Career episode

Business, Career

Career Episode No. 1 Piranha Hangar Base Construction Project

Place in Colombia

Introduction

This first episode is based on my experience as Project and Quality control Manager for the project related to th construction of two piranha hangar base. This project was executed by XXX, the Company which I worked for, and the Contractor was the ZZZ. This construction project took place from August 2004 to August 2005.

Background

The main scope of this project was to build two hangar bases for “ piranha” motor boats. These hangar bases provided different facilities to military personnel that need some support during their military operations and each one had fuel storage and supply facilities, warehouse, dinning and temporary housing facilities . Thus, it was necessary to build a potable water system, sanitary system, fuel storage and distribution system, air conditioning system, bilge and ballast system, electrical network, including generator set. Hull, deck and roof structure were built on steel structure with different specs and coating schema. Each piranha hangar base weighted 209 tons and had two storeys.

The Hull was composed by five pontoons each one of 8 meters length x 1. 20 meters width x1. 5 meters depth and a main section of 24 meters length x 3. 5 meters width x 1. 5 meters depth. Each pontoon had a specific function, pontoon number 3 was designed for sewage system, pontoon five was used

for ballast system and included sea box. Inside other pontoons there were installed pipe lines for fuel, sanitary, electrical, bilge and ballast system. Hull main section was designed to fuel and potable water storage. On second floor, there were located facilities for housing, office and nursery.

The main existing problem for this project was that the hangar base had to be fabricated on site since transportation of an entire hangar base was impossible due to security conditions. ZZZ decided that this was a Best Value Proposal, which means that the selected constructor would be the company that guarantees the success of the project regardless the price. The company had to define and support not only an economic and technical proposal but also a real proposal that analyzed and guaranteed quality, transportation and security/safety factors.

This proposal also had to include a fabrication plan at Bogota and an on-site, transportation plan and on-site assembly plan. The contractor also had to outline an integral plan to perform assembly on-site and furthermore pinpoint which equipment would be used in pre-assembly and joint nine heavy steel modules.

Personal Engineering Activity

During the bid process, I was an active member of the technical team which defined technical solution, including hull modules definition, fabrication and assembly plan at Bogota and on site. This technical team was composed (in hierarchical order) by my boss Eng.

XYZ, who is the general manager of the Company, me and a group of external specialists from different fields e. g. structural, naval and

mechanical engineering . In this stage, I was in charge of coordinating equipment to define an integral solution and based on conclusions of the technical team meetings, I did relevant documents such as fabrication and assembly plan, transportation plan, Quality control plan and technical proposal, including project schedule. Final proposal presented by ZZZ was composed of two main stages. The first one was fabricating at Bogota, he hull (pontoons and main hull) and processing steel plates and steel profiles, including sandblasting and coating process. Second stage was transport these steel modules by air and joint them at project location. After a meeting, in which I had to explain and support designed plans to ZZZ, they fortunately decided that our proposal was the best option for them, so the Company was selected as the contractor for the construction of two Piranha Hangar Bases and then it started a new process, which was related to the construction of the project according to proposed plans. . For this construction stage, my job description was that of Project and Quality Control Manager . The following were my main functions:

Engineering Activities

Supervising and ensuring that each activity was performed according to drawings and specs. This activity was performed throughout the entire process, including construction stage. Supervising steel structure fabrication process. Hull modules were fabricated on a Steel Structure shop located at Bogota . These modules were pre-assembled here in Bogota to guarantee that it would not be any problem at the place.

All welding procedures of hull modules were tested by a company which is certified to verify and qualify welding quality and procedures. Steel structure

was sent to the place with primer and barrier coating; final coating was applied on site . This decision was taken for two main reasons. Firstly, at the place relative humidity level is extremely high, so quality of coating activities could not be guaranteed; furthermore, sand blasting procedures could not be done at the places due to its cost and environmental regulations. Selecting Test Company to perform and control quality of main.

I also supervised and ensured that welders were certified by an approved organization. Ensuring welding activities, pipelines and equipments performed at optimal level. Sought materials and equipment needed by the project and assured that those fulfilled requirements established by ZZZ. Once I had identified the supplier for equipment and/or materials, I gave the info to the Purchase Department of the company and they performed the acquisition and coordinated delivery procedures. This procedure was under my supervision and I had to be informed about purchase and delivery status.

When the supplier was located out of the country, purchase procedure was myresponsibilityfrom beginning to end. This meant that I had to define right supplier, perform importation and nationalization process and coordinate process until its delivery on-site. Writing technical reports that were required by client. Guarantying to client that all activities were performed according to submitted plans. Supervising that those activities were performed fulfilling requirement of Quality Control Plan. Simulating behavior of each piranha hangar base according to hull construction and specific loads.

