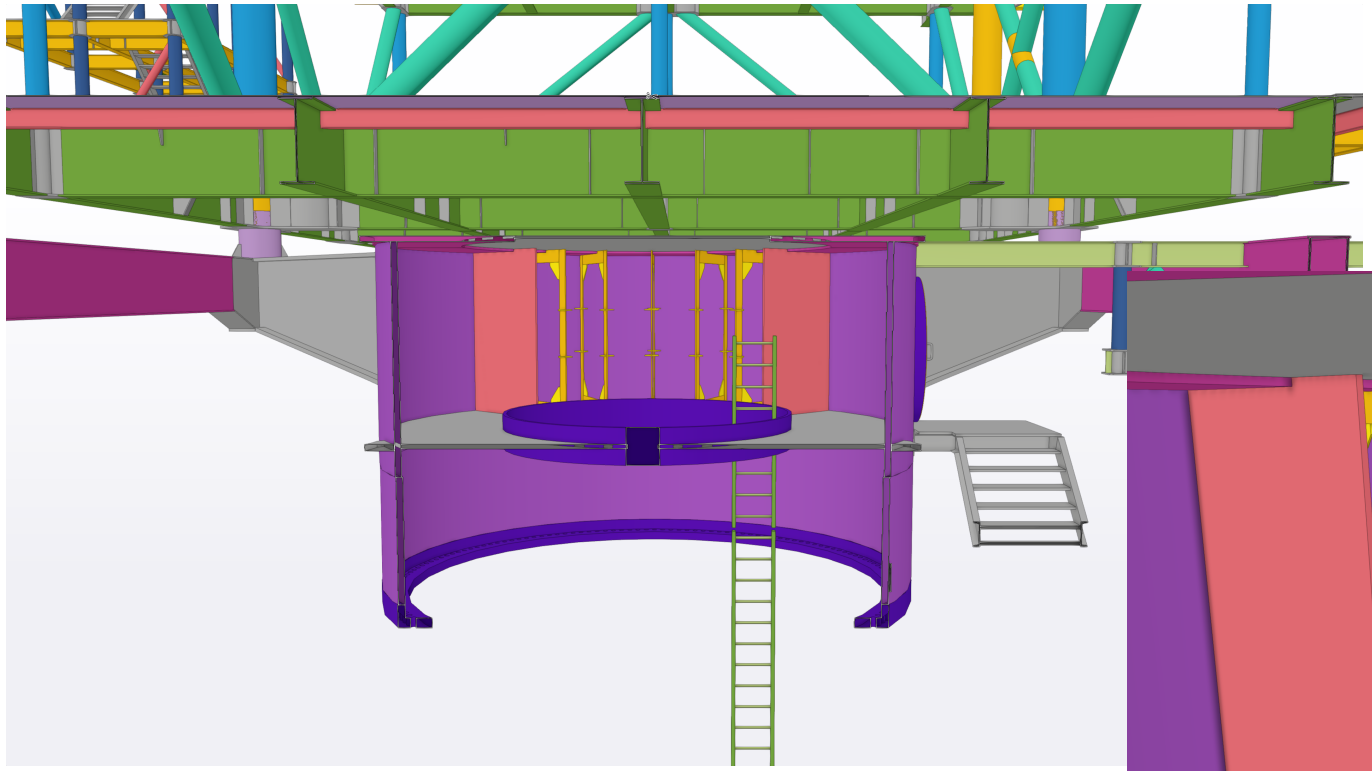
3. CHECKING ANY ERECTION SEQUENCE UPDATES, MOVEMENT AND CSE

CONFINE SPACE ENTRY (CSE) Definition

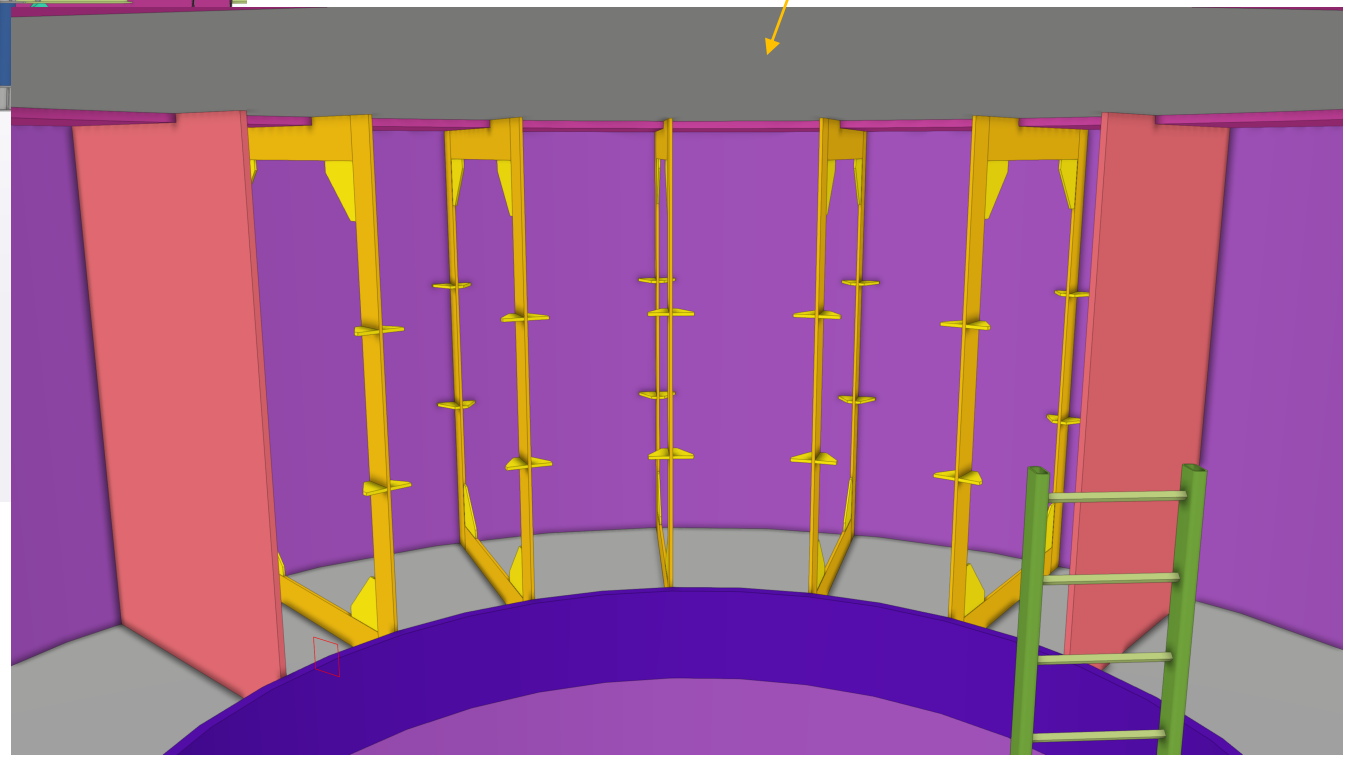
"Confined spaces are enclosed or partially enclosed spaces that are not designed or constructed for continuous human occupancy, have limited or restricted means for entry or exit, and where there is risk of injury or illness from hazardous substances or conditions. Confined spaces include, but are not limited to, underground vaults, tanks, storage bins, manholes, pits, silos, process vessels, pipes and tubulars."

3. CHECKING ANY ERECTION SEQUENCE UPDATES, MOVEMENT AND CSE

CONFINE SPACE ENTRY (CSE) Where? Transition Piece



Waste Water Tank
And
Structural welds

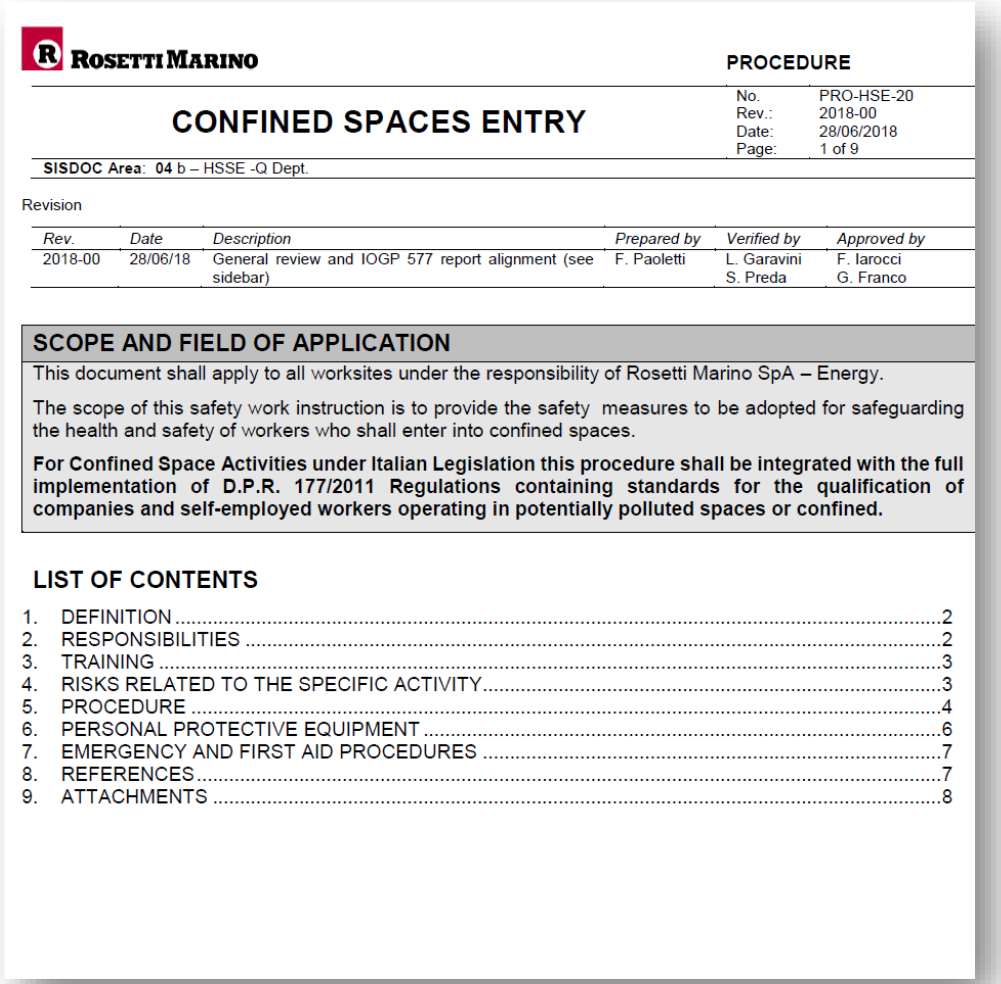


3. CHECKING ANY ERECTION SEQUENCE UPDATES, MOVEMENT AND CSE

CONFINE SPACE ENTRY (CSE) - Hazards

3. CHECKING ANY ERECTION SEQUENCE UPDATES, MOVEMENT AND CSE

CONFINE SPACE ENTRY (CSE) – How to Control



ROSETTI MARINO

PROCEDURE

CONFINED SPACES ENTRY

No. PRO-HSE-20
Rev.: 2018-00
Date: 28/06/2018
Page: 1 of 9

SISDOC Area: 04 b – HSSE -Q Dept.

