

Installation of storage tanks construction essay



The proposal contains the detailed scope of works on various discipline of the tender, procedures developed for execution of Storage tank construction of the project " Construction of Oil Terminal, the purpose of this technical proposal is to provide clear direction in the form of procedures, controls and administration practices in order that the services provided by contractor are in accordance with the tender and contractual requirements and in accordance with CGL internal quality systems and procedures. The intent of this document is also to communicate the execution strategy to all concerned.

Proposal Purpose :

This proposal sets out the scope, programme and terms to provide a single window service, with all the expertise and technical competence for the entire work related to the storage tank construction as given below.

Design and engineering

Procurement of materials for the tanks

Fabrication

Field erection , welding and testing

Surface preparation , painting

Assistance during Pre commissioning, commissioning and training

All the works shall be carried out as for the completeness of the project. This proposal is in accordance with the engineering specifications, drawings, all

the statutory regulations and international codes and standards have been considered in our proposal for this Job.

Basis of offer

Proposal is based on tender enquiry, data sheets, specifications, drawings issued as the tender documents.

Validity

This proposal will be valid for acceptance within 60 days from the date of commercial tender submission any further extension on proposal validity shall be subject to mutual agreement between the client and contractor.

B. Detailed Scope of Works

1 Proposed List of Tanks

Sr. No

Tank Tag no

Product

Type

Qty (Nos.)

Capacity m3

Size in Meter

Diameter

Height

1

T-2011/2012

Gas oil / UGL

EFR (single deck)

2

750

11. 5

8. 5

2

V-4011

Jet A1

Horizontal

1

10

2

3

3

TF-T-2005

ULG 98

EFR (single deck)

1

5000

22.5

15

4

V-2011

ULG 91/95/98

Horizontal

1

10

2

3

5

T-7001/T-7002

Firewater

CS Dome

2

6500

22.5

19

6

TF-T-2003/2004

ULG 95

EFR (single deck)

2

20000

36

22

7

V-1011

Gas oil

Horizontal

1

10

2

3

8

TF-T-1001/1002/1003

Gas oil

EFR (single deck)

3

20000

36

22

9

TF-T-2001/2002

ULG 91

EFR (single deck)

2

20000

36

22

10

T-5001/5002/5003/5004

Jet A1

CS Dome

4

24000

41

22

2. Scope of Supply and Works

2.1 Scope of Supply

All permanent material for tanks such as Plate Materials, nozzles & manholes, wind girder and stiffener etc. required for the tanks.

Internal & External floating roof, Floating roof Seal, all the permanent accessories of the Floating roof.

Internal and external accessories indicated on data sheet

Clips for platform/ladder/pipe support directly welded on tank body.

Bolts/nuts, clamps, gaskets for internal

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Blind flanges together with bolts/nuts and gaskets for blinded nozzles and manholes

Davits and/or hinge for manholes.

Vortex breaker (if required).

Platforms, spiral stairway with handrails, roof handrail.

Internal pipe with support

Breather valves/ emergency drain / Rim vents and gauge hatch (if required).

Name plates with bracket

Earth bosses or lugs

Settlement check lugs

Support clip for firewater and Foam system piping connected to the tank.

Surface preparation and Painting material for equipment

Test plate for PQT and WPQT

Spare parts of gasket and B/N for construction and pre-commissioning.

Construction Equipments

Electricity for construction.(fabrication and erection)

Heavy equipment, all machineries and other facilities for construction

Welding rods, grinding wheels, cutting gases and other Miscellaneous Consumables for construction

All the NDT equipments for testing and inspection

Hydraulic Jacks & Power Pack for the tank erection

Pumps & temporary pipes and fittings for hydro testing

Tools and jigs including scaffolding for construction

Consumable material for erection

Blind flanges together with bolts/nuts and proper gaskets for hydrostatic test

Corrosion inhibitor for hydrostatic test (if required)

Direct and Indirect Manpower

Dedicated design and drafting item for the project.

Dedicated Construction management team at site

Dedicated project management at Office

Supervisory staff for Fabrication and erection

QA/ QC personnel for testing and inspection

Safety and EHS officers a site

Skilled, semi skilled and unskilled man power for the fabrication and erection and testing at site

2. 2 Scope of Work

Mechanical design (strength calculation and detail design)

Loading data for tank foundation design.

