PREQUALIFICATION DOCUMENTS

HXsteel International Engineering W.L.L

Strive to deliver quality, on-time and value engineering service to our client.

Address: 7th Floor, IBQ Building, Airport Road
P.O.Box 23917
Doha, Qatar
Fax: +974-44215631
Email: info@hxsteel-engineering.com
Web site: www.hxsteel-engineering.com

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CHAPTER 1: GENERAL INFOORMATION

1. Name of CONTRACTOR: **HXsteel International Engineering W.L.L** (www.hxsteel-engineering.com)
2. Company Owner / Sponsor: (along with copy of their ID cards) **Mohd Ahmed A J Al-Medaihki**
3. Business Address / Location: **7th Floor, IBQ Building at Airport Road P.O.Box 23917, Doha, Qatar**
4. Telephone No.: **+974 - 4427 2384**
5. Telefax No.: **+974 - 4421 5631**
6. Contact Person: **Zhang Hua**
7. Date of Company Formed: **4th May 2008**
8. Share-holding Company :

   Hebei Hangxiao Steel Structure Co., Ltd
   Yutian Industrial Park, Hebei Province
   China 064100
   (www.hxss.com.cn)

9. Main business activities and specialilities of
   1) **Design and build of metal building related project, in cluding civil, architectural and MEP work on a turn-key basis;**
   2) **Engineering design, supply and erection of steel structure**

10. Qatar Commercial Registration No.:
    (along with copy of the Commercial Registration)

    39063

11. Bankers in Qatar:

    Qatar International Islamic Bank

12. Auditors in Qatar:

    Morison Menon Charted Accountants L.L.C

13. Insurance Company:

    Qatar Insurance Company

14. Fixed Assets:

    QR4,274,133 (Only Qatar Operation)

15. Net Assests:

    QR2,882,969 (Only Qatar Operation)

16. Net Income Previous:

    QR57,251,628 (Only Qatar Operation)

17. Third Party Liability:

    QR1,130,000

18. Personnel Details:

	Number
Management and Aministration	**18**
Design Engineers	**4**
Steel & Metal Work Engineers	**4**
Civil & Structural Engineers	**5**
MEP Engineers	**3**
QA/QC Engineer	**2**
Technicians:	
Steel & Metal Work	**4**
Civil & Structure	**5**
MEP	**3**
Quantity Surveyors/Estimators :	**2**

Supervisors / Foreman (Segregated by trade discipline):

General Forman = 1 **Workshop Supervisor = 1**
Steel Fit-up Foremen = 3; Welding Foremen = 2; Rigger Foremen = 2
Civil & Structure Foreman = 4; Cladding Foremen = 2
Eletrical Foreman = 1; Mechanical Foremen = 1;

Tradesmen (Segregated by trade):

Fitter = 20; Welder = 12; Rigger = 6; Scaffolder = 8; Bolt toquer = 8
Cladding Work = 12
Steel Fixer = 16; Carpenter = 10; Mason = 12;
Plumbing = 5; Elctrician = 5;

Plant operators / Drivers :

Manlift operator = 9; forklift operator = 2; driver = 5

Safety engineer:
3

Operations and Handover Manager
1

19. Workshop facilities and Location:

1) **Qatar Workshop**
   Full set of steel fabrication, welding, blasting and painting Equipments at Al Sailiya

2) **Overseas Factory**
   Full set of automatic steel fabrication and metal sheet rolling machine at Yutian Industrial Park, Hebei Province, China 064100

وزارة الاقتصاد والتجارة
Ministry of Economy and Commerce

Registration and Commercial Licenses Department

إدارة التسجيل والتراخيص التجارية

مستخرج ببعض بيانات السجل التجارى

2016/05/02

رقم السجل التجارى:	39063	عدد الفروع:	0
الأسم التجارى:	هنغاشيو العالمية للهياكل الفولاذيه و الهندسية المحدودة	السمة التجارية:	
تاريخ انشاء السجل:	04/05/2008	تاريخ انتهاء السجل:	02/05/2017
الشكل القانونى:	شركة ذات مسئولية محدودة	راس المال:	200000
حالة السجل:	نشط	جنسية المنشأة:	قطر

معلومات الاتصال

صندوق البريد:	22756	أرقام الاتصال:	4886163

الشركاء

الأسم	رقم الإثبات	رقم السجل	الجنسية	النسبة	الحالة
زهانج هاو	26970200034		سنغافورة	12	
هنغاشيو العالمية للهياكل الفولاذية		1302291000161	سنغافورة	36	
محمد احمد على جمعه المضيحكى	27463400760		قطر	52	

غرفة قطر
QATAR CHAMBER

تشهد غرفة تجارة و صناعة قطر بان المنشاة المذكورة اعلاه سجلت لدينا
Qatar Chamber certifies that the above mentioned establishment has been registered

دولة قطر
إدارة التسجيل والتراخيص التجارية
السجل التجاري • الرخص التجارية
وزارة الاقتصاد والتجارة

وزارة الاقتصاد والتجارة
Ministry of Economy and Commerce

Registration and Commercial Licenses Department

إدارة التسجيل والتراخيص التجارية

مستخرج ببعض بيانات السجل التجارى

المدراء (المخولون بالتوقيع)

الأسم	رقم الإثبات	رقم السجل	الجنسية	الصفة (الصلاحية)
زهانج هوا	26970200034		سنغافورة	صلاحيات كاملة ومطلقة - مدير
محمد احمد على جمعه المضيحكى	27463400760		قطر	صلاحيات كاملة ومطلقة - مدير

الأنشطة التجارية

الرقم	إسم النشاط
4100001	انشاءات عامه (مقاولات عامه)
4100011	مقاولات تشيد الانشاءات المعدنية

الرقم	إسم النشاط
537000	تجارة مواد البناء
541200	التجاره فى الحديد

دولة قطر
إدارة التسجيل والتراخيص التجارية
السجل التجاري • الرخص التجارية
وزارة الاقتصاد والتجارة

رقم السجل : 39063

غرفة قطر
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وزارة الاقتصاد والتجارة
Ministry of Economy and Commerce

Registration and Commercial Licenses Department

إدارة التسجيل والتراخيص التجارية

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2016/05/02

رقم السجل التجارى:	39063	عدد الفروع:	0
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دولة قطر
إدارة التسجيل والتراخيص التجارية
السجل التجاري • الرخص التجارية
وزارة الاقتصاد والتجارة

Certificate CH16/0390

The management system of

HXsteel International Engineering W.L.L

P.O. Box 23917, 6th Floor, Regency Business Center, Al Baladiya St., Al Corniche Road, Doha, Qatar

has been assessed and certified as meeting the requirements of

ISO 9001:2008

For the following activities

Design, Fabrication ,Supply and installation of Steel structures, Construction of Buildings and MEP works

This certificate is valid from 23 February 2016 until 14 September 2018
and remains valid subject to satisfactory surveillance audits
Recertification audit due before 12 January 2019
Issue 1. Certified since February 2016

Authorised by

SGS Société Générale de Surveillance SA Systems & Services Certification
Technoparkstrasse 1 8005 Zurich Switzerland
t +41 (0)44 445-16-80 **f** +41 (0)44 445-16-88 www.sgs.com

CHAPTER 2 - HUMAN RESOURCES

A) COMPANY REPESENTATIVE

Name: Zhang Hua
Position: General Manager
Nationality: Singaporean
Qualification: Msc. Civil engineering, B.Eng, Dip. Mgt

B) PROJECT MANAGER

Name: Mubashir Jameel Alvi
Nationality: India
Qualification: B.Tech in Civil Engineering

C) WORKSHOP IN_CHARGE

Name: Cabonita, Leo Luagu
Nationality: Philippine
Qualification: Bachelor of Science in Industrial Engineering

D) PROCUREMENT MANAGER (More Than 20 years experience)

Name: A.V. Pradeep Kumar
Nationality: Indian
Qualification: Bachelor of Science in Civil Engineering

E) QA/QC REPRESENTATIVE (more than 7 years experience)

Name: Demudu Babu Chukka
Nationality: India
Qualification: Bachelor of Science in Mechanical Engineering

F) COORDINATION ENGINEER (More than 10 years experience)

Name: Nisha Bijo
Nationality: India
Qualification: Bachelor in Electrical Engineering

G) CONSTRUCTION MANAGER

Name: Samson Pantaleon T. Vasquez
Nationality: Philippine
Qualification: Bachelor of Science in Civil Engineering

H) **PROJECT ENGINEER** (More than 20 years experience)

Name:	**Alexander D. Orongan**
Nationality:	Philippine
Qualification:	Bachelor of Science in Civil Engineering

K) **MEP ENGINEER / MANAGER** (More than 27 years experience)

Name:	Vladimir G. Gaidai
Nationality:	Ukrine
Qualification:	Bachelor of Science in Mechanical Engineering

L) **SAFETY ENGINEER**

Name:	Siyoj Yohannan
Nationality:	India
Qualification:	Diploma in Mechanical Engg

M) **GENERAL FOREMAN** (More than 20 years experience)

Name:	Dev Narayan Chamar
Nationality:	Nepal
Qualification:	Certified Foreman

Work Experience = 23 Yrs
AGE = 45

Zhang Hua
General Manager

He has a wide range of engineering, procurement and construction (EPC) experience in Institution, offices, schools, hotels, residential, Industrial and commercial complexes. He is strong in large structural system analysis and fast track record project management, by himself, he takes parntership with China biggest steel structural company Hangxiao Steel Structure forming the Company of HXsteel International Engineering W.I.I in Qatar since 2008, through his leadership, HXsteel has delivered many steel structural projects, And the company is moving to provide EPC service to his end-user/clients. He has shown very strong engineering knowledge and project management skill on the projects in which HXsteel are handling. From his leadership, HXsteel has achieved utmost speed to grow up, within one year operation, HXsteel has been equipped with 25 staffs who comes from 9 different nationalities and 95 skilled workers from 5 different countries. HXsteel has also been equipped with full range of equipment, tools and instrumentation for handling any kind of steel building project.

Education and Affiliations

TongJi University
(China, 1988)

Diploma (Civil Construction Management)

TongJi University
(China, 1988)

Bachelor of Engineering (Engineering Mechanics)

National University of Singapore (Singapore, 1997)

Master of Science (civil engineering)

Graduate IstructE (2002)

Professional Experience

Qatar (2008-…)

- Design, Fabication & Erection of Steel Structure for NDIA CP16 (17 Buildings)
- Installation of Roofing and Wall Cladding for NDIA CP16 (17 Buildings)
- Design, Fabication & Erection of Approach Light Steel Bridge for NDIA CP10 (1.7km)
- Design & Build of Tee Hanger at Equestrian Federation for Qatar Olympic Committee
- Design, fabrication & erection steel structure for 15F Hleytan Tower @Corniche Rd.
- EPC for 3 No of Double Sty Worker Accommodations at DSSA, Dukhan
- Design, fabrication & erection of steel bridge for NDIA Approach Light Structure
- Design, Civil construction and PEB erection for One Workshop @DSSA, Dukhan
- Design, fabrication & erection steel structure for 5sty Fitness Center @Cornich Rd
- Design, fabrication and erection of steel roof for Al Maha School.
- Design, Civil construction and Steel erection for Mezzanine at Doha College
- PEB erection for 2 warehouse and 1 workshop at Al Khor
- Design, Fabication & Erection 10 accommodation, 2 mess halls at Al Khor
- Design, Civil construction and PEB Eection for 3 Steel Stores at Shahaniya
- Roof and wall cladding installation for QataLum T13
- Painting Modification work for QataLum Anode Service Plant.
- EPC for one Warehouse with Mezzanine at DSSA, Dukhan
- EPC for one Workshop with Mezzanine at Ras Laffan Industrial City
- CWO for One Roller Shutter Door Installation to Ext'g Warehouse at QatarGas.
- Erection Pipe Rack & Shelter for GTC 158 at Fahahil Supporting Plant, Dukhan
- Strengthening of Basement Slab for QIB office at C Ring Road.
- PEB erection for One Temperary Warehouse at NDIA CP60
- Fireproofing for Steel Bridge at Sport City
- Fireproofing for 44 sty Doha Highrise Office Building at Corniche Road
- Design & Build Workshop for GDI at Dukhan
- Design, Fabication & Erection of Steel Structure for Shooting Range at Lehsaynia
- Design, Fabication & Erection of Steel Structure for Main Gates at Qatar University
- Design & Build Steel Engineering Factory for QBC
- Design & Build Laffan Alumnium Factory for QBC
- Design & Build Maitenance Workshop for Weatherford at Dukhan

Continuing >>>> ……

Zhang Hua

General Manager

Professional Experience

Singapore (1996-2007)

HXsteel business start

- Design and build of Budget Terminal Building at Changi Airport.
- Design and Construct NTU New Campus Building Steel Structure and Bridges

Public Work Department, renaming to CPG Consultants in 2002

Position: Senior Engineer

Projects:

- New Supreme Court Building (Architect: Norman Foster)
- SPMS New School Development for Nanyang Technological University
- 16 sty Commercial Building Somerset For UOL at Somerset MRT Station.
- International Design Competition for Beijing Olympic Tower.
- Raffles Junior College Development, includes 7 block buildings
- Veterinary Public Health Centre, includes 2 block buildings
- 108m Bin Hendi Tower at Dubai
- 85m span Aircraft Hangar (Hangar 3) at Changi Airport for SIA
- Two Storey WAFER FAB (7) factory and 3 sty CUB and GAS plant
- Singapore Post Centre Building

China (1992-1996)

Chongqing Iron & Steel Design Insitute (CISDI)

Position: Design Engineer

Projects:

- Panzihua Steel Corporation No.2 150Ton steel Stove Structure
- Steel Bar Rolling Plant for KunSteel Corporation (M&E IHI Japan)
- Steel Plate Continous Rolling Plant for BaoSteel (coordinate with DAIKEN)
- 50,000m3 Gas Vessel for KunSteel Corporation
- New Coating Workshop for ISUZU, Japan
- Material Transfer C/O Stations for Baosteel (M&E MITSUBISHI)
- Steel Continuous Hot Rolling Plant for NanjingSteel (with Italy Steel Group)

Work Experience = 15 Yrs
AGE = 38

Education & Affiliations

A First Class Bachelor's Degree in CIVIL ENGG.

From AURANGABAD with DISTINCTION in year 1999

A First Class Diploma in CIVIL ENGG.

From Board of Technical Examination, BOMBAY. In year 1994

Ronnie Matar

Manager - Operation

He is strong exposure to civil and structural projects, be able to achieve the best standard of industrial building construction, he is a skilled communicator with excellent relationship management and interpersonal approach, he got his First Class Diploma in Civil Engineering in 1994, and obtained his FIRST Class Bachelor degree in 1998, hie core strength is project management; Resource Planning & Control; Site & Construction Management

Project Management: Managing civil/structural/architectural components specifications for selection, detail design, installation. Leading all construction deliverables & managing contract documentation efficiently.

Resource Planning & Control: Managing entire execution work of big projects by Coordinating with the management and contractors for the progress of the project and timely completion of the project construction.

Site & Construction Management : Execution of Reinforce Cement Concrete And Steel Structures For Plant Building And Non Plant Building Various Retaining Structures, Pile Foundations And Frame Of Heavy Structures, Piperacks.

Professional Experience

HXsteel - Manager Operation (2013-….)

Lead the engineers and constuction managers, Manage the company project delivery, monitoring the planning, quantity survey and project logistics

Monitoring the project engineering proposal and approval, procurement, and administrative mattters. Liaise with Project clients and consultants

- Design, Fabication & Erection of Steel Structure for Shooting Range at Lehsaynia
- Design, Fabication & Erection of Steel Structure for Main Gates at Qatar University
- Design & Build Steel Engineering Factory for QBC
- Design & Build Laffan Alumnium Factory for QBC
- Design & Build Maitenance Workshop for Weatherford at Dukhan

Aarvi Encon Pvt Ltd for Rajasthan Atomic Power Project - RAPP (2011-2013)

Senior Consultant

Project: Larsen & Toubro installing turbine island package for two new 700-MW capacity units for Nuclear Power Corporation of India Ltd (NPCIL) for RAPP

Responsibilities:

- Managing and Responsible for planning, scheduling and coordinating the technical and management aspects of projects
- Accountable for the successful completion of engineering project & Extensive regular contact with assigned project
- Conducting Client/contractor meetings, resolving Client/engineering project issues.

Almarai Company, Alkharj KSA (2008-2011)

Manager Construction

- Dairy Industry project;
- Main Process Areas, Milk filling Area, Zabadi and Laban (Crude) Filling area;
- Blow Moulding Expansion Project, ETP / STP project; Refrigeration Upgrade project

Phillips Carbon Black Limited, Mundra, Gujarat (2004-2007)

Manager Construction

- Carbon Black Plant
- 90MW Power Plant at Reliance (Jamnagar Refinery)
- Construction of PTE and PTFE Plant
- Vietnam Emulsion Project

Work Experience = 15 Yrs
AGE = 44

SAMSON PANTALEON T. VASQUEZ
Project Manager

He has total 21 years working experience spanning from Engineering Procurement and Construction Oil & Gas (EPC) Management, Construction Planning & Scheduling, Health, Safety and Environment Oil & Gas Construction (HSE) Management, Quality Assurance & Quality Control (QA/QC) Management, Steel Structure Fabrications & Installations, Pre Cast Concrete Productions & Installations, Civil & Structural Piping & Welding Inspection, Material & Equipment Inspection, Interpersonal Communication & Negotiation Effective, he is very familar with MS Office Applications, Auto CAD, STAAD and Primavera Proficient, in addition, he is a hardworker always strive for success and deliver his committment

Education & Affiliations

BS in Civil Engineering
Osmania University

Member of Kuwait Society of Engineers, since 1999

Professional Experience

HXsteel International Engineering W.L.L (2013-….)
Project Manager

- Managing all related construction activities including, steelwork fabrications,
- Responsible for productions & installations, control of manpower
- Project Budget & Cost Control
- Project planning, monitor & define the timeframe to finish the Project on time
- Preparations and submissions of Construction Progress and Cost Tracking Reports
- Forecast deliveries of materials, manpower and equipment project required
- Check & quantify project materials required, details & specifications
- Make Procurement requirement, handling plans
- Handle the coordination to all disciplines and control safety and quality practices
- Direct control & provide engineering & technical supports during construction on Site
- Lead Sub- Contractors, monitor and support Sub- Contractors on Site
- Control of material availability and equipment workability on Site

Nesma Trading Contracting Co. Ltd. K.S.A (2011-2013)
Construction Manager

- Saudi Aramco Petro Rabigh Refining & Petrochemical Plant Fencing & IDAS Project
- Saudi Aramco Wasit Sewage Treatment Plant, STP, Water ReverseTreatment Plant
- Saudi Aramco Wasit Gas Plant Package 3 Project, Temporary Camp & Facilities

Joannou & Paraskevaides (O) Ltd Tripoli, Libya (2009-2011)
Construction Superintendent

- WAHA Oil Company (WOC), Faregh Oil & Gas Processing Facilities, Phase II

AbdulGhani and Cardahi Doha, Qatar (2006-2009)
Construction Manager

- GCC Interconnection Doha South 400 KV Super Sub-Station
- Qatalum Industrial Facilities and Sub-Station

Joannou & Paraskevaides (O) Ltd Tripoli, Libya (2002-2006)
Construction Superintendent

- WAHA Oil Company (WOC), Faregh Oil & Gas Processing Facilities, Phase I

VASSCON Engineers and Contractor Abra, Philippines (1998-2002)
Steel Structure fabrication and installation
Project Manager

- Commercial, Residential Buildings, Town Houses, Beach and Farm Resorts,
- Raw Land Development and Water & Flood Control Walls

Work Experience = 26 Yrs
AGE = 49

A.V. Pradeep Kumar
Procurement Manager

He is expert in Materials Management / Purchase, with more than 26 years experience in the relevant industry for Material Procurement / Project Procurement / Vendor Development, well versed with the concepts of Inventory control / ISO Standards / Six Sigma / JIT; Playing important roles in implementation of ERP system for Material Department; Execllent communication, negotiation and inter-personal skills; he is also a good team leader with execllent relationship management; His experience in MEP contracting company in Doha-Qatar since 2008. He is leading the company project procurement team, interact with subcontractors for ensuring the project delivering on time and identifing competent agencies to cater desired services for projects/Plant.

Education & Affiliations

B.Com - Calicut University
Kerala, 1981

M.Com - Calicut University
Kerala, 1985

PG Diploma in Materials Management
Anna University - 1989

Professional Experience

HXsteel International Engineering W.L.L (2013-….)
Procurement Manager

- Heading the procurement team
- Handle the procurement for all projects
- Material submittal preparation for Consultant approvals
- Handle the Central Stores acitivties of the company
- Arrange IMS certification and apply ISO Certification for Quality/EMS/OHSAS
- Vendor Development:
  - Identifying and recruiting new vendors and development of existing vendors for achieving cost effective and timely delivery
  - Vendor rating and appraisals
- Documentation / MIS
  - Purchase budget preparation & fund requirement
  - Preparing MIS pertaning to monthly procurements/purchase/cost saving
  - Preparation of monthly performance report with respect of procurements

BEMCCO W.L.L (2008-2013)
Procurement Manager

HBL Power System Limited (2005-2008)
Manager - Purchase

Radiant Elastomers Pvt Ltd (2001-2005)
Asst. Manager - Purchase/Marketing

SIGNODE India Limited (1987-2000)
Sr. Executive - Purchaser

Deccan Agresustems Pvt Ltd (1983-1987)
Sales Coordinator

VLADIMIR G. GAIDAI

Senior MEP Engineer / Assist Manager

He has over 27 years of mechanical, eletrical and chemical engineering experience in design, site construction, project execution, supervision, and construction, maintenance in large scale projects, including 8 years of seagoing and marine renovation experience as MEP engineer onboard of Cruise Ships. He joined HXsteel since Sept 2009, has contributed his knowledge and expereince to assist company for building up of full range of EPC service. He is easy going and be able to communicate with all level of personnel, i.e. from client to the techncian and workers. he has good experience on problem solving and guiding of client for value engineering solutions, his leadership has ensured company to deliver the project on time and with most satifactories from clients.

Work Experience = 27 Yrs
AGE = 50

Education & Affiliations

Mechanical (Cryogenic) Engineering - 1984
Odessa Technological Institute of Refrigeration Industry

Petro-Chemical Engineering -1988
USSR Academy of Sciences,

Professional Experience

Qatar

Working as Assist Manager and Senior MEP engineer in HXsteel (2012-…)

- Manage the consultant for the design from preliminary to construction drawings
- Manage the submission and approval from QP and RLIC.
- Manage the procurement and subcontractor.
- Manage to apply permit for all utilities tie-in.
- Project planning
- Manage the site construction
- Manage the coordination with client and client's supervision consultant.
- Cost controlling

Consulting Engineering Group, Qatar (2010-2012)

Senior Mechnical Engineer for

Responsibilities:

- Responsible for site supervision, inspection and monitoring of mechanical, electrical and plumbing works and related aspects.
- Ensure that all requirements for Design input, variations, changes and other information are implemented.
- Review, approved and process all mechanical technical submittals and samples for compliance to the Project specification
- Review approves contractor's drawing in compliance with Design Drawings, Project specification, national and international Standards.
- Liaise with the client's engineers, with local authorities and ministerial agencies having jurisdiction over the project.

Ukraine (1989-2010)

- Working as Head of Industrial Piping Dept for Bratya Ltd
- Working as MEP ENGINEER/SUPERVISER for Geros ltd
- Working as Design and Research Engineer at Odessa Technological Institute

Work Experience = 19 Year
AGE = 41

Alexander D. Orongan

Project Engineer

He has 19 years of total work experience. welled experienced of supervising any kind of construction projects, good coomunication skills, be able to handle the coordination between authority, client, subcontractor and site supervisor as well as workers. He is a fast learning person, that makes him immediately settle into HXsteel project delivery, by equipping himself with necessary steel structure knowledge and PEB system, his current capability ensure himself be able to manage medium size project, like workshop and warehouse independently, He is a hard-working and responsible person, with necessary engineering knowledge background on field construction, contracting and planning. He is able to handle valuation for payment, variation order and preapre the project submittle, manpower and equipment resources planning, quality assurance procedure and work specification.

Education and Affiliations

BS in Civil Engineering
Saint Mary's College

Passer - Civil Engineers Licensure

Passer - Master Plumbers

Member of Philippine
Institute of Civil Engineers

Professional Experience

HXsteel International Engineering W.L.L (2009-….)

Work as Assist Project Manager

- NDIA CP16: Steel Structural,Standing Seam Roof and Aluminium wall cladding
  The project under his inchrage consist 17 buildings with 27,000m2.
- NDIA CP10: Sea Bridge for Approach Lights
  There are 3 bridges, each bridge length 550m into the gulf sea
- Design & Build Al Maha School: 2 No of Swimming Pool and 2 No of Auditorium
  The Swimming Pool being pre-engineering built up rafter with sandwich panel
  The Auditorium being composite steel structure.
  Total build up area is 3600m2

Work as Site Engineer

- Design and Build of 5 sty Fitness Centre at Cornich Road
  The project is pure steel frame / composite structure.
  The building is irregular shape.
  The structure is transferrred two times.
  The strigger truss supporting 4th floor and roof in round shape. i.e. curve truss.
  The maximum spann of transfer beam is 32m (where transfer 4 sty above it)

Philippine (1994-2008)

Asia Konstrakt Philipines Inc (2005-2008)
Project Engineer / QA QC

WTG Construction & Development Corp (2000-2004)
Project Engineer / QA QC

Davao RJB Construction Corporation (1995-1999)
Site Engineer

Project Invloved:

Citylink Mall at Panabo City
GSD Building and warehouse at Davao City
KFC and Mercury Drug Structural - Gasiano mall of Davao
Madapo Hill at Davao City
National Highway, Panabo City

Work Experience = 30 Year
AGE = 52

DANILO M. MABINI

Senior Designer / Workshop In-charge

He is A dynamic, team-spirited and performance driven professional with an extraodinary blend of leadership, technical skills and construction industry knowledge. Recognized for keen ability to improve designs complimented by meticulous and creative detail to drawings and specification. He has gained his experience to deal with client and coordinate with them for all civil, structure, architecture and MEP design. he has very good capablity to assist client to clear their demand and exact requirements. He is able to handle the drawings from preliminary to final construction drawings and shop drawings. His past expereince has equipped his confidnce for the submission procedure to QP and RLIC in Qatar.

Education & Affiliations

Leyte Institute of Techology
(Tacloban)

Bachelor of Science
in Civil Engineering, 1985

Professional Experience

HXsteel International Engineering W.L.L (2012-….)

In-charge of design and submission works include:

- Design and construct Dopet Workshop at RLIC
- Design and construct Warehouse with Mezzaine at QP DSSA.
- Design and construct Warehouse for Black Cat
- Design and construct Metal Roofing for Alstaldi

The work consists 10 accommodation buildings, 2 mess hall & 2 Mosq.

- Design and construct steel structural and cladding for Al Maha School

The work consists 2 Auditorums and 2 Swimming Pools

- Design and Build for Sgtrengthening of QIB Office Building at C Ring road.

G.S. Structural Steel and Metal Fabrication W.L.L , Qatar, (2010-2012

QS / Steel Detailer

- Qatar University Car Parking Fabric Tent
- English Modern School Building Canopies
- Al BADR Car Parking Fabric Tent
- Bin Omran Store and Garage
- Al Naddaf VillaCar Parking Fabric Tent
- Bin Omran Site Water Pump Main Gate
- Al Muftah VillaCar Parking Fabric Tent

Construction Development Company W.L.L Qatar (2005-2009)

Structural Steel Detailer

- Saint Regis Hotel, West Bay – P295
- Alfardan Towers – P267 -100% finished
- NDIA Package 19 – P288

STAR STEEL SYSTEM PHILIPPINES (2001-2005)

Structural Steel Detailer

Work Experience = 15 Year
Age = 37

Nisha Bijo
Project Coordinator cum Support Engineer

She has over 15 years experience in the same field, she is an Efficient, Diligent , Accountable & detail-oriented Project Support Engineer, being knowledgeable of all tasks related to project coordination and delivery activities for materials, services, sub-contracts of projects, with a first class graduate degree in Electrical & Electronics Engineering. Excels at multi-tasking in a fast-paced environment, completing tasks within time and standard. Superior computer skills with proficiency in MS Office, MS Outlook and MS Project. Has worked in varied industries in India, Kuwait and Qatar including Government Electricity Board,T raining institutes, Trading, Contracting and Engineering companies.

Education & Affiliations

Govt. Engineering College
Thrissur University of Calicut
India
Bachelor ofTechnology
1st Class, 2000

Professional Experience

HXsteel International Engineering W.L.L (2013-…)

1 Design and Build QBC Steel Engineering Workshop project
2 Design and Build Laffan Aluminum Factory Project
3 Design and Build Al Shaheen Maintenance Workshop Project
4 Steelwork for Lusail Pump Station Project
5 Steelwork for Musheirub Government Building Project

FSIMEC Construction LLC, Qatar

Site In-Charge

Supervising the site engineers at construction site

Recommend proper approach & engineering jusdgement as per site conditions

Coordinate and communicate meeting arrangement with clients

Prepare and submit documents to consultants and obtaining approval

- NDIA CP26 - Aircraft Maintenance Hangar: Fire Stop, thermal insulation works
- NDIA CP18 - Main Terminal : Fire Stop, Thermal Insulation and expansion joints.

Govt. Polytechnic, Vechhochira, India

Lecture

- Teaching Post secondary college students the topic of eletrical engineering like
  - Eletrical Circuits & Networks
  - Eletrical Machine and Design
  - Eletrical Circuits & Networks
- Conductingfollowingelectricallabclassesforstudents
  - ElectricalMachineLab
  - CircuitTheoryLab
  - BasicElectricalEngineeringLab
- Internal Examiner for final year lab exams

XDHS DAS
Safety Officer

He is responsble person and commit to his duty, he is very keen to take care of all people from different level, he is energic and active always try to help others, he is a fast learner and try to improve himslef on the knowledge of safety management, he has one-time passed the safety exam from QP as qualified safety officer for any QP project. He is easy going and with good communication skill.