Revision

Rev.	*Date*	*Description*	*Prepared by*	*Verified by*	*Approved by*
2018-00	28/06/18	General review and IOGP 577 report alignment (see sidebar)	F. Paoletti	L. Garavini S. Preda	F. Iarocci G. Franco

SCOPE AND FIELD OF APPLICATION

This document shall apply to all worksites under the responsibility of Rosetti Marino SpA – Energy.

The scope of this safety work instruction is to provide the safety measures to be adopted for safeguarding the health and safety of workers who shall enter into confined spaces.

For Confined Space Activities under Italian Legislation this procedure shall be integrated with the full implementation of D.P.R. 177/2011 Regulations containing standards for the qualification of companies and self-employed workers operating in potentially polluted spaces or confined.

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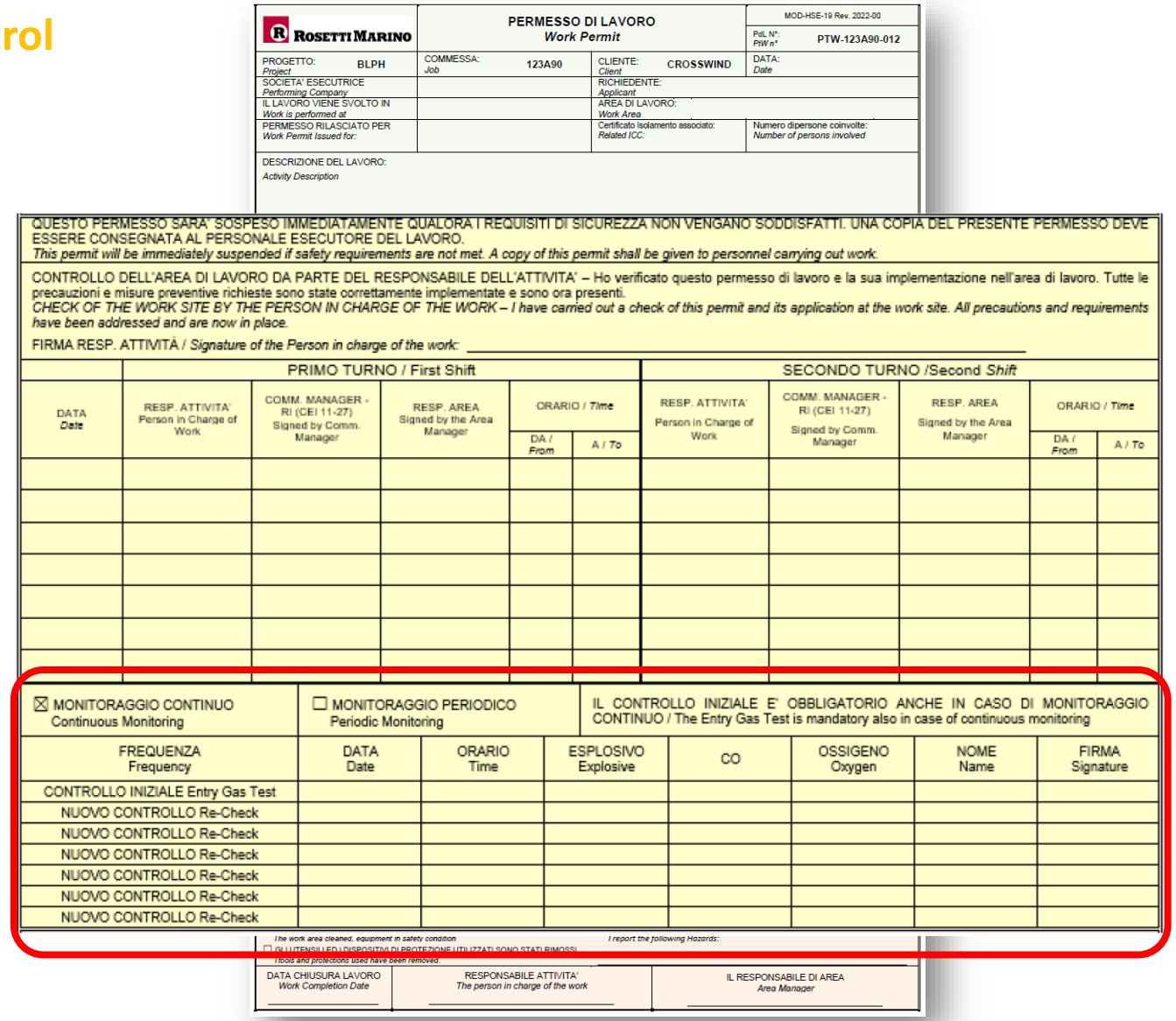
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- Training
- Permit to Work
- Watchman
- Gas Monitoring
- PPE
- JSA
- Toolbox Talk
- Emergency Preparedness

3. CHECKING ANY ERECTION SEQUENCE UPDATES, MOVEMENT AND CSE

CONFINE SPACE ENTRY (CSE) – How to Control

Permit To Work



ROSETTI MARINO

PERMESSO DI LAVORO
Work Permit

MOD-HSE-19 Rev. 2022-00

PdL N°: / *PtW n°* PTW-123A90-012

PROGETTO: *Project* BLPH	COMMESSA: *Job* 123A90	CLIENTE: *Client* CROSSWIND	DATA: *Date*
SOCIETA' ESECUTRICE *Performing Company*		RICHIEDENTE: *Applicant*	
IL LAVORO VIENE SVOLTO IN *Work is performed at*		AREA DI LAVORO: *Work Area*	
PERMESSO RILASCIATO PER *Work Permit Issued for:*		Certificato Isolamento associato: *Related ICC:*	Numero dipersone coinvolte: *Number of persons involved*

DESCRIZIONE DEL LAVORO:
Activity Description

QUESTO PERMESSO SARA' SOSPESO IMMEDIATAMENTE QUALORA I REQUISITI DI SICUREZZA NON VENGANO SODDISFATTI. UNA COPIA DEL PRESENTE PERMESSO DEVE ESSERE CONSEGNATA AL PERSONALE ESECUTORE DEL LAVORO.
This permit will be immediately suspended if safety requirements are not met. A copy of this permit shall be given to personnel carrying out work.

CONTROLLO DELL'AREA DI LAVORO DA PARTE DEL RESPONSABILE DELL'ATTIVITA' – Ho verificato questo permesso di lavoro e la sua implementazione nell'area di lavoro. Tutte le precauzioni e misure preventive richieste sono state correttamente implementate e sono ora presenti.
CHECK OF THE WORK SITE BY THE PERSON IN CHARGE OF THE WORK – I have carried out a check of this permit and its application at the work site. All precautions and requirements have been addressed and are now in place.

FIRMA RESP. ATTIVITÀ / *Signature of the Person in charge of the work:* _____

	PRIMO TURNO / First Shift					SECONDO TURNO /Second *Shift*				
DATA *Date*	RESP. ATTIVITA' Person in Charge of Work	COMM. MANAGER - RI (CEI 11-27) Signed by Comm. Manager	RESP. AREA Signed by the Area Manager	ORARIO / *Time* DA / *From*	ORARIO / *Time* A / *To*	RESP. ATTIVITA' Person in Charge of Work	COMM. MANAGER - RI (CEI 11-27) Signed by Comm. Manager	RESP. AREA Signed by the Area Manager	ORARIO / *Time* DA / *From*	ORARIO / *Time* A / *To*

☒ MONITORAGGIO CONTINUO
Continuous Monitoring

☐ MONITORAGGIO PERIODICO
Periodic Monitoring

IL CONTROLLO INIZIALE E' OBBLIGATORIO ANCHE IN CASO DI MONITORAGGIO CONTINUO / The Entry Gas Test is mandatory also in case of continuous monitoring

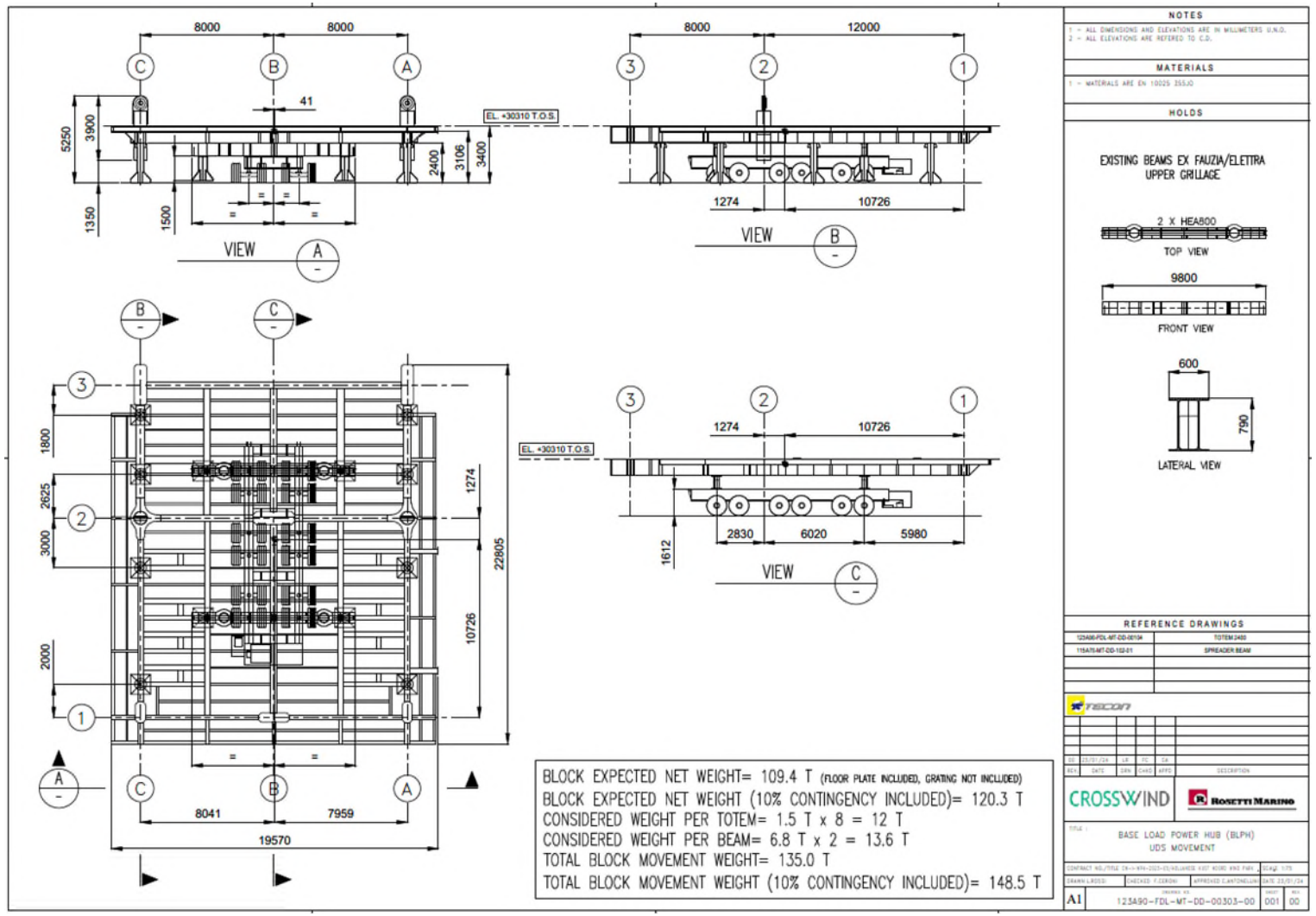
FREQUENZA Frequency	DATA Date	ORARIO Time	ESPLOSIVO Explosive	CO	OSSIGENO Oxygen	NOME Name	FIRMA Signature
CONTROLLO INIZIALE Entry Gas Test							
NUOVO CONTROLLO Re-Check							
NUOVO CONTROLLO Re-Check							
NUOVO CONTROLLO Re-Check							
NUOVO CONTROLLO Re-Check							
NUOVO CONTROLLO Re-Check							
NUOVO CONTROLLO Re-Check							

The work area cleaned, equipment in safety condition / *I report the following Hazards:*
☐ GLI UTENSILI ED I DISPOSITIVI DI PROTEZIONE UTILIZZATI SONO STATI RIMOSSI
Tools and protections used have been removed.