Manufacturing drawings

Documentations (procedure – fabrication & construction, ITP and others)

Submission of as-built documents and drawings

Material procurement

Shop fabrication

Packing list (packing volume, size & weight, etc)

Packing and inland transportation of shop fabricated components.

Unloading of materials at site

PWHT for 1st course shell with nozzles as per code requirement.

Hydro-test and water drainage as broom clean condition after hydro-test and drying

Settlement checking during hydrostatic test

Temporary work of utility for construction and test

Site construction

Inter connecting walkway between tanks.

Inspection & test at shop and test.

Surface preparation and painting for exterior surface as per specification.

Internal Coating as per spec

Hot dip galvanizing of tank handrails and staircase

Project management and control

Third party inspection agency review

Attending the meeting with client and consultant

Over all construction management of storage tank package

Documentation for government approvals if any

Mechanical guarantee

Other activities to meet requirements of inquiry

2. 3 Out of Scope of Supply & Work

Tank foundation and civil works

Oil Pass required for the site crew and staff.

Electrical, Instrumentation accessories

Process Piping, Plant piping, inter connecting pipes between tanks.

Cabling (including earth cable) and wiring materials.

Supply of anchor bolts (if required)/ Grouting for tank bottom

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All kinds of valves including shut-off valves for draw-off sumps and external piping.

Companion flanges and bolts/nuts

Pumps , Heaters , Heating coils if any

Insulation material and work (if required)

Fire protection material and work

Customs clearance and taxes & duties if any

Government permit and approval (for local regulation)

Tank Gauge (Radar Type)

Level instruments (High & Low) and transmitters

All kind of instrumentation and Electrical works

Lightning protection if any , Earthing

2. 4 Facilities to be provided by Client

Oil passes for our crew and staff.

Adequate space for the Lay down area in the vicinity of site

Adequate space for the fabrication and painting yard in the vicinity of site(if space is not provided we will fabricate & Prime the tank plates at our fabrication shop in Dubai and transport it to sites for erection)

Site office for our staff

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Rest room facilities for our crew

C. Project Execution

Design and detail engineering : Contractor In house

Fabrication and shop priming: At site(if fabrication area is available)

If no area is available at site, then fabrication will be done at our fabrication shop

Erection at site: Contractor In house team

Surface preparation and painting through reputed sub contractors.

Typical Project Execution Plan

Project execution plan & organization

Contractor formal role in the project implementation will commence from the signing of the

Agreement between the Client and Contractor. However, the effective participation of the contractor will start from the date of receipt of letter of intent (LOI) and the project kick off

meeting, where project scope and basis will be formally agreed.

Contractor's Organization Charts

The Contractor will appoint a Project Manager to take total charges of scope of work for which they are responsible. The structure is shown in the organization charts.

1. 2 Overall Project Execution

The Project Manager and his team are the primary interface point between the Contractor and Client. It is via this interface that all the day-to-day correspondence passes and project report are issued.

The Project Manager with his team oversees the contractor's scope of work. The projects coordinator is responsible for the coordination between Client, Engineering, Procurement, Fabrication and the Site Operation.

As soon as LOI is issued internal Kick-off meeting will be held to firm up the project procedures. In order to successfully achieve its objective the Project Manager issues the Project Dossier detailing the interface between Contractor and the Client. It sets out the detailed working method to be employed by them through all phases of the job.

With the co-ordination procedure the project schedule and methods of measuring progress and controlling the work are also issued.

Inventory Procedure

Quality Control

Shipping Procedure and Forecast

Field Project Control Procedure

Field Safety Procedure

Change Order Procedure.

1. 3 Design and Engineering

The Client has given the basic design. The detailed design for Contractor (in house) will carry out the project

2. Procurement & Sub- contracting

Contractor will prepare material requisition for all plant, equipment and materials and the Procurement in-charge shall manage the procurement and sub contracting. He will establish the procurement plan, identifying the finite list of requisition to be issued by the engineering groups, to start procurement cycle. Contractor will issue enquiries and obtain offers.