Work Experience = 14 Year
AGE = 35

Education and Affiliations

Diploma in Engineering
Magadh University

Passed QP safety Officer exam

Professional Experience

Qatar

Working as Safety Officer in HXsteel Since July 2009.

New Doha International Airport Project

Gulf Drilling Industrial - Warehouse Faciliaties at Dukhan

- Safety training
- Safety planning
- Safety Inspection
- Site Nursing
- Toolbox meeting and Staart Talk

Prominent Technical Trading & Endineering Co.,
Safety Officer
Duration = 2007 - April 2009
Project: 32 Residential villas

Saudi Arabia

Raymond Saudi Arabia Ltd Co.,
Safety Officer
Duration = 2002 - April 2007
Project: SAFFCO project in Jubail Industrial City, K.S.A
Petrochemical plant in Jubail Industrial City, K.S.A

India

Larsen & Toubro Co., Ltd
Site Supervisor
Duration = Before 2002
Project: Wipro building in Electronic city Bangalor

Work Experience = 13 Year
AGE = 35

MILDRED
Snr Accountant

She is reliable and honest, with strong background in Finance and Accounting methodologies and practices, ability to work independently, highly creative, strong motivator and intuitive problem solver, She commitment to her work that furthers the growth and wholeness of individuals and the company. She is personable, articulate and professional with both top management, support staff and co-workers. in addition, she has keen interest and aptitude for quickly learning new things and going beyond expectations, And Excels at multi-tasking in a fast paced environment and completing projects within time frame, as well as Highly flexible, responsible, and detailed-oriented, with proficiency in Lotus Notes, QuickBooks, MS Excel, MS Visio, MS Word, SAPHR R/3 System and Sage.

Education & Affiliations

POLYTECHNIC UNIVERSITY
OF THE PHILIPPINES

Bachelor of Science
in Accountancy

Professional Experience

Qatar

Working as Snr Accountant in HXsteel Since 2012.

- Prepare balance sheet reconciliations
- Process bank reconciliation.
- Manage company bank faciliaties.
- Prepare profit and loss statements and monthly report
- Prepare general ledger accounts
- Prepare & review revenue, expense, payroll entries, invoices and other documents
- Resolve accounting discrepancies
- Supervise the entire account.
- finalizing the accounts
- Auditing

IBM Business Services, Inc (Philippines)

Benefits Process Owner (2007-2009)

- Handles employee & vendor management – payment administration & validation
- Handles enrollment and termination of employees to various benefit plans.
- Handles benefits delivery (via payroll, third party, outside payroll)
- Prepares and handles communication to employees and third parties
- Ensures proper retention of documents related to benefit administration
- Ensures compliance of process with internal or external control requirements
- Conducted data testing, loading, payroll validation and reports generation in SAP
- Prepares budget for P&G Singapore and Malaysia Local Employees
- Attend to client meetings as required

Benefits Admin Assistant, Australia + New Zealand Accounts (2005-2007)

- Processing employee benefits using SAP, Microsoft Excel & Word
- In charge for preparation of Payment Request Form for ISOP Termination.
- Payroll validation
- Handle monthly update to Expat out employee about their ISOP contribution.

CCI ASIA GROUP CORP. (PHILIPPINES) (2000-2005)

- preparation of Income Statement, Bank Reconciliation, Cash Position, Sales Report, Inventory & other reports needed by the management.
- Timely & accurate preparation of vouchers & corresponding payments of all company obligations to maintain good credit standing to enhance company image.
- Ensure that all government taxes and other compliance payments are remitted on time to avoid penalties and optimize use of resources.

Work Experience =12 Years
AGE = 34

ROSALYN SOTTO
Secretary

She is a well self-organized person, she is able to work in a most effective and effeicient manner, she is good at planning, coordination, managing customer needs and people management, being smart, dynamic, vibrant, confident and diplomatic with excellent interpersonal skill, very good at oral, written and communication skills, hard working mentality coupled with dedication, sincerity and efficiency, ability to work independently and turn out results of most original kind. Willing to take up challenges. A person proficient in oral and written communication with the ability to relate to people well and create effective working relationship with others. A team worker who displays energy and positive action toward group goals. A systematic worker who works with less supervision and is able to get things done within a definite time frame. Has the sensitivity for customer care and service

Education & Affiliations

Bachelor of Science in
Textile Technology

Central Luzon State
University, Philippines
1997-2001

Professional Experience

Qatar

Working as Secretary in HXsteel Since Oct 2011

- Filing and organization
- Maintaining Hard and Softcopy of updated catalogues and price list
- maintaining employees files, attendance and leave records.
- Drafts and prepares memos and letters
- Sending and receiving official Emails.
- Preparing Order Confirmation
- Preparing Purchase Order .
- Preparing Delivery Notes
- Maintaining project files
- Sales Database entry (project history, client contacts)
- Preparing technical sheets and satalgus cutouts
- Coordinates with All Departments
- Handles queries & finding solutions to customer problems
- Responsible in stock monitoring and deliveries
- Perform all necessary administrative functions

Business Yard Technological Solutions LLC (2008-2011)
Secretary/Admin & Sales Coordinator

Bulacan National Agricultural State College, Philippines (2005-2008)
Secretary / Research Assistant

ARTWORK INC., Manila, Philippines (2002-2005)
Secretary to the Creative Director/ Purchasing Assistant

Work Experience = 25 Years
AGE = 46

ASIO RAMIL

Workshop Supervisor

He has wide range and handful experience on steelwork / metal work fabrication and erection, the projects which he involved includes Commercial Building, Industrial Plant, Process Plant and PEB system building, he has excellent management, planning and communication skill to lead the workforce achieve the project quality and schedule requirements. He has vast experience and excellent approach to handle any kind of complicate steelwork and metal work, and always try to guide others along with his measurement to the work. He is appointed as workshop superisor in our organization to in charge the entire workshop operation and production, and manage a group of Charge-hand for different projects. He has sensitive mind about Work Safety and Quality, and pass the qualification from different international clients.

Education & Affiliations

Philippine Christian University
Pedro Gil St, Malate, Manila

BSBA - Undergraduate

Professional Experience

HXsteel International Engineering W.L.L (2009-…..)

Overall incharge of workshop operation and production;

- Planning and montior the fabrication schedule as per the company's requirement.
- Assign the work to different group of workforce
- Determine and liaise with procurement department to arrange the consumble
- Supervise the electrician and mechanics to maitain the workshop equipments.
- Manage the fit-up setting and fabrication approaches.

Projects under his control:

- Steelwork for NDIA CP16
- Steelwork and metal work for DSWMC at Mesaieed
- Metal work for Barwa Commercial Avenue
- Steelwork and metal work for Qatar University Entrance Gate Canopy
- Steelwork and metal work for Shooting Range
- Steelwork and metal work for Musheriub Govermental Building
- Steelwork for KG Warehouse at Industrial Area
- Metal works for Roof Trille at Alsaad Comercial Complex

Austal Ships, Philippines (1998-2006)

Team Leader

Read and interpret drawing plans;

Fabricate / Fit-up hull frames, girder / keel, shell plates

Install gusset, brackets, small compoent parts, railings, stairs and bollards

K & A Metal Ind. (1991-1995)

AutoCAD Operator

Produce structural / mechanical drawings

Produce detailed drawingson parts

Produce maps for hauling routes.

Work Experience = 19 Years
AGE = 38

SAHADAT ALI NASIR A.

Welding Foreman

He has vast experience on any kind of welding, and familar with all kind of metal welding methodl, being 6G welder, 4 years worked at Dubai airport project as Welder foreman, he shows very good planning and management skill on his work, he is always in position to guide other welders to implement the work as per the WPS, he is good in communication and be able to motivate other welders deliver the work on time and with good quality. His knowledge on cladding work equips him be able to solve all relevant construction conflictions at site. He always gives proposal once there is any problem on the work. He is a hard working and honest person in our organization. His capability has promoted him even with experience on working as QC Supervisor.

Education & Affiliations

Higher Secondary (Passed)

Computer- MS Office Completed

Trade Certificate
Welder - 6G
TRANSCEND INSTITUTE
(Trade Testing & Technical Services), India

Professional Experience

HXsteel International Engineering W.L.L (2009 -...)

- Assist QC engineer in prepare WPS;
- Responsible for welder qualification test
- Prepare the welding map
- Assign the work to the team welders, and direct with approach
- Training other welders to improve their skill from 3G to 4G to 6G...

Projects under his control:

- Steelwork for NDIA CP10
- Steelwork for NDIA CP16
- Fitness Center at Corniche Road
- Shooting Range at Amir Force base
- Steelwork and metal work for Qatar University Entrance Gate Canopy

William Ware LLC, UAE (2005-2009)

Lead Welder

Projects invloved:

- Dubai Airport Phase 1
- Abu Dhabi Agregate termal - Material tansfer convoyer
- Abu Dhabi Chemical plant - Pipe Rack

Texcel Engineers PVT LTD, Chennai (2003-2008)

Lead Welder

Projects invloved:

- 1X500MW Boiler Unit
- Evaparation Plant
- Boi Earth Menure Plant
- Spray Dryer Power Plant

Chapter 3 : Facilities, Plant and Equipment

1) PLANTS and EQUIPMENTS in QATAR

Steelwork Equipments @ Workshop / Site

S/No	Descripition	Capacity	QTY	Remark
1	Generator	150kVA	3	
2	Forklift	5Ton	1	
3	CO2 welding set		2	
4	AC/DC Welding machine		12	
5	Shear Stud welding		1	
6	Fireproofing Cementitious spray Machine		1	
7	Rectifier Welding set		4	
8	Compressor	260cfm	1	
9	Small compressor	50 to 100 cfm	4	
10	Sand Balsting Machine	200L	1	
11	Airless spray machine	125 cfm	2	
12	Dial Indicator torque wrench		2	
13	Bolt load meter		2	
14	Automatic bolt tightening machine		4	
15	Total station		1	
16	Theotelit (2)		2	
17	Megnatic driller		4	
18	Standing Seam Machine		2	

Civil machine

S/No	Descripition	Capacity	QTY	Remark
1	Concrete vabritor pump		2	
2	Concrete floating machine		2	
3	Plate Compactor		2	
4	Roller Compactor		1	
5	Concrete grinder		1	
6	Capenter saw set		4	
7	Water jack		2	

Instrumentment

S/No	Descripition	Capacity	QTY	Remark
1	Paint thk meter	1 to 300 micron	3	
2	Thick layer thk meter	upto 5mm	1	
3	Ohm meter		1	
4	Gas meter		2	

Steelwork Erection Tools

S/No	Descripition	Capacity	QTY	Remark
1	Large Spanner	upto 400kN.m	6	
2	Small spanner		30	
3	Drilling tools		20	
4	Grinder		30	
5	Lifting belt	upto 120Ton	16	
6	Rivet gun		20	
7	Battery driver rivet gun		6	
8	Hook	Upto 30Ton	36	
9	Steel sling (m)		500	
10	Life line	5Ton	4	
11	Falling arrestor	500kg	12	
12	Flame cutter		8	
13	Installation spanner		50	
14	Chain block	Upto 6Ton	24	
16	Oven		6	
17	Post Light		10	
18	Aluminium scafolding set		12	
19	Scaffolding set		50	
20	Scaffolding pipes		500m	
21	Scaffolding coupler		300	

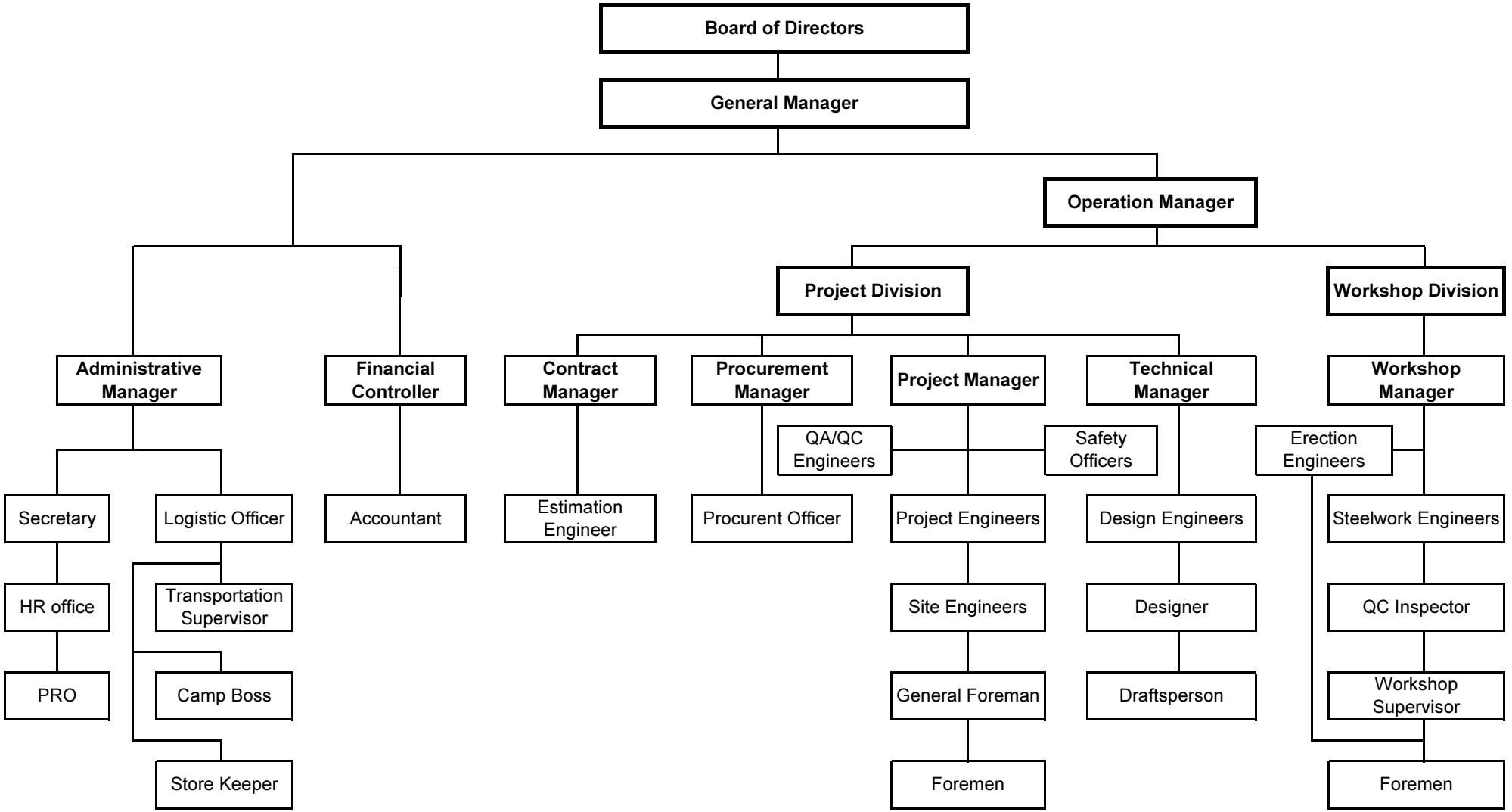
2) Fabrication Plants in China

No.	Name	Type	Qty	From
1	3D Digital control driller	DNF1000	1	Japan
2	3D Digital control driller	DNF1050	2	Japan Daito
3	Super three dimension driller	(SDNFC-1050)	4	Japan Daito
4	End surface sawmill	ST6090	5	Japan Daito
5	End surface sawmill	GT7010	2	Japan Daito
6	Sewing machine	HQ1040NW	3	Japan HATALY
7	Auto-sewing machine	ASL-35TW	1	Japan
8	Alternating AC & DC weld machine	AX5-500	6	Jaingsu
9	Alternating AC & DC weld machine	YK-505FL4	6	pasansonic
11	Alternating AC & DC weld machine	ZXE1-400	2	Pasansonic
12	Alternating current weld machine	BX1-500TSM1	4	Pasansonic
13	Alternating current weld machine	BX1-400	4	Pasansonic
14	Alternating current weld machine	BX3-400	4	Pasansonic
16	CO2 protective weld machine	YD-500KR,UTA	2	Pasansonic
17	CO2 protective weld machine	KR-500	2	Pasansonic
20	direct current weld machine	KR600	24	Pasansonic
23	Rebar Welding machine	USN-50	2	Jilin
26	Automatic paint machine	GPQ9C	12	Tianjin

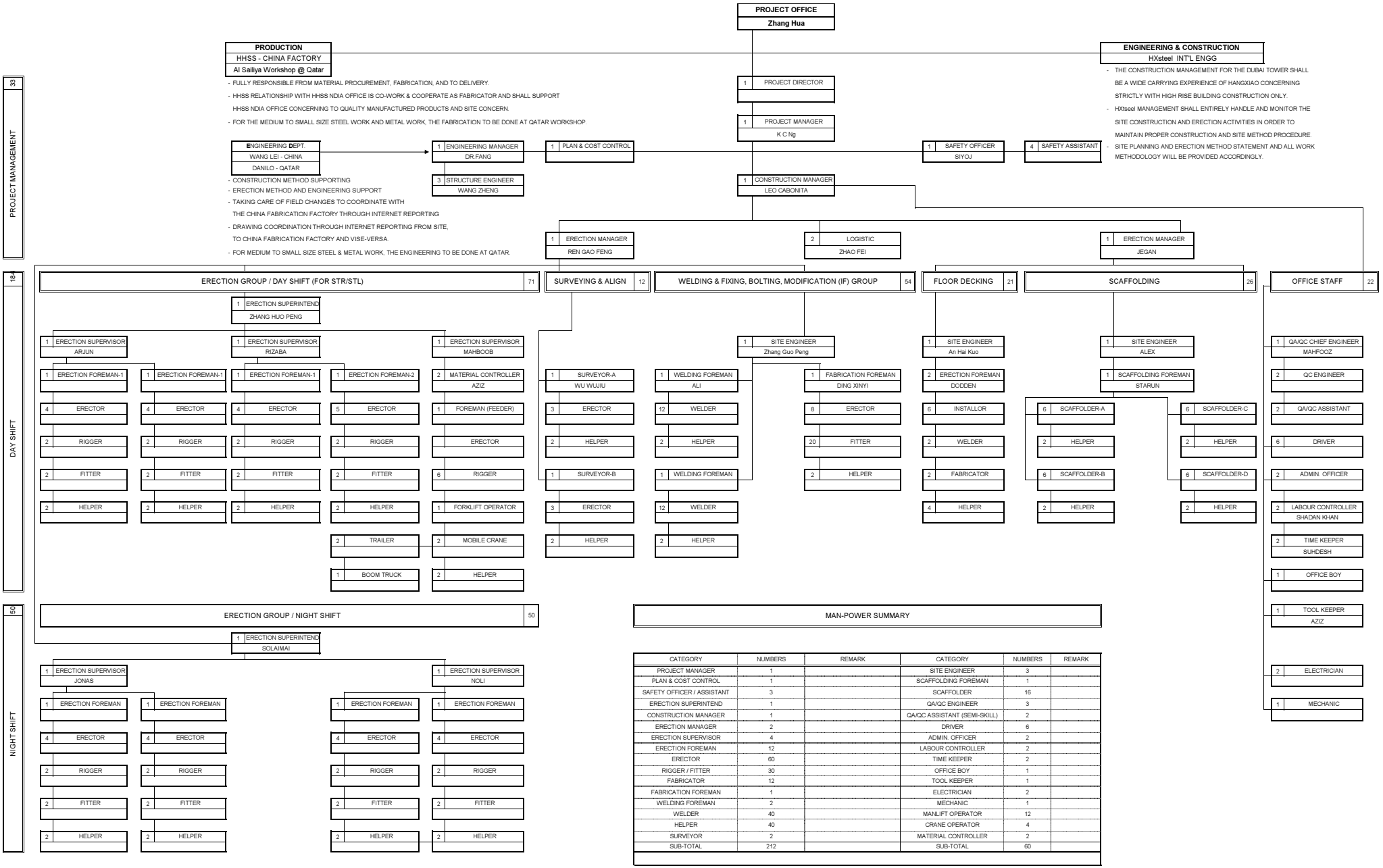
CHAPTER 4 - SUPPLIERS

Supplier	Goods to be supplied
Sosco	Hot Rolled H Beams & Shaps
TSS	Hot Rolled H Beams & Shaps
Corus Steel	Hot Rolled H Beams & Shaps
Hyundai Steel, Korea	Steel Plates
Baosteel, China	Steel Plates
Ansteel, China	Steel Plates
Zhejiang Shuangling Co., Ltd, China	Fasteners / Bolt & Nuts
Oriens Metal Co., Ltd, Korea	Fasteners / Bolt & Nuts
Jotun	Paint
International Paint	Paint

Chapter 5 - Compant Organization Chart



CHAPTER 6 - PROJECT ORGNAZITION
(Typical Only For Mega Size Steel Structure Project)



MAN-POWER SUMMARY

CATEGORY	NUMBERS	REMARK	CATEGORY	NUMBERS	REMARK
PROJECT MANAGER	1		SITE ENGINEER	3	
PLAN & COST CONTROL	1		SCAFFOLDING FOREMAN	1	
SAFETY OFFICER / ASSISTANT	3		SCAFFOLDER	16	
ERECTION SUPERINTEND	1		QA/QC ENGINEER	3	
CONSTRUCTION MANAGER	1		QA/QC ASSISTANT (SEMI-SKILL)	2	
ERECTION MANAGER	2		DRIVER	6	
ERECTION SUPERVISOR	4		ADMIN. OFFICER	2	
ERECTION FOREMAN	12		LABOUR CONTROLLER	2	
ERECTOR	60		TIME KEEPER	2	
RIGGER / FITTER	30		OFFICE BOY	1	
FABRICATOR	12		TOOL KEEPER	1	
FABRICATION FOREMAN	1		ELECTRICIAN	2	
WELDING FOREMAN	2		MECHANIC	1	
WELDER	40		MANLIFT OPERATOR	12	
HELPER	40		CRANE OPERATOR	4	
SURVEYOR	2		MATERIAL CONTROLLER	2	
SUB-TOTAL	212		SUB-TOTAL	60	

CHAPTER 7 - QA/QC PROCEDURES

Contents – Quality Assurance Manual

1. DEFINITIONS

For this entire Quality Assurance Manual, the following definitions shall apply:

1.1. Accuracy

- The degree of correctness with which a method of measurement yields the true value of a quantity usually expressed in terms of "errors"

1.2. Calibration

- A comparison between a standard and measuring equipment, instrument or items of equipment with a standard of higher accuracy to detect, correlate, adjust and document the accuracy of the instrument or equipment item being compared or tested.

1.3. Customer/Client

- The party(s) or his representative(s) issuing a contract for obtaining items and/or services.

1.4. Engineer

- The Experienced and Qualified Offer authorized by HXSTEEL placing order for the work with the contractor or other officers as may be authorized and appointed in writing by the Company to act as the Engineer for the Contract.

1.5. Evaluation

- An appraisal to decide whether a management system can produce a quality control or service and generating evidence to support decisions of acceptability.

1.6. Inspection

- The process of measuring, examining, testing, gauging or otherwise comparing one or some characteristics of the product or service with the specified requirements.

1.7. Item

- Any level of unit assembly, including structure, system, subassembly, component, part or material.

1.8. Material

- A substance or combination of substance forming components, parts, pieces and plant items.

1.9. Measuring Equipment

- All devices used to measure, gauge, test, inspect or otherwise quantify the characteristics of an article.

1.10. Process

- Procedure or techniques followed in the production/erection of a product.

1.11. Quality

- All features and characteristics (attributes) of a product or service that bear on its ability to satisfy a given need.

1.12. Quality Assurance

- All those planned or systematic actions necessary to provide adequate confidence.
- An item or a facility will do satisfactorily in service.

1.13. Quality Assurance Manual

- A document specifies the general quality policies and practices of an organization.

1.14. Quality Control

- Those quality assurance actions that provide a means to control and measure the characteristics of an item, process or facility to established requirements.

1.15. Quality Control Surveillance

- The monitoring activity by the purchaser, his representative or independent organization acting on his behalf of a contractor's quality control organization and methods.

1.16. Quality Plan

- A document setting out the specific quality practices and procedures used for a particular component, part or material.

1.17. Quality Program

- Total management and procedures for the execution of a specific contract or project.

1.18. Standard

- An instrument, device or material of known characteristics and higher precision used to establish and maintain the accuracy of a measurement system or device.

1.19. Sub-Contractor

- For these Requirements the purchase of all products or services by a contractor is considered as subcontracting and the sources of supply as subcontractors.

1.20. Use-As-Is

- A disposition which may be imposed for non-conformance when it can be established that the discrepancy will result in no adverse conditions and that the item under consideration will continue to meet all engineering functional requirements including performance, maintainability, fit and safety.

2. MANUAL CONTROL

2.1. Scope

- This section defines the responsibilities and control for preparation, distribution, revision and recall of Quality Assurance Manual of HXSTEEL.

2.2. Responsibility

- The Manager of Q.A. shall be responsible for preparation, review, distribution withdrawal and revision of Quality Assurance Manual.
- The Border of HXSTEEL shall be responsible for approval of Quality Assurance Manual.

2.3. Distribution and Control of Quality Assurance Manual

- This Quality Assurance Manual shall be identified and classified as "Controlled" or "Uncontrolled" according to its use, and distribution shall be recorded on the Quality Assurance Manual Distribution Record under the responsibility of the Manager of Q.A. Staff.
- Distribution and Quality Assurance Manual Distribution Records shall be controlled and maintained by the Manager of Q.A. by use of Quality Assurance Manual Transmittal Control Slip and the classification of Quality Assurance Manual shall be identified on the cover sheet as "Controlled" or "Uncontrolled".
- All Quality Assurance Manuals shall be assigned a serial number and shall be used for the identification of issue.

2.4. Review

- The Quality Assurance Manual shall be reviewed once in a year. Q.A. Manager shall be responsible for review and to finalize the revision of Q.A. Manual if required. Any proposal to the Q.A. activities shall be tabled on the meeting periodically by Q.A. Staff.
- Should any activity be decided at the meeting to be revised soon, the Manager of Q.A. shall arrange for revision as early as possible.

2.5. Distribution and Revision Control

- Quality Assurance Manual and revisions shall be distributed by use of Quality Assurance Manual Transmittal Control Slip [Quality Assurance Manual T.C.S.].
- The Return Receipt portion of the Quality Assurance Manual T.C.S. shall be completed and returned to Q.A. Staff by the receipt.
- The record of Quality Assurance Manual and revisions distribution shall be maintained by Q.A. Staff on the Quality Assurance Manual Distribution Record.
- This Record shall include the person assigned for preparation of Quality Assurance Manual, the Serial Numbers "Controlled" or "Uncontrolled" revision issued, date of issue and the date when the Return Receipt is received. All Quality Assurance Manual Receipt shall insert the Transmittal Portion of the Quality Assurance Manual T.C.S. in the Quality Assurance Manual.
- Quality Assurance Staff shall note return of the Return Receipt and record on the Quality Manual Distribution Record. The Manager of Q.A. Department shall be responsible to assure that "Controlled" Manuals are updated, as necessary to meet the applicable codes and/or standards.

3. ORGANIZATION, AUTHORITY AND RESPONSIBILITY

3.1. Scope

- This chapter defines general responsibilities & authorities for Qatar Space Technology.
- Shows the General Organization Chart including the Quality Assurance Organization.
- The details of specific and further responsibilities are defined in each chapter of this Manual.

3.2. CEO of HXSTEEL

- The CEO assumes total and ultimate responsibility for activities done in accordance with this Q.A. Manual.
- The responsibilities shall include the following as a minimum.
  a. To provide administrative guidance and control of HXSTEEL personnel to ensure that the policy of the works is executed.
  b. To direct Management Audit to ensure that all activities comply with this Manual.

3.3. The Manager of Q.A. Department

- The Q.A. Manager reports to the CEO and shall have total responsibilities carrying out the quality Assurance System as defined in this Quality Assurance Manual.
- These responsibilities shall include:

  a. Establishment and promulgation of Q.A. System.
  b. Preparation and issuance of Quality Assurance Manual.
  c. Review of all Q.A. activities by the audit.
  d. Overall control of Q.A. for the procurement items.
  e. Execution of test and inspection on the fabricated items.
  f. Execution of receiving inspection on the procurement items.
  g. Total control for non-conforming items during all stages of production.
  h. Responsible for stopping the production activity as and when any deviation from the requirements of Q.A. Manual or specification requirement occurs.
  i. Issuance of test/inspection reports & certificates.
  j. Review of Specifications and bid documents.
  k. Approval of vendor/subcontractor
  l. Documentation of Q.A./Q.C. Procedures
  m. Communication with Authorized Inspector of the customer on quality aspect.
  n. Periodical review of Quality Assurance Manual.

3.4. The Manager of Production Department

- The Manager of Production reports to the Plant Manager and shall be responsible for Planning and Fabrication of Steel Structure & Machinery and delegated following authorities:

  a. Responsible for total control of fabrication.
  b. For Issuance of operation planning cards.
  c. Total control of fabrication lines.
  d. Control of shop floor personnel.
  e. Control of in-process materials and items.
  f. Control of distribution of drawings, superseded drawings and documents with respect to fabrication/production and procurement.
  g. Preparation and issuance of fabrication flow chart.
  h. Preparation and issuance of instruction manual for fabrication and check sheet.
  i. Control of electrodes during welding.

3.5. Engineering and Design Manager

- The Engineering and Design Manager reports to HXSTEEL Boarder and has been delegated following responsibilities.

  a. Review and control of customer specifications, drawings and related documents.
  b. Preparation, review and approval of all design documents, shop drawings, material order lists, material specification for procurement and erection drawings.
  c. Standardization of products and parts.
  d. Design of products and design modification.
  e. Checking of clients' drawings and material order lists when these are "Free Issue" by client.