DATA CHIUSURA LAVORO *Work Completion Date*	RESPONSABILE ATTIVITA' *The person in charge of the work*	IL RESPONSABILE DI AREA *Area Manager*

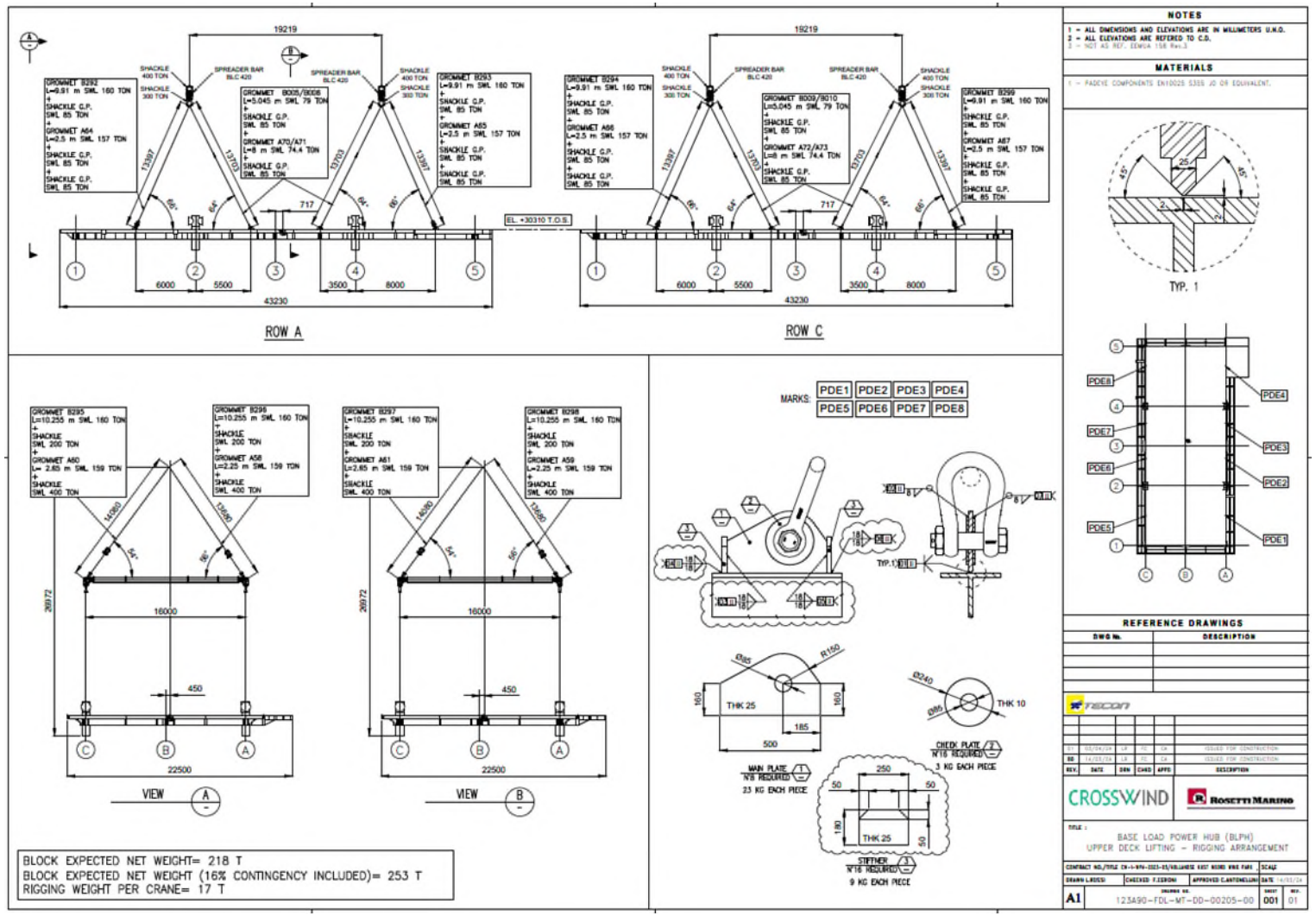
4. LIFTING PLAN ANALYSIS (STRUCTURAL ENG.)

MOVEMENT ON GROUND



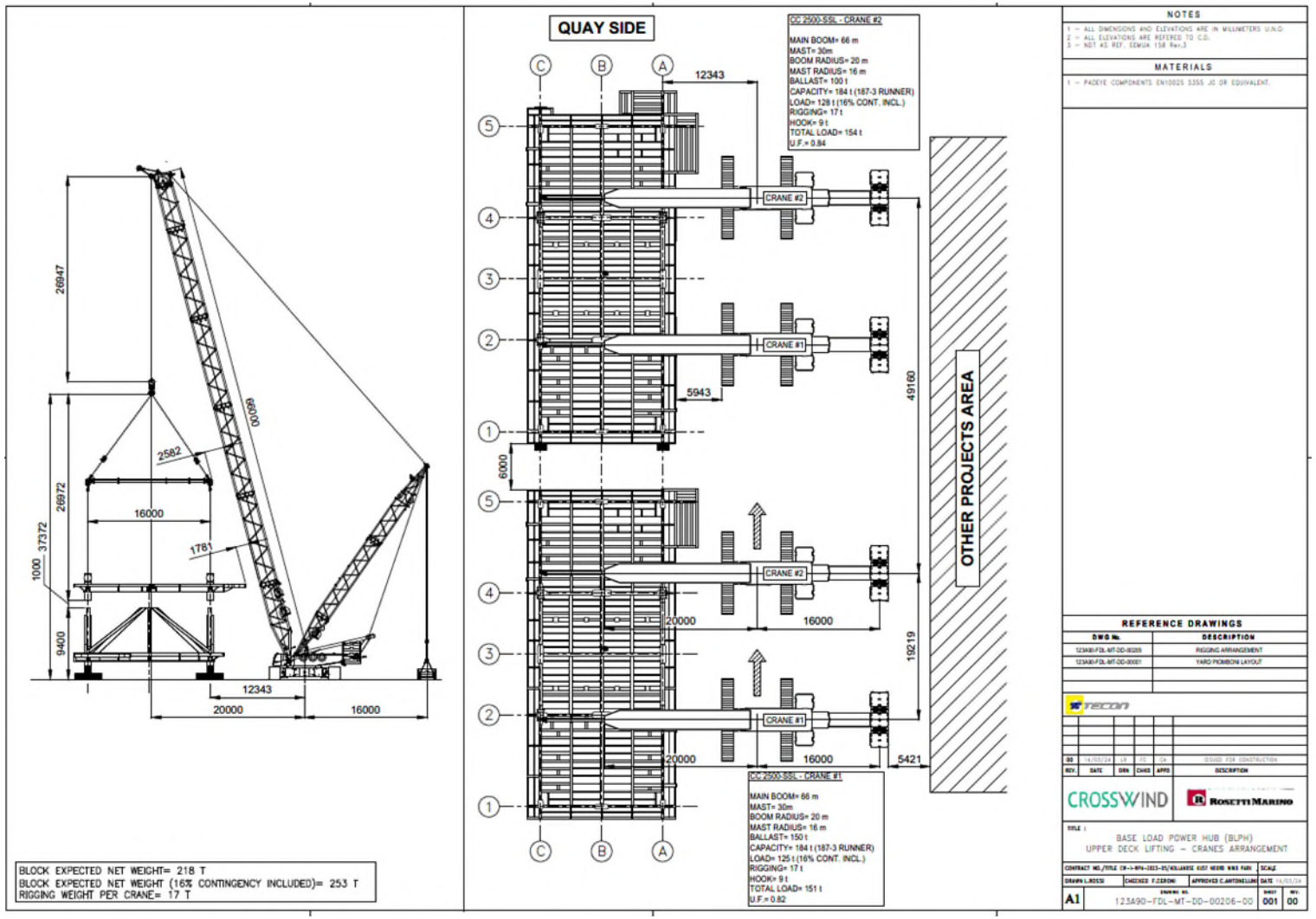
4. LIFTING PLAN ANALYSIS (STRUCTURAL ENG.)

UPPER DECK LIFTING



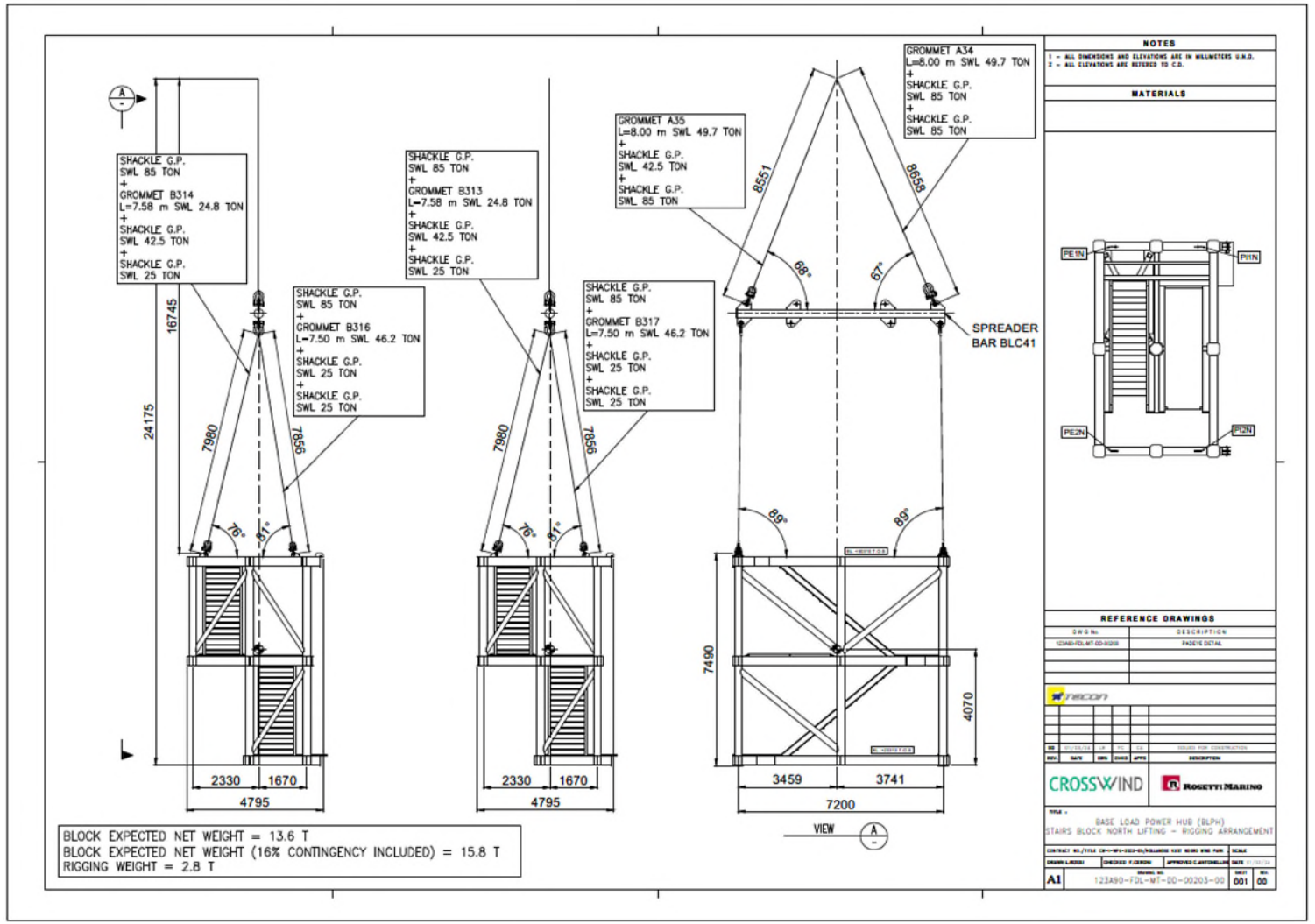
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UPPER DECK LIFTING