Purchase orders will be placed by the contractor on vendors approved by Client, offering best

Techno-commercial terms.

A list of critical & long lead items will be established including long lead item and those critical to programs. Special monitoring of these items will be carried out to ensure timely delivery.

Procurement service offered by the contractor will include bid evaluation, arranging vendor coordination meetings, selection, placement of purchase orders, amendment of purchase order and modified if necessary, to reflect any specific requirements of the specific order.

3. Construction

Contractor's Construction group will supervise the construction to be carried out in a phased manner. It will be responsible for field inspection, material and inventory control and logistics for timely executing of the project.

Contractor's Project Manager will ensure quality and schedule so that the construction is done as per the detailed design/engineering document prepared by Client and within agreed time frame.

4. Pre-commissioning and commissioning

The Commissioning Group headed by the Commissioning Engineer of the contractor will direct and supervise to provide the necessary assistance to the pre-commissioning and commissioning activities of Client. Project in co-ordination with the Commissioning in-charge of Main contractor/consultant. The major activities of this group will include:

- Check plant units for mechanical completion at size.

Prepare pre-commissioning programme to assign priorities during final stage of counteraction work.

Planning and scheduling of plant start up activities.

Co-ordinate and supervise the start up of the plant.

Main contractor/consultant shall conduct process guarantee test turns.

5. Project scheduled, control and reporting

Contractors system of project planning scheduling and monitoring is designed to provide comprehensive planning services to the project management team. This system is instrumental in devising realistic schedules establishing checkpoints, keeping overall watch on the progress, deviation from schedules, pinpointing the problem and recommending areas of corrective actions. The details are given below:

6. Planning & Scheduling

6.1 Proposed Schedule and overall project schedule

The proposed project schedule is submitted along with this proposal. This indicates the project starts date, end date and major milestones of the project the proposed schedule is prepared in the form of bar chart schedule.

On award of the control, the proposed schedule is converted into an overall project schedule in the form of squared PERT network on time scale. This network includes overall engineering, procurement and construction duration as well as critical and near critical items for each system. This overall schedule forms the basis for execution of the contract and is used for corporate project review.

6.2 Master Network

For project control, master network is prepared for the project, master network is updated internally every month, this is revised if (i) The overall project schedule is revised, (ii) There is a major change in the scope of work, (iii) unforeseen events beyond contractor's control. The master network forms the basis for detailed scheduling and project control.

6.3 Function Schedules

At the level of the executing departments, functional schedules are prepared for all functions, viz. process, residual engineering, ordering and delivery. Standard Networks for various functions are used for sequencing various activities in the schedules. These schedules are also used for scheduling projects physical progress and its measurement.

6. 4 Key Construction Network

This network is delivered from master network. This is made, work area wise, on time scale The number of networks to be prepared depends upon the workload into which the plant is divided. These networks are prepared at a time when engineering and procurement activities have sufficiently advanced and construction activities are about to begin or major milestones such as deliveries of equipments at site, start and completion of civil works, mechanical erection etc., are about to be achieved.

6. 5 Reports

Basically, three types of reports are produced. First type of report contains activities to be performed in next two months and is known as Activity List. Second type of reports gives the status of drawings, materials, etc. and is named Status Report, which highlights the deviations and exceptions and immediate actions. The Third Type of Reports is the one, which summarize progress report at various time intervals.

6. 6 Monthly Progress Report

Monthly progress report is basically meant for Client. This report gives a comprehensive coverage of engineering, procurement and construction activities carried out during the month under review. The monthly report appraises the Client of the progress of the project and holds up if an in achieving the progress. The report contains the following information:

Overall progress statistics

Status of milestones

List of problems/hold ups

Functional progress curves

Quantitative status report for equipment

Detailed status of construction

D. Work Breakdown Structure

E. Bar Chart (Project Schedule)

Please Refer Annexure I

Project Organization Chart

G. Man Power Deployment Schedule

H. Construction Equipment Deployment Schedule

List of Proposed Vendors and Suppliers

Sr No

Description

Supplier

Origin

1

Carbon Steel Plates

Corus

European(West / East)