3.6. Material Manager

- The Material Manager reports to the Plant Manager and has been delegated following responsibilities.

  a. Preparation of inquiries and subsequently purchase orders for raw material and consumable procurement
  b. Preparation of purchase order for offside fabrication items
  c. All purchase activities regarding equipment, instruments etc.
  d. Purchased material release from warehouse
  e. Purchased material Control at warehouse
  f. Maintaining up-to-date records
  g. Maintaining the list of approved vendors/subcontractors

3.7. Site Project Manager

- The Site Project Manager reports to the Plant Manager and has been delegated following responsibilities:

  a. Understanding the contents of project
  b. Preparation of project performance scheme
  c. Control of site personnel
  d. Management of project progress
  e. Management of safety in the site
  f. Management of construction equipment and false work equipment
  g. Management of materials in the site
  h. Site Financial Management
  i. Control of subcontractor in the site
  j. Final project inspection
  k. Coordination with the main contractor in the site

4. DESIGN AND ENGINEERING CONTROL

4.1. Scope

- This chapter identifies the responsibilities and measures established and implemented to control design and engineering activities and customer requirements including the proper review of drawings, specifications and the translation into fabrication/working documents for use at the works.

4.2. Order Entry

- Receipt of a contract from the customer prepared by the Sales Manager. The Sales Department shall forward all customers' contract specifications, drawings and relative documents to the Contract Coordinator in the Sales Dept. production planning, Engineering and Q.A. Department Manager.
- The responsible Design Engineer in the Design Staff and Q.A. Staff shall review the customers' specifications and other contract documents such as standard for adequacy and prepare their recommendation. If necessary, contract specification review meeting shall be convened to discuss the contractual requirements.
- During Q.A. review, special attention shall be given or tested inspection requirements and inspection by an independent authority.

4.3. Design Drawings, Specification & Production Drawings

- The Manager of Engineering & Design shall be responsible for the preparation and obtaining approval of drawings from the client or consulting engineer.
- The shop drawings shall define all the requirements and data of fabrication of an item, such as identification, material specification, joint details and dimensions with necessary tolerance.
- The shop drawings and design calculations shall be submitted to the customer or inspector or review and approval as required by contract agreement.

4.4. Revision Control of All Design Documents

- The responsible Design Engineers shall verify the appropriate revision numbers of the design documents before these documents are issued for production/fabrication.
- Above all, when the standard production drawings stored in Document Service Room are issued, the responsible Design Engineer shall show the revision numbers on the Engineering instruction and the date of issue.
- The CHXsteelf Engineer is responsible for reproducing and distributing these drawings according to the Engineering instruction to Q.A. Production Planning and Sales Departments.
- When any changes occur in the design documents during production, the obsolete drawings shall be superseded or the Engineer Change Notice shall be issued promptly by the responsible Design Engineer and the obsolete prints removed.

4.5. Procurement Specification

- The Design & Engineering Staff shall prepare all procurement specifications for materials according to approved drawing.
- All procurement specifications shall meet the applicable code, design drawings and specification requirements.
- The procurement specification shall be forwarded to Q.A. Department for review & acceptance. If procurement specification is acceptable, it shall be transmitted to Materials Department for preparation of the Purchase Order according to Material Procurement Procedure.
- Any revision to a procurement specification shall be referred to the originator and handled as an original issue.
- The procurement specification shall include but not limited to the following:
  - Material identification requirements to the applicable standard or code i.e., shape, weight & quantity, shipping & payment details.

- Inspection/test to be conducted by the vendor.
- Mill Certificate requirements.
- Documents required to be supplied by the vendor.
- Drawing and specification identification and their revisions.

5. DOCUMENT CONTROL AND Q.A. RECORDS

5.1. Scope

- This chapter identifies the methods, established to control the issuance, distribution and revision of all manufacturing documents, These measures shall ensure that all manufacturing documents including revision are properly reviewed, approved and released by the authorized personnel, distributed to the assigned locations and as a result the latest applicable documents are in use always.

5.2. Responsibilities

5.2.1. Design

- The Manager of Engineering Department is responsible for preparation, review, obtaining approval from client and distribution of all design documents as identified in the specifications. The Manager of Engineering Section has been delegating the authority to control all design documents.

5.2.2. Production Planning

- The Manager of Production Planning Department is responsible for preparation of Cutting Lists, Process Sheet, Job Cards, Priority List and distribution of Material Weight List documents to all concerned.
- The Manager of Production Planning has been delegating the authority to control the fabrication documents with his scope of management.

5.2.3. Quality Assurance

- The manager of Q.A. Department is responsible for the preparation, review, approval and distribution of all Quality Records such as day-to-day inspection records, tests certificates etc.
- The Quality Assurance Manager has been delegating the authority to control the quality assurance documents and if required to review, to confirm quality assurance documents, issued by the other department concerned.

5.2.4. Check & Approval

- Approval of documents shall be by a responsible person who specifies checkers for documents.

5.2.5. Distribution

- The distribution of drawings shall be by the copy flow system.
- The Originators of the documents shall be responsible for distribution of the Documents.

5.3. Document Control

5.3.1. Confirmation of Change Documents

- All the changes to documentation that will affect manufacture and Q.A. activities shall be in writing. The record of all changes shall be made with the standard sheets and be maintained by originator.
- The Engineering Coordinator is responsible for distribution of change documents and to confirm delivery by Distribution List & Receipt.

5.4. Document Identification

- All related documents shall be identified according to the identification procedure.
- All documents except general issue must have contract number in prominent place plus date and revision number.

5.5. Updating

5.5.1. Drawings

- The Manager of Engineering Dept. shall be responsible for the updating drawing revision by replacing outdated drawings with revised ones.

5.5.2. Other Documents

- The issuing department manager shall be responsible for the updating documents.

5.6. Retention of Outdated Documents

- The issuing department could keep the outdated documents for reference.
- The outdated documents shall be identified with "VOID" stamp.

5.7. Retention

5.7.1. Drawing Control Staff

- The Manager of Engineering shall be responsible for retention of Drawings, specifications and instructions registered to the Drawing Registration System.

5.7.2. Originator

- The originator shall be responsible for all original documents in the appropriately protected cabinets.

6. MATERIAL PROCUREMENT CONTROL

6.1. Scope

- This chapter defines the responsibilities and methods practiced during the planning, procurement and receiving of all materials, items and control of services by HXSTEEL's Works.

6.2. Responsibility

- The Manager of Materials Department shall be responsible for procurement of all materials, items and services to be used.

6.3. Procurement of Materials

6.3.1. Procurement Specification

- The Procurement Specifications shall be initiated for the procurement of all materials, items and services. The responsibilities for preparation of procurement specification are as follows;

a. Materials and Items

- The Manager of Design & Engineering shall be responsible for preparation of the Procurement Specifications and Engineering Instructions for materials or items, and for distribution of Procurement Specifications and Engineering Instructions by marking the group code identification, the specifications and instructions.

b. Services

- The respective requesting section shall prepare the Procurement Specifications for purchase. All procurement specifications shall be reviewed and approved by the Q.A. Manager. The Manager of Q.A. Department is responsible for assuring those all-applicable standards; customer capability Q.A. Requirements are complying for the procurement of materials, items, and services. The Procurement Specifications shall include all necessary documents such as engineering procedures, standards and other HXSTEEL 's Works requirements applied to the purchase order.
- The Procurement Specifications shall be transmitted to responsible Materials Manager for preparation of purchase requests.
- The Purchase Requests with attached Procurement Specifications and other applicable documents shall be forwarded to the purchase Section for preparation of Purchase Orders and issuing of Purchase Orders.
- The Procurement Specifications shall be attached to the Purchase Order for issue. Before issue the Purchase Orders that shall be reviewed/signed/stamped and dated by the Manager of Materials Section to ensure that they meet Procurement Specifications and Purchase Requests and that the vendor is properly qualified.
- The copies of the finalized Procurement Specifications shall be forwarded to the Q.A. Department and in turn Q.A. Department shall forward to Inspector of Inward Inspection Staff.
- If changes are made in drawings, specifications or inspection requirements during the procurement cycle, the revision shall be documented and approved by use of Engineering Change Notice (ECN). The approved ECN and attached/revised Procurement Specification shall be forwarded to the vendor/subcontractor via original path.
- Revised Procurement Specifications shall be forwarded to the Q.A. Staff to replace the original Procurement Specifications to conduct proper receiving inspection upon receipt of materials, items and services.

7. VENDOR AND SUBCONTRACTOR QUALIFICATION

7.1. Policy

- The Head Q.A. and representatives from Design, Production & Material Department shall be responsible for carrying out Vendor Survey [Audit Surveillance] to assess the capabilities of vendor/subcontractor and to evaluate the quality ratings according to approved procedure.

The advice of Head Q.A. in selection of vendor/subcontractor is final and binding to all concerned.

- The assigned survey members shall record the results of survey according to above-mentioned format. The report shall also include one of the following:
  - The vendor/subcontractor is qualified and recommended as supplier.
  - The vendor/subcontractor has discrepancies requiring correction and must be reevaluated after correction.
  - The vendor/subcontractor is not qualified.
- The team shall prepare the Vendor Survey/Audit Report that shall include their appraisal and recommendation of the vendor/subcontractor and shall forward complete Vendor Survey/ Audit Report to the Manager of Q.A. Department for final evaluation and approval.
- After the vendor approval has been made, the Vendor Survey/Audit Report shall be filled in the vendors' list of Materials/Purchase Department and Q.A. Department.
- The Manager of Q.A. Department through Q.A./Q.C. Engineer shall schedule program and do Inspection/Testing periodically during fabrication phase and perform qualified vendor audit according to terms and conditions of contract.
- Q.A. Department shall maintain the records of vendor/subcontractor evaluation during fabrication phase inspection according to the procedure prescribed by HXSTEEL's Works.

7.2. Materials Receiving Control

- The Q.A. Manager through Material Receiving Inspector shall be responsible for the material receiving inspection of all procured items. All items shall be accepted in the following manner by receiving inspection before use.
- Receiving Inspectors shall check documentation for completeness & compliance with Purchase Order, Procurement Specification, and Receiving Inspection Checklist. Acceptance Tag and Certified Materials Test Reports, Mill Certificates as appropriate and Non-Destructive Test Records according to the applicable code/standards requirements, if required.
- Receiving Inspector shall check the material identification against above-mentioned documents and ensure that any off cuts from the materials drawn from the stock issues have identification markings transferred by hand stamping or other permanent marking, from the parent pieces before return to stock and that purchasing has full details of such returns.
- Materials as received against purchase orders shall be inspected to see that they comply in all respect with the purchase order, drawings, specifications etc., and issue a Goods
- Receiver Inspection Acceptance/Rejection Note. The Q.C. Inspector will record the actual dimensions of materials inspected and ensure that these are within specified tolerance and attach a yellow sticker tape or label. Place a Green Sticker Tape or Label on each item.
- Sample tests or inspection compared with code/standard requirement procurement and specification's requirements shall be conducted upon receipt of the material at the works.
- The Receiving Inspector shall draw samples according to covering code/standard requirements and shall contact a third party Laboratory for carrying out test/inspection.
- Results of test/inspection shall be recorded on the Receiving Inspection Report and results shall be reviewed and approved by the Q.A./Q.C. Engineers.

- Materials or items on which any process required with the procurement specification were not done by the vendor shall be segregated as non conforming item and processed according to the clause stipulations.
- Rejected materials, either form own stocks or outside supplier that do not conform in all respects with the purchase order, specifications and drawings shall be reported to Q.A. Engineer immediately and endorse the Acceptance/Rectification/Rejection Note accordingly, giving full details of reasons for rejection and affix a Red sticker for Rejection and Pink Sticker for Rectification.
- Arrange to put rejected or doubtful material in a holding area.

7.3. Materials Distribution Control

- The Quality Assurance manager through Q.A./Q.C. Engineer and Q.C. Inspector controls the distribution as follows;
  - The Receiving Inspector distributes the inspection reports to all departments concerned.
  - Warehouse supervisor issues all contract materials to the Workshop required by Production control.
  - No goods what so ever is issued unless they have the original Green Sticker or Label attached showing on Inspection clearance.
  - The various shop floor Q.C. Inspectors check the identification before cutting or other workmanship is begun and ensures that identification numbers will appear on each piece after cutting and will not be canceled when further operations are carried out.
  - Any material or items that may become surplus to requirements due to design changes, off cuts or other reasons, come back within the control of the Raw Material Inspector.
  - Raw Materials Inspectors shall issue a surplus materials note, for contract costing and enter details of surplus material in the stock material's card and file for reference by materials and warehouse personnel.

8. PRODUCTION CONTROL

8.1. Scope

- This chapter defines responsibilities and the control of fabrication operations to ensure all the operations are carried out under controlled conditions.
- All operations such as Cutting, Machining, Punching, Drilling, Heat-treating, Pre/post heating, Assembling, Welding etc. shall be carried out according to the documented instructions, specifications and drawings as systemized at shop floor workstations.
- These documents shall include the criteria for acceptability of workmanship to ensure that the operations have been satisfactorily accomplished.

8.2. Production Control

- The Production Manager shall be responsible for the productivity and quality product.
- The Production Engineer shall supervise and supply the necessary instructions regarding operations at their workstations.

8.3. Operation Control

- The operation shall be progressing with the job card system and shall be carried out according to the drawings, Instruction Sheets, officially distributed by Planning through charge hands.
- Any discrepancy and deviation shall be reported to the responsible personnel according to Quality Manual stipulations.
- Production Planning Staff shall prepare Cutting Lists, Sketches, Templates, and Tapes for C.N.C. Machines, Drawings on all steps of processes for fabrication sequence and welding procedures.
  - The Instruction sheets shall be identified with Contract number and Drawing number and shall be approved by Production Manager Engineering Departments and confirmed by the Manager of Q.A. Department.
  - If any new standard, instruction or cutting list is necessary, production-planning Department shall prepare them.
  - If the previous sheets/documents are available for repeat order or new order, production - planning staff shall initiate the review of those sheets with personnel concerned before commencing the job.

8.4. Planning of Fabrication Sequence

- Fabrication sequence including inspection by inspector stated on the Instruction Sheets shall be designated on the Operation Planning Card with drawing numbers to be referred to.

8.5. Revision of Instruction Sheets

- If any change is required on the sheet after setting down, Planning shall prepare the change as follows;
  - Temporary/minor change of fabrication sequence and/or fabrication procedures and such shall be carried out according to, the control standard for change of "Technical Details"
- Operations of special processes such as C.N.C. Drilling, Punching, Welding, Cutting, Plating, Sub-assembly fit-up etc. shall be carried out by qualified workers certified with the Qualification Institution.
- The O.A. Manager shall review all such qualification records and approve the personnel.

8.6. Non-Conformance Control

- If non-conforming items are detected, they shall be identified, recorded, notified, segregated and de-positioned according to related instruction of this Manual.
- Finished/Semi-finished items shall be protected from un-penetrable conditions such as rust, rust damage and so on, and clearly distinguished with one or any combination of following procedures throughout production (1) Painting (2) Tagging (3) Labeling (4) Stamping (5) Sanding (6) Bagging & Stocking.

8.7. Handling

- Acceptable or preferable handling procedures shall be prepared for handling the items during different fabrication phases and issued to shop floor personnel according to design requirements.
- Any prohibition on handling shall be informed clearly by production staff on the documents.

8.8. Control of Production Facilities

- The Production Manager shall be responsible for the control of fabrication facilities through Maintenance Section. The Production Manager shall control special machines or equipment and tools.

9. WELDING CONTROL

9.1. Scope

- This defines the responsibility and system for welding at steel structure works to assure that qualified welders according to qualified welding procedure using specified materials will do welding.

9.2. Responsibilities

- The Quality Assurance Manager, through Quality Assurance Engineer & Quality Control Engineer & Inspectors will be responsible for control of welding quality according to welding procedure documents.
- The Production Manager shall be responsible for control of welding electrodes, assignment of qualified welders and execution of welding at shop floor.
- The Manager of Engineering staff shall be responsible for design of weld joints, welding parameters etc.
- The Q.A. Engineer/Q.C. Engineer shall be responsible for calling Independent Inspection Authority to witness the Welding Procedure, Welding Specification & Welder Qualification Test and keep full master record of the procedure and welding operator tests against an independent record system and arrange for reevaluation as and when required by shop floor engineer but not less than every 12 months.

9.3. Qualification of Welding Procedure & Welders

- The welders shall be qualified with weld performance qualification by Independent National authorities. The Quality Assurance Engineer with the help of Welding Engineer shall prepare the Welding Procedure Specification (WPS) for qualification of procedures and welders.

9.4. Welding Procedure Qualification

i. The welding engineer shall select competent welders to do welding procedure qualification test.
ii. Selected welder shall do the trial welding of the test pieces.
iii. The welded test pieces shall be mechanical tested and recorded by Q.C. Engineer.
iv. The Parameters for welding shall be identified by evaluation of the test results of trial welding.
v. These results shall be documented as Welding Procedure Qualification Record (PQR).

9.5. Welder Performance Qualification

i. The Welders receiving test shall do welding of test pieces according to approved WPS order under supervision of Q.C. Engineer, independent Authority Engineer & Welding Engineer.
ii. The welded test pieces shall be X-ray or Magnetic Particle tested according to AWS and ASME and/or engineer standards' requirements.

iii. Q.C. Engineer shall review WPS and results of mechanical test for welded test pieces.

9.6. Qualification Renewal Control

- The Q.C. Engineer shall prepare and maintain current list of qualified welders.
- The list, so called Welders Renewal List shall identify personnel by name, Identification number and Specific Qualification.
- Q.C. Engineer shall assign each qualified welder identification number.
- The welder Renewal List shall be prepared, distributed and updated periodically. With the updating of the Welder Renewal List, the Welding Process Record shall be maintained by Q.C. Engineer.
- This list shall include sufficient information to identify all qualified welders and their qualifications.

9.7. Welding Consumable Storage, Drying & Issue

- Using Engineering instruction according to the material procurement procedure and clients specification shall purchase all consumable.
- After completion of Receiving Inspection, The Q.C. Inspectors shall notify Inventory Control Section to transfer materials to the welding material storage room as follows:
  - On receipt of delivery of welding materials, packages are marked with their respective contract numbers and a yellow sticker attached by the stores personnel, after whom they are inspected by the Warehouse Inspector and Materials Inspection acceptance/rejection note issued in the same manner according to clause 3. With a green sticker attached, if acceptable.
  - The Electrodes shall be placed separately and stored at a controlled temperature. All electrodes having low hydrogen covering shall be dried at least two hours between 230ºC and 260ºC or according to manufacturers' recommendations before use.
  - The stores personnel then issue the electrodes to the welders against a material issue note.
  - The welders then place them in the heated ovens provided, local to the job. The production Supervisor ensures that only sufficient rods are drawn for the particular work period, approximately four hours.
  - In addition, for low Hydrogen Electrodes, if being exposed more than four hours, they shall be returned to the storage room for drying again.
  - Damaged and used welding rods shall be disposed in the designed waste containers.

9.8. Operation

- The Welding operation shall be performed according to approved WPS and Welding Engineers Instructions.
- The welding materials to be used shall be specified on the approved WAS. The welding Supervisor/charge-hand shall monitor welders' activity to insure compliance with approved WPS.
- The Welding Inspector shall monitor welding parameters and in-process welding data according to approved WPS parameters.
- The Welding Inspector shall record welding parameters on the Welding Process Record. The Welding Inspector shall check fit up of Assembly immediately before first run weld.

- If non conforming condition is noted during welding process, for example the parameters of fabrication instruction sheet or approved WPS have been violated, welding shall be stopped and then nonconformity tag and nonconformity notice shall be prepared and processed according to non-conformance chapter of this Manual. The Welding Inspect shall examine first side back gouges or grinding before second side welding begins in full strength joints.
- When the welding has been completed, the weld dimensions, visual inspection & NDT shall be carried out by welding inspector. The Welding Inspection Report shall be prepared and signed/stamped and dated by the Inspector, if acceptable. The completed report shall be reviewed and approved by Quality Assurance Engineer or Q.C. Engineer.
- Inspector & Q.A./Q.C. Engineer shall maintain the completed record after the inspection.

9.9. Welding Equipment

- The operating control and maintaining of all welding equipment shall be responsibility of the Production Manager and maintenance shall be included in the scheduled program.

10. INSPECTION AND TEST PROGRAM

10.1. Scope

- This chapter identifies the responsibilities & measures established to assure that all personnel in charge of inspections and tests are properly trained and qualified if necessary, and the procedures of inspection and test are properly reviewed and approved according to the governing code/standards.

10.2. Responsibilities

- The Quality Assurance Manager through Q.A./Q.C. Engineer and various Inspectors shall be responsible for carrying out the inspection/test at all stages of fabrication.

10.3. Standards, Drawings and Procedures

- All inspection & tests shall be performed according to the customer's specific requirements, standard/code requirements, approved inspection procedures and drawing requirements.
- Quality plans with reference documents for inspection shall be readily available to the inspectors.
- The Quality plans and instructions shall be completed to clarify items and procedures of inspection and test, and acceptable tolerance depending on drawings, specifications and standards.
- Quality Assurance Engineer and Q.C. Staff shall prepare the Quality Plans and inspection test procedures respectively within the scope of specification.

10.4. Quality Plan

- The inspection and test procedures planned according to various requirements concerned shall be prepared by a responsible Quality Assurance Engineer and submitted to the customer for approval.
- The inspection and test sequence according to production flow and document No./check lists shall be stated on the quality plans from receiving inspection (beginning of fabrication) through final inspection.

10.5. In-Process Inspection

- In-Process inspection except hold points may be carried out by process inspection after completion of each operation according to the Quality plans particularly important phases of fabrication stated on the quality plans shall be checked by inspector of in-process.
- Quality Control In-process Inspection Reports shall be prepared daily in each work stage such as cutting drilling, punching, welding and etc.

10.6. Assembly Fit-Up Inspection

- Assembly Inspector is responsible for carrying out assembly fit-up check. Dimensional and tack welding checks according to drawing and quality plan requirements.
- Inspector shall ensure that the fabrication will be carried out on a flat and level surface.
- If assembly required to be tacking welded as per drawing, tack welder shall be qualified prior to commencing the fabrication according to AS or ASME or applicable code/standard.
- Prepare the Assembly Inspection Reports daily.

10.7. Welding/Pre-final Inspection

- Welding/Pre-final Inspection shall be carried out by Q.C. Inspector and ensured that welder performance qualification tests and weld procedure qualification carried out on the special test pieces according to welding control chapter as prescribed in the Quality Manual.
  - Inspect weld preparations and fit up in all subassemblies and carry out dimensional checks. Where heavy welds are called for check that suitable allowance for shrinkage has been allowed.
  - Checks that preheat requirements are satisfactory.
  - Inspect weld runoff pieces and carry out dimensional checks, orientations, etc. according to the drawing/Quality Plan requirements.
  - Inspect all welding runs, final runs, back gouging or grinding & record. Any local preheats and post-heats treatments or other approved methods or code/standards as required by the drawings and quality plans.

10.8. Non Destructive Inspection

- Qualified inspector shall carry out all NDT examination comprising liquid penetrate magnetic particle, Ultrasonic and Radiography as required by the quality plan/specifications.
  - If defects require to be repaired, Inspector shall inform production personnel though Material Rectification Note.
  - Repaired material shall be inspected by NDT according to approved procedure.

10.9. Pre-final Inspection

- Qualified inspector according to drawing & the Quality Manual shall carry out pre-final inspection such as dimensional checks to clear the complete fabrication.

10.10. Surface Treatment Inspection

10.10.1. Surface Preparation

- Bare steel components of steel structure, after fabrication shall be prepared by shot blasting or sand blasting according to governing code/standard requirement.

- Q.C. Inspector shall check the blasting abrasive used for blast-cleaning, silica sand grades or shot or grit so that it will produce an average keying profile on the surface according to paint manufacturer recommendations.
- After blast cleaning, surface shall be visually inspected for mill scales, oil spatter, grease, soil, cement, salts, acids or other corrosive chemicals, which are harmful for painting.
- Degree of surface cleaning is also inspected visually by comparing the blast surface with the photographic standards such as Swedish Standards SIS 055900 or SSPC chapter 2.4.

10.10.2. Painting

- To ensure the success of the painting operation, following environment conditions shall be monitored.
  - Surface temperature shall be measured to ensure that no condensation occurs on the surface.
  - Relative humidity will be measured to prevent condensation on the surface.
  - The instrument used for wet bulb/dry bulb temperature measurement is whirling Hygrometer.
  - The wet/dry bulb temperatures, recorded shall be used to calculate relative humidity by help of dew point calculator.
  - Relative humidity and dew point temperature will be recorded periodically before the painting operation starts.
  - Before painting, type of paint, mix ratio etc., according to paint manufacturers' recommendation shall be inspected and recorded.
  - After completion of painting on the steel structure surface, dry film thickness will be visually examined to establish application defects such as over spray, dirt inclusions, blisters, sags, runs, adhesion, flaking in confined corners etc.
  - Paint coating dry film thickness shall be measured by use of Elcometer. Number of readings according to clients' specification requirements shall be recorded in Painting inspection Report.
  - Elcometer shall be calibrated daily before use according to approved procedure.
  - If the result of DFT is varying from the specified value or if any defect is observed on paint surface it shall be sent for rectification.
  - Rectification of paint defects shall be carried out according to the instructions of Inspector.
  - After satisfactory completion of painting inspection, material shall be offered for client's representative, if necessary, according to contractual agreement for carrying out random paint inspection.

10.10.3. Records

- All the results of inspection and tests shall be recorded and retained with other related documents according to standard format documents control.

- The identification number of measuring instruments used for inspection and test shall also be recorded on the Inspection Reports.
- These Inspection Reports shall be reviewed and approved by Q.A./Q.C. Engineer and shall be documented according to the Chapter, Document Control.

10.10.4. Feed-Back

- All evidence and Inspection Reports related to quality of items that have been revealed through out inspection and test shall be fed back to concerned departments.

10.10.5. Facilities for Tests & Inspections

- The Manager of staff and section in charge of test and inspection shall be responsible for planning, arrangement and maintenance of facilities for tests and inspections.

11. MEASURING CONTROL AND TESTING EQUIPMENT

11.1. Scope

- This chapter identifies the responsibilities for the control of measuring and test equipment, including measuring tools, gauges. In the works measuring and test equipment shall be periodically calibrated according to the instructions "Measuring Devices Calibration Control Procedure".

11.2. Responsibility and Authority

- The Manager of Q.A. Department shall be responsible for the over all calibration/control of measuring and test equipment though the Quality Control Staff and maintenance/production staff providing that personnel using equipment have been instructed in the proper procedures for use and maintenance.
- The Q.C. Engineer shall be directly responsible for calibration of measuring devices and maintaining reference standards used in the shop floor.

11.3. Mechanical & Electrical Measuring Equipment

- The Manager of Q.A. Staff shall be responsible for the control and calibration of mechanical equipment as follows:
  - Maintaining master list of mechanical & electrical measuring equipment used for production.
  - Establishing calibration plan for mechanical & electrical measuring equipment according to the requirements.
  - Doing calibration of equipment according to the calibration plan.
  - Preparing & maintaining equipment calibration records according to enclosed format.

11.4. Reference Standards

- These standards shall be maintained in the calibration laboratory and shall be used to calibrate measuring equipment and working standards.

11.5. Working Standards

- The working standards used as Standards for calibration of equipment shall be traceable to the Reference Standards.

11.6. Equipment Calibration

- All measuring and test equipment shall have calibration label attached and shall be calibrated according to the specified time schedule.
- Instrument Calibration Records shall be maintained for all measuring & test equipment. They shall contain the following information:
  a. Instrument Identification
  b. Manufacturer
  c. Calibration due dates
  d. Required accuracy
  e. Location assignment
  f. As-found condition
  g. Calibration results
  h. Sign/Stamp and dates of person conducting calibration
  i. Standard used for Calibration

12. NON-CONFORMANCE AND CORRECTIVE MEASURES

12.1. Scope

- This chapter identifies the responsibilities, and describes the measures established to control Materials and items that do not comply with specification or drawing or these Quality Manual requirements to prevent their inadvertent use.

12.2. Definition of Non-conformance

- Nonconformity means any condition of material, item or services that do not conform to the drawing, customers' specification or to these Quality Manual requirements.

12.3. Responsibilities

- The Manager of Quality Assurance Department shall be responsible for detection, control, disposition and correction of all non-conformances.

12.4. Non-conformity Notice

- Non-conformance caused by works activities inside the factory shall be recorded on the ‘MRN’ (Material Rectification Note) or Nonconformity Notice for inside use and items shall be tagged or segregated in a separate area accordingly. Non-conformance shall be informed to the section supervisor concerned by the Inspectors to check.

12.5. Segregation

- Tagged non-conforming items shall be segregated and held by Inspectors.
- Incoming non-conformance items shall be segregated as Rectification, Rejection and suspension to the specified area.
- Incoming Materials, either stock or outside purchases that do not conform to the order shall be returned to the vendor through the Inventory Control Staff to get proper replacement.

12.6. Measures

- The Inspector at warehouse with the approval of Quality Assurance Manager is responsible to decide the disposition of the non-conforming items and to establish proper measures for prevention with the responsible Q.A./Q.C. Engineers.
- The measures shall be written in MRN document with the acceptability of disposition that has the disposition "Repair" or "Use-as-is".

12.7. Customer/Clients Deviation

- The Q.A. Manager through coordination Manager shall be responsible for information to the customer on critical deviations, with the disposition of non-conforming items classified as category "C".