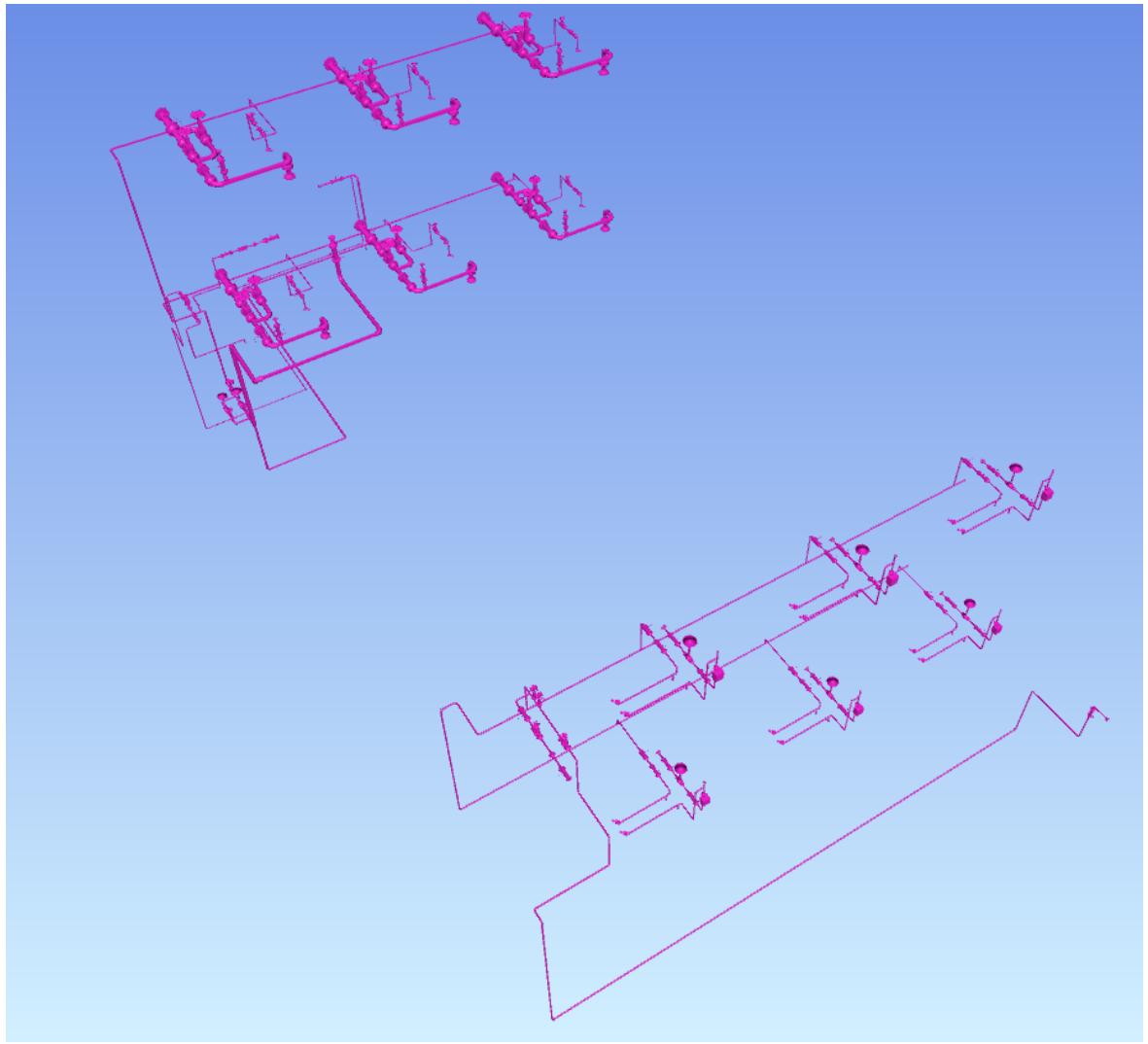
4. LIFTING PLAN ANALYSIS (STRUCTURAL ENG.)

MAIN STAIRCASE LIFTING



5. OUTFITTING INSTALLATION

PIPING

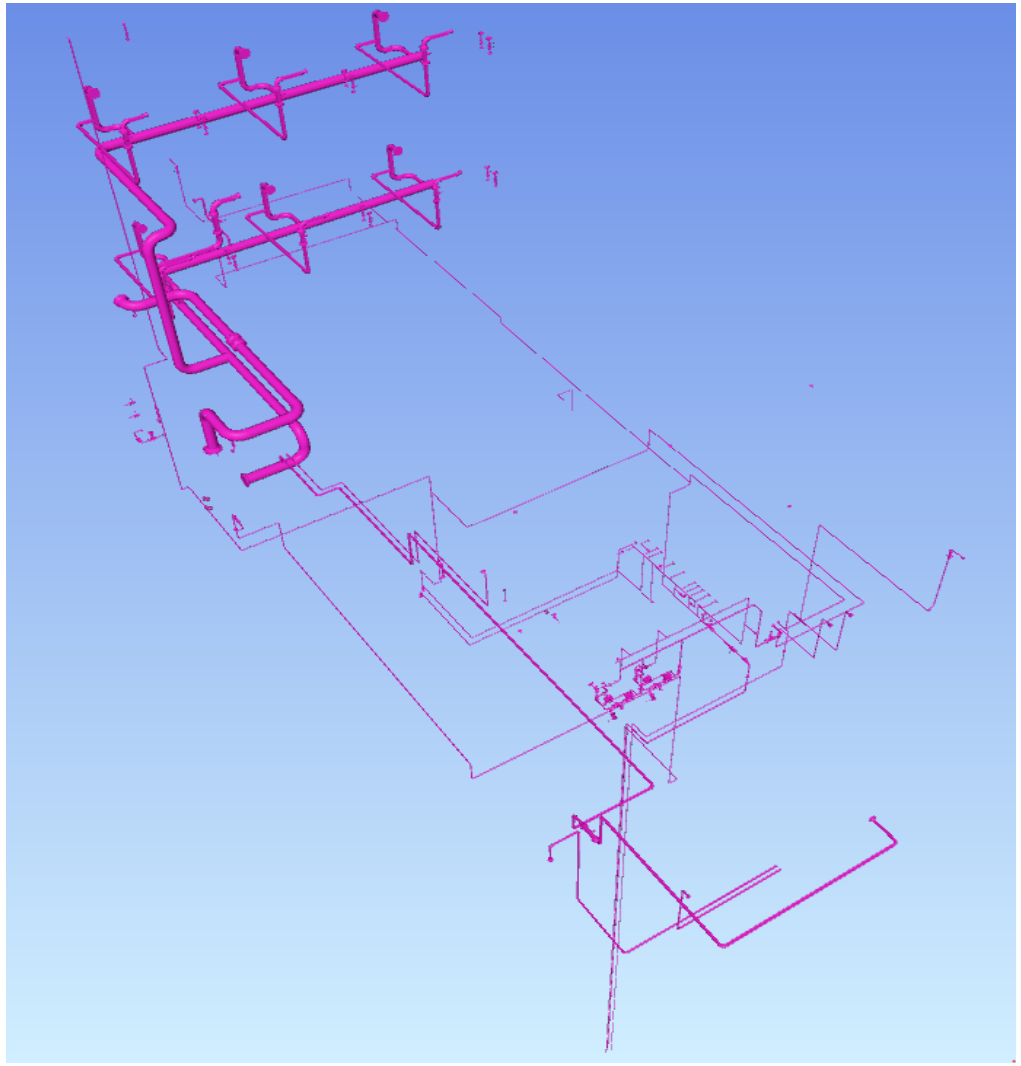


HYDROGEN

- Hydrogen pipe network is fully butt welded in order to avoid any point of leakage, while all valves are flanged purchased with Fugitive emissions test certificate No screwed connections are present.
- Total quantities of Stainless steel to be spooled and installed are around 3 tons
- All Hydrogen circuit have been studied for stress analysis according to ASME B31.12 and will be constructed according to all requirements present on isometrics drawings.
- Drain or vent connection for hydraulic test are present on the network to allow commissioning to perform the relative mechanical completion