For tanks

Arcelor Mills

European(West / East)

Posco

Korea

Dongkuk steel

Korea

Duffer co

Belgium

Dillinger Hutte

Germany

Nippon steel

Japan

Stemcor

South Africa

Sumittomo

Japan

2

Carbon Steel Pipes

Dalmine Spa

Italy

Mannesmann

Brazil / Germany

Nippon steel

Japan

NKK steel

Japan

Kawasaki

Japan

NSC

Japan

Hyundai pipes

Korea

Korea pipes

Korea

3

Carbon Steel Pipe

Benkan corp

Korea

Fittings

Awaji sangayo Corp

Japan

BKL

UK

BKL

Thailand

OMR

Italy

Techno forge

Italy

Tect tubi

Italy

Vanleeuwen

Holland

4

Flanges

Bebitiz

Germany

FAD flange

Italy

Geldbech

Germany

Korea flange

Korea

5

Floating Roof seal

Ultra float

USA

Korea Flot

Korea

HMT

USA

CTS

Nether land

6

Paint

International Paint

Jotun

Hempel

Sigma

Responsibility Matrix

SR. NO

DESCRIPTION

Division of Responsibility

(subcontractor)

(Main Contractor)

A

ADMINISTRATION

1

Visa/work Permit

âˆš

2

Accommodation

âˆš

3

Food

âˆš

4

Transportation

âˆš

5

Site first Aid Facilities

âˆš

B

TAXES & DUTIES / INSURANCES

1

WCP Insurance

âˆš

2

Automobile Insurance

âˆš

3

Capital machinery insurance

âˆš

4

Contractor All Risk Erection Policy

âˆš

C

FACILITIES

1

Laydown yard / Fabrication Yard

âˆš

2

Stores

âˆš

3

Site office facilities

âˆš

4

Worker rest room & toilets

âˆš

5

Parking Spaces for Vehicles

âˆš

6

Drinking water & Portable water

âˆš

7

Electricity for site office and rest room

âˆš

8

Electricity for Fabrication

âˆš

9

Blasting and Painting Facilities

âˆš

10

Carbagge Disposal

âˆš

11

Hazardous Mateial Disposal

âˆš

12

Removal of Construction Debris

âˆš

13

Electricity for Site Construction

âˆš

14

Safety Interface with Client

âˆš

15

Personal Protection Equipments

âˆš

D

DESIGN & ENGINEERING

1

Design

âˆš

2

Engineering

âˆš

3

Detailed drawings

âˆš

4

Support details

âˆš

5

Structural Drawings

âˆš

6

Asbuilt Drawings

âˆš

E

PROCUREMENT & SUPPLY

1

Direct Material (Plates for shell bottom and roof, Structural for stairway, roof handrail and roof structures)

âˆš

2

Consumables

âˆš

3

Gaskets / Bolt / Nuts for hydro testing

âˆš

4

Permanent Gasket/Bolt/Nuts

âˆš

5

All Galvanized items for platform/stairway etc

âˆš

6

All tank mounting appurtenances and Instruments

âˆš

7

Material unloading at site

âˆš

F

Plant & Machinery At Site

1

Crane

âˆš

2

Hydra Crane

âˆš

3

Fork Lift

âˆš

4

Rolling Machine

âˆš

5

Welding Machine

âˆš

6

Generators

âˆš

7

Hydraulic Jacks System (Jacks, power packs, hoses, accessories etc.)

âˆš

8

Tools such Grinding, cutting , beveling Etc

âˆš

G

PRE FABRICATION

1

Plate cutting & Edge preparation (Shell, Roof, Bottom & Annular)

âˆš

2

Sand Blasting and Painting of internal and external surfaces of tank as per client approved Painting procedure.