12.8. Classification to Non-conformance

a. Category 'A'

If the items that have the disposition of "Repair" or "Use-as-is" are evaluated has no bearing on the designed quality level/specific requirements and a change of modification are made with the approval of related department.

b. Category 'B'

If the items with "Repair" or "Use-as-is" have some bearing on the designed quality level, but still have some allowance compared with the specific requirements of customer and/or with the guarantee performance, no information is made to customer.

c. Category' C'

If the items, with "Repair" or "Use-as-is" do not comply with the specific requirement and/or guarantee performance, the Manager of Q.A. Department through coordination Manager shall inform the fact to the customer and shall obtain an approval before making the decision for disposition.

12.9. Re-Inspection

- The repaired non-conforming items shall be inspected again and decision making by the Q.C. Inspector and shall have approval by the Q.A. Engineer. Q.A. Manager shall review these results periodically.

12.10. Non-conformity Prevention

- All MRN shall be forwarded the section supervisor for necessary action and for prevention of recurrence.

13. TRAINING

13.1. Scope

- This chapter defines the responsibilities for the Training, Qualification and Certification of Personnel.

13.2. Responsibilities

- The company CEO shall assume the over all responsibility for Training of personnel doing activities. It is the responsibility of each Department Manager to schedule and conduct

Training for those individuals who completed Quality Assurance and/or does other activities affecting product quality.

13.3. Training

- The Manager of each Department shall prepare the Training schedules and program to engage well-trained and qualified personnel for the job.
- Personnel doing special processes requiring special skills or knowledge shall receive following training.
  1. Formal Induction Training conducted by HXSTEEL.
  2. On-the-job Training conducted by a supervisor, experienced operator or other qualified personnel.
  3. Besides above, all personnel in charge of Quality Assurance shall have pertinent knowledge on the Quality Assurance System.
  4. The Manager of each department shall maintain the Training Record including the subject and training hours.

13.4. Qualification

- Personnel doing special processes shall be qualified by outside independent agency special processes such as Welder Performance, Welder Operators Qualification etc.
- The Manager of each Department shall list the Qualification on their personnel. The List shall include the following:
  1. Educational background.
  2. Experience in the same or related processes.
  3. Satisfactory demonstrated performance and results of any tests or practical demonstration.

13.5. Certification

- The Q.A. Manager shall review the Training Records of qualified personnel and confirm if all requirements are satisfactorily met.

Preface – Quality Control Manual

GM's Foreword

Quality is the prime need of the company for techno-economic development. HXSTEEL's has emerged as the premier organization in fabrication of Steel Structure & Industrial Machinery significantly to the customer's requirements. Within the laid down frame of time, cost and quality, HXSTEEL's is rapidly moving forward to fulfill the promise of high quality. The achievement of HXSTEEL's in industrial plant by completing the projects within the time schedule, cost and quality is due to effective achievement of project management control.

Achievement of quality is not only the responsibility of Quality Control Department, but it is the responsibility of all those departments whose functions affect product quality and performance.

It is all the more essential that the items, which are fabricated according to agreed Quality Assurance Practices, are properly transported, received, inspected, stored, and finally delivered to the customer through tool of scientific and systematic operation activities. It is, with this philosophy in mind, that the Quality Manual has been generated; which will also ensure uniformity of approach in all HXSTEEL's projects. I am sure that this manual will be of immense help to all departments and will enable increased managerial effectiveness to be achieving our industry.

Sincerely,

Zhang Hua
General Manager

Contents

1. General

- This Quality Control program assures that the entire quality related work element for all products, manufactured by HXSTEEL's should be inspected and controlled through each phase of production.
- Written Quality Control procedures with specific instructions shall be applied to all operations about the current revision control.
- Any flaws can be discovered through the conscientious application of these written instructions in the early stage so that corrective actions can be expedited.

2. Quality Control Organization

- Quality Control Department had been established for developing and maintaining the product quality through Quality Control Program. In addition, a committee has been formed to support and encourage the Quality Control activities of Production Departments.

  The detailed functions of these specific organizations are described as follows:

a. Quality Assurance Department

- The Quality Assurance Department has two sections whose responsibilities are as follows:

i. Quality Assurance Section

- Establishing, maintaining and application of the in-plant standards.
- Reviewing the in-plant standards by comparing actual operations with the standards.
- Collecting and statistically analyzing the data concerning Quality Control.
- Necessary education and training for the people and specific personnel concerning Quality Control.
- Reviewing errors in design and operation, inspecting specific items in question and suspending its operation.
- Advising the selection of possible subcontractors from the point of view of Quality Control.
- Acting as a host for the Q.C. Promotion Committee.

ii. Quality Control Section

- Inspection and Testing of:
  a. Raw materials, received
  b. Shop-assembled items
  c. Fabricated individual members
  d. Welding
  e. Corrosion Control (Hot-Dip-Galvanizing; if applicable)
  f. Purchased standard parts and other subcontracted products
  g. Painting
  h. Packing

- Preparation of the inspections for witnessing by the Customer's inspectors and report generation.
- Investigation, settlement and reporting of the defects or failures which are claimed by Customers.

iii. Quality Committee

- Quality Control circles will be formed in every section of production department. Each circle will select their subject for improvement of the production quality. The Quality Committee will encourage the activities of the Quality Control circles. The Committee will be consisted with department managers in factory.
- Analysis and evaluation of the performance of the activities which are conducted by the committee.

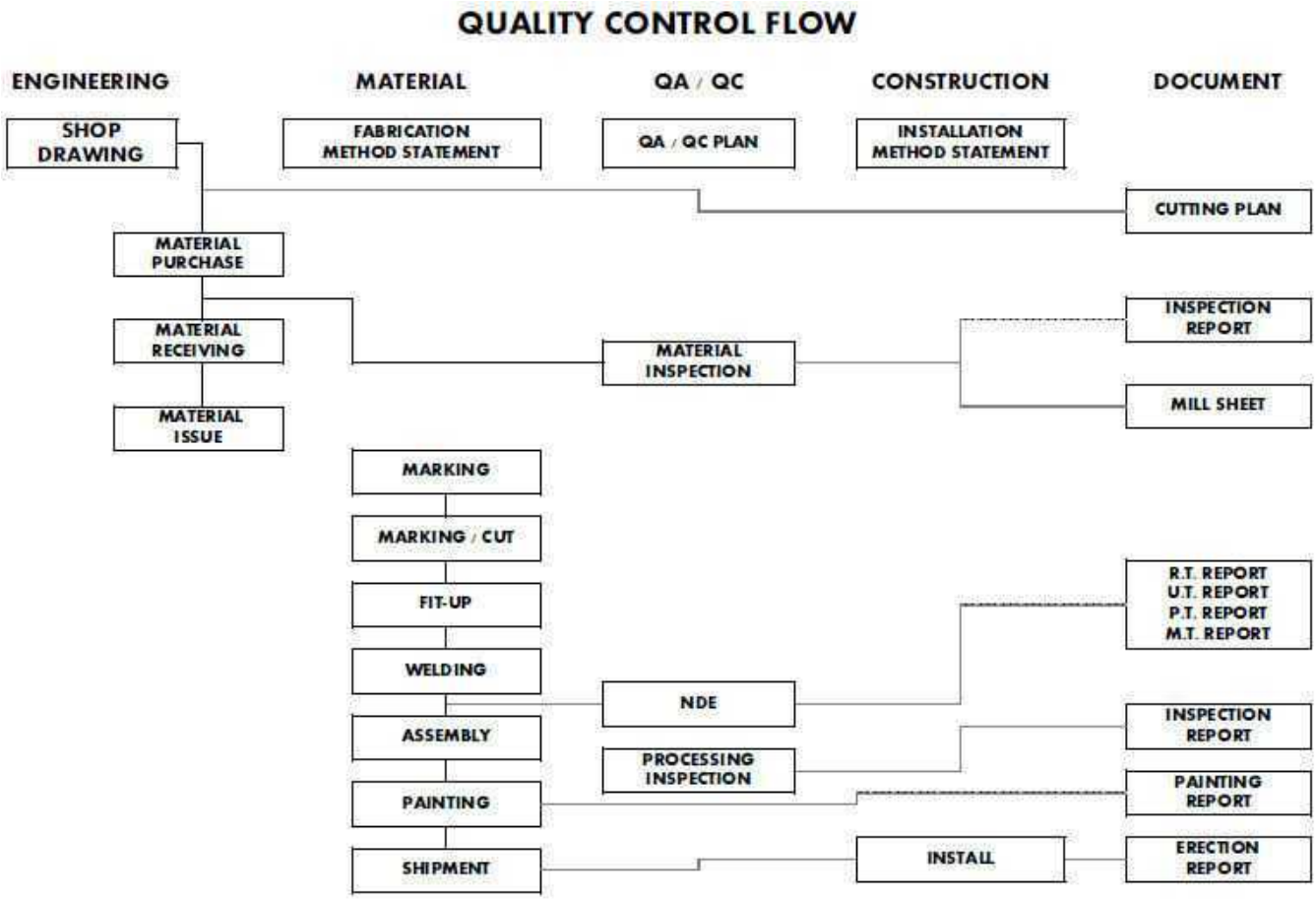
3. Quality Program Management

a. General

- In practice, the Quality Control Department takes leading part in the quality program management, while the quality is the responsibility of each operational section.
- The function, responsibility and authority of the Quality Control Department are as stated in Section 2-2.

b. Flow of Quality Control

Following chart shows the standard manufacturing and Quality Control process.



4. Specifications, Drawings and Changes

a. General

- The specifications and drawings are the most important information for the production of space frame.
- The Steel Structure & Machinery has various in-plant standards to develop and maintain the uniformity and reliability of the quality of the products.
- Should Customers' specifications or furnished drawings conflict with or be not covered by the in-plant standards, the matters in question are subject to review and study by the Quality Control Section, the Design Section and the Sales Department. The specific requirements are then incorporated temporarily into the in-plant standards for the particular contract only.
- All the changes in design and shop drawings are distributed to the sections concerned through a sheet, NOTICE OF CHANGE IN DRAWING. The sheet is filled by the design engineer or the Drafter in charge, reviewed by the Production Planning Section and the Quality Control Section and then distributed to the related operation sections in the shop. The review is made to ensure that the change will not adversely affect quality or compliance with contract requirements.
- The above change control system ensures that only current documents shall be available to operating personnel and provides for initiation of documented change.

b. Information Included In Technical Documents

- The following information is included, when applicable, in technical documents, such as drawings, work specifications, etc. for each contract.
  a. Characteristics and design criteria necessary for material procurement, manufacturing, inspection and test operation.
  b. Characteristic tolerance for all dimensions, process variables or measured attributes specified in the technical documents.
  c. Identification to which procurement, fabrication, processing, inspection and test can be related.

c. Specification and Change

- Sales Department will receive Customer's specifications and their complete copies are delivered to the Production Planning, Quality Control and Design Sections.
- The Sales Department, the Design Section and the Quality Control Section jointly evaluate and clarify the particulars of the specification. They prepare a draft of the input specification against the Customer's specification to simplify understanding by the persons concerned.
- The finalized in-plant specification with remarks by the Quality Control Section on the points to be paid attention to be delivered through the Production Planning Section to all the sections concerned.
- Should any changes in the specification be advised to the Customer, the changes are treated in same manners as the Customer's initial specification. The written change notices shall be delivered related sections. The manager of each section who has received the notice has to return the old specification without fail to the Quality Control Section.

d. Drawing and Change

i. Design Drawing

a) The design drawings prepared by the Design Section are submitted to the Customer for approval through the Sales Department.

b) Upon receipt of the reviewed drawings from the Customer the Design Section checks them and reports the results to the Production Planning Section and the Sales Department. In case, Customer request any change, the Design Section evaluate the request and revises the drawings accordingly.

ii. Shop Drawing

a) The basic shop drawings are prepared by the Design Section and checked by the manager of the Design Section, the Production Planning Section and the Quality Control Section for predictability, interchange-ability, and inseparability. Their submittal to and receipt from the Customers are executed in a manner similar to that for the design drawing.

b) Should any errors or discrepancies be found on the drawings during the shop assembly, the details are reported to the Design Section, the Production Section, the Quality Control Section and the Sales Department; the corrective actions to be taken are discussed among them and determined.

c) Then the related design and/or basic shop drawings are revised and the Sales Department shall inform the Customer. The final drawings and any other drawings required under a contract are submitted through the Sales Department.

iii. Customer-furnished Drawing

a) When Customer furnishes design drawings, shop drawings and other kinds of drawing, these are delivered to the Design Section through the Sales Department and the Production Planning Section.

b) The results of evaluation by the Design Section are informed to the Quality Control Section, the Production Planning Section and the Sales Department.

c) Any change in the furnished drawings should be advised to the Customer; the Design Section checks the changes and informs the results to the Quality Control Section, the Production Planning Section and the Sales Department.

d) Revised drawings are delivered to the related sections and the managers of these sections return the original drawings to the Design Section upon receipt of the revised drawings.

e) Should any errors or discrepancies be found on the furnished drawings during the process of shop assembly and other inspection, the Quality Control Section informs the Customer of the corrective action to be taken.

iv. Erection drawing

a) The erection drawings are prepared by the Design Section and checked by the manager of the Design Section, the Erection Department, the Structural Analysis Section and Quality Control Section about interference between adjacent components, right component selection, and force-reaction during erection, and integration with related items. Should any errors or

discrepancies are found on the drawing during this checking time; the details are reported to the Design Section and Quality Control Section.

b) If any errors or discrepancies of the drawings are found during erection, Site Manager has to report the details to the Design Section, the Sales Dept. and Quality Control Section through the management of the Erection Dept.

c) The corrective actions to be taken after discussing among the Design Section, the Quality Control Section, the Structural Analysis Section and the Erection Department.

d) Design Section shall revise the related erection drawings and inform to the Customer.

5. Control of Purchase

a. Purchase Control System

- The Materials Department is in charge of assuring that all materials, supplies and services of subcontractors confirm to the quality requirements. In selecting a subcontractor, the Quality Control Section has the authority to disapprove the use of subcontractors who do not have a Quality Control system that will meet the procurement requirements.
- The control by the Materials Department includes the following:

  a) The order sheets to subcontractors specify all technical and quality requirements.

  b) The Quality Control Section surveys the subcontractor's plant before placing the order and checks the suppliers' Quality Control system.

  c) The Quality Control Section informs the Materials Department of these results.

  d) The Quality Control Section periodically visits and reviews each supplier who has been approved to see if he is maintaining his system.

  e) When necessary and as required by the Materials Department, the Quality Control Section will provide technical assistance and training to subcontractors to achieve required quality levels.

  f) All documents showing the compliance of the supplies by Subcontractors to the quality requirements are received and filed with the receiving note and purchase order.

b. Receiving Inspection

- Raw materials, finished products and semi-finished products, procured from mills and subcontractors are subject to receiving inspection by the Inspection Section before acceptance. The inspection is conducted in accordance with a Test and Inspection Plan where the methods of sampling, reviewing documents, etc. are specified.
- When incoming materials are failed the receiving inspection, the chief of the Inspection Section will inform Quality Control section for considering degree of the defects, and their percentage. Quality Control section shall request the Materials Department to order the Subcontractor to take such action as complete replacement, selection of only conforming material, repair, etc. as happens may be.
- Non-conforming materials shall be segregated and disposed in accordance with the relevant in-plant standards. The subcontractor shall propose and obtain approval by the Quality Control Section as to preventive means and corrective action.

6. Processing and Fabrication Control

- Processing and Fabrication of Steel Structure shall be done by the Standard Specification, of Fabrication prepared by HXsteel.
- The Fabrication Controls are managed by the Production Planning Section in the manner described below:
  a) Planning of fabrication of contracted and expected work to ensure the optimum Operation of the plant and the meeting of delivery requirements.
  b) Establishing of operation standards.
  c) Establishing workmanship standards including characteristics and allowable tolerance.
  d) Controlling non-conforming material including procedure for its identification, segregation and disposition.
  e) Arrangement and maintenance of tooling, jigs, fixtures, templates, and other equipment.
  f) Education and training of fabrication personnel to improve their technical skills and Quality Control procedures.

a. Process Controls

a) Controls are carried out to assure uniform quality for the process such as cutting, machining, welding, heat treatment, galvanizing and painting.
b) Welders and welding operators should be all qualified according to AWS DI. 1 and/or the National Welding Code.
c) The Quality Control Section maintains certificates of the qualification records.

b. Processing and Fabrication Inspection

- Fabrication inspection is classified as follows:
  a) In-Process Inspection
  b) Shop Assembly Inspection
  c) Final Inspection

i. In-Process Inspection

- Every operation section has responsibility to transfer materials or semi-finished products, conforming to the specification, to the next section and in-process inspection of fabrication is carried out by Inspector at each fabrication step.
- The inspection results are recorded in "Internal Inspection Report".
- Dimensions and shapes are checked with templates or drawings. Should any non-conforming members and nodes be found, it is identified with the white paint and segregated from the correct members.
- The non-conforming members are then repaired or replaced in accordance with the Provision in the standard and/or relevant requirements given in the contract specification and repairing or replacement of the non-Conforming materials is done conforming to the relative in-plant standards.

ii. Shop Assembly Inspection

- If necessary, shop assembly inspection will be done to assure conformity with the relevant shop drawings, correct fit and proper field erection.

iii. Final Inspection

- After galvanizing and/or painting, Inspector shall inspect all welded components from the Inspection section in regard with straightness, assorting and component identification mark before packing.
- Should any non-conforming members and nodes be found, these are then repaired or replaced in accordance with the provision in the standard and/or relevant requirements given in the contract specification.

7. Tooling

a. General

- It is essential for appropriate Quality Control and efficiency to have the manufacturing facilities and equipment kept in good condition by the operators themselves and not by the maintenance personnel.
- This assumption is made in establishing operation standards, training system, qualification system, personnel evaluations etc.
- Only those who have the required level of skill are permitted to operate the facilities.
- Preventive and Routine Maintenance by the Maintenance Section Preventive and Routine Maintenance is performed by the Maintenance Section in addition to the daily check, adjustment and control by the operator.
- Preventive maintenance is defined as that to be performed in advance of the facilities or parts reaching their full life.
- The operators report each month the information on the facilities through the foreman and Production Section to the Production Department for appropriate maintenance work.
- The routine maintenance refers to the maintenance of electrical system, cutting, machines, welding machines, N. C. drilling machines and etc. which may require the dismantling of the facilities for examination and adjustment.
- This is done by the Maintenance Section and not by the operators concerned.
- The Maintenance Section holds the list of facilities and equipment with the maintenance history of each major facility and equipment.
- The Maintenance Section shall keep and up-to-date the detail drawings, catalogues and other documents and information necessary for the routine maintenance.
- The Material Department does such checks or adjustments, which require specific techniques or equipment, through maintenance sub-contractors with relevant companies (recommended by the Maintenance Section).

b. Facilities Improvement

- The facilities are not only maintained but also constantly improved for the purpose of better safety and Quality Control.
- Only the Maintenance Section is able to do improvement work.
- No operator is authorized to modify any facilities.

c. Control of Facilities

- All facilities are operated and controlled only by authorized personnel.
- No other personnel are allowed to operate or repair them without permission.

- The facilities are inspected regularly using a special checklist and the results are reported monthly to the manager of Production Department.
- In case of the facilities being found out of order, its detail is recorded in the daily report sheet and reported to the Maintenance Section.
- Should a defect adversely affect quality or safety, the operation is immediately suspended. Such defective facilities are market for prohibition of their use.

d. Control of Jigs and Fixtures

- All the production jigs and fixtures shall be inspected and renewed in accordance with the relevant provisions.

e. Control of Tools and Index

- All the production tools and indexes shall be inspected and renewed in accordance with the relevant provisions.

8. Material Identification and Status

a. Material Identification

- Steel shapes, pipes, nodes and necessary components are stored and fabricated so that manufacturing lot number can be identified.
- Color Coding will be used for the identification of steel grades and component assorts.
- A Job Order Number will identify each Contract. The manufacturing lot number is stamped or marked on each material for identification.

b. Material Status

- The Production Planning Section plans and controls all production schedules.
- All information on the status of material preparation subcontracts production, process, test, inspection and shipment is reported from the relative sections to the Production Planning Section. With based on these reports, Production Planning Section will arrange the manufacture and shipment schedules and finally confirm the schedules and finally confirm the schedules by holding the production planning conference once a week with the managers of every operation and inspection section.
- In addition, the long and mid term, the Production Planning Section provides production plan at intervals of two weeks.
- Application for witnessing of test and inspection is made under instructions from the Production Planning Section.

9. Shipping and Storage

a. General

- The Packing Section together with the Inspection Section controls the quality during packing, storage and shipment.
- The specification of packing, storage and shipment meeting the Customer's requirements is prepared by the Sales Department and the Quality Control Section prior to starting the operation and delivered to the Packing Section.
- The personnel of the Inspection Section also performs the inspection as stated in Section 6-6-3, which may be witnessed by the inspector of the Customer.

b. Packing

- All Steel Structure & Machinery components are packaged in accordance with

the in-plant standard, Standard Specification for Packing of Product, unless otherwise specified by the Customer.

- In addition to checking as described in Section 9-1, the following are checked:
  a) Description and appearance of component marks
  b) Description and appearance of shipping marks
  c) Description of packing list
  d) Quantity of components per package
  e) Size and quality of the materials for packing
  f) Rigidity of each package

c. Storage

- All the components are stored indoor before/after packing.
- After packing indoor, all the packages are stored in such a place where the final coating is not affected by harmful substances like acid, salt etc. The packages are handled with slings and/or forklift in a manner, which will prevent damage to final coating and damage to the package.
- Should the final coating be found damaged, repairing or replacement is performed depending on the extent of the damage and the provision of the contract specification.

d. Shipment

- All the components are shipped only when the inspector from the Quality Control
- Department and/or from the Customers if necessary have released them for shipment after satisfactorily executing specified tests and inspections.
- The following precautions are taken during shipment:
  - Careful handling of the material to prevent damage to it when loading on and unloading off the truck.

10. Measuring and Test Equipment

a. Measuring Equipment

- Measuring equipment such as steel tape, Vernier calipers, micrometers, straight and angle rules, etc. are to appropriate standards.
- All of them are maintained and calibrated monthly by the authorized personnel of the Inspection Section in accordance with the in-plant standard.
- The steel tape with the accuracy certificate is established as the factory standard tape.
- Only the equipment, which accuracy has been verified by receiving and periodic calibration will be listed measuring equipment list and shall be used in the shop.

b. Test Equipment

- N.D.T. equipment and other test equipments are calibrated by the qualified public inspection organization within specified calibration periods.
- The calibration certificate label, shows next calibration due date, should be kept on the test equipment.

11. Inspection and Test

- Inspection and test are performed so as to confirm the conformity of the product to the contract specification, drawings and quality requirements.
- In case that the Customer wants to inspect and test components of the contract an inspection and test plan is prepared for each contract by the Sales Department and the Inspection Section, and reviewed by the Quality Control Section.
- The plan is then submitted to the Customer for approval.
- The plan may cover the inspection and the test from the receiving inspection to the shipment including those for the subcontracted items. In planning, the detail of the Customer's specification is checked with the related in-plant standard and the differences, if any are clarified.
- Details of the plan with the explanation on such differences are provided in written by the Quality Control Section to the sections concerned.
- The Inspection Section will generate reports based on results of the inspection and the test and submitted to the Quality Control section and their copies with the related data are submitted to the Customer by the Quality Control Section.

12. Quality Records and Information Feedback

a. Quality Records

- The related sections shall report all the information of the quality of the products to the Quality Control Section. The information includes not only the inspection and test data per contract but also the general in-plant inspection and test records, defective materials, corrective action, calibration, quality cost data etc.

b. Information Feedback

- The quality information gathered at the Quality Control Section is feed back to design, purchase, operation and other sections concerned as well as the associated sub -contractors.
- Before the feedback, the information is analyzed or arranged by the Quality Control Section statistically or by means of other Quality Control techniques.
- The failure costs are periodically summed up, statistically analyzed and presented to all people of Production Departments for better understanding of quality costs and improvement of quality consciousness.

13. Non-conforming Material

- Non-conforming materials, if found, are controlled and discarded as follows.
- The Quality Control Section maintains the records of the nonconformance for cause analysis and feedback to the sections concerned.

a. Incoming Materials

- When incoming materials fail the receiving inspection, the Materials Department will, according to the advice by the inspection Section and the Quality Control Section, order the sub-contractor to take such action as overall replacement, selection of only confirming material, repair etc., as the case may be.
- Non-conforming materials are separated and discarded in accordance with the relevant in-put standards.

b. In-Plant Fabricated materials

- Should any non-conforming material be found in process of fabrication or inspection, those materials are identified with the white paint or with a label and separated from other correct materials.
- The non-conforming materials are then repaired or replaced in accordance with the provision in the in-plant standard and/or relevant requirements given in the Customer's specification.

c. Shipped Materials

- The non-conforming materials, unacceptable to the Customer are repaired or replaced according to the decision made between the Customer and the Inspection Section.

14. Corrective Action

- The following corrective actions are taken so as to prevent reoccurrence of non-conformance.

a. Incoming Materials

- The Quality Control Section analysis the reports on the nonconformance submitted by the Inspection Section and suppliers or sub-contractors.
- After the analysis, the Quality Control Section requires the suppliers or sub-contractors to establish a preventive action, and check the actual performance by them of the Section.
- Their Quality Control system is also subject to review by the Quality Control Section.

b. In-Plant Fabricated Materials

- The Quality Control Section analysis the cause of the non-conformance with the related sections and advises them to perform the following, wherever applicable.
  - Training of operational or engineering personnel.
  - Improving manufacturing process and procedure.
  - Reviewing and proposing amendment to the related in-plant standard.

c. Shipped Materials

- The Quality Control Section analysis carefully with the related sections the causes of nonconformance claimed by the Customer and take the following actions, wherever applicable.
  - Improving the Quality Control system of sub-contractors and suppliers
  - Improving the test and inspection plan and system
  - Amending the in-plant standard

1. Check List of Project Quality Plan

W.O.No.: _____ TOTAL WEIGHT: _____

OWNER : _____ PERIOD OF CONTRACT: _____

CLIENT : _____ INSPECTION BY: Main Con. / Client

PROJECT: _____ REV.NO / DATE: _____

S.No	Description	Ref. Document
1	SCOPE:	
1.1	This quality assurance procedure covers for the inspection and testing of Structural Steel Work.	
1.2	Material supply, fabrication, Hot dip galvanizing (only for exposed structure) and installation of steel structures.	
1.3	Preparation of shop drawings, as built drawings and connection design for approval.	
1.4	If any conflict with project specifications exist without the approval from client, the project specification shall prevail.	
2	Material	
2.1	All structural steel will be BS 4360 Gr 50B / BS EN 10025 Gr. S355JR / equivalent unless shown otherwise on the drawings.	
2.2	The structural fasteners shall be Grade 8.8 as specified in according to BS 3692.	
2.3	All high strength friction grip bolts according to BS 4395-Part 2 (Higher Grade)	
2.4	All anchor bolts (cast-in) shall be grade 8.8 as specified in accordance to BS 3692.	
2.5	All bolts, anchor bolts, nuts and washers to be cold sprayed galvanized / electroplated to BS 3382.	
2.6	All materials to be checked and identified in accordance with manufacture certificates while receiving.	
2.7	All materials shall be free from surface defects such as segregation, cracks, laminations and pitting.	
2.8	All material test certificates to be checked for chemical and mechanical properties to be complied with relevant standard.	
2.9	All unidentified materials to be sent for testing for compliance to the relevant standard, the testing laboratory shall be Accredited Lab.	
2.10	Random sample testing of materials if required by the project Engineer to be sent for testing for compliance to the relevant standard.	
2.11	All rejected materials to be removed from work place.	
3	Fabrication:	
3.1	All fabrication tolerances to be as per BS 5950 part 2 sec 7.2 unless other wise specified.	
3.2	All cutting shall be shearing, cropping, sawing or machine flame cutting. Hand flame cutting shall be permitted only with the	
	Permission of the QA / QC.	
3.3	All gas-cutting edges to be grind before they go for fit-up and welding.	
3.4	All holes to be drilled and after drilling burrs to be removed.	
3.5	All sharp corners to be rounded off.	
3.6	Any splicing of long sections or non-availability of material sizes to be decided for the location and lengths prior to fabrication.	
3.7	Mismatching of butt joints should be less than ¼ T where T is minimum or maximum 3 mm which ever is less.	
3.8	When ever the two different thickness to be joined the thicker part to be 1:4 tapered when the difference is more than 3mm.	

W.O.No.: _____ TOTAL WEIGHT: _____

OWNER : _____ PERIOD OF CONTRACT: _____

CLIENT : _____ INSPECTION BY: _____

PROJECT: _____ REV.NO / DATE: _____

S.No	Description	Ref. Document
3.9	Straightening / Rolling of beams / sections shall be done by pressing. Local heating shall be permitted for any structural member	
	within 500 to 600 degree centigrade.	
3.10	The maximum deviation of the straightness of welded members shall be L/500, but not greater than 25mm.	
3.11	The maximum deviation from the specified camber of welded members shall not exceed 12mm or 1mm / m length of the curved	
	Member.	
3.12	All tubular members shall be sealed so as to prevent the access of moisture to inside of members.	
3.13	Each piece of structure shall be distinctly marked before delivery.	
4	Welding	
4.1	All welding of structural steel work shall comply with BS EN 1011-1 and 1101-2.	
4.2	All welding to be carried out with approved welding procedures for SMAW, SAW, FCAW process according to BS EN 288 Part 3.	
4.3	All welders to be qualified for the particular process are going to be used before starting the job according to BS EN 287 Part 1.	
4.4	All welding electrodes for S355 steel should be low hydrogen type. AWS E7016/7018 for SMAW, AWS E71T-1 for FCAW process.	
4.5	All welding electrodes for S275 steel at site and shop shall be rutile type AWS E6013 for SMAW process.	
4.6	Ensure the welding is free from undercuts, slag, spatters, cracks, porosity, discontinuities and sufficient leg lengths according to	
	Standard BS EN 25817 Quality level C.	
4.7	All fillet welds shall be continuous and have a smooth convex shape.	
4.8	All single side welds should be 1.5t and double side welds to be 1t where t is the thinner part to welded unless otherwise noted	
	In the drawings.	
4.9	All main butt welds shall be complete penetration welds.	
4.10	Run in-Run out plates to be kept for main butt welds.	
5	Non destructive testing:	
5.1	All main member full penetration butt welds thickness 8mm and less will be carried out 100% X-Ray as per BS EN 12062	
	Quality level B.	
5.2	All main member full penetration butt welds thickness above 8mm will be carried out 100% Ultrasonic test as per BS EN 12062	
	Quality level B.	
5.3	All the fillet welds and secondary member butt welds will be carried out 20% Magnetic Particle Testing as per BS EN 12062	
	Quality level C.	