5. OUTFITTING INSTALLATION

PIPING

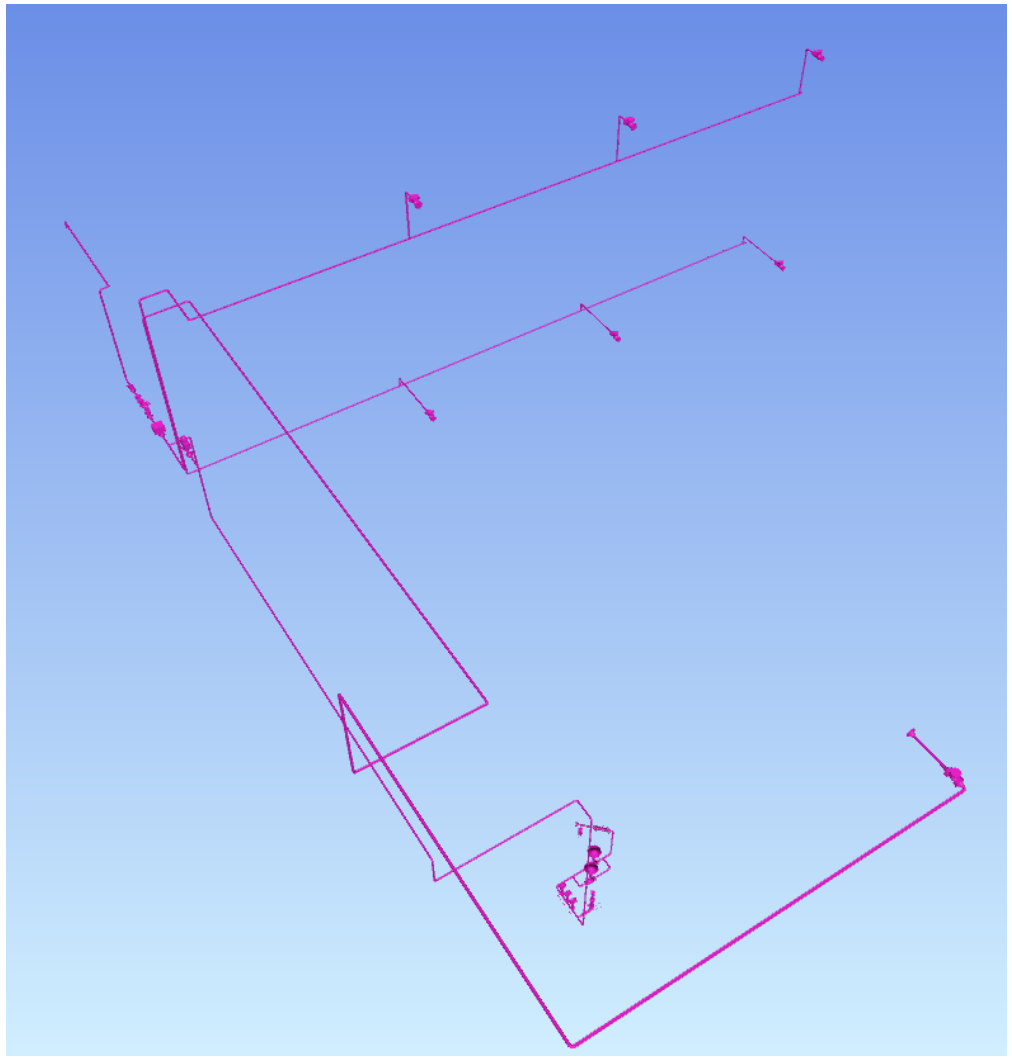


AIR AND VENT

- Instrument air pipe network is fully butt welded in order to avoid any point of leakage, while all valves are flanged. No screwed connections are present.
- Total quantities of Stainless steel to be spooled and installed are around 1 ton
- Air pots will be interfaced on distribution headers in order to serve group if actuated valves with tubing in SS.
- Drain or vent connection for hydraulic test are present on the network to allow commissioning to perform the relative mechanical completion

5. OUTFITTING INSTALLATION

PIPING



NITROGEN

- Nitrogen pipe network is fully butt welded in order to avoid any point of leakage, while all valves are flanged. No screwed connections are present.
- Total quantities of Stainless steel to be spooled and installed are around 0.5 tons and carbon steel to be spooled and installed are around 0.3 tons
- Drain or vent connection for hydraulic test are present on the network to allow commissioning to perform the relative mechanical completion.

5. OUTFITTING INSTALLATION

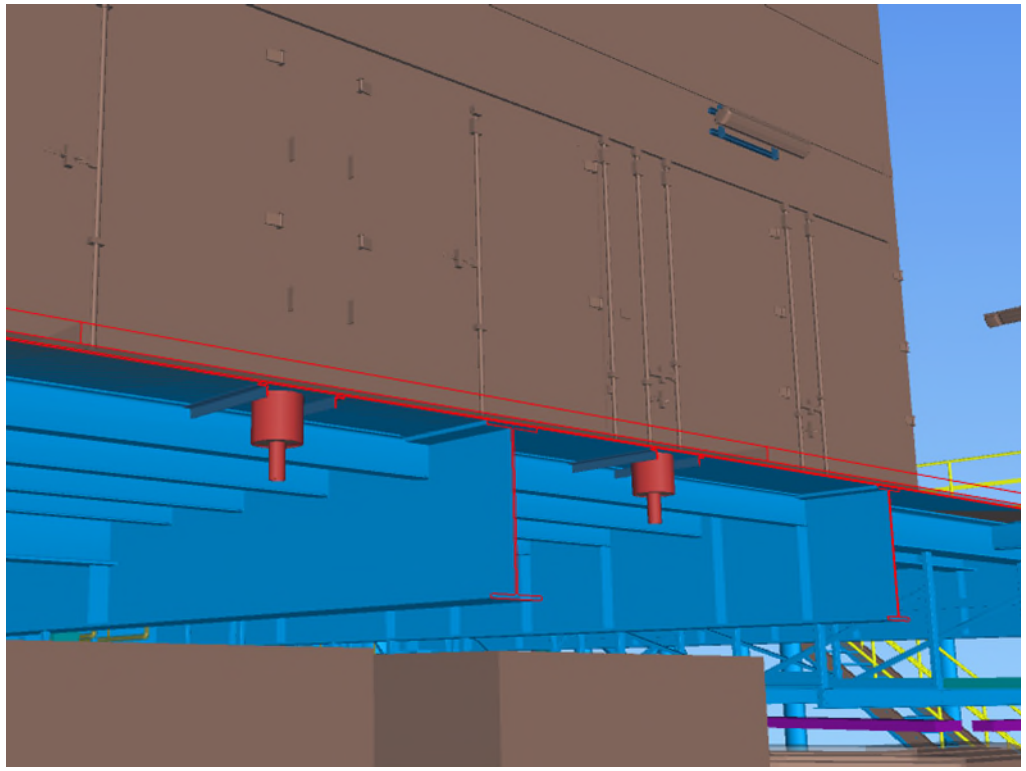
PIPING

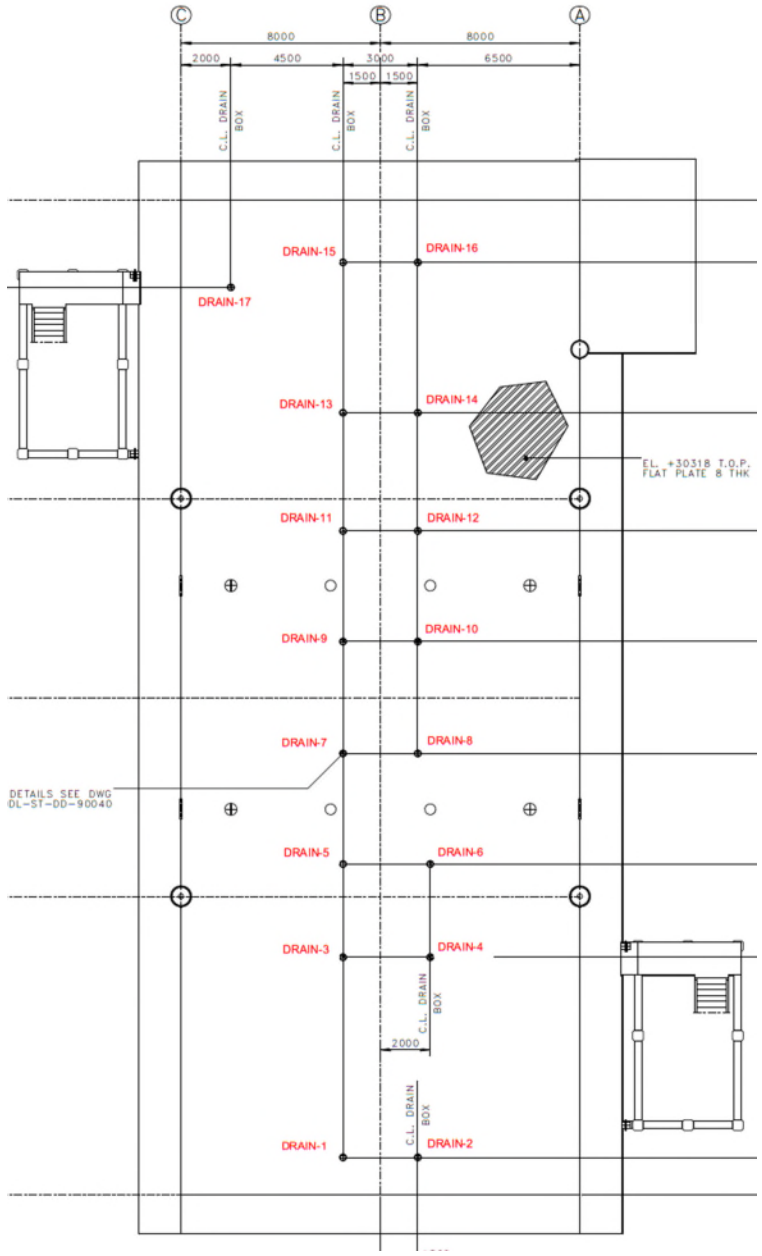
BALANCE

- Drain, vent, sea water distribution system are fully butt welded in order to avoid any point of leakage, while all valves are flanged. No screwed connections are present.
- Flanged connections have been foreseen for hook up activities and offshore installation
- Total quantities of Super duplex to be spooled and installed are around 3 tons, carbon steel to be spooled and installed are around 0.3 tons and plastic tube around 0.05 tons.
- Drain or vent connection for hydraulic test are present on the network to allow commissioning to perform the relative mechanical completion.