âˆš

3

Shell plate rolling

âˆš

4

Nozzles & Manway Neck Rolling

âˆš

5

Sump Plate Rolling, Welding & External painting

âˆš

6

Roof Structure and Floating Deck prefabrication

âˆš

H

CONSTRUCTION

1

Civil work

âˆš

2

Instrumentation

âˆš

3

Tank Insulation

âˆš

4

Scaffolding for Erection and painting, if any

âˆš

5

Tank Erection -Bottom , Annular, Shell, Roof, Roof Structure, Floating Deck , shell & Roof Nozzles & Man way, Sump

âˆš

6

Painting Jobs as per client approved procedure

âˆš

7

Meeting Client's construction Schedule

âˆš

I

TESTING

1

Liquid Penetrent Testing

âˆš

2

Magnetic Partical Testing

âˆš

3

Radiographic Testing

âˆš

4

Ultrasound Testing if any

âˆš

5

Post Weld Heat Treatment if any

âˆš

6

Facilities for Hydro-testing

âˆš

7

Water for Hydro Test

âˆš

8

Drain point for hydro-tested water near to tank bottom (Max 250 M)

âˆš

9

Dewatering & Drying

âˆš

10

Tank Calibration

âˆš

J

HANDING OVER

1

Punch list

âˆš

2

RT film Submission

âˆš

3

AS Built Drawing

âˆš

4

Final Dossier submission

âˆš

5

Pre commissioning assistance

âˆš

6

Commissioning assistance

âˆš

K

GENERAL

1

Third Party Inspection Costs

âˆš

2

All the approvals from Local authorities

âˆš

3

Necessary gate passes / permits to carry-out our works

âˆš

4

Coordination with Client

âˆš

Project Estimation Summary

Sr. No.

DESCRIPTION

QTY.

Unit Rate

Amount

I

PRELIMINARIES

Mobilization of Manpower/Equipment

1

70, 000

70, 000

Establishment of site facilities

1

200, 000

200, 000

Insurance

1

200, 000

200, 000

Demobilization of Manpower/Equipment

1

70, 000

70, 000

Design/Engineering

1

80, 000

80, 000

Documentation

1

30, 000

30, 000

Sub Total

AED

650, 000

II

PROCUREMENT

Steel Plates(A 537 Cl. 1)

3, 363

2, 931

9, 856, 953

Steel Plates(A 36)

2, 258

2, 488

5, 617, 904

Structural

96

2, 800

268, 800

Pipes & Fittings/Flanges

1

510, 000

510, 000

Fasteners

8

7, 000

56, 000

Aluminium Dome

1

7, 000, 000

7, 000, 000

Hatch / Accessories

1

—

—

Jet Mixer + Misc

8

—

—

Galvanizing

8

5, 000

40, 000

Stairway Steps

8

16, 500

132, 000

Sub Total

AED

23, 481, 657

III

CONSTRUCTION

Sub-Contract

5, 450

1, 000

5, 450, 000

Consumables

1

100, 000

100, 000

Safety Equipments

1

398, 200

398, 200

Salary for Staff

1

500, 000

500, 000

Wages for Fabrication Crew

1

—

—

Wages for Erection Crew

1

—

—

Equipments (Hire)

1

1, 661, 000

1, 661, 000

Equipments (Purchase)

1

600, 000

600, 000

Mobilization of Pre fabricated material to site

1

320, 000

320, 000

Scaffolding & Erection Tools & tackles

1

42, 000

42, 000

Fuel

1

617, 400

617, 400

Freight, Visa , Food & Accommodation for Crew

2, 663, 200

2, 663, 200

Testing Requirement

1

—

—

Site Communication/Stationary/Utilities

1

—

—

Office Communication/Stationary

1

—

—

Heating & Nitrogen Coil

1

3, 849, 468

3, 849, 468

Sub Total

AED

10, 751, 268

IV

SUB-CONTRACT

Civil Foundation & Misc. Works

1

8, 389, 450

8, 389, 450

Civil Design

1

—

—

Soil Improvement

1

—

—

Reduce backfilling (1 M)

1

—

—

Surface Preparation & Painting

1

2, 476, 700

2, 476, 700

Belzona application

1

—

—

NDT works

1

1, 150, 000

1, 150, 000

Third Party Inspection

1

150, 000

150, 000

Calibration

1

64, 000

64, 000

Hydro Test

1

200, 000

200, 000

Sub Total

AED

12, 430, 150

V

OTHERS

BG Charges

100, 000

Finance Charges

150, 000

Commission to Agents