W.O.No.: _____ TOTAL WEIGHT: _____

OWNER : _____ CONTRACT PERIOD: _____

CLIENT : _____ INSPECTION BY: _____

PROJECT: _____ REV.NO / DATE: _____

S.No	Description	Ref. Document
5.4	All visual inspection of welds will be carried out 100% as per BS EN12062 Quality level C.	
5.5	All Non-destructive tests to be carried out by the approved Accredited Laboratory.	
6	**Surface Treatment**	
6.1	Painting / Hot dip galvanizing shall be carried out in accordance with BS EN ISO 1461 / BS EN ISO 12944 respectively.	
6.2	Thickness of galvanizing / painting shall be measured by using Elcometer (Digital).	
7	**Delivery**	
7.1	Care shall be taken while delivery of painted structures to avoid any damage by providing proper packing and handling.	
8	**Erection**	
8.1	All fabricated parts shall be handled and stacked in such a way that permanent damage is not caused to the components.	
8.2	Prior to start erection of structures foundations shall be checked for dimensional accuracy. If any discrepancy affecting the work	
	Shall be informed to the client.	
8.3	The grouting space below the base plate shall not be less than 25mm and not greater than 50mm.	
8.4	The grouting shall only be carried out after sufficient portions of structure have been aligned, leveled, plumbed & bolt tightening.	
8.5	Ends of holding down bolts/anchor bolts shall protrude a minimum of 25mm above nuts.	
8.6	The tolerances for erection shall comply with BS 5950 part 2 section 7.3. unless otherwise specified.	
8.7	The maximum tolerance for plumb L/600 mm but not more than 5mm.	
8.8	The position in plan of steel column at its base shall not deviate from the specified position by more than 5mm from setting-out axes.	
8.9	The distance between bolt holes for any connection shall be + or – 1mm. the length of member shall be + or – 3mm.	
8.10	The level of the top of the beams at any story shall be within + or – 10mm of the specified level at the supporting columns.	
8.11	Before any erection of steel work is commenced, the method and sequence of erection proposed shall be approved.	
8.12	Bolts and nuts of Gr. 8.8 shall be tightened in accordance with relevant specification requirements.	
8.13	Bolts shall be provided with a washer under the element (nut or bolt head) turned in tightening.	
8.14	All the damaged galvanized surface required to be touch up with approved procedure.	
9	**Galvanized / painting Touch up**	
9.1	For any galvanized / painted damaged areas /weld area surfaces to be prepared to a standard St3 in accordance with SIS 05 5900.	
9.2	Touch up with approved repair procedure.	
10	**Stages of Inspection**	
10.1	To be followed according to Inspection Test Plan.	

INSPECTION TEST PLAN (ITP)

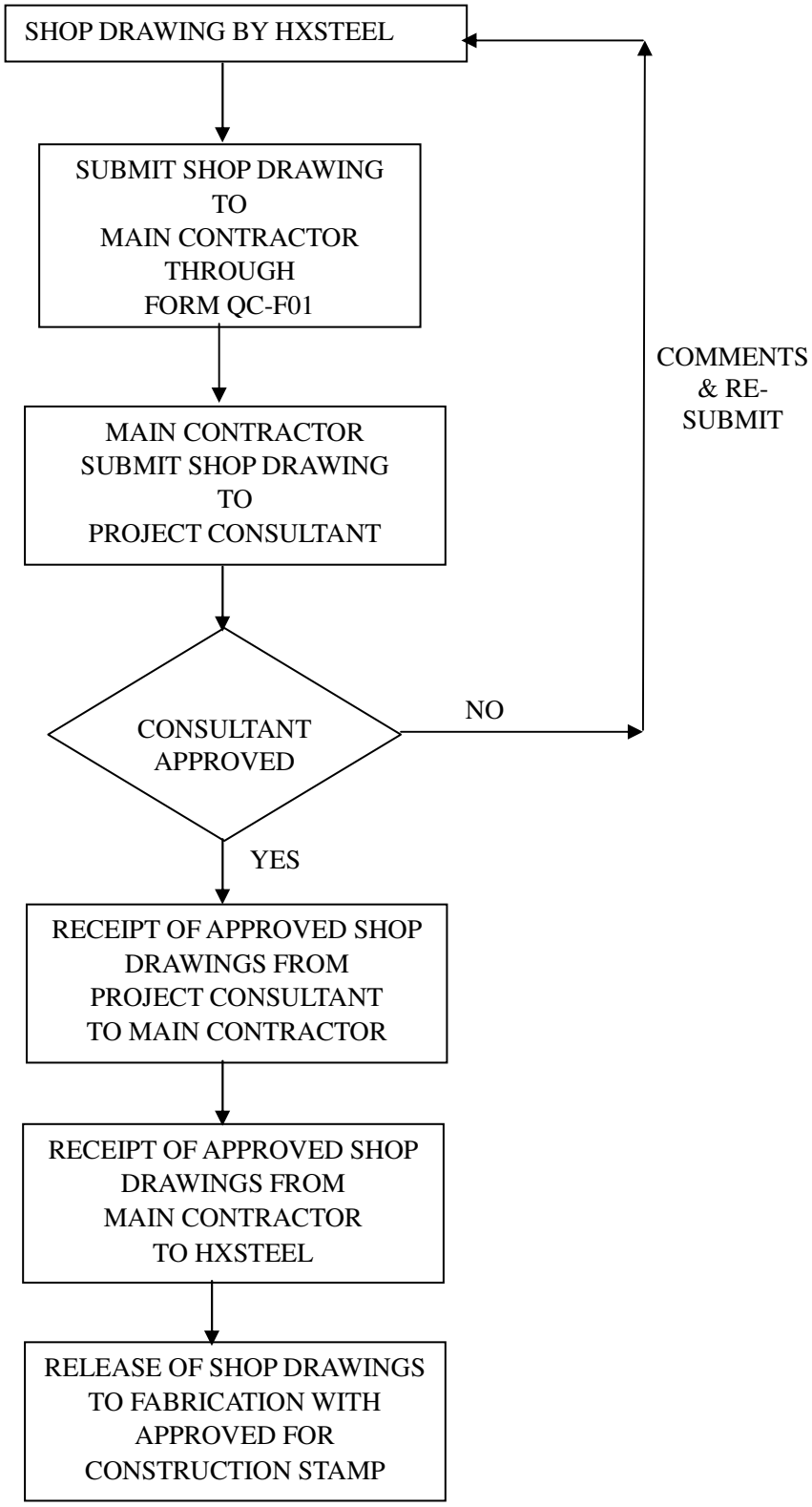
Project : Structural Steel Work Prepared & updated by : .

Checked by : _____ Prepared & updated date : .

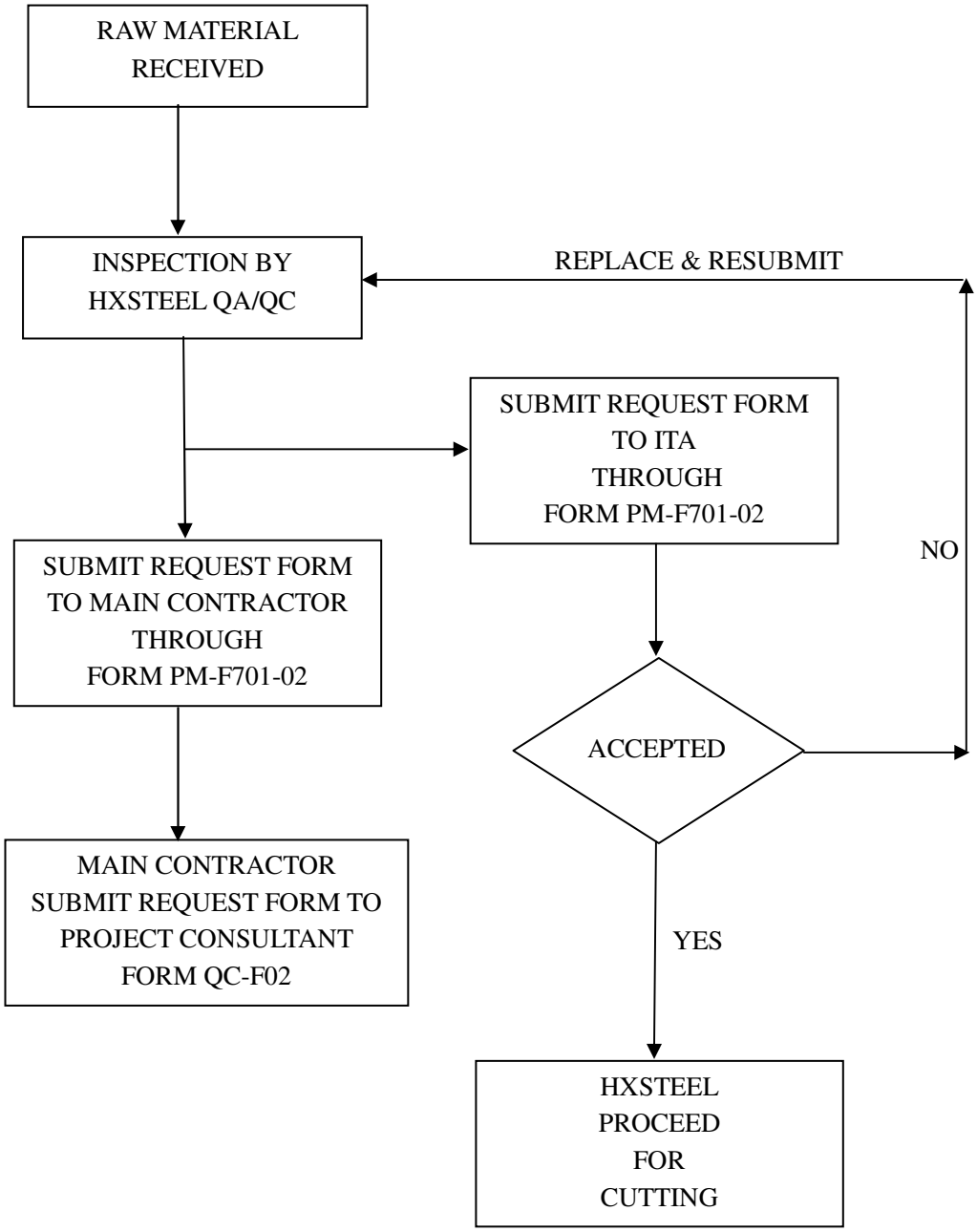
S/No	Item description	Specification	Acceptance criteria/Reporting evidence	Hangxiao Execute	Main Con. Rep			Consultant			TPI			Remark
				100%	RA	R	H	RA	R	H	RA	R	H	
1	Shop drawing approval	BS 5950 – Part 1	BS 5950 – Part 1	X						✓	-	-	-	
2	Raw Materials Inspection	GB/T1591-94	GB/T1591-94	X		✓			✓				✓	Random Sample
3	Fit up inspection	BS5950 – Part 2 Approved Drawings	BS5950 – Part 2 Drawings	X		✓			✓			✓		Main member only
4	Welding procedures / Welder qualification test	BS EN 288 / BS EN 287	BS EN 288 / BS EN 287 WPS & WQT	X			✓			✓	✓			
5	Welding Inspection	BS EN 12062	BS EN 25817 Quality Level C	X		✓			✓				✓	Full Visual inspection
6	Dimensional Inspection	BS5950 – Part 2 Approved Drawings	BS5950 – Part 2 Drawings	X		✓			✓			✓		Main member only
7	Non-Destructive Testing	BS EN 12062	BS EN 1062 Quality Level B& C	X		✓			✓ ✓				✓	100% Full pen & 20% fillet weld
8	Surface Treatment	BS EN ISO 1461/12994	BS EN ISO 1461/12994	X			✓			✓	✓			
9	Plumbing & Alignment (at Site)	BS5950 – Part 2 Approved Drawings	BS5950 – Part 2 Drawings	X										
10	Bolt Tightening (at Site)	As per Bolt spec	As per Bolt spec	X										
11	Final Inspection & Final touch up (at Site)	BS5950 – Part ,BS EN ISO 1461/12994	BS5950 – Part ,BS EN ISO 1461/12994	X										

LEGEND : RA _ Review & Approval R – Random Check H–Hold

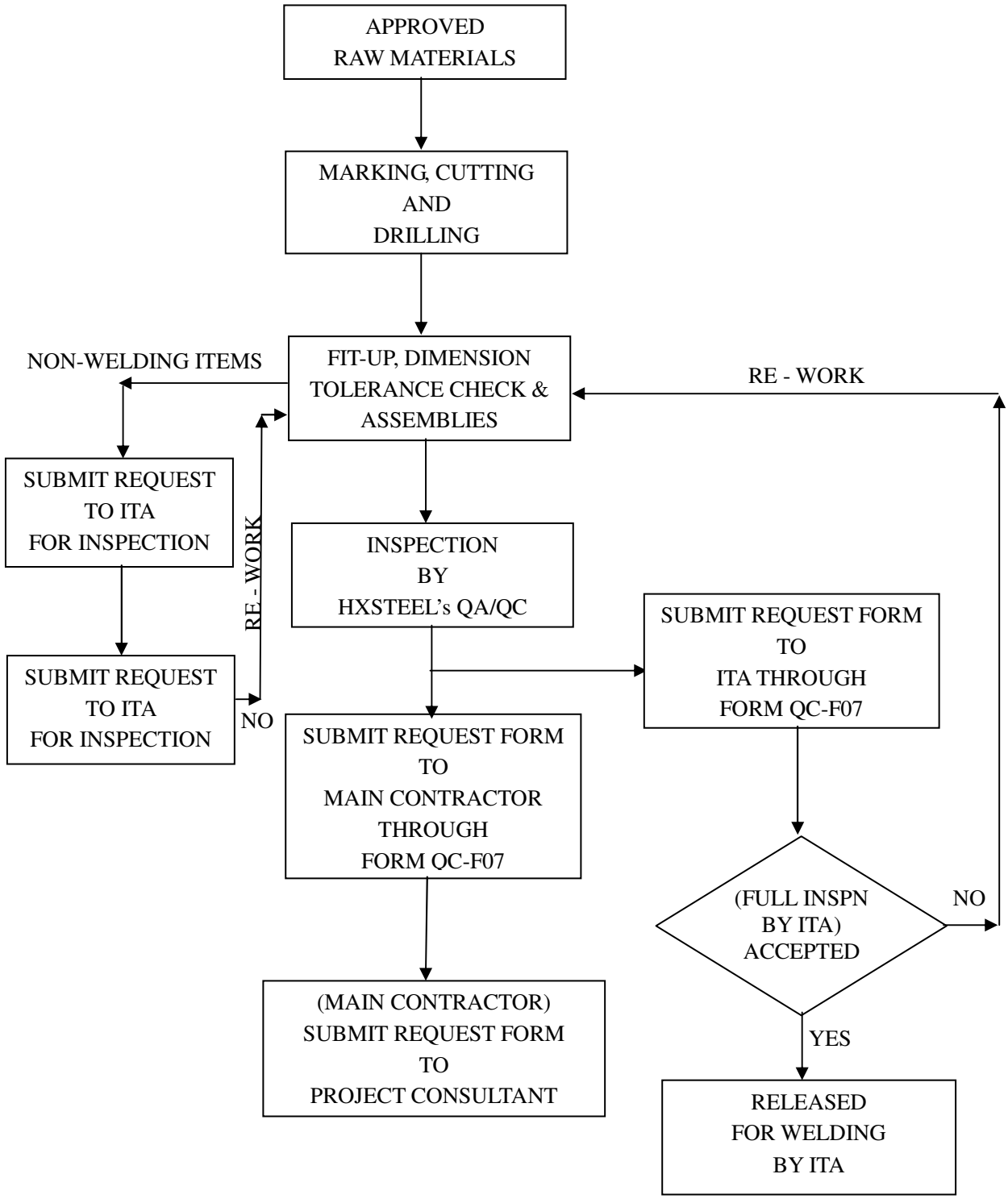
1. FLOW CHART FOR SHOP DRAWING



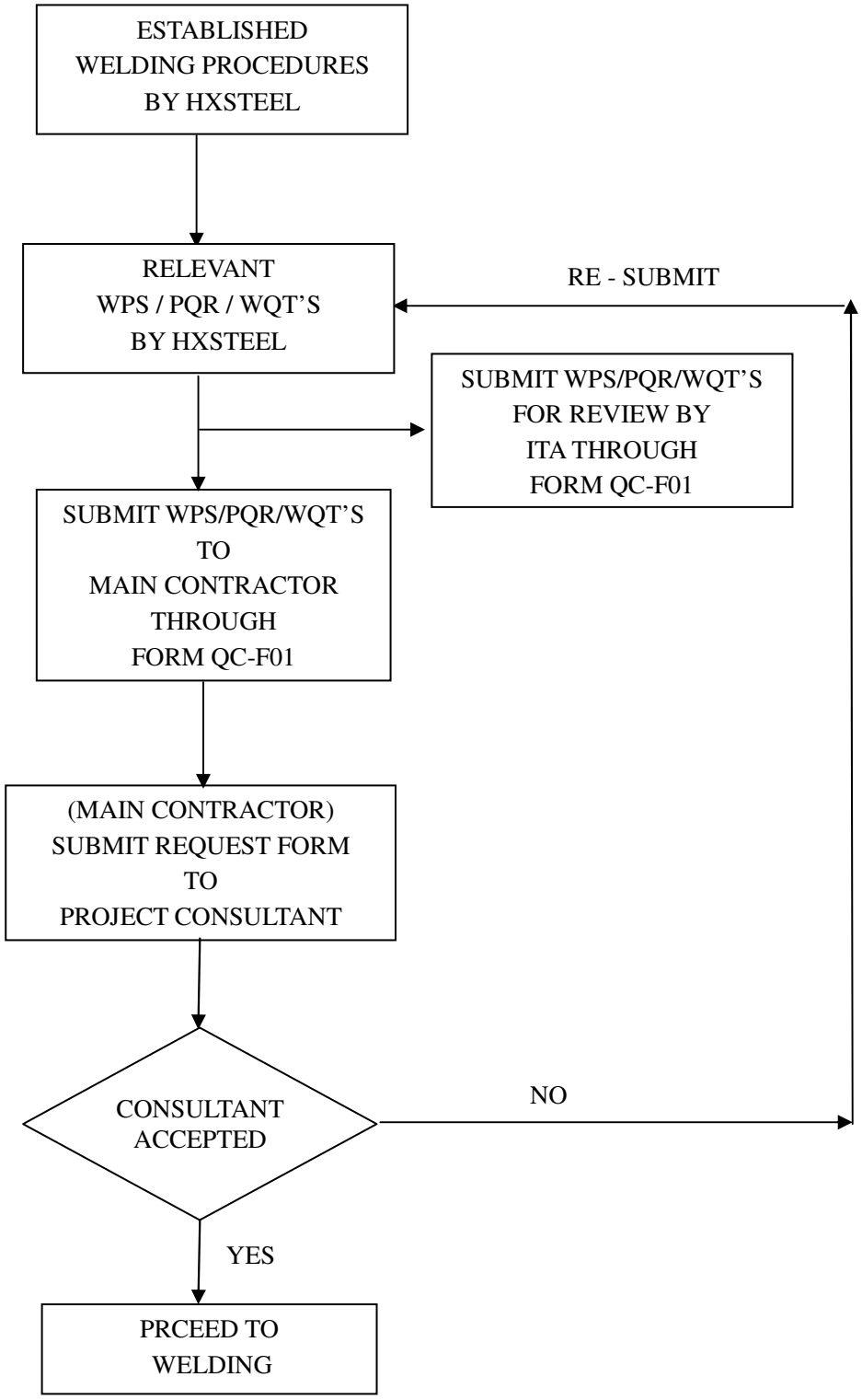
2. FLOW CHART FOR RAW MATERIAL INSPECTION