This procedure was very interested since I learned new things related to vessels . For this activity I was supported by Eng. Y who is a Naval Engineer from the National Navy and he really taught me a lot about this subject, we

use a special software that simulated vessel behavior according to its own weight, tide level, bilge and ballast tank level and specific conditions that could affect hangar base stability.

Management Activities

Controlling execution budget. Controlling project progress and project schedule. Controlling reports that were required by ZZZ, such as daily reports, Man hour report. Writing and preparing submissions of materials, equipment or procedures which must be submitted to ZZZ and must have its approval. It was a key issue since ZZZ approval took about 30 days and activity could not be started if all the related submittals were not approved. So, any mistake or delay on this activity could significantly affect the progress of the project. Calculating and supporting payment request. Attending meetings requested by client, in order to support project and its progress to ZZZ.

Defining and requesting to human resources department required labor to work on site. Eventhough assembly on site was easier than the one that we had planned; there was a problem with the structure designed and built to maneuver steel modules into the water. At the beginning this structure was composed by steel truss and pulleys; however due to weather reasons we required a fast method; so I proposed and built a series of roller boards which were fabricated on AC SCH 40 pipe which was the only strength material available on-site at this stage of the project. It was a good idea.

The success of this project was due in part to the rainy season as water level had significantly increased, and so steel modules were close to low-lying

land, reducing transportation and handling distance of big steel modules from work area to river.

Summary

For the successful execution of this project it was important to have create and maintain good team work. Since this project included different fields of engineering and it was mandatory to have positivecommunicationbetween site engineer, subcontractors and specialists in order to avoid any mistake. The entire roject was performed and completed amidst a healthy workingenvironment. 10. The project was very interesting because it required technical and managerial abilities . It was a personal challenge because it was my first project not only with the company but also with the ZZZ. They have a quality system that really does not make many mistakes and they also have documentation systems and procedures that takes time and cannot be underestimated during the planning process. 11. Our proposal was the best for them; I think that they had some doubts about air transportation and assembly on site of prefabricated modules.

Thus, at the beginning, they were extremely dedicated to this project and when they realized that the entire hull was floating on the river, they were proud of their decision. Project fulfilled ZZZ requirements; it was given additional execution time since it was an unexpected rainy season. 12. I think that my role contributed to the project, since I was in charge of key activities and any mistake could dramatically influence the project and its objectives. I realized that I haveleadershipabilities and that projects could seem complicated but when a project has drawings, specs, a good quality control system and good team work anything is possible. This project was

also interesting because it had special equipment that had to be bought in the USA; there was an armor steel plate that was bought in Peru so I learned how to do international purchases and nationalization procedures. 13. In addition, I had to constantly coordination with other departments and gave technical support to the site team, duties that were new to me. It was an important episode in mycareerand has helped to develop my knowledge base, experience, skills and confidence.

Career Episode No. 2 Design And Construction For Midnight Express Facilities

Place – Colombia

Introduction

This episode is related to my job as Project Manager and Quality control Manager for the design and construction for midnight express facilities at Place (Colombia), which is a Pacific coast city. This project was executed by XXX, the Company which I worked for, and the Contractor was ZZZ. This project took place from July 2006 to March 2007.

Background

The first main objective of this project was to provide, at pier zone, fuel, electricity and water to midnight express patrol boats. Fuel was provided from two storage tanks 5000 gallons ea. located at 984, 25 feet away from pier location. Electricity had to be taken from a generator set located at the same distance and water was taken from a storage tank located at 1. 640, 42 feet away from pier. These pipelines had to be underground and at pier

zone they had to be anchored to concrete structure and protected against sun and bumps.

Second objective was to install infrastructure necessary to install a jet dock system which is a floating dock system that works according to tide level of fluctuating waters. This floating dock was 45, 93 feet length per 29, 53 feet width and was composed by cubes of surface area of 20" x 20" (500mm x 500mm) , 14 pounds (6. 4 kgs) weight, and over 200 pounds (90 kgs) of buoyancy. The cube was air filled (basically a rigid, hollow compartment) with a wall thickness of approximately ? " (6mm). In order to accomplish this second objective, a special design was created since this jet dock system had to be anchored to existing concrete piles which were not totally aligned with Y-axis nor designed to loads and movements transferred by floating dock and midnight express boats. It is important to note that at this Pacific area, tide levels vary from 1 to 19, 69 feet daily; this data was obtained by using Marina records and by doing measurements each hour during six months which were recorded and analyzed in excel.