5. OUTFITTING INSTALLATION

PIPING - DRAINAGE SYSTEM

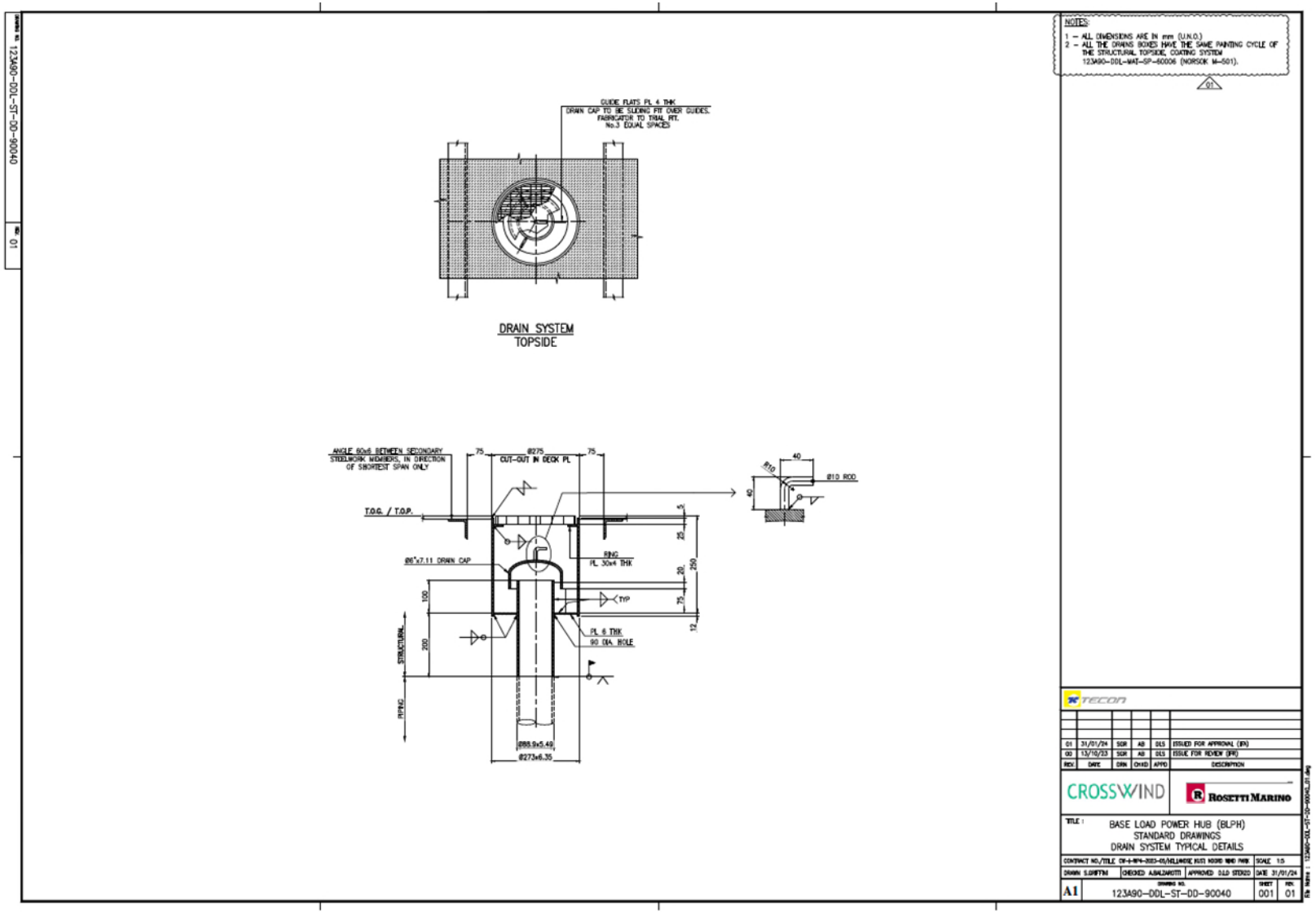




Drainage System as requested by CW team is going to design by RM engineering. The request is arrive in particular to dispose all the rainwater foreeseen in a yeasr time base on company regulations.

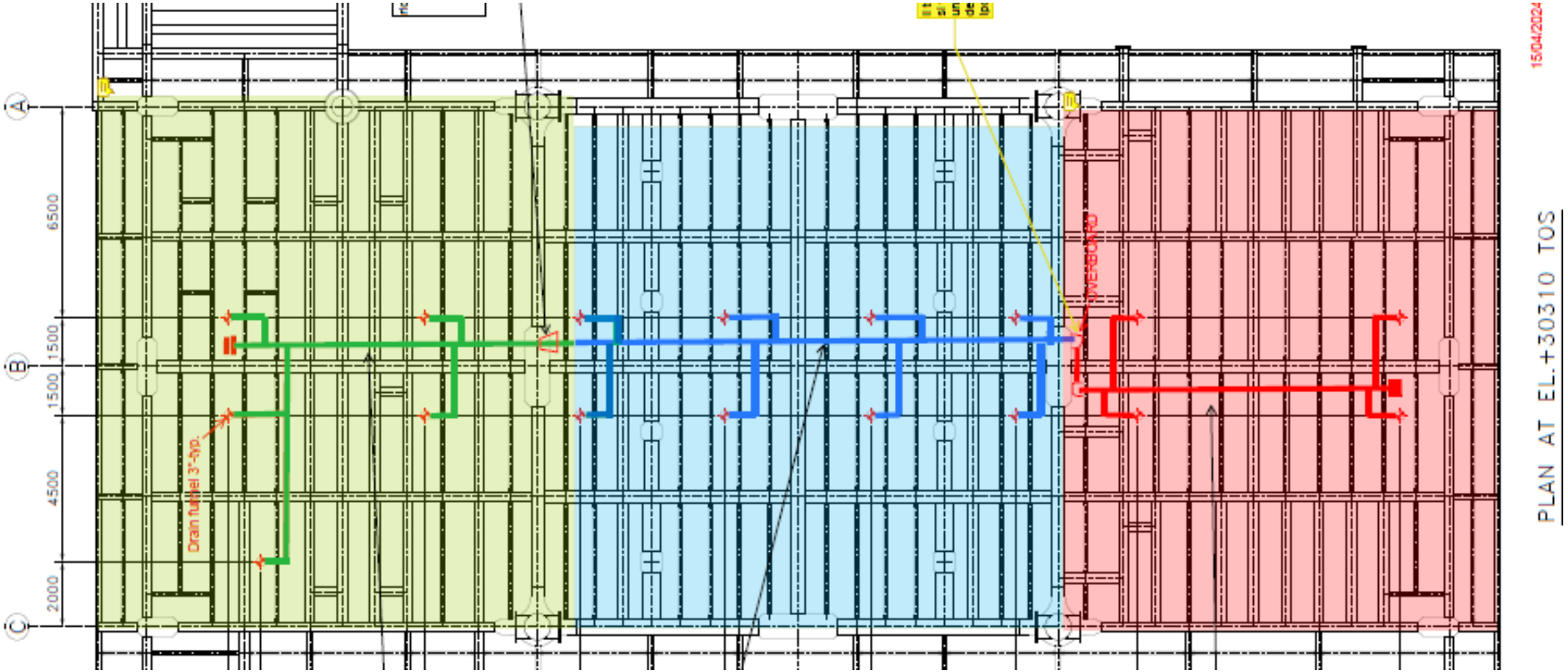
5. OUTFITTING INSTALLATION

PIPING - DRAINAGE SYSTEM (Detail)