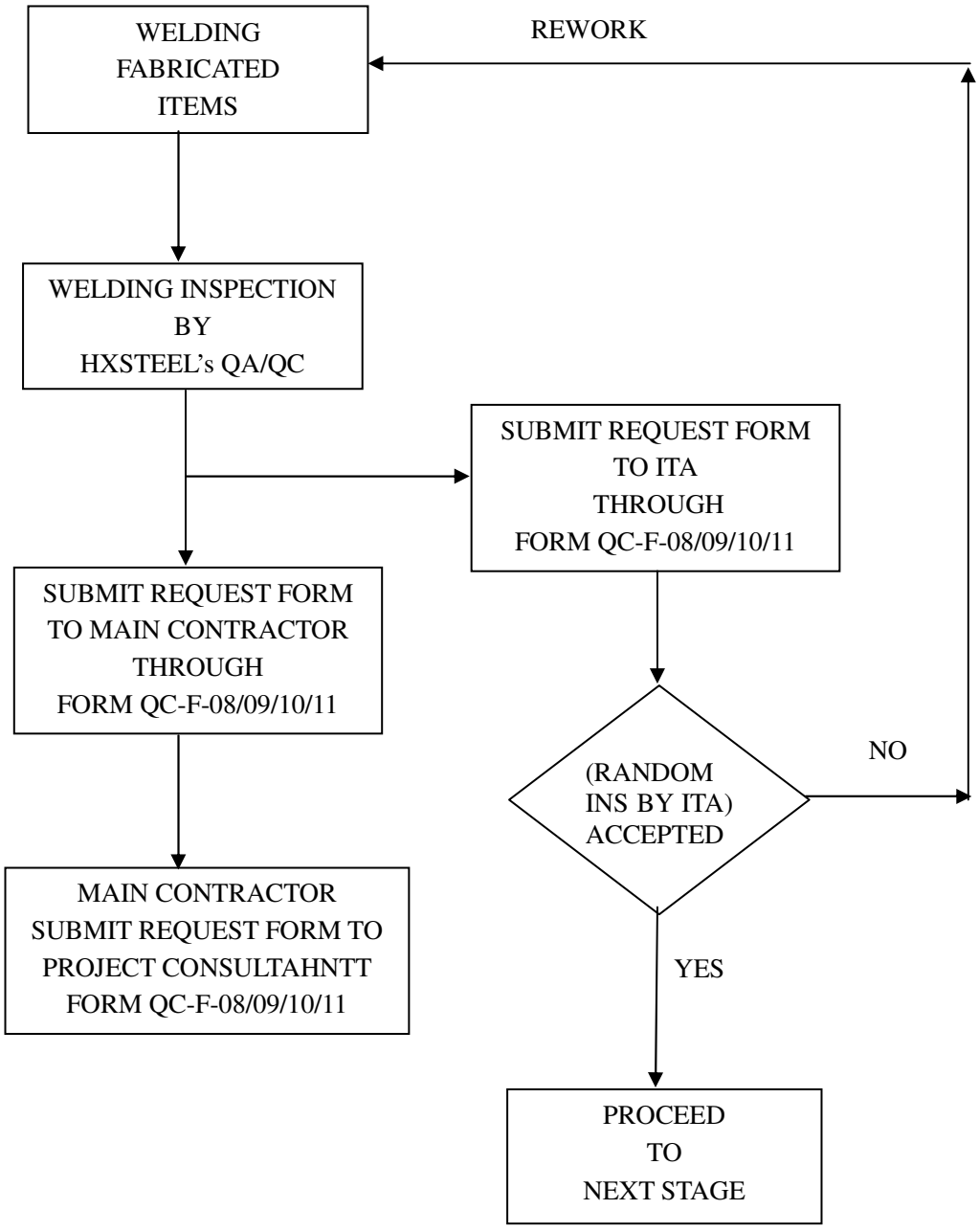
3. FLOW CHART FOR FIT-UP INSPECTION



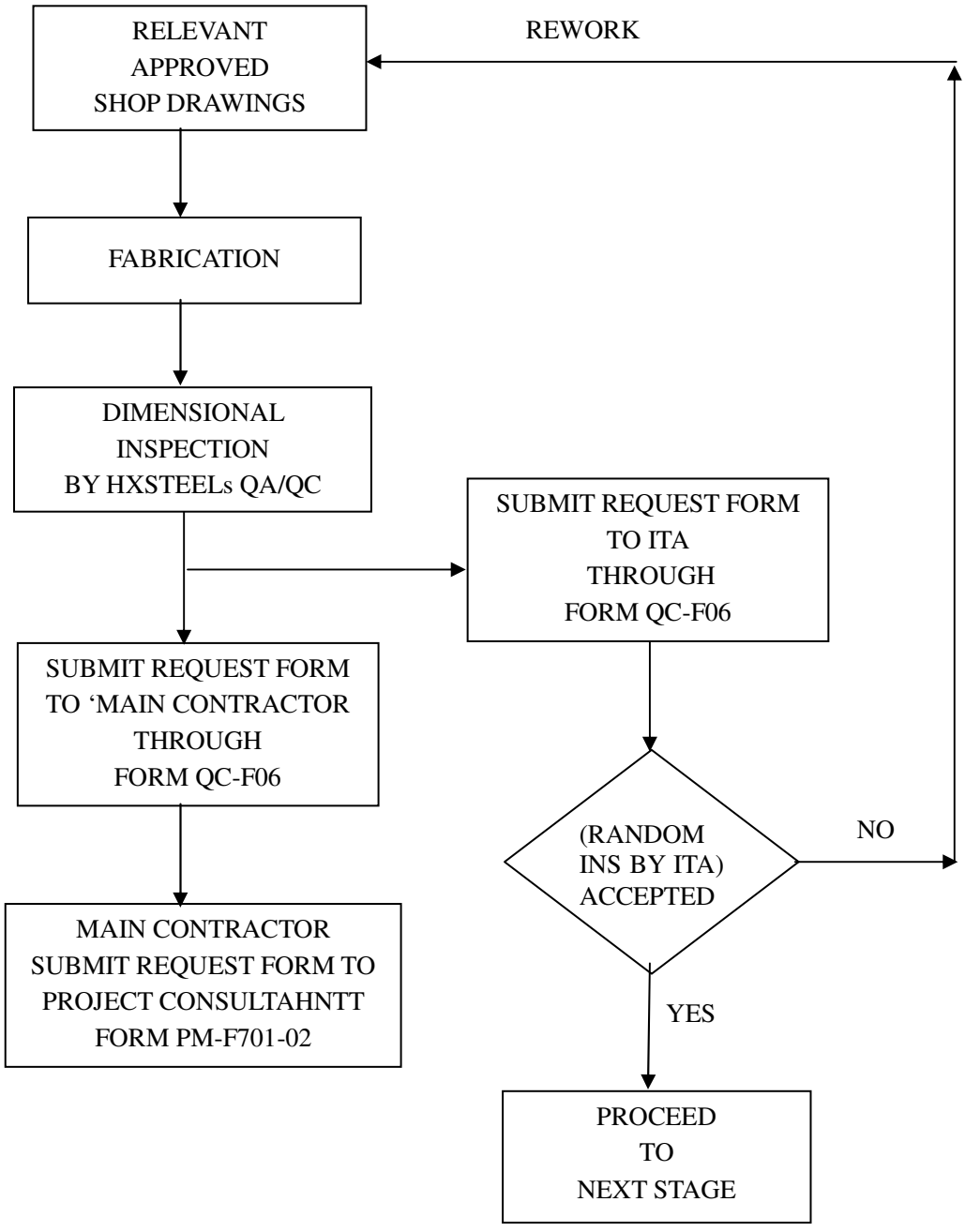
4. FLOW CHART FOR WELDING PREPARATION



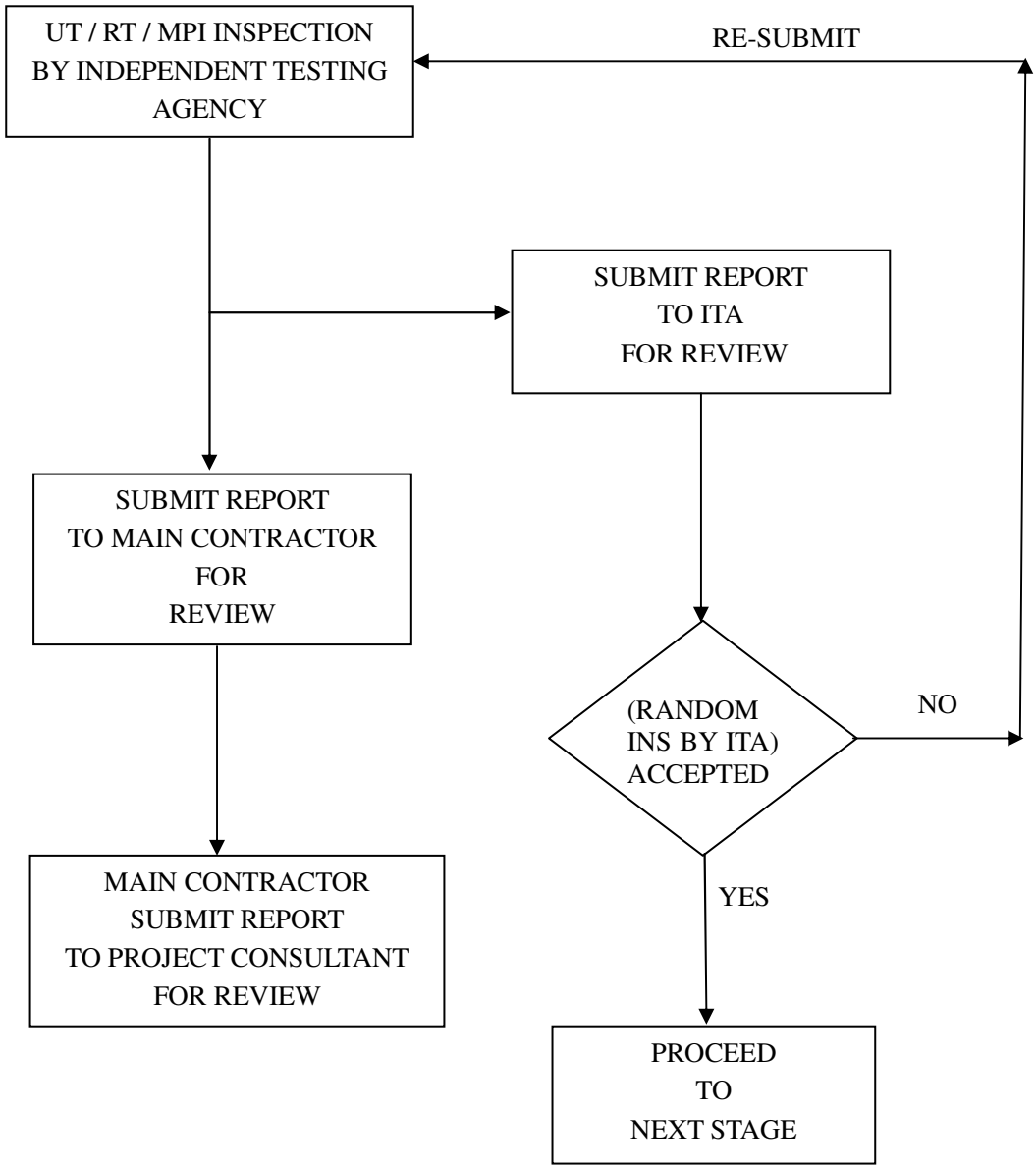
5. FLOW CHART FOR WELDING INSPECTION



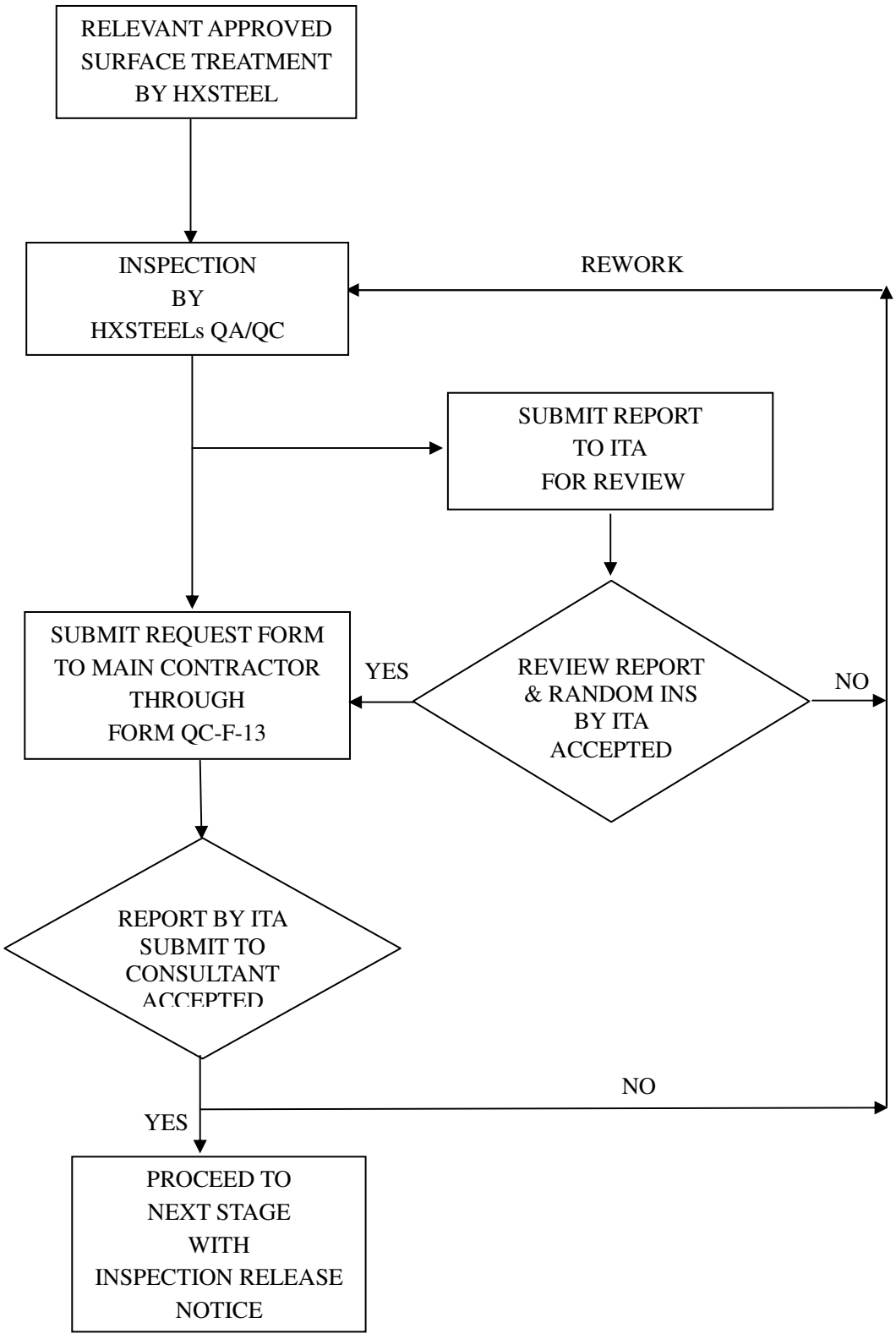
6. FLOW CHART FOR DIMENSIONAL INSPECTION



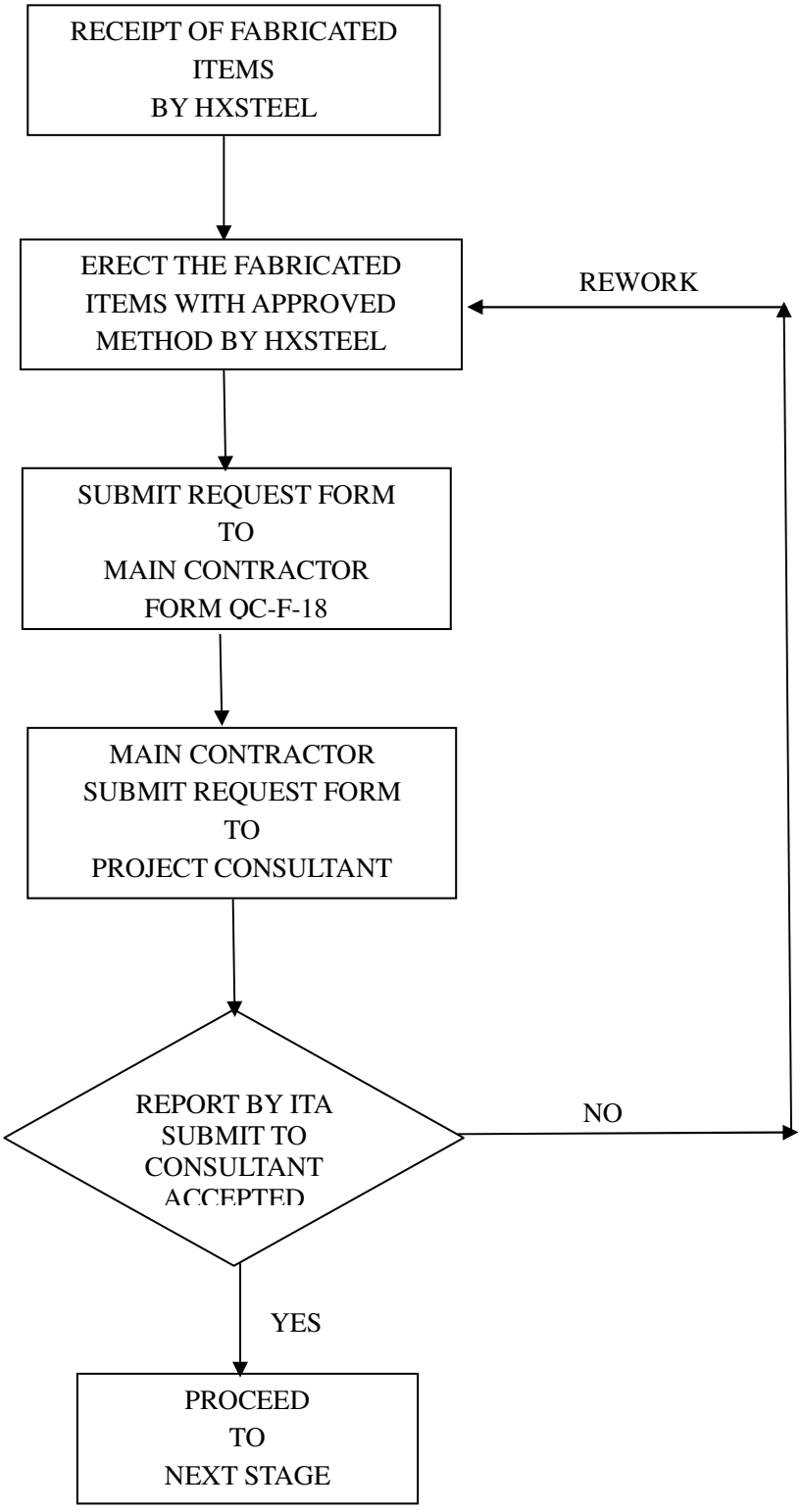
7. FLOW CHART FOR NDT



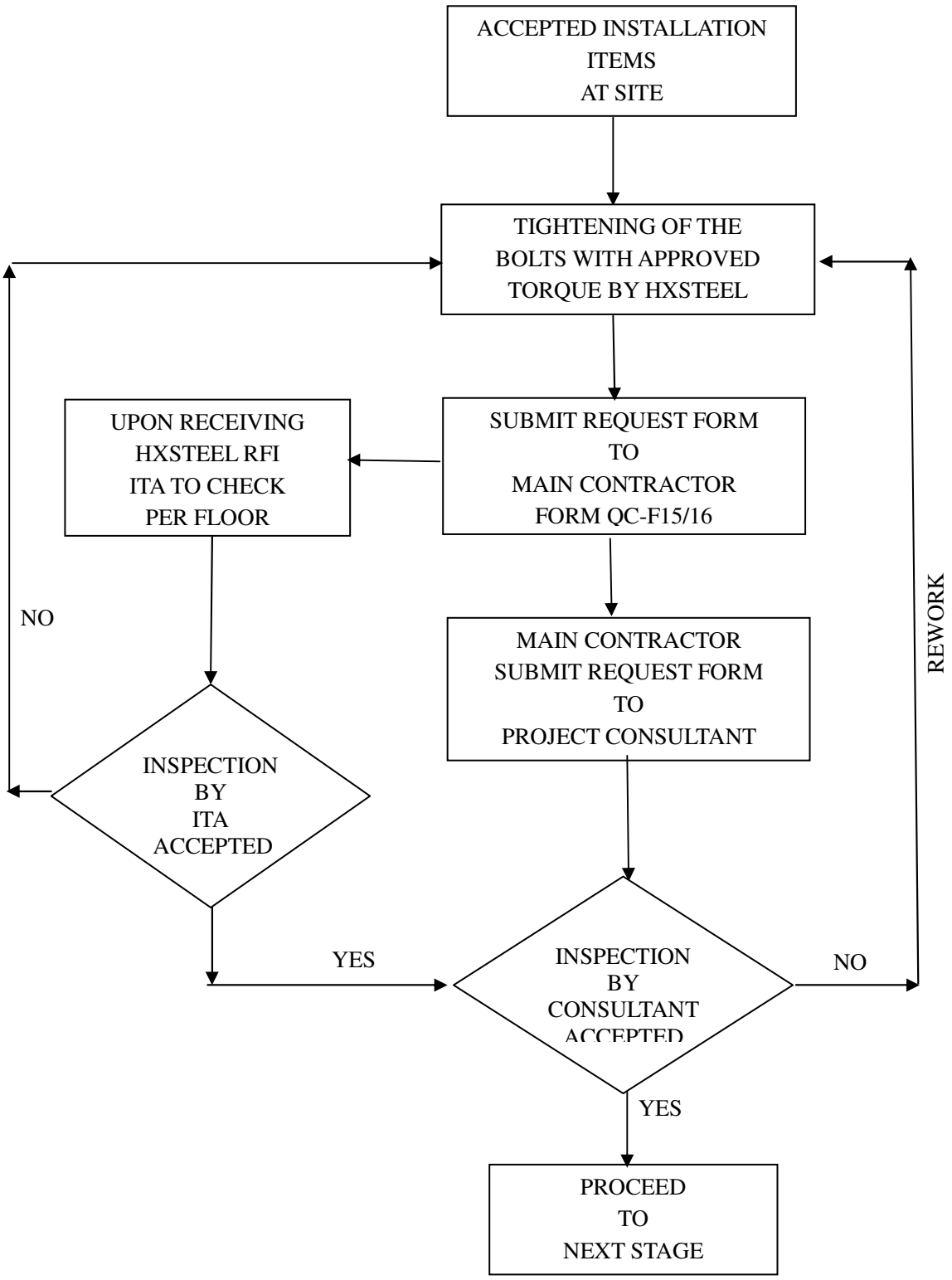
8. FLOW CHART FOR SURFACE TREATMENT



9. FLOW CHART FOR ERECTION INSPECTION (PLUMBING & ALIGNMENT)



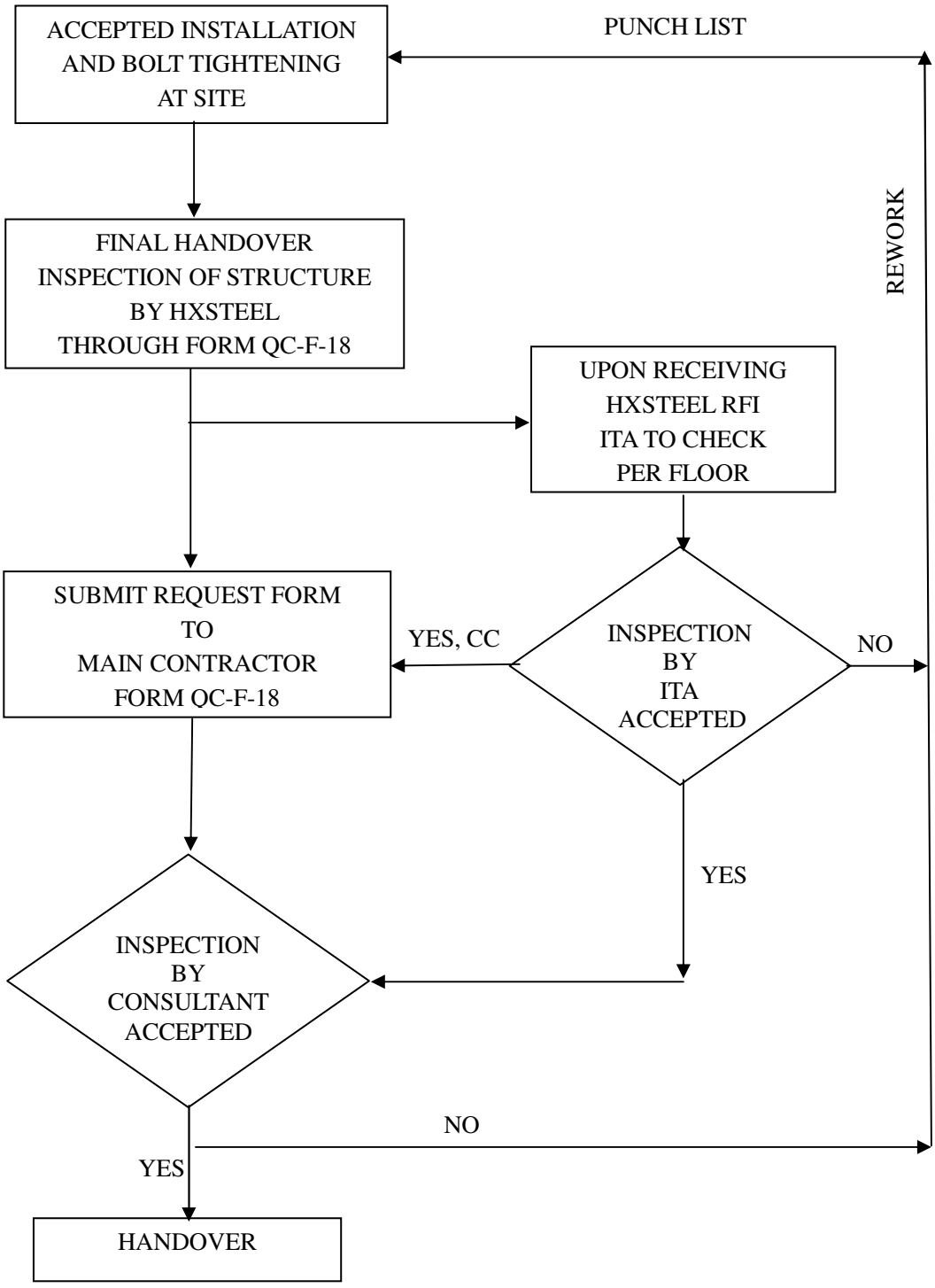
10. FLOW CHART FOR BOLT TIGHTENING



11. FLOW CHART FOR FINAL ERECTION INSPECTION

Project :

Ref.: Item No. 11 Final Inspection at Site (Final Handover)



Client	Project Title:	**Quality Control Forms**	

HXsteel International Engineering W.l.l

QUALITY MANAGEMENT PROCEDURE

Our Ref:

Project Title:

TO:

ATTN:

COPY TO :

CLIENT		AS REQUESTED	
MAIN CONTRACTOR		FOR SIGNATURE	
PRINCIPAL CONSULTANT		FOR INFORMATION	
MECHANICAL ENGR		FOR APPROVAL	
ELECTRICAL ENGR		FOR CONSTRUCTION	
STRUCTURAL ENGR		FOR QUOTATION	
QUANTITY SURVEYOR		FOR ACTION	
CLERK OF WORKS		PRELIMINARY	
.....		URGENT	

S/No.	Document/Drawing No.	Title/Description	Size	Quantity

Remarks:

Issued By		Received By	
Signature		Signature	
Date		Date	

Client	Project Title:	**Quality Control Forms**	

材料检验跟踪记录
MATERIAL IDENTIFICAEION/INSPECTION RECORD

工程名称:
Project item:

日期 Date	牌号 Steel grade	规格 Description	材料标准 Material Spec	数量 Qty	炉号 Heat/Cast No	供应商 Supplier	证书编号 Mill Cert.No	外观 Appearance	结论 Results	备注 Remark

注 LEGEND:S - 合格 Satisfactory U - 不合格 Unsatisfactory

操作员 Operator: 检验员 Inspected by: Zhang Dong 验证人 Witnessed by:

Client	Project Title:	**Quality Control Forms**	

CUTTING PLAN

Project / wo No.			Date		
Main Element		Page		Rev	
Release date		Completion date			
Name of cutting					

Prepared by:- _____.(HXsteel Production Dept)

Checked by:- _____.(3rd Party Inspector)

Client	Project Title:	**Quality Control Forms**	

CALIBRATION RECORD OF INSPECTION, MEASURING & TEST EQUIPMENT

Description of equipment:			
Part / Serial no.		Date of purchase:	
Calibration acceptance criteria:			
Calibration interval		Calibration prior to use	

S/No	Date of Calibration	Calibration certificate no.	Calibration report reviewed by	Acceptable / Not acceptable	Due date	Remark

Checked by:

HXsteel Production Engr (date)

Inspected / reviewed by:

HXsteel QA/QC & (date)

Witness /Reviewed By:

3rd party inspector & (date)

Client	Project Title:	**Quality Control Forms**	

INSPECTION REQUISTION / REPORT

Client: _____ Prod. Request No.: _____

Attn: _____ Fax: _____ Type of inspection: Fit-up/Visual/Mtrl/Painting

Project: _____ Date of Inspection: _____

Work order: _____ Location : _____

Sheet No.: of

S/No	Size / Mark no	Qty	Item Description	Material grade/specs	Heat No.	Remark

We request / notify the inspection for the abovementioned works. The work has been inspected / reviewed by our in-house shop fabrication supervisors engineers & QA/QC personnel and found to be satisfactory in accordance to the drawings and contract specifications required.

Checked by: Inspected / reviewed by:

HXsteel Production Engr (date) HXsteel QA/QC & (date)

( ) we have inspected / witnessed / reviewed the above mentioned work and found to be in accordance to the drawings and contract specification requirements. See comments if any.

Comments:

( ) Inspected and released for further operation.

( ) Inspected with Comments (see below)

( ) Hold for re-inspection

Witness /Reviewed By:

3rd party inspector & (date)

Client	Project Title:	**Quality Control Forms**	

尺寸检验记录
DIMENSIONAL INSPECTION RECORD

工程名称：　　第 页 共 页
Project item：　　PAGE OF

构件号 Job No	详细尺寸检验 Dimensional Detail Inspection						
	图纸要求尺寸 Dwg.dimension	公差 Tolerance	实际尺寸 Actual dimension	操作员 Operator	检验员 Inspected by	结论 Results	备注 Remark
注 LEGEND:S –合格 Satisfactory U – 不合格 Unsatisfactory							

Proceeded by: (操作员 Operator)　Inspected by: (检验员 QC/QA)　Witnessed by: (3rd party inspector)
Date:　　Date :　　Date :

WELDER QUALIFICATION TEST REPORT

Client: _____

Project _____

Updated By:

S/No.	Welder's Name	Welder's ID No	Date of Test	Process	Code	Plate thk	Position	Base metal / filler metal specs	Project W.O	Project Period	Remark (witnessed by)

Client	Project Title:	**Quality Control Forms**	

外观检验记录
VISUAL INSPECTION RECORD

工程名称：　　第 页 共 页

Project item：　　PAGE OF

构件号 Job No.	组装检验 FIT UP INSPECTION				焊接外观检查 VISUAL INSPECTION AFTER WELDING					
	组装日期 Fit up Date	检验人 Checked By	数量 Qty	结论 Results	焊工 Welder	焊缝尺寸 Size for welds	焊接日期 Welding Date	检验人 Checked By	焊缝外观质量 Welds appearance quality	结论 Results
注 LEGEND:S –合格 Satisfactory　U – 不合格 Unsatisfactory										

Proceeded by: (操作员 Operator)　Inspected by: (检验员 QC/QA)　Witnessed by: (3rd party inspector)

Date:　　Date :　　Date :

河北杭萧钢构有限公司
Hebei Hangxiao Steel structure CO, LTD
超声波探伤报告
Ultrasonic inspection report

报告编号：　　第 页共 页
Report code：　　PAGE OF

工程名称 Project item;					
工件名称 Sample name			检测比例 Inspection proportion		20%
材质 Material	Q345B	规格 Spec.		检测地点 Test location	杭萧车间 Plant of hangxiao
接头种类 Tie -in type		坡口形式 Groove type		探伤面 Destructive test section	
验收标准 Acceptance criterion		检验等级 Test grade	B	合格级别 Approved grade	III
仪器型号 Apparatus model		表面状态 Surface state	焊后状态 State after welding	探伤时机 Destructive-test occasion	24 小时 24 hours later
试　块 Sample plate	CSK-IA/RB-II	耦合剂 Bond	浆糊 Paste	探伤方式 Destructive-test mode	斜角（单） Bevel (single)
扫描调节 Scan modulation	深度 1:1 Depth 1:1	扫查灵敏度 Scan sensitivity	Φ3*40* 16dB	检测日期 Testing date	

序号 No.	构件号 Product No	焊缝号 Welding seam fig.	厚度 thickness （mm）	长度 Length （mm）	缺陷情况 Defect state	等级 Grade	结果 Results	备注 Remark

说明 Note ：NI：无应记录缺陷　defect for non-stress record　　H：缺陷至检测面的深度（mm） depth from defect to testing face (mm)　　L ：缺陷的指示长度（mm ）　defective indicative length (mm)

批准 Approved by		审核 Checked by		检测 Inspector	
日期 Date		日期 Date		日期 Date	

河北杭萧钢构有限公司
Hebei Hangxiao Steel structure CO, LTD

超声波探伤报告

Ultrasonic inspection report

报告编号：
Report code：

第　页 共　页
PAGE　OF

序号 No.	构件号 Product No.	焊缝号 Welding seam fig.	厚度 thickness （mm）	长度 Length （mm）	缺陷情况 Defect state	等级 Grade	结果 Results	备注 Remark

河北杭萧钢构有限公司
Hebei Hangxiao Steel Structure CO, LTD

着色渗透探伤检测报告
Detection of Dye Penetration Inspection Report

报告编号：　　第 页 共 页
Report code：　　PAGE OF

工程名称 Project Title								
杆件名称 Name of element					构件编号 Member Mark.			
环境温度 Environmental temperature		试 块 Sample plate		表面状态 Surface state				
检测方法 Detection Method		渗透剂施加方法 Penetrant infliction		显像剂施加方法 Methods imposed imaging agent				
检测部位 Detection site		材质 Material		厚度（mm） Thickness (mm)				
渗透剂类型 Penetrant types		清洗方法 cleaning method		渗透时间 Penetration time				
渗 透 剂 Penetrant		检测比例 Inspection proportion		显像时间 Imaging time				
显 像 剂 Marked as agent		验收标准 Acceptance criterion		合格级别 Approved grad				
焊缝号 Welding seam fig.	焊工号 Welder No .	缺陷编号 No. defects	缺陷痕迹显示尺寸 Size showed signs of defects	缺陷痕迹性质与分布 Defects traces of the nature and distribution	返修情况 Back to repair situation	等级 Grade	备注 Remark	
探伤部位及编号示意图 Testing location and No. Map :								
检测 Inspected by								
审核 Checked by								
批准 Approved by								

HXsteel International Engineering W.L.L

着色渗透探伤检测报告

Detection of dye penetrant inspection report

报告编号：　　第 页 共 页

Report code:　　PAGE　OF

焊缝号 Welding seam fig.	焊工号 Welder NO .	缺陷编号 No. defects	缺陷痕迹显示尺寸 Size showed signs of defects	缺陷痕迹性质与分布 Defects traces of the nature and distribution	返修情况 Back to repair situation	等级 Grade	备注 Remark

Client	Project Title:	**Quality Control Forms**	

抛丸和油漆检验记录
BLASTING AND PAINTING INSPECTION RECORD

工程名称:
Project item:

构件号 Job No	抛丸检验 BLASTING INSPECTION					油漆检查 PAINTING INSPECTION				
	日期 Date	检验人 Checked By	抛丸等级 Approved grade of blasting	结论 Results	温度/湿度（℃/%） Temperature/ humidity	日期 Date	涂层平均厚度 Average Thickness of Coat(um)	检验人 Checked By	结论 Results	备注 Remark
注 LEGEND:S －合格 Satisfactory U － 不合格 Unsatisfactory										

操作员 Operator:
日期 Date:

检验员 Inspected by:
日期 Date:

第三方见证人 Witnessed by:
日期 Date

Client	Project Title:	**Quality Control Forms**	

REQUEST FOR TRANSPORTATION FORM

PO / PR No. _____
W / O No. _____
Project _____ Date _____

S/No	Description	Total weight (kg)	L x B x H Size (MM)	QTY	Present Location	Date to Be Delivered	Unit Rate	Amount

Delivery To / Consignee			Mode of Transport Required	Type of Eqpt	Hire / Own	Vendor
Contact Person						
Tel / Fax Nos.						
Under L/C	Yes / No	Terms: CIF / FOB / C&F	*Internal dimension of packing (mm)			
Packing Required*	Yes / No	Type: Crate / Case / Pallet				
Remarks						

Requested by

HXsteel QC
(Name, signature & date)

Certified by

3rd Party / Owner (Name, signature & date)

Client	Project Title:	**Quality Control Forms**	

High Strength Friction Grip Connection
Quality Inspection Checklist

Projection name：

Inspection No.：　　Location：

	Inspection Items	Inspection Result
Major items	（1）The type and technical provision of HSFG shall comply with the design requirement and Section 2.2 of 25045-16-3PS-05120 requirement	
	（2）Review the result of proof load for HSFG shall comply with the manufacturer's specification	
	（3）Review the result of slip factor at HSFG connection contact surface shall comply with the design requirement and the requirements from RCSC's "Specification for Structural Joints Using ASTM A490.	
	（4）HSFG connection contact surface smooth, no burr, oxide weld fall, weld scare, dirt and paint	
	（5）Two steps tightening of HSFG connection, the torque shall be adjusted timely, the torque value of 1st screw and final screw shall comply with RCSC's "Specification for Structural Joints Using ASTM A490.	
	（6）Free insert-in the bolt but not force-in the bolt hole, and shall comply with standard requirement	

	Inspection items	Quality condition									
		1	2	3	4	5	6	7	8	9	10
General items	（1）HSFG connection appearance quality										
	（2）HSFG（special wrench operate）final screw quality										

Inspection	Major items	
	General items	

Checked by: QC (HXsteel) Name, Signature & Date	---------- Name of QC	Witness by: 3rd Party Inspector Name, Signature & Date	---------- Name of QC
Certified by: PM (HXsteel) Name, Signature & Date	---------- Name of PM	Approved by: M.C representative Name, Signature & Date	---------- Name of PM

Client	Project Title:	**Quality Control Forms**	

High Strength Hexagon Bolt Connection
Quality Checklist

Project name：
Inspect No.：　　Location：

	Inspection items	Inspection result
Major Items	（1）Technique condition at high strengthen hexagon bolt connection shall comply with design requirement and GB/T1231 requirement	
	（2）Review result of torque factor of high strengthen hexagon bolt connection shall comply with RCSC's "Specification for Structural Joints Using ASTM A 325. requirement	
	（3）Slip resistance factor test of high strengthen hexagon bolt connection shall comply with the design requirement and the requirements from RCSC's "Specification for Structural Joints Using ASTM A 325.	
	（4）High strengthen hexagon bolt connection contact surface smooth, no burr , weld fall, scar, oxygen skin, dirt and paint etc	
	（5）3 step tighten high strengthen hexagon bolt, define wrench torque for the first two step, the result shall comply with requirement from RCSC's "Specification for Structural Joints Using ASTM A 325.	
	（6）Free insert-in the bolt but not force-in the bolt hole	

General Condition	Inspect Items	Quality Condition									
		1	2	3	4	5	6	7	8	9	10
	（1）Appearance quality of connect										
	（2）Torque quality										

Inspection result		
	Major control items	
	General items	

Checked by: QC (HXsteel) Name, Signature & Date	---------- Name of QC	Witness by: 3rd Party inspector Name, Signature & Date	---------- Name of QC
Certified by: PM (HXsteel) Name, Signature & Date	---------- Name of PM	Approved by: M.C representative Name, Signature & Date	---------- Name of PM

Client	Project Title:	**Quality Control Forms**	

Structural Steel Anti-corrosion Coating Work
Quality Control Checklist

Project name：
Inspection No.：　　Location：

		Items	Inspection result
Major items	1	The type, mode and quality of paint, thinner and dryer etc, layer of coating and thickness painting shall comply with local authority current requirement.	
	2	Before painting, steel surface preparation shall meet design requirement and local current stipulated standard	
	3	When steel exposed or in erode environment, shall conduct cohesion test	
	4	No mis-painting, the indication, element mark shall be clear and in order	
	5	No mistake and missed painting, the coating shall be no short cohesion and re-rust	

		Items		Permitted Deviation	Measured deviation（mm）									
					1	2	3	4	5	6	7	8	9	10
General items	1	Appearance quality of coating：Application shall uniform, no obvious crape, drop, bleb, perfectly attached												
	2	Element touch-on film complete, perfectly attached												
	3	Total thickness of Dry residue film	Outdoor 150 Indoor 125	-25										
	4	Element produced thickness of dry painting film shall be 25 times coating layer		Each run -5										

Inspection	Major items	
	General items	

Checked by: QC (HXsteel) Name, Signature & Date	---------- Name of QC	Witness by: 3rd Party Inspector Name, Signature & Date	---------- Name of 3rd Party
Certified by: PM (HXsteel) Name, Signature & Date	---------- Name of PM	Approved by: M.C representative Name, Signature & Date	---------- Name of M.C representative

Client	Project Title:	**Quality Control Forms**	

FINAL INSPECTION CHECKLIST FOR STRUCTURES ON SITE

Client : _____

Project : _____

W / o : _____

Area / Location : _____ Report No.: _____

Building / Structure No.: Date :

	Plumbing & alignment	Hebei Hangxiao	PLL	3rd Party / owner	Remark
1	Plumb tolerance				
2	Line & level				

Bolting

1	Size & type of bolts				
2	Required torque achieved				

Non – destructive testing

1	Ultrasonic (UT)				
2	Radiography (RT)				
3	Magnetic particle (MPT)				
4	Liquid penetrant (LPT)				

Protective coating

1	Coating evenness				
2	Coating colour				
3	Coating thickness (DFT)				

Others

1					
2					
3					
4					

Comments

( ) Inspected and released for further operation.