So it was very difficult and complex to design a system that worked according to this tide level variation and that were strong enough to support wave forces and directions. In addition, infrastructure included a floating steel platform that was moved according to tide level and that was used as pedestrian access to the jet dock floating platform. It was necessary to design and built a fiber glass floating unit that was used as guide to the steel platform. At the existing pier, there were installed two dockside pillars which supplied electrical energy and water to midnight xpress boats. Fuel was supplied by two fuel pumps. The scope of this Contract had two main

activities: Design and Construction. This kind of contracts with ZZZ is very important and requires special attention from Contractor Company. Design procedures have three submittals: Submittion #1: 50% Design submission Submittion #2: 90% Design submission and 100% Design submission Each one of these documents must be submitted to ZZZ in order to have their approval . This approval takes 30 calendar days, and no work on sitecan be started if final submittal has not been approved; thus, any mistake in these documents will carry out a delay on execution time.

Personal Engineering Activity

At the Design and Construction stage my job position was Project Manager and Quality Control Manager and I was in charge of representing the company during project execution, approving or disapproving executed activities, preparing and submitting payment request, Maintaining updated submission register, preparing and signing daily report .

If any work had not been performed according to specs and/or technical code I had authority to reject the work and to define corrective actions. 9. I also coordinated and supervised the Project, assured that the work was properly scheduled, assured that costs were being properly controlled and maintained and an efficient safety program was in place. The Design team was composed by a Structural Engineer, an Electrical engineer and me.

I was in charge of this team and I coordinated and supervised their work. I also designed hydraulic network and environmental system. I was an active member of this team and my work was reported directly to Eng. W, who is the general manager of the Company. Once specific design had been done

by each external specialist, I reviewed those and if requirements were fulfilled, I prepared design submissions, which included drawings, calculations and specs and submitted it to ZZZ for their revision and approval .

These specs were done using SpecsIntact program, which is an specialized software created by ZZZ to edit and create technical specs according to scope and conditions of specific project. In order to do environmental design I first defined two main criteria.

- The not treated water quality and
- the use of treated water and required quality.

For determining water quality I based my analysis on lab results for well located near the project area.

And for the second aspect and according to specs the required treated water quality was determined based on the following uses:

- Water not apt for drinking

Water apt for human contact: Activities where human skin came in contact water Fresh water washes activities to retire marine salt from non sensible materials that do not require being washes with demineralized, distillate water or with more physical and chemical quality than potable water. 13. After these criteria had been defined , treatment plant capacity was calculated based on the estimated operation flow, maximum 0. lps, storage volume of 1000 gls (according to SOW), and critical conditions or maximum consumption; the storage volume would be consumed in 1. 75 hours. I

determined that the well must supply the consumed water at the same rate, which is 0. 6 lps, to assure water supply at all times.

Thus, I selected a treatment plant of 0. 6 lps. 14. According to the water quality expected and its final use, the treatment to be used included the following processes:

- Ventilation1 ventilation tray set

Flocculation and Coagulation : 1 coagulation and flocculation tank Sedimentation1 sedimentation tank The Hydraulic design was done using the Hazen-Williams equation with a roughness coefficient C = 150 for PVC pipes and according to the International Plumbing Code 2003. It was not difficult to develop the networks design due to all of the input parameters were known, so it was make the calculations according to the design process and fulfilling the international standards requirements. The challenge for this project was to design a system easy to assembly and guarantee that materials would resist sea environment and fluctuating water forces. Works must be performed on the sea and on a rainy season.

For these reasons materials and procedures had to be carefully selected, reviewed and approved. By analyzing information given by surveying methods, existing piles were not aligned; they did not have a common axis . Thus, in order to prevent damage in jet dock system, it was mandatory to create something that fixed the jet dock guides in the same X and Y axis. Since the jet dock system required poles to let floating board to move according to tide level, I thought that it would be a good idea if these poles

had horizontal members as long as it was required to absorb X-Y axis variations.

To achieve this purpose, I suggested steel guide poles, instead of PVC guide poles which were recommended by Jet Dock supplier; in addition, this material would guarantee a stronger structure, able to support wave forces. At the bottom section, these guide poles were fixed to existing concrete pier by fabricated steel clamps plate 1/8“(height= 1, 6404 feet) jointed with O1” screws and at top section they were anchored to existing concrete pier beam by using adhesive mortar for rebar and anchor fastenings.

These guide poles and their supports were prefabricated and preassembled at Bogota, Colombia. On site it was difficult to install these guide poles, since their length was 22, 97 feet, tide level would be, as minimum one meter above guide pole anchor system. Thus, this anchorage activity had to be performed with specialized diving people that guarantee that screws were installed according to Torque requirements. It was an interesting experience because, even though it was an easy project, there were many difficulties that could influence the overall quality of final product.

Thus, it was necessary to have good specialists for each field. In addition, on site was a senior engineer who had great experience regarding coastal projects, so his knowledge was very useful in solving specific problematic on-site details.

Summary

I learned new things which related to projects surrounding coastal environments. Overall, in order to do the job properly, a number of variables

had to be considered. All the construction procedures were defined throughout design activities; since I did not have knowledge about ea water behavior and how waves and tides can impact in an on shore project, it was interesting to find that my proposed ideas were accepted without hesitation. Since I was in charge of key activities and any mistakes could affect the project, I worked effectively and diligently to ensure the smooth completion of the project and to ensure client satisfaction. The ZZZ and YYY were satisfied with the project and the installed equipment.