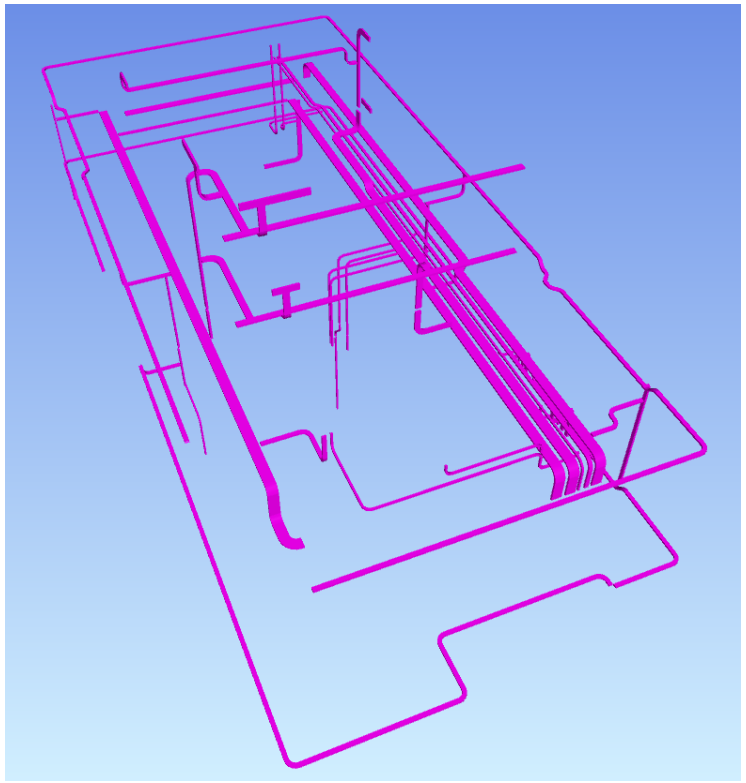
5. OUTFITTING INSTALLATION

PIPING - DRAINAGE SYSTEM

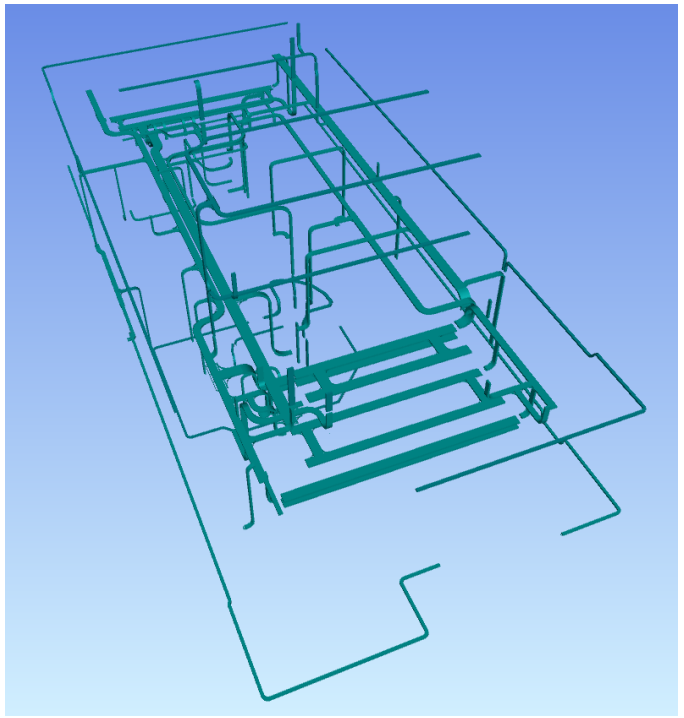


5. OUTFITTING INSTALLATION

E&I-T

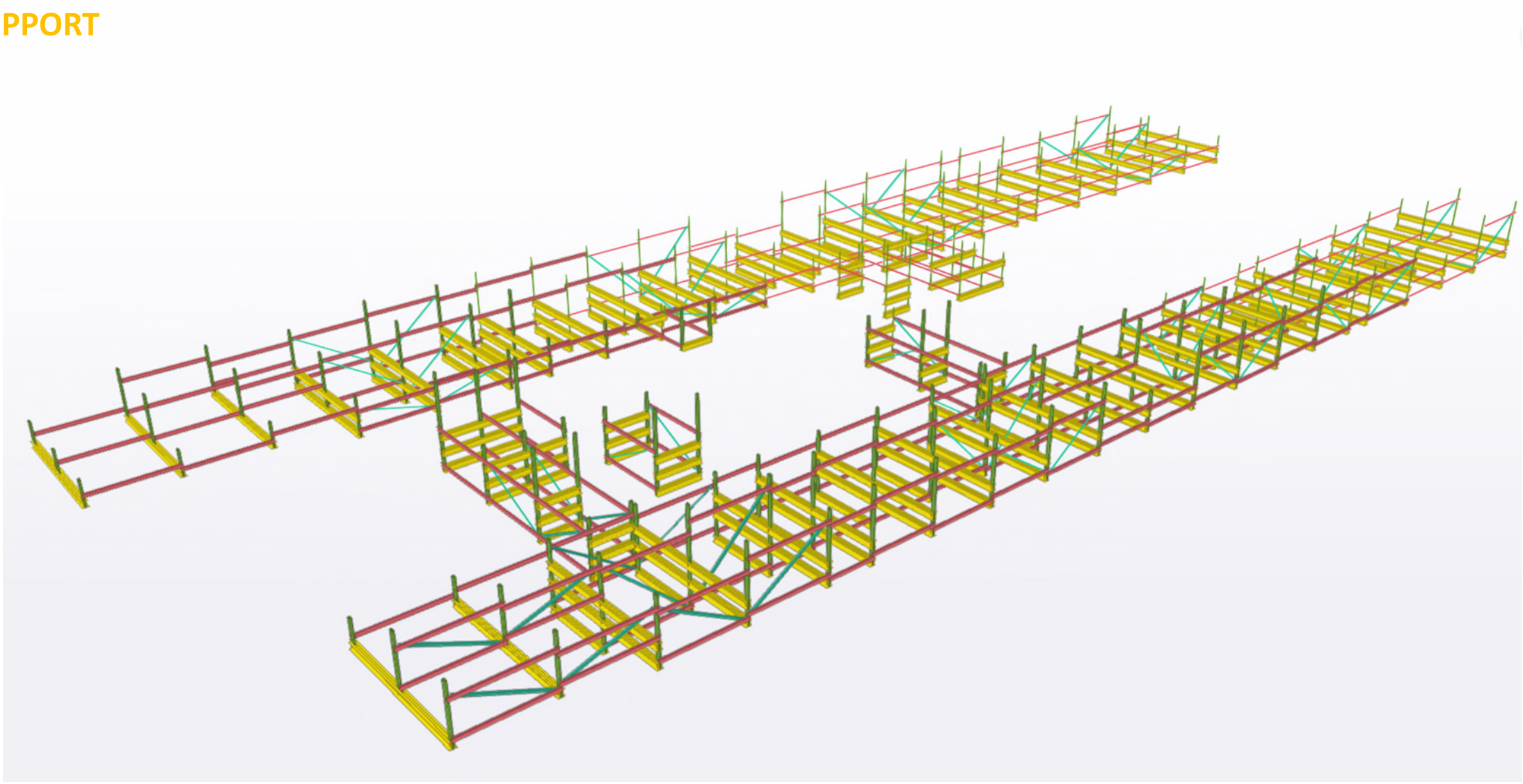


- All trays will be in FRP material to allow a fast installation and supporting construction.
- Majority of cable trays are routed below UD in order to facilitate rest of LD installation. External routing of trays on LD and UD are for lighting circuit and Emergency push buttons
- Total quantities of trays to be installed is around 6 tons



5. OUTFITTING INSTALLATION

FRP SUPPORT



5. OUTFITTING INSTALLATION

FRP SUPPORT





5. OUTFITTING INSTALLATION

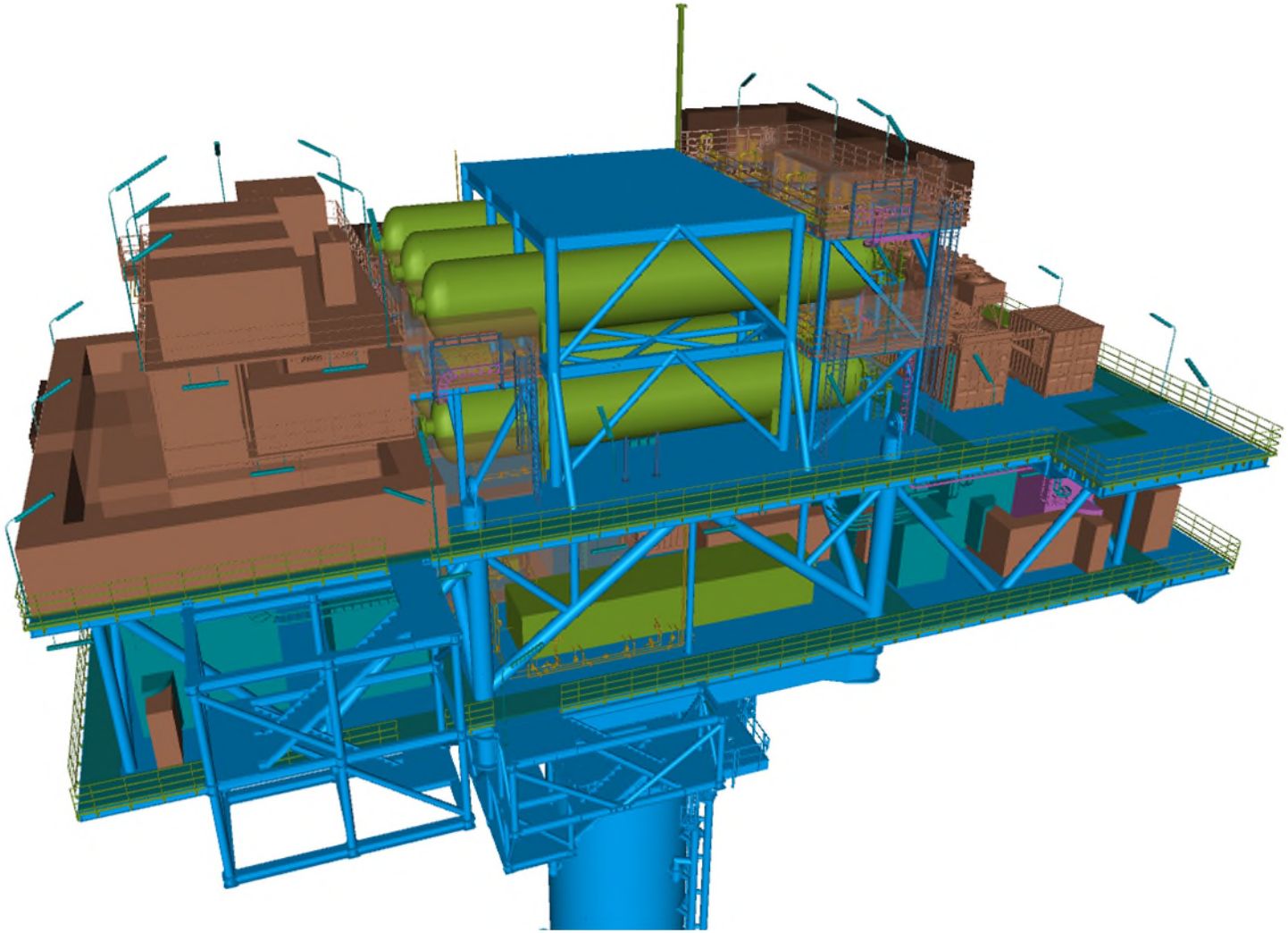
FRP SUPPORT



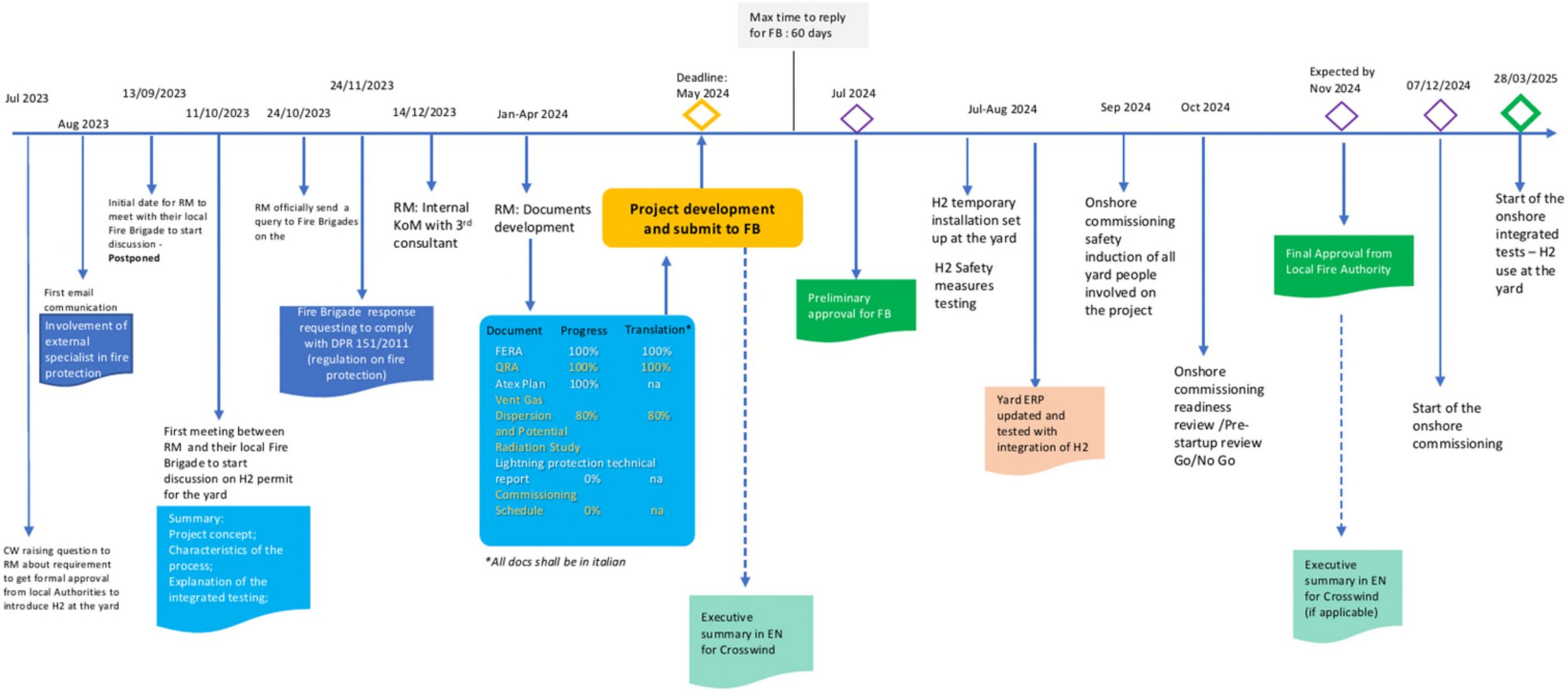


6. INTERNAL 3D MODEL REVIEW (CONSTRUCTION-ORIENTED)

OVERVIEW ON NAVISWORK



7. HSE REVIEW ROAD MAP H2



Roadmap for H2 Permit obtention @ Rosetti Marino - Piomboni Yard

8. PRELIMINARY ROAD MAP OF COMMISSIONING PHASES

COMMISSIONING DELIVERABLES PREPARED AND READY FOR ISSUE;

- MDR UPDATE INCLUDING FULL LIST OF OPERATION TEST PROCEDURES (OTPs),
- MECHANICAL COMPLETION AND COMMISSIONING SEQUENCE OF PRIORITIES,
- COMMISSIONING SYSTEMS & SUB-SYSTEMS BREAKDOWN LIST
- MC & COMMISSIONING EXECUTION PLAN

COMMISSIONING DELIVERABLES UNDER PREPARATION;