( ) Inspected with comments.

( ) Hold for re-inspection

Above mentioned item were inspected in accordance with drawings, and contract specifications.

* Note; Accepted --- A. Hold / Re-inspection --- R.

Inspected By:	Inspected / Witness By:	Certified By
---	---	---
HXsteel QC (Name, signature & date)	3rd party inspector (Name, signature & date)	MC representative (Name, signature & date)

CHAPTER 8 - HEALTH AND SAFETY PROCEDURES

0		Issue For Approval				
REV.	DATE	DESCRIPTION	PREP	CHKD	REVD	APPD

CONTRACTOR:

HXsteel International Engineering W.L.L

DOCUMENT TITLE:

SAFETY, HEALTH & ENVIRONMENTAL MANAGEMENT PLAN FOR CONSTRUCTION OF METAL BUILDING

MAIN CONTRACTOR:

DOCUMENT NO.	1 2 0 3 - 0 0 0 1 **SHT** 0 1 **Of** 2 4	**REV.** 0

TABLE OF CONTENTS

1. Introduction

This erection safety procedure is a part of HIE' Health, Safety and Environmental Management System in line with the Safety Regulations and with the " Health and Safety Policies" of the State of Singapore.

2. Purpose

To define, in detail, the objectives for establishing and maintaining compliance with Health & Safety requirements and State of Singapore Regulations for Contractor.

3. Scope

This plan is applicable to the general contract project of HIE in commencement of Site works until handover to the Client.

4. Responsibilities

The Director, with actions delegated to the HIE Site Safety in charge, is ultimately responsible for ensuring this procedure is established, maintained and complied with. All Site personnel have a responsibility to comply with this safety procedure.

5. Definitions

The following definitions apply to the contents of these documents.

Client

Contractor	HXsteel International Engineering W.L.L
Subcontractor	Any other Company working on Site on behalf of Client or HXsteel.
Employer	Any Company or person employing labor on the Site.
Site Manager	A person who has overall responsibility for the execution of the site works.
Site Safety Supervisor	A person with professional qualifications and experience in Health & Safety, and dedicating 100% of the working day to Health & Safety related matters to the project. CV subject to review and acceptance by Client prior to arriving on site.
Designated Safety Officer	In the absence of a Site Safety Manager, a person designated to all Health & Safety matters. The designated person must be competent in the duties assigned and be given enough time to deal with Health & Safety related matters. The designate should have completed safety training & First Aid training, and should be familiar with Steel Structural Erection sites and dedicated 100% to the project. CV will be subject to review and acceptance by client prior to arriving on site.
Site Safety officer	A person who should assist the HSE manager and ensure that direct supervision and co-ordination of the subcontractors activities and

day-by-day controls with him to manage any HSE related issues. CV will be subject to review and acceptance by client prior to arriving on site.

6. Scope of Work

This Site Safety Procedure shall apply to all personnel working on the Site. It sets out the General principle to be applied throughout the Project.

All Subcontractors are required as part of their contractual commitment to fully co-operate with HIE, client, Contractor and other Subcontractors to ensure that overall safety objectives are maintained throughout the construction and commissioning stages of the Project.

7. Plan Objectives

The Site Safety Procedure is intended to set a high general standard of Health and Safety for the project, although it may not cover all of the hazardous activities on Site or all that may be necessary to prevent personnel injury or property damage.

It may be considered to be additional to any other controls which may be necessary.

8. Safety Management System

8.1 Safety Management will be applied through the following step:

1) Definition of Health and Safety Policy, safety plan objectives, organization responsibilities.
2) Planning of the activities, including definition of standards, procedures and documents.
3) Hazard identification and management process.
4) Monitoring implementation through reviews and audits.

8.2 Site and Job Hazard Assessment.

Risk assessment related to installation, erection, and construction and pre-commissioning activities is to be performed by contractor. This includes identifying hazards associated to site activities, then hazard analyzes and applying risk reduction and risk mitigation measures to reduce the risk as low as reasonably practicable.

8.3 Job Hazard Management.

8.3.1 Hazard identification, analyzes and control.

Responsibilities of contractor and sub contractors shall ensure that every work activities performed by sub contractors or vendors are executed in a safe and controlled manner.

To accomplish this, hazard identification, analyzes and control system has to be performed by sub contractors considering the planned activities or type of work.

All personnel involved in the work of contractor and subcontractors are to be made aware of the risk and informed/trained on the application of the technical, operational or organizational measures resulting from the hazard analyzes.

8.3.2 Safe Work Procedure

Each sub contractor shall adopt and apply the safety plan and procedures provided by contractor, or shall develop his own safe work procedure, relevant to his own activities, based on safety plan and procedure.

8.3.3 Personnel Protective Equipment

P.P.E shall comply with requirements of client's safety regulations for contractors, and this safety plans articles.

8.3.4 Accident Investigation, Reporting and Follow up

Contractor shall carry out investigations on incident which might occur during construction and pre-commissioning activities.

Objectives are:

- To investigate all hazardous incidents to find out root and contingency causes which determined the occurrences
- To disseminate learning points to all appropriate people.
- To take corrective actions and monitor their implementation, in order to prevent reoccurrence of similar incidents.
- The details of the activities in the accident investigation are described in the plan's relative articles.

8.3.5 Safety Statistics

Contractor has identified a set of statistical parameters through which performance on major health and safety issues is monitored.

8.3.6 Permit to Work System

Permit to work shall be managed at site by contractor and sub contractor's personnel in complacence with and by the client's permit to work system.

8.3.7 Emergency Response Procedure

This procedure will be based on the provisions included in the client site contingency and emergency procedures for the emergency communication means, escape ways and assembly points.

8.3.8 Fire Prevention and Fire Protection Program

Contractor and sub contractors are responsible for applying the fire program inside their own temporary facilities and working areas.

Each subcontractor shall:

- ❖ Establish and communication to contractor his own fire protection program.
- ❖ Provide his own temporary facilities and working areas with an adequate quantities of fire extinguishers and other fire fighting equipment, including provisions for signal, warning panels, emergency doors, etc. as required by Law and regulations of the State of Singapore.
- ❖ Establish a fire protection training program for his personnel, including basic

information on fire prevention rules for all workforce, and advanced training to the use of fire fighting equipment for on adequate number of workers to include in the sub contractors emergency team.

Providing the contractor temporary facilities and offices with an adequate quantities of fire extinguishers and other fire fighting equipments, including provisions for signals, warning panels, emergency doors etc. as required by Law and regulations of the State of Singapore.

9. Existing Hazards

9.1 Existing Lines and Services

Any Electrical Lines, Existing Gas Pipe Lines and Services buried and above ground exist near the installation, erection, and construction area..

9.2 Natural and Environmental Hazards

Extreme climate (Temperature, Wind, Dust and Sand storms) working limits will be controlled by design specification and by personnel protective equipment.

9.3 Fire and Explosion Hazards

9.3.1. Fire protection: Active and passive fire protection, fire extinguishing equipments, isolation and fire proofing of critical structures and equipments.

9.3.2. Operator protection: Alarms of hazardous situations, Emergency response and evacuation plan, and personnel protective equipments.

9.4 Maintenance Hazards

Access requirements including need for heavy lifting equipment, access and handrails of scaffoldings and use of welding machines will be controlled by clients and HIE lifting equipment regulations and procedures.

10. Individual Responsibilities

All persons employed on Site are responsible for the following:

10.1 To take responsibility for the Health & Safety of themselves and other persons who may be affected by their acts or omissions at work.

10.2 To understand and implement the requirement of the site Health & Safety plan and other site rules and procedure.

10.3 To correctly use the protective equipment provided by the employer.

10.4 To assist in maintaining common Roadways and Job sites in a clean and safe working condition.

10.5 When concerned that any site activity is proceeding in an unsafe manner, immediately report the unsafe findings to their Supervisor / section Manager / Safety Manager or client's Representative.

11. Security Control of Job Site, Equipment and Traffic

11.1 All personnel engaged to work on site must be given a site specific orientation, and will be put a sticker on the safety helmet.

11.2 HXsteel will issue I.D. Card to all personnel employed on site. The I.D. Card must be carried and be available for inspection at all times.

11.3 Entry to the site will be controlled, and only person approved for work on site will be allowed access.

11.4 All vehicles entry/leaving the site may be subject to search by HIE guard personnel, and take an inspection prior to the introduction to site.

11.5 Contractor and subcontractors shall maintain site road cleanliness and place debris into proper waste skips.

11.6 Vehicles speeds on site shall not exceed 20 km/h.

11.7 Car parking will be in car parks and shall be allocated by client.

11.8 Entry of Tools and Materials

11.9 All tools, materials and equipments will be submitted to enter to the sites according to the following:

- Submit a list of tools, materials, equipments wish to bring the site.
- Company will approve entry after checking the list.
- All delivery of materials will be allowed on production of delivery notes.
- The material controller will maintain entry with log book.

11.10 Traffic Control

All must respect and obey security regulations issued the Project Manager/Safety Manager. Sub contractors are full responsible for guarding his tools, materials and equipments available within the site.

Safety Manager will nominate a responsible security to be answerable to for security matters.

Drivers and personnel under the influence of alcohol or narcotics are not allowed to enter the site area.

Photography and carrying cameras are prohibited in all sites without a proper permission from the authorities.

12. First Aid Facilities

Contractor and Subcontractors shall provide at all installation, erection, and construction sites & facilities suitable and adequate first aid facilities, including trained first aid personnel, in accordance with the appropriate statutory / local requirements.

13. Safety Signs

Contractor and Subcontractors shall provide signs within the Buildings / Work areas under their control, and will in particular install emergency exit signs and signs warning of specific hazards. Road traffic warning signs, barriers, traffic lighting, etc. should be positioned, during road crossing erection and installations areas etc. and traffic diversions should be made available.

14. Registers and Records

The listing below of registers and records are indicative only and each Contractor and Subcontractors remain solely responsible for the maintenance of registers and records.

- Accident Book
- Accident Report
- Daily manpower attendance records
- Safety meeting records
- Tool box meeting records.

15. Safety Meetings

Safety meetings will be held on a weekly (if required) and monthly basis. The monthly safety meeting must be attended by the Site Safety Officers / Safety Manager.

It is not the responsibility of client to chair the contractor's safety meetings, but client representative will be invited to attend from time to time to observe, and record.

16. Induction Training and Safety Awareness Course (*if client required*)

16.1 All staffs and employers of contractor and Subcontractors should attend to client/QST safety orientation course.

16.2 An agreed number (construction staff and supervisors) of Contractor and Subcontractors to attend and pass client's permit to work course.

16.3 Contractor and Subcontractors are required to provide the appropriate level of training for their personnel.

16.4 Induction training will include the following:

- A summary of the site health and safety plan.
- Procedure for the reporting of unsafe acts and conditions.
- Procedure for the reporting of accidents and dangerous occurrences.
- Location of the site first aid personnel and client/HIE preferred medical center.
- Security and car parking arrangements.
- Disciplinary procedure resulting from failure to follow site safety requirements.

16.5 Contractor and Subcontractors shall maintain an ongoing safety awareness program. This will be achieved via tool-box talks, safety posters, videos and other appropriate means to ensure that all workers are fully informed and aware of safety practices relevant to their particular trade.

17. Cranes and Heavy Equipment

17.1 Cranes and heavy equipment shall only be operated / used by trained, competent personnel, and operators shall have up to date certification. No crane or heavy equipment must be used on site unless it is accompanied by a valid test certificate which has been approved by client.

All lifting belts, slings, ropes, chains, spreader bars, shackles etc. are to be individually tested

and each supplied with a valid certificate, fully complying with client safety color code specification.

17.2 Crane and lifting equipment operators must not attempt to lift any object which exceeds the safe working load of the crane and/or lifting equipment.

17.3 Contractor and Subcontractor shall ensure that all heavy equipment such as crane, side boom, loader and back hoe etc. are tested in accordance with statutory requirements and manufacturer instructions.

Note: back hoes and front shovel loaders are designed for excavation works only, and not designed as lifting equipment. To utilize these machines as lifting apparatus is highly dangerous and will not be permitted on this project.

17.4 Signals given to crane operators must be internationally recognized and must be given by a trained and experienced person.

17.5 The Contractor is to keep a safety lifting certificate register of all their lifting plant and equipment.

The register is to be kept up to date, and the document is to be readily available for inspection at all times.

The register is designed to assess the expiry dates of plant and equipment, and to plan ahead for retesting so as to avoid major installation, erection, and construction delays.

17.6 Cranes, side booms, loaders, heavy plant and equipment are not designed for transporting personnel, to and from construction sites. A strict control on this subject will be enforced.

17.7 Temporary supporting of steel structures sections, and steel plate welded sections, are to be carried out in the correct manner, utilizing the approved method of supporting, and the approved supporting materials.

17.8 All lifts exceeding 50 tons weight and height of lift above 10 meters considered as heavy lift by Lifting Equipment Technical Regulation.

The procedure of lift and method statement shall be prepared by the Contractor and submitted to concerned department for approval.

18. Scaffolding & Ladder

18.1 Scaffolding / Work platform shall be followed by and with client's guideline for scaffolding.

18.2 Trained and experienced Scaffolders only must erect scaffolding. All persons erecting scaffolds higher than 2 meters must wear a safety harness.

18.3 Each scaffold structure must be registered and inspected, and shall comply with recognized standards. (**Scaff-tag** or equivalent system).

18.4 All scaffolding Subcontractors must suitably identify and only use their own tubes, fittings and boards.

18.5 If a scaffold structure is left incomplete and unattended, then "Warning" and "Do not use" sign must be clearly displayed on the scaffold until the scaffolding has been completed, inspected and declared safe for use.

18.6 Any person found to be making unauthorized modifications to any scaffold structure is likely

to be dismissed from site.

18.7 The safety of a ladder depends on four important factors selection, condition, position and use.

18.7.1 Selection

i) A ladder must be of the proper length for the job to be done. If it is to used for the access or as a working place, it shall rise for to a height of at least 0.9 meters above the landing place.

ii) Wet metal ladders shall not be used near electrical equipment with exposed live conductors. Such ladders shall have a warning notice attached to guard against use near electrical equipment.

iii) Aluminum ladders shall not be used where there is likelihood of contact with materials harmful to aluminum.

18.7.2 Condition

i) Each ladder shall be examined before use.

ii) Rungs shall be properly mortised into side rails. Cleats shall be inset by one-half inch and uniformly paced 30.5 cm from top to top.

18.7.3 Position

i) The side rails of a ladder shall be equally supported on a firm level surface. The area at the base of a ladder must be dept clear. Ladders shall not be used in a horizontal position as platforms, runways or scaffolds.

ii) Ladders shall be set at an angle of 25 degrees (whenever possible).

iii) Side rails must be securely tied off to present movement.

iv) Ladder landing places shall be provided at least every 9 meters of height and shall be fitted with guardrails and toe boards.

v) A ladder should always be placed so that there is space behind each rung or cleat for a proper foothold.

18.7.4 Use

i) Where an extension ladders is used fully extended, the minimum overlap of section shall be four rungs.

ii) Single rung and single cleat ladders should be used by one man at a time.

iii) Men ascending or descending ladders shall not carry tools and materials in their hands.

iv) Ladders and stepladders shall be maintained in good condition at all times.

19. Working at Height

19.1 Persons required working at a height of 2 meters or more must be protected from falling. This fall protection must in most cases be a work platform with guardrail and toe boards although there are some circumstances such as steel erection where the use of safety belts will be acceptable.

19.2 All scaffolding must comply with the requirements of section 18 of this safety plan.

19.3 As permanent structures are being erected, contractor and subcontractors must endeavor to erect the permanent stairways, walkways and floors complete with guard rails.

19.4 All ladders to be wood or aluminum construction and to be approved by client representative (if required). No ladders can be used to exceed 3.7m (12ft) in height.

20. Structural Steelwork Erection

20.1 All steel erectors must wear a safety harness.

20.2 Persons must not be allowed to climb steel work. They must be provided with proper access.

20.3 Walking the top flange of steelworks is strictly forbidden, unless fitted with guardrails or clipped with a safety harness onto a running line.

20.4 Persons caught disobeying this instruction, and supervision found to be condoning their actions, are likely to be dismissed from site.

21. Personal Protective Equipment

21.1 Safety helmets, coveralls and safety shoes shall be worn at all times on the construction site. Especially labor shall wear coveralls, and staff and supervisors shall wear company's working uniform.

21.2 Other protective equipment must be provided to suit the particular activity being performed. E.g., Goggles or face screen (for any process involving a risk of eye injury), ear defenders for noise levels above 85 dbA, gloves where there is risk of hand injury etc.

21.3 Failure to wear safety equipment as required will lead to immediate dismissal from the Site.

22. Accident Reporting and Investigation

22.1 Any accident / incident, which occur as a result of on site operations or relates to the project in general, will be investigated, reported and analyzed by the Safety Manager in conjunction with the Project Manager. The accident report in full will be submitted to the client site supervisor within 24 hours of the occurrence and verbal report will be within 2 hours. This applies to all personnel including subcontractors' suppliers and visitors.

22.2 Any accident involving fatality, serious injury or hospitalizations or one or more persons will be investigated in depth and all causes identified. Hazard control measures will be implemented, the accident site secured and all plant, equipment and material remain unmoved until permission is given by the designated authority.

22.3 Site Manager and all employees are responsible for reporting all injuries and occupation related illness to the Safety Manager and Site Manager.

22.4 A record of all reports must be kept by contractor.

23. Radioactive Substances / Use of Ionizing Radiations.

23.1 Storage

All radioactive substances not in use shall be kept securely in a dedicated store.

The storage place should be clearly marked with the warning sign and the working "Danger-Radioactive Material" in clear and indelible print.

The access hatch or door should be provided with a lock, the keys of which should be kept by the authorized radiographer. Only authorized personnel should introduce source into, or remove them from the store.

23.2. Transportation

Land transport: Transport vehicle should be provided with at least one portable fire extinguisher of the DCP, on e portable orange colored flash light, and fire proof warning notices in front and rear. The warning notices should be clearly displayed showing the telephone numbers of authorities to be notified and the steps to be taken in the case of an accident. Transport route should be short and safe and the vehicle should never be left unattended.

The driver shall ensure that the radioactive substances should be dept in adequately shielded and closed containers.

Sealed sources for radiography with the exposure container should be dept inside a lead-lined box which has the radiation warning sign on the out side.

The transport container should be properly strapped to prevent movement or loss.

A portable fore extinguisher of the DCP type should be at hand and fire proof warning signs should be provided.

Handling Procedure and Personnel Protection

- Keep maximum distance from the source.
- Provide maximum shielding
- Keep exposure time down.

23.3. Guide Lines

A radiography permit shall be obtained on each occasion radiological work is carried out. Prior to Radiography work commencing a qualified person must be appointed to act as a radiation protection advisor.

Sources must be stored in safe containers so constructed that the level of radiation at the boundary limit of 10 feet shall not exceed 0.75 milliards per hour in air.

A barrier shall be erected around each area where the source is exposed so that the level of radiation at the barrier does not exceed 0.75 microseiverts per hour in air.

Suitable warning notices for display at barriers shall have the working "Radiation-Do Not Enter" in Arabic and English. The notices shall also include the radiation symbol.

All persons using radioactive substances shall be trained and certified in the use of such substances.

An exposed source must be immediately returned to its safe container on the request of the

operating personnel, or in the event of a fire or other emergency occurring.

Subcontractors must ensure that the required safe guards are in place prior to carrying out any radiography work on site.

23.4 Radiography Work for Lay-down Area

Contractor shall ensure that all safety measures have been implemented by the NDT subcontractor related to radiographic testing and P.P.E. prior to commencement of radiographic works in accordance with client/HIE Safety Regulation for Contractors.

Contractor shall use the checklist as a minimum to ensure that all safety requirements have been achieved and that will be attached to the check list form.

On satisfactory completion of the requested safety checks the safety department shall sign the request form submitted by contractor's QA/QC dept. in order that RT works may proceed.
The safety dept. shall conduct surveillance checks during the course radiographic works and ensure all the safety requirements are complied.

1. **Responsibilities of Contractor's QA/QC Dept.**

   Contractor's QA/QC dept. shall inform their safety manager of the radiographic test for each work. The QA/QC dept. shall formally request for safety managers approval for the RT work to commence using the request form.

   QA/QC dept. shall ensure that no RT works will be proceeding without the prior knowledge and approval of the safety manager.

   QA/QC dept. shall only request clearance for RT works if they are satisfied that all safety requirements can be complied with.

2. **Responsibilities of the Subcontractor**

   All X-Ray technicians have the responsibilities to evacuate non-classified workers to a safe distance and to ensure area where radiography is being performed are cordoned off using cordoning robes, flashing warning light and sign boards prior to commencement of radiographic operations.
   All X-Ray technicians shall use film badges, pocket dosimeters and P.P.E. while performing radiography. Calibrated surveys meters shall be used to survey the radiation area verify radiation safe area.
   All safety equipment, devices and documents should first be presented to client/HIE safety dept. for inspection and approval prior to the commencement of radiographic works.
   All X-Ray technicians shall have responsibilities to themselves and other persons with regards to safety and shall ensure site facilities are adequate with lights, scaffolding and the like prior to commencement of operations.

23.5 Radiography Work Area.

All designated controlled area shall be clearly indicated by signs with the radioactive warning and written warning in both English and Chinese.

The RPS (Radiation Protection Supervisor) of any such facility shall ensure that adequate procedures and controls are in place to restrict entry of all personnel who are not Classified Persons to the facility, and that at no time shall such persons be permitted to enter any permanently defined or temporary controlled area within the facility.

All operations involving the use of ionizing radiation shall be performed under the 'Permit to Work' system.

A controlled area shall be set up, with boundaries clearly defined and entry restrictions imposed, each time sources of ionizing radiations are used. The boundaries of such controlled areas shall be at a sufficient distance, defined by direct measurement of calculation, such that the instantaneous dose equivalent rate is less than 7.5 uSv/h at the boundary.

Clear warning shall be given each time a chemical source of ionizing radiation is to be unshielded or a radiation generator activated.

24. Highly Inflammable Gases and LPG

24.1 Cylinder Identification

Gas cylinders shall be color coded in accordance with BS 349. i.e. Oxygen – black, Acetylene – Maroon, Nitrogen – gray body with black top, Propane – bright red, Butane – blue, Hydrogen – red.

24.2 Storage of cylinders

Cylinders shall be stored with due regard to fire hazard. No other flammable materials shall be stored on the side with them, or in the immediate vicinity. Cylinders must be dept at a safe distance from any heat source and they shall be stored in such a manner that they can be readily removed in the event of fire.

Oxygen cylinders and their fittings, including hoses, shall not be stored in such a place or used in such a manner that they shall come into contact with oil, grease, live electric apparatus or sparks. Oxygen, Acetylene Hydrogen, propane etc. cylinders shall be stored in separate area and oxygen acetylene shall never be stored together.

24.3 Stacking of Cylinders

Propane and acetylene cylinders shall be stored vertically only and secured.

Oxygen cylinders may be stored either vertically or horizontally provided that, if stacked horizontally, it must be done pyramid fashion with no more than 15 to a stack.

The largest oxygen must be at the bottom of the stack and the stack must be securely wedged and kept off wet ground.

24.4. Handling and Transporting of Cylinders

Cylinders of oxygen, propane and dissolved acetylene shall not be subjected to rough usage or excessive shock or used as rollers or supports. Cylinders shall not be dropped from a height. A proper carriage or platform and not a sling shall be used for moving cylinders, weather empty or full.

When cylinders are being transported they shall be loaded and firmly wedged to prevent violent contact when the vehicle moves.

Oxygen cylinders shall not be transported on trucks together with hydrogen, acetylene or LPG cylinders

The transportation of any gas filled cylinders shall always be in a proper rack, regularly maintained and properly inspected at least by annually.

24.5 Cylinder Fittings

- Standard automatic pressure regulators and pressure gauges shall be fitted to both oxygen and acetylene cylinders. Regulators and gauges shall be checked to ensure they are functioning properly.
- Damaged gauges or regulators shall be removed from service for repair immediately when defect is discovered.
- Red hose shall only be used for acetylene, hydrogen, LPG and other combustible gases, and black hose shall be used or oxygen and nitrogen.
- Hoses shall be pressure tested annually and examined monthly to ensure that they are free from cuts, cracks, burns and excessive wear.
- Only secured hose connectors shall be used. It is strictly prohibited to bind hose connections with wire.
- Only standard valve keys shall be used.

25. Welding, Grinding and Flame Cutting

25.1 Automatic cut-off system for all diesel driven welding machines, air compressors and generators should be used in site with Safety precautions.

25.2 Welding, Grinding and Flame cutting equipment must be in Good condition and safe for use. Electric leads must be well insulated.

Gas hoses must be free from damage and correct hose connectors used.

Specialized industrial connections are to be fitted to all electrical connections. Always disconnect power before changing grinding wheels.

Ensure wheel guards are fitted, check disc for defects, and ensure mounting flanges are clean.

25.3 Cutting and welding work must be performed by trained and experienced persons.

25.4 Gas welding and flame cutting must be prevented from blowback by a non-return valve fitted at the nozzle end of each hose.

Flash back arrestors must also be used.

As a safety precaution, specially designed trolleys or cradles are to be utilized to keep all bottles in the upright position during fabrication, for welding rigs, for transporting and site activities.

25.5 In the event that welding, grinding or flame cutting operations require to be carried out on a pipe line or vessel that has previously carried flammable, explosive or toxic substances, then a specific risk assessment / method statement and working permit shall be required.

25.6. Oxygen cylinders must be stored a minimum of 6 meters from any other combustible gas cylinders, oil and greases.

26. Excavations

26.1 All excavations deeper than 1.3 meters must have the sides protected against collapse as per Standard Safety Regulations for Constructions. Sloping of trench walls should be utilized as a form of safety measure for relative construction.

26.2 Materials, including those removed from the excavation, must be stored a minimum of 1.5times the depth of the trench from the edge of the excavation to ensure that persons working in the excavation are not at risk from the materials falling.

27. Manual Handling

27.1 Employee shall not require a person to lift, carry or move any load so heavy as to be likely to cause injury to that person. The requirement is applicable to all activities performed on site.

28. Controls of Tools and Equipments

28.1 General

- Adequate storage facilities shall be provided for all tools and equipment used in any work place.
- All tools and equipments shall undergo regular preventive maintenance of their facilities.
- All electrical equipments shall be inspected and repaired as required, with specific attention given to integrity of insulation and earthing provisions.
- All fixed equipment and machine tools, hand tools, etc. shall be subject to regular inspection, maintenance and replacement as required ensuring the safety of their operators.