Career Episode No. 3 Design And Construction For Concrete Recycling System

Bogota, Cundinamarca – Colombia

Introduction

This episode is based on my experience as Project Manager for the project related to the construction of infrastructure required at a concrete recycling system RRR® at Precast Concrete Plant COMPANY at Bogota, Colombia. This project was executed by XXX, the Company which I worked for, and the Contractor was COMPANY which is a National Precast Concrete Manufacturer. This construction project took place from December 2007 to March 2008.

Background

Precast concrete plant required an integral solution to solve the final disposal of residual concrete . They did not have space nor adequate treatment for this material.

In addition, the concrete plant did not have a drainage system so rain water got mixed with wash water and water produced by daily operation and

maintenance of proper equipment and concrete mixers. This water used to be accumulated at lowest areas creating different environmental and operational problems, such as floods, visual and soilpollution. Due to these conditions, COMPANY decided to install a recycling RRR® system, which offered the complete solution not only for reclaiming aggregates and cementitious water for reuse in the production process but also for treating excess water.

A recycling system provides a closed loop system and consists of a reclaimer and a system to reuse the water. With a recycling system the sand and aggregates as well as the greywater are reused in the batch plant. There was no material leftover to dispose of and therefore a zero discharge solution. This water is treated in a way that enables clear water to be available after the process and can then be used within the factory . The accruing sludge can be used in the batch plant to provide a closed loop system.

The objective for this project was to build several civil works such , Rigid pavement including granular as : Reinforced concrete tanks for storage of clarified and greywater, foundation for RRR® equipment layers, potable water network , electrical network, drainage system and environmental works like grease / oil trap and sand trap treatment . As project manager, my work was supervised by Eng. M who is the owner of the company and I reported every subject related to project performance to him and the general manager of the Precast Concrete Company.

Personal Engineering Activity

At the beginning of the project we had a general drawing given by RRR® system supplier. This drawing was a layout drawing that indicated general dimensions / distances and water and electrical supply network requirements. The first activity that I had to do was locating RRR® infrastructure inside the general layout of the concrete plant which had existing facilities including cement and aggregates bins, office building, warehouse and a maintenance shop. Thus, I had to define a RRR® system location analyzing existing facilities and parameters like flooding areas, maneuver distances and turn radius. After the suggested location was approved by Client, it was mandatory to improve draft drawings given by machine supplier. Therefore, the second activity was to define maneuver area, pavement slope, drainage system location and grease/oil trap and sand trap treatment location. Once these criteria had been defined by me and approved by the general manager of the Precast Concrete Company , I designed each one of these items . For designing a drainage system I analyzed two main water sources; rain water which was calculated by using Rational method and wash water which was calculated by direct measurement and according to number of loaded cars per day. For Rainfall intensity I used pluviometric Record located at the project area. Since water had sediments, I designed a system based on reinforced concrete open channel in order to facilitate maintenance operations.

A Rational Method

To design grease / oil trap I used flow calculated in previous stage and used a retention period of 20 mins which is the one suggested by National code

for Hydro sanitary Activities (RAS) . The company for whom I worked, started the construction of the project according to design drawings. I supervised each activity and ensured performance was carried out in accordance with drawing specifications given by RRR®, who was the equipment supplier. I also Coordinated and supervised the Project performance, Assured that the work was properly scheduled and that costs were being properly controlled. My work fulfilled project requirement. This could clearly be noted when equipment and recycling systems arrived from Germany. Everything meant my requirements and the installation process went smoothly. Drainage and treatment system were an integral solution to existing water problems reducing flooding areas.

Throughout project execution it was not technical difficulties, assembly on site was easy and there no were required any extra works or any modification

Summary

For the execution of this project it was very important to have good client communication. Positive team work transpired throughout the entire project and this and this affirmed and aided the constructive client communication. OverallI believeI was a good project manager, both from the client perspectives and from the workers perspective.

The project was a success and I believe that success was and is a reflection of my capabilities. The project was very interesting because it required technical and managerial abilities. It was a personal challenge because it was the first recycling system in my country. There was little technical

expertise and know how available to assist me and few knowledgeable people to go to for advice. I had to use my own initiative to get the job done successfully. I think this project has been one of the biggest challenges of my professional career thus far.

I had to develop an important design project in a short time and without previous experiences about RRR system. In addition I had to constantly coordinate with other departments and give technical support to the site team, duties that were new to me. It was an important episode in my career and has enabled me to gain much knowledge as I had little previous experience in many of the areas I encountered. This project enabled me to further my professional knowledge base, expand my technical expertise and develop my managerial capabilities.