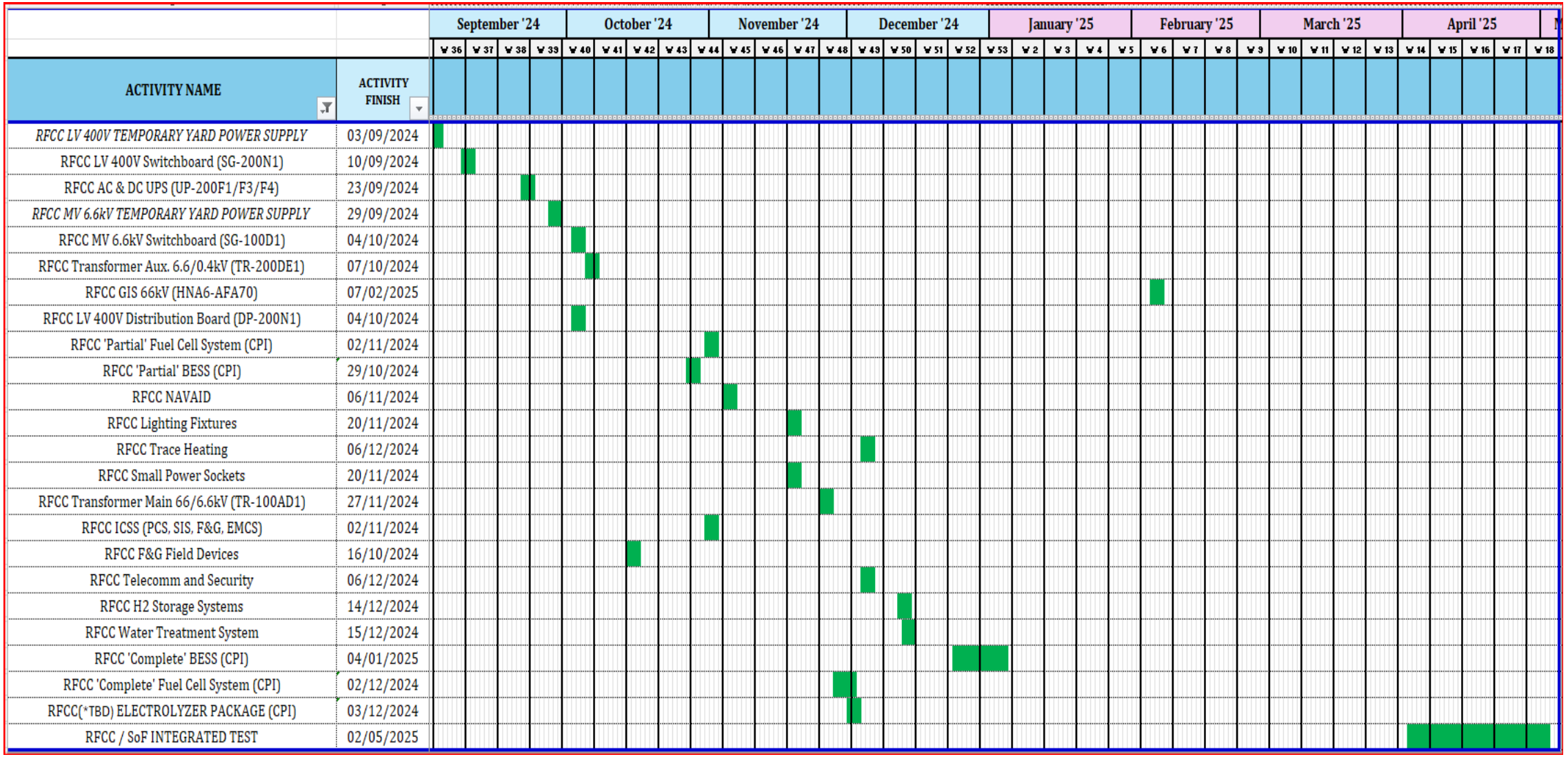
- COMMISSIONING SYSTEMS & SUB-SYSTEMS BOUNDARY LIMIT MARK-UP DIAGRAMS,
- PRE-COMMISSIONING FUNCTION TEST SHEET TEMPLATE COLLECTION (ITR-B),
- TEMPORARY YARD POWER SUPPLIES AND FACILITIES DEFINITION.

COMMISSIONING SCHEDULE UPDATE;

- PROJECT SCHEDULE REVIEW AND REVISION TO IDENTIFY TARGET SUB-SYSTEMS RFCC ‘READY FOR COMMISSIONING CERTIFICATE’ ACHIEVEMENT DATES,
- TARGET RFCC DATES ARE ALIGNED WITH MAIN EQUIPMENT FORECAST DELIVERY TO YARD DATES,
- MC & COMMISSIONING SUB-SYSTEMS ENERGIZATION SCHEDULE ANTICIPATED WITH REGARDS TO PROJECT BASE LINE.

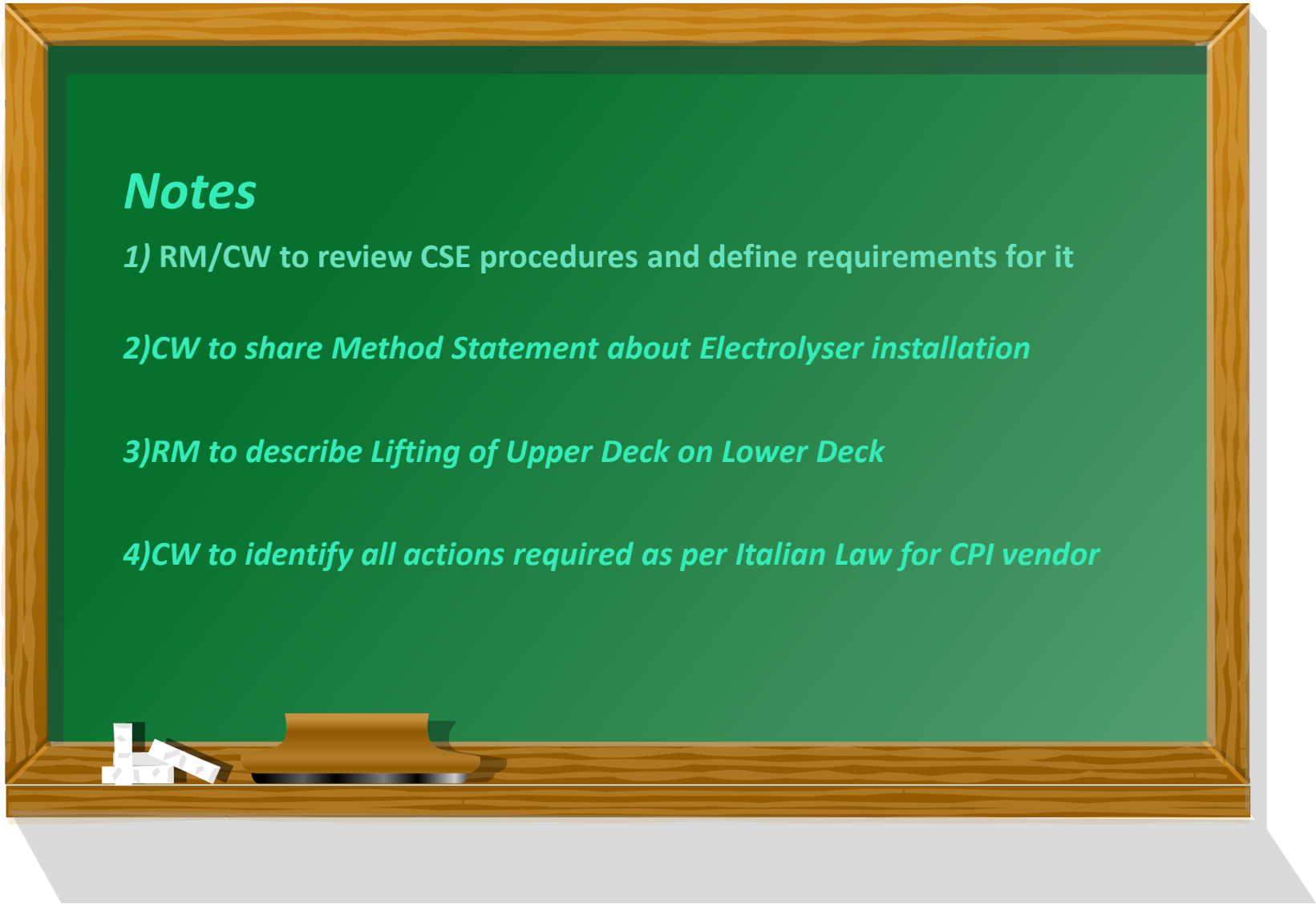
8. PRELIMINARY ROAD MAP OF COMMISSIONING PHASES

TARGET ACHIEVEMENT OF RFCC DATES;



ACTIVITY NAME	ACTIVITY FINISH
RFCC LV 400V TEMPORARY YARD POWER SUPPLY	03/09/2024
RFCC LV 400V Switchboard (SG-200N1)	10/09/2024
RFCC AC & DC UPS (UP-200F1/F3/F4)	23/09/2024
RFCC MV 6.6kV TEMPORARY YARD POWER SUPPLY	29/09/2024
RFCC MV 6.6kV Switchboard (SG-100D1)	04/10/2024
RFCC Transformer Aux. 6.6/0.4kV (TR-200DE1)	07/10/2024
RFCC GIS 66kV (HNA6-AFA70)	07/02/2025
RFCC LV 400V Distribution Board (DP-200N1)	04/10/2024
RFCC 'Partial' Fuel Cell System (CPI)	02/11/2024
RFCC 'Partial' BESS (CPI)	29/10/2024
RFCC NAVAID	06/11/2024
RFCC Lighting Fixtures	20/11/2024
RFCC Trace Heating	06/12/2024
RFCC Small Power Sockets	20/11/2024
RFCC Transformer Main 66/6.6kV (TR-100AD1)	27/11/2024
RFCC ICSS (PCS, SIS, F&G, EMCS)	02/11/2024
RFCC F&G Field Devices	16/10/2024
RFCC Telecomm and Security	06/12/2024
RFCC H2 Storage Systems	14/12/2024
RFCC Water Treatment System	15/12/2024
RFCC 'Complete' BESS (CPI)	04/01/2025
RFCC 'Complete' Fuel Cell System (CPI)	02/12/2024
RFCC(*TBD) ELECTROLYZER PACKAGE (CPI)	03/12/2024
RFCC / SoF INTEGRATED TEST	02/05/2025

9. COLLECTION OF FEEDBACKS, SUGGESTION, CONSTRUCTABILITY INPUTS



8. FIRST QUARTER Construction Phase



ANNEX - AGENDAS OF CONSTRUCTABILITY REVIEW MEETINGS

CRM 4 (60% model review date – Prior installation of outfitting item) Agenda to be implemented further with Company proposed items	Owner
Welcome and Safety moment	Construction Manager
General review of the feedback collected during the Constructability Review Meeting 3	Construction Manager
Checking any Erection Sequence updates, Movement and Scaffolding Plan	Construction Manager / Senior Structural Eng.
Highlights about Interface Week Place Holder	Construction Manager
Lifting Plan analysis	Construction Manager / Senior Structural Eng.
Outfitting installation	Construction Manager
Internal 3D Model review (Construction-Oriented)	Construction Manager and Project Eng. Manager
HSE Review Road MAP H2 (HSE Manager) (Updating)	HSE Manager
Collection of feedbacks, suggestions, Constructability inputs	Construction Manager

CRM 5 (Topics to be defined)	Owner
Topics relevant to project Down-Stream Activity like Construction Completion, Pre- commissioning; Testing and Mechanical Completion.	Construction Manager; Engineering Manager, Quality Manager; Commissioning Manager, HES Manager
Follow-up about previous meetings	Construction Manager

CONSTRUCTABILITY REVIEW MEETING 4

THANKS FOR YOUR ATTENTION

24 th April 2024, Ravenna