28.2 Hand Tools

- All hand tools shall be assigned to a responsible person.
- The responsible person shall ensure that hand tools are maintained in good condition. Regular six monthly inspections shall be made of all hand tools and records of these inspections maintained. If any defects are identified the tool shall be removed from service and either be repaired or replaced.
- The use of hand tools with powered machines such as grinders shall be strictly controlled.

28.3 Portable Electrically Powered Tools.

- All portable electrically powered tools shall be of a type approved by client, and shall be inspected, tested, serviced and used in accordance with the manufacturer's instruction.
- Plug adaptors shall not be used in industrial or operational environment at all times, the electrically powered tool plug shall match the provided socket.
- Portable electrically powered tools shall not be used in potentially hazardous or explosive environments. In addition, extreme care shall be taken in working areas containing oil, water, caustic, corrosive or conductive fluids, particularly with regard to routing of power leads.
- Protective guards shall be securely fitted, and correctly adjusted.

28.4 Pneumatic Tools

- Using high pressure air to clean or remove dust and chips from personnel, clothing is prohibited.
- All air lines and couplings shall be fit for the specific application.
- Flexible air lines shall be protected form damage by vehicles and materials and shall be routed such that they do not represent a trip hazard to workers.
- Prior to carrying out any repair, adjustment or cleaning of pneumatic tools or equipment, the air supply shall be physically disconnected.

Where necessary, the compressor shall be isolated and lines depressurized prior to disconnecting the tool or equipment.

29. Commissioning (Include Pre-com and Mech.-com.)

29.1. Prior to commissioning, all personnel shall be required to attend a further induction training course specially relating to the potential hazards, lock out system, permit to work etc.

29.2. Commissioning of electrical switchgear and certain items of project will commence prior to the completion of overall installation, erection, and construction activities.

29.3. Safety Signs and/or Barriers shall be erected to indicate that project is energized or under commissioning.

30. Noise and Environmental Impact

The use of earplugs / ear defenders is mandatory in all areas where noise levels exceed 85dbA.

31. Alcohol and Drugs

31.1. Alcohol and illegal drugs are not allowed on site, any one found possession of, or under the influence of such substances are likely to be dismissed from site.

32. Hot Work Procedure

32.1. Definition

This procedure is mandatory, hot work is the performance of work where heat or electrical sparks of such intensity are used or generated that it is possible to ignite flammable liquids,

vapors or gases or any other combustible matter.

32.2. Preparation of Site Hot Work.

Personnel authorized to sign hot work permits on behalf of the operating authority are responsible for ensuring that the site area and the equipment requiring hot work have been properly prepared to prevent the rise of fire, explosion, or exposure to toxic gases.

Precautionary measures include:

- Disconnecting/isolating other equipment by inserting blanks or disconnecting lines and installing solid blanks on open ends.
- Freeing the equipment of hydrocarbons.
- Clearing away of combustible materials.
- Sealing of all sewers and drains within 50 feet from where hot work is to be performed.
- Removing or wetting down tarpaulins, wooden floors, decks, platforms, scaffolds, etc.
- Provision for fire protection and fireguards if necessary.
- Location of any welding equipment etc.
- The site of the hot work is to be prepared to the requirement of the operating authority.
- If the operating authority decides that fire cover is required he will arrange provision with the fire officer, and the permit shall not be issued until fire cover has been provided.

32.3. The Permit Process.

The permit should only be valid for a limited period of time and should be a means of ensuring that;

- The area is made as safe as possible before the work starts.
- Precautions are taken while the work is in progress.
- There is checked afterwards.

Suitable fire extinguishers of appropriate types must be at hand and a careful watch must be kept for fire breaking out while work is in progress.

When welding, cutting or grinding, the works are must be suitably screened using non-combustible material.

Gas cylinders must be secured in a vertical position on a trolley and fitted with a regular and flash back arrestor.

If work is to take place on one side of a wall to or partition, the opposite side must be examined to ensure no combustible material will be ignited by conducted heat.

There of any hot work must be thoroughly examined one hour after the work has finished checking that are is no smudging.

33. Site Safety Checking and Safety Patrol

33.1. **4-cycle of safety control**

Routine safety control is said to be 4 cycle of "situation checking" →"defect finding" → "countermeasure establishment"→ countermeasure enforcement".

The accident/incident is to take place through combination of unsafe condition and unsafe behavior present in the site.

Since there are various kinds of works in construction site, its status is changed minute by minute according to construction progress schedule.

Safety engineer, safety officer and site engineer shall make an accurate judgment in connection with accident by checking this situation correctly and finding the defect without any omission.

33.2 **Safety patrol**

Safety officers should patrol around the working site and correct / control for the unsafe matters to minimize incidents and prevent to future disaster.

33.3 **Use safety Prize / Incentive system**

We, HIE believe that all most all accidents can be prevented, if all workers have safety in mind and fulfill safe conditions.

When we find workers adhering to safe working practices we will give to them a safety prize on a monthly basis.

Ultimately, this is an incentive to achieve zero defects on site.

33.4 **Use safety Penalty system**

When we find unsafe behavior of labor, a warning letter will be issued and penalty imposed as a 1st stage.

2nd stage a strong warning letter will be issued and a higher penalty imposed.

They will be dismissed from site, if unsafe behavior was not modified **; no third chance**.

33.5 **Use of Camera system**

We take photo for unsafe condition and unsafe behavior on site, and post it on safety information board.

We believe that this system is a kind of good method to achieve zero defects at site.

34. Risk Assessment

34.1 Contractor and Subcontractors shall follow client's risk assessment guide. Hazard identification sheets required to be completed and signed before hot work permit applications for working areas in live plant.

34.2 Risk Assessment will be provided for the installation and erection of steel structural.

35. Emergency Response Procedure

35.1 Installation, Erection, and Construction Area

In the event of a Fire Alarm being sounded the following immediate actions shall be taken:

35.1.1 Supervisors / Mechanics / Operators / Drivers shall switch off all Machineries / equipments in the Plant Area, and leave the place of work.

They shall proceed in an orderly manner and wait quietly till their names are called out by the Site Administrator or the Senior Supervisor.

In case the fire is discovered, the following action will be taken immediately:

1) Raise the Fire Alarm
2) Call the Fire Brigade
3) Immediately tackle with Fire equipment
4) Evacuation

1) Raise the Fire Alarm

The person who raises the Fire Alarm should make sure that all the employees in the entire job site are fully aware of the danger. Any person who uses the fire extinguisher to extinguish the fire should be very confident that he would be able to extinguish the fire completely and promptly. The rise of Fire Alarm is to set the evacuation in motion and telephone the Fire Brigade for the fire fighting assistance.

2) Calling the Fire Brigade

The Fire Brigade should be called immediately as soon as the Fire Alarm is raised.
The Fire Brigade, on being informed of fire, should also be advised on:

a. Type of fire
b. Where is fire
c. Name of the informant, location, road, proper address etc. and the telephone number.

3) Tackling the fire

The fire should be attacked immediately on discovery with the fire fighting equipment located at the Industrial Area. All employees must know the location of the fire fighting equipment and alarm points, emergency telephone number, etc., and the right type of fire extinguisher to use for each type of fire.

4) Evacuation

If the employees fail to control the fire, they should evacuate the Industrial Area immediately in an orderly manner following a safe escaping route.

Every employee should know :
To whom the fire should be reported.
The nearest Fire Alarm point and its operation.
Availability of the nearest telephone.
Telephone number of the Fire Brigade.
Nearest fire extinguisher, type, and how to use them.

35.1.2 First Aid And Rescue (Casualty) Services :

On hearing the Fire Alarm sound:

The trained staff, with knowledge of First Aid and Emergency methods or removing casualties, should report to the Site Administrator or Senior Supervisor during the emergency to give first aid to any casualties.

35.2 Office Complex

In the event of Fire Alarm being sounded the following immediate actions shall be taken:

35.2.1 Office Staff

All Office Staff shall switch off all appliances in the office such as computer machines, electric typewriters, calculators, etc. and after they have closed their office door shall vacate the office building.

35.2.2 In case, a fire is discovered, the following action will be taken:

a) Raise the Fire Alarm.
b) Call the Fire Brigade.
c) Immediately tackle with fire equipment.
d) Evacuation.

a) Raise the Fire Alarm

The person who raises the Fire Alarm should make sure that all the employees in the office are aware of the danger. Any person who uses the fire extinguisher to extinguish the fire should be very confident that he would be able to extinguish the fire completely and promptly. The rise of a fire alarm sill set an orderly evacuation of personnel in motion.

b) Calling the Fire Brigade

The Fire Brigade should be called immediately as soon the fire alarm is raised.

The Fire Brigade, on being informed of the fire should also be advised on:

a. Type of fire
b. Location of fire
c. Name of the informant, location, road and proper address, and the telephone number etc.,

c) Tackling the fire.

The fire should be tackled immediately on discovery with the fire fighting equipment located in the office. All employees must know the location of the fire fighting equipment and alarm points, emergency telephone number etc., and the right type of fire extinguisher to use for each type of fire.

d) Evacuation.

If the employees fail to control the fire they should evacuate the premises immediately in an orderly manner.

Every employee should know:

a. To whom the fire should be reported.
b. The nearest Fire Alarm point and its operation.
c. Availability of the nearest telephone.
d. Nearest fire extinguishers, type, and how to use them.
e. Location of the assembly point for roll call.

35.2.3 First Aid Services.

On hearing the Fire Alarm sound:

Trained staff with knowledge of First Aid and emergency methods of removing casualties should report to the administrator or his assistant during the emergency to give first aid to any casualties.

35.3 Medical Emergency Response

35.3.1 General.

- Many workers in job site are geographically remote from medical facilities. First Aid Equipment will be available on site and an emergency system put in place to effectively transfer ill or injured employees to clinic or hospital.
- Medical Emergency contact number shall be displayed in construction are and to foreman.

35.4.2 Medical Emergency Equipment.

- All work sites shall be provided with First Aid Kits, sufficient in quantity and scope to deal with medical emergencies arising from the work being carried out.
- All work sites shall have a suitable stretcher available for the secure movement of injured persons. Where injuries may take place above or below ground, prevision for securing the patient and recovering the stretcher to ground level in a non-horizontal position shall be made.

35.4 Emergency Response Number

1) Police and Ambulance : 999

2) Boarder of HIE Management : XXXXXX

3) Erection/Site Area :

QA/QC Dept. (Mr. Song Haibo) : XXXXXX

Rigging Dept. : _____ : _____

Erection Team Leader : _____ : _____

Fabrication Team Leader : _____ : _____

4) Office & Camp Area :

Admin Dept. (Mr. XXXXXXXXXX) :

(Mr. XXXXXXXXXX) :

Site Office : _____ : _____

Camp : _____ : _____

36. Safety Organization Chart and Responsibilities

36.1 Safety Organization Chart (see figure 1).

36.2 Responsibilities

36.2.1. Site Manager

- Ensuring this plan is established, maintained and complied with.
- The Site Manager will be responsible for the overall implementation of the safety plan and procedure. He is answerable to the Project Manager.

36.2.2. Safety Manager

The Safety Manager shall report operationally to the Site Manager and functionally to the Project Manager and shall be responsible for:

- Provide guidelines to the construction department on safety related matters.
- Ensure the development and implementation at site of activities, assist the management in all HSE related matters and manages the HSE organization at site.
- Ensure that all activities regarding work safety and hygiene are carried out in accordance with safety plan and procedures for construction and pre-commissioning.
- Managing the incident / accident investigation as per procedure and maintaining records of the site safety statistics.
- Issuing safety meetings program and organizing meeting.
- Managing first aid and health care organization and facilities at site.

36.2.3. Safety Officer

- He should assist the Safety Manager and ensure that direct supervision and co-ordination of the sub contractors activities day by day control with him to manage any HSE related issues.
- Site safety matters should be reported to Safety Ensure all incident / accidents on site are immediately reported to Safety Manager / Site Manager, and leading that investigation.

36.2.4. Site Safety Officers

Their responsibilities shall include but are not limited to:

- Verifying that all workforce direct or indirect responsibility receive appropriate HSE information's, induction and training, including supervision and control on the HSE training.
- Advising HSE Manager of any required actions to upgrade substantial working and

living conditions under their individual responsibility.

- Ensuring adequate level of working and living condition by means of regular inspections on housekeeping, hygiene, portable water system and waste disposal etc.
- Leading incident investigation, attend accident investigation and reporting on them to the Safety Manager as per the incident investigation and reporting procedure.
- Ensure all incidents / accidents on site are immediately reported to Safety Manager.
- Organizing and managing the medical and first aid services at their own work site.
- Monitor construction activities to ensure that the HSE requirements and procedures are being complied with.
- Identify specific hazards inadequately addressed in the HSE manual and provide safe work instructions to deal with them.
- Notify promptly in writing to the involved personnel of safety plan and procedures and / or discovered unsafe working conditions, ask remedial action and keep record of it.
- In case a hazard condition of immediate to life and health is found during the inspection, they order immediate stop to the activity and should notify in writing and report to Safety Manager immediately. Resuming work is only allowed when corrective actions are implemented to the satisfaction and the stop work order is written off.

36.2.5. Line Supervisors

- Ensuring that all personnel have access to, and use approved work procedures and are properly trained and understand their equipment and jobs.
- Reporting, investigating and follow up HS incidents.
- Regular review of performance.
- HS being a subject of personnel appraisals.

The End

Client:	Main Contractor	Project Title:	**JOB SAFETY ANALYSIS FOR STEEL WORK**	

Hazards	Potential Health Effect	Risk Rating			Proposed Control Measures	Responsible Person
		S	L	R		
1. Installation Work						
1.1) Collision of vehicle Moving vehicle Personnel injury Traffic block Property damage	Injury to body, Collision of vehicle Loss equipment	3 3 3	1 1 1	3 3 3	a) All vehicles must be roadworthy and possess relevant valid insurance cover. b) All drivers and operators must hold relevant valid licenses and be fully authorized to carry out the works. c) The site speed limit must be observed at all time. d) Vehicles only to be reversed after the driver/operator has checked, To ensure that the way behind is safe and clear. e) Help must be provided by another authorized person to act as guide or Bank man whenever necessary. f) Vehicles must not be left unattended whilst engine are left running. g) All drivers/operators and personnel involved in off-loading or movement Of materials, etc. must wear the appropriate PPE upon arrival at, and whilst on site.	Safety officer
1.2) Hazards originated from Transported loads. Fall of loads Personnel injury Property damage	Injury to the personnel Loss of equipment	3 3	1 1	3 3	a) When transporting heavy loads, the trailer or carrier load capacity must be verified prior to loading/transporting. b) Load projecting beyond the edge/end of trailer or carrier shall be highlighted by securing a red warning flag to the end or edge of load projection. c) All loads shall be fully restrained from possible movement during or after transportation by means of suitable chains, slings, ropes, etc. Check before removing restrain d) All over size materials / structure must be police escort to site at night.	Rigger Foreman
1.2) Off-loading Property damage Personnel Injury In securing the load Pinch points	Loss of material Injury to personnel Loss of property Fall of material Cut injury of fingers	3 3 3 3	1 1 1 1	3 3 3 3	a) Safe and suitable means of access to the trailers / lorries to be provided. b) All lifting gear used for off-loading to be checked for valid certificate and current color code. c) All crane used on site to have valid operation certificate issued by local authority. d) To barricade working area using red & white safety tapes. e) Lifting Supervisor and Riggers should oversee all lifting activities. f) Ensure that load must be within the SWL. g) All workers must wear PPE including hand gloves. h) Materials shall be properly stacked to a safe height.	Safety officer
2.1) Faulty Crane	Personnel injury Loss of equipment Loss of material	3 3 3	1 1 1	3 3 3	a) All crane used on site to have valid operation certificate issued by local authority b) Cranes condition checked and logged by operator on regular inverval with any Defects reported and repaired immediately.	Safety officer
2.2) Improper crane operation	Tip over of the crane Personnel injury Loss of equipment Load may swing and cause injury	3 3 3 3	1 1 1 1	3 3 3 3	a) All cranes to carry load chart which operator must check before each lifting operation when necessary. b) Cranes shall only be operated by qualified operators who must hold valid operation certificate.	Safety officer

Client:	Main Contractor	Project Title:	**JOB SAFETY ANALYSIS FOR STEEL WORK**	

Hazards	Potential Health Effect	Risk Rating			Proposed Control Measures	Responsible person
		S	L	R		
2.3) Insufficient SWL capacity	Cause crane over-turning, Damage construction material, Damage the surrounding properties	3 3 3	1 1 1	3 3 3	a) Carry out crane/lift study prior to any lifting operation to determine crane position, max and min operating radius, boom operating length, angle & boom height clearance when necessary. b) Check and verify actual weight of load with allowance for addition weight of hooks, slings, shackles, etc.	Safety officer
2.4) Instability of crane	Cause construction accidence Damage construction material, Damage the surrounding properties	3 3 3	1 1 1	3 3 3	a) Ensure crane's out-riggers are set-up on consolidated firm ground capable of supporting the crane and load during lifting. b) Provide steel or timber pads under each out-rigger to distribute and reduce point load under each support. c) Check for any signs of ground level movement at each rigger position before and during lifting operation. d) Ensure that tower cranes are firmly anchored and constructed. e) All tower cranes must be load tested and endorsed by qualified engineer before Use.	Rigger foreman
2.5) Improper crane operation	Damage construction material, Damage the surrounding properties Cause personnel accident.	3 3 3	1 1 1	3 3 3	a) All lifting operators will be under the sole control of one qualified person who shall be designated as lifting Supervisor and assisted by a competent Person (single man). b) The crane operator will only accept signal or directions from the lifting supervisor or his authorized signal man. c) Standard crane hand signals or radio communications shall be used at all time. d) The crane signal man shall wear a High Visibility Vest.	Safety officer
2.6) Inadequate lifting tackle	Cause construction accidence Damage construction material, and surrounding properties	3 3 3	1 1 1	3 3 3	a) Ensure all lifting tackle used is in good condition, has valid certificate and color coded. b) Ensure the SWL of all lifting tackle to be used is sufficient for the loads to be lifted. c) Ensure that all lift attachment welds (if any) are adequate and have the required NDT certificate.	Rigger foreman
2.7) Improper/unsafe lifting practice	Cause construction accidence Damage construction material, Damage the surrounding properties, Cause personnel injure. Back Injury Finger injury Wrong placement of fingers	3 3 3 3 3	1 1 1 1 1	3 3 3 3 3	a) All rigging works to be carried out by competent person only. Lifting supervisor And riggers must be approved and with relevant certificate. b) No personnel to stand under suspended loads at any time during lifting. c) Avoid any kinks in the lifting slings or strops and protect from sharp edges or objects when lifting in progress. d) Used tag lines as guide ropes for loads during lifting and do not attempt Lifting during excessive winds. e) Lifting area to be cordoned off and unauthorized personnel will not be allowed to enter. f) Prior to hoisting, lift load slightly to check for balance, weight, alignment and crane stability before hoisting to final position.	Rigger foreman
2.8) Installation difficulties	Cause personnel injured, Fall from height Slip of tools Falling of tools	3 3 3 3	1 1 1 1	3 3 3 3	a) Connection compatibility and length to be checked prior to lifting. b) Ensure erection personnel wear all required PPE including full body harness, securely attached to a suitable anchor point.	Rigger Foreman

Client:	Main Contractor	Project Title:	**JOB SAFETY ANALYSIS FOR STEEL WORK**	

Hazards	Potential Health Effect	Risk Rating			Proposed Control Measures	Responsible person
		S	L	R		
					c) Cherry picker & scaffolding platform shall be securely lashed to columns or trusses prior to erection to Facilitate safe release of lifting tackle.	
					d) Ensure all holding down bolts and anchors are free from damage and can Be fully tightened without difficulty.	
2.9) Hazards due to working at height.	Fall from height Falling of tools Personnel injury	4 3 3	2 1 1	8 3 3	a) All erection personnel working at height must wear full body harness.	Safety officer
					b) Cherry picker & scaffolding platform shall be securely lashed to columns or trusses prior to erection to Facilitate safe release of lifting tackle.	
					c) Educate all personnel working at height on proper use of safety belts.	
					d) Cherry picker & scaffolding platform shall be used for height work. Where ever cherry picker is not accessible, Certified Man basket shall be used	
2.10) Falling objects.	Personnel injured and/or property damaged	3	1	3	a) All tools and equipment to be securely fastened or kept in a secure container.	Safety officer
					b) All bolts shall be carried in bolt bags during erection, secured to the steelwork Or the erectors tool belt.	
					c) Wearing safety helmets by all site personnel will be a mandatory Requirement.	
					d) Work area to be barred directly to prevent entry and possible injury to personnel below.	
					f) No personnel will be allowed to work in the area below any erection work being carried out.	
3.1) Faulty Equipments.	Cause equipment broken injure personnel or gas exploring	3	1	3	a) Check the regulators, valves, etc. of the gas cutting sets, compressed gas cylinders and welding equipment are in good condition.	Safety Officer
					b) Inspect all hoses for leaks, burns or damaged areas, loose fittings or Connections or any other defects which may render the hose assembly unfit for use.	
					d) Any hose which has been burnt by a flash back must be replaced.	
					e) Welding cables shall be replaced when insulation shows any sign of cracking or perishing.	
3.2) Improper handling and storage of equipment.	Cause gas exploring, and injure personnel	3	1	3	a) Combustible gas and oil shall be prevented from coming in contact with oxygen Cylinders, regulators, connectors and hose.	Safety officer
					b) Oxygen and acetylene gas cylinder storage areas shall be separated.	
					c) Gas cylinders are to be made secure at all times.	
					d) Compressed gas cylinders must not be stored or placed near heat generating Equipment, combustion engines or electrical equipment.	
					e) Gas cylinders should not be placed in confined spaces or in unsafe position.	
					f) Gas hoses and welding cables must be routed to minimum the risk of tripping or any damage to the hoses/cables.	
3.3) Hot work hazards. Fire Flying particles Burn Toxic fumes Falling of welding slag Consumable material	Property damaged Eye injury Personnel heat injured, Cause lungs problem Burn injury Fire.	3 4 3 3 3	1 2 1 1 1	3 8 3 3 3	a) All personnel associated with hot work shall wear the necessary personnel Protection equipment (PPE).	Safety Officer
					b) Preventative measures must be taken to ensure that no spark, slag or hot items are allowed to fall onto any combustible materials or personnel below elevated hot work area.	
					c) Adequate ventilation must be provided if hot work is carried out in any enclosed. Environment	

Client:	Main Contractor	Project Title:	**JOB SAFETY ANALYSIS FOR STEEL WORK**	

Hazards	Potential Health Effect	Risk Rating			Proposed Control Measures	Responsible person
		S	L	R		
					d) All hot works shall be carried out at a safe distance from compressed gas cylinders.	
					e) Precautions must be taken when welding in wet conditions, to protect personnel from electrical shocks. Do not submerged welding cables in water.	
					f) Fire extinguishers shall be positioned in the hot work area during any hot work operation.	
4.1) Emergency Action	Execute emergency procedure once any accidence occurs				a) In the event of an emergency on site, HXsteel emergency procedure shall be followed as described and advised at the site Safety Introduction Course.	Safety officer

Likelihood	Description	Rating
Unlikely	Occurrence close to zero	1
May happen	Capable of taking place	2
Likely	Tend or inclined to occur	3
Very Likely	High inclination of occurrence	4
Certain	Most definitely happen – not "if" but "when"	5

Severity	Description	Rating
Minor Injury	Firs-aid on site	**1**
Minor Injury	Treatment off site	**2**
Up to 3 days Injury		**3**
Major Injury	Reportable	**4**
Death		**5**

		Likelihood				
		1	2	3	4	5
Severity	1	1	2	3	4	5
	2	2	4	6	8	10
	3	3	6	9	12	15
	4	4	8	12	16	20
	5	5	10	15	20	25

Classification:

1 - 4 Attention Required – Low Risk

5 - 9 Corrective Measures Required – Medium Risk

10 - 16 Corrective Action Required – High Risk

20 – 25 Serious Risk – Elimination of hazard require

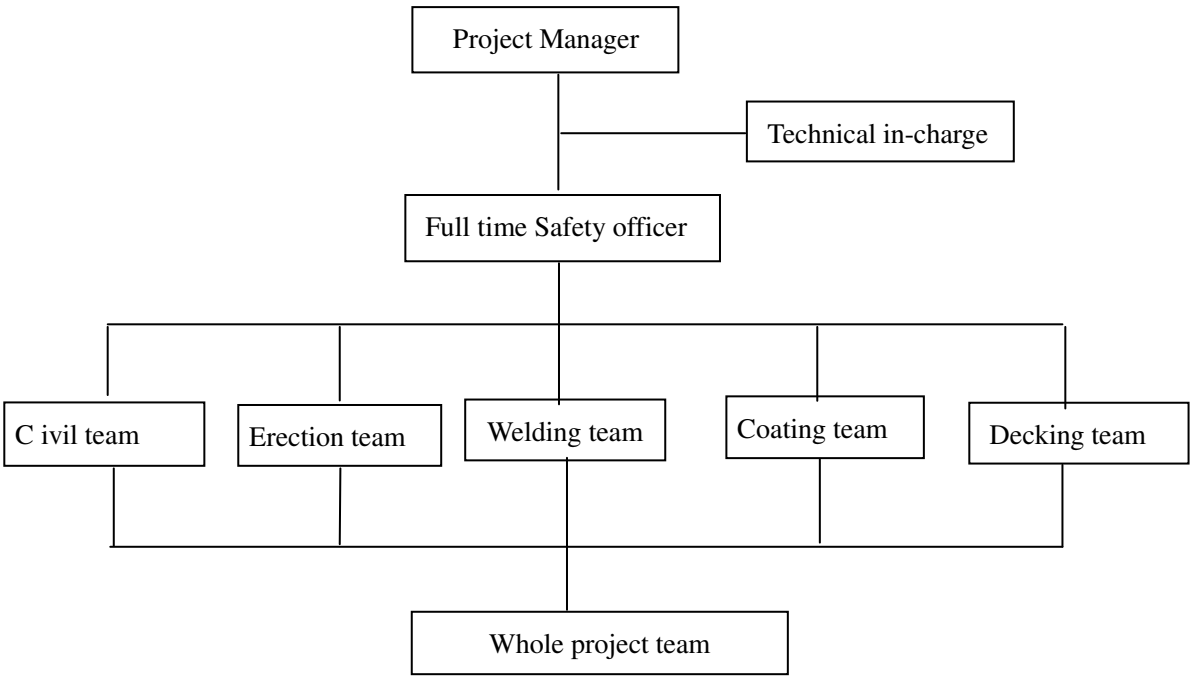
Safety Control Plan

Safety Assurance Procedure

Safety management goal

Always safety first, construction site to achieve most standard construction and maintain an accident free and safe working environment at work place, thus building confidence among the workmen for safety of their lives.

Safety Assurance System



Safety Plan

The following shall be forming the safety plan to develop the safe environment at the work place, to prevent hazards or accidents to personnel and property:

1. Workmen safety equipments
2. Tool-box meeting
3. Machinery / equipment safety
4. Electrical
5. Fire protection Storage of gas, and fire protection for welding
6. Vehicles – Drivers / operators
7. First Aid
8. Training
9. Report

1. Workmen safety equipments

The following safety equipments shall be provided to the workmen as applicable, to ensure the safety of individual.

i. Uniforms
ii. Shoes
iii. Helmets
iv. Goggles
v. Masks
vi. Gloves
vii. Welding glasses
viii. Safety harness / belts etc;

- The workmen shall have to use these safety equipments appropriately while on job to prevent themselves from untoward accidents.
- The shop / site supervisors shall have to implement the personnel safety system by providing them the above equipments.
- In case of safety violations, the empoloyees shall be warned to avoid the repetition and to follow the safety rules, if they further neglect to follow the safety rules, the matter shall be taken to the Div. manager / Gen. Mananger for necessary action.
- If the personnel does not use the protection equipments and meeting accident, then the responsibility shall be of the individual who met with an accident. Neither management nor the safety department will hold the responsibility for any of such cases due to the shear negligence of person.

2. Workmen safety equipments

- The tool box meeting is to remind the workers about the safety at work, the risk during the execution of job, the requirements of the tools, their responsibilities, etc;
- The tool box meeting shall be conducted often to the personnel working at site and shop before they commence their duties.
- The tool box meeting shall be conducted by the site staff for the personnel working at erection site and by the safety engineer at shop accordingly.
- The workmen shall understand the importance of meeting and co-ordinate in implementing into action by collecting the required safety equipments and tools before going in to work site.
- This action will minimize the accidents at working area, thus ensuring the total safety for the personnel.
- Also, the wastage of time in searching the appropriate tools shall be minimized.
- This meeting will help to work in a disciplined and organized way which in return help to achieve the recognition from the clientele / consultants.

3. Machinary / Equipment

- All the machinery such as lathes, shaping machines, power press, plate bending machine, plate rolling machine, milling machine, welding machine, grinding machine shall be maintained

periodically by the QC engineer.

- Also, the equipments like EOT cranes, tower cranes, lifting jacks, chain blocks etc; shall be maintained properly and tested for certification by the QC engineer.
- QC engineer and concerned shop engineers shall be taking charge of inspecting the machinery and equipments.
- Apart from this, all the machinery and equipments shall be provided with guarding mesh or covers appropriately whenever necessary, as a protection to avoid the accidents.
- All the electrical connections for the machinery shall be periodically checked by the electrician, tp make sure that the connection are safe and secure to avoid the accidents of electrical shock or electrocution to the operator or any personnel working at the machine.
- The trained or skilled personnel shall be engaged for operating the machinery and equipments.
- The use of machinery & equipments by the unauthorized or unskilled personnel illegally shall be restricted.
- Usage of the machinery by the unskilled personnel without proper guidance by the skilled operator may lead to the accidents. The appointed skilled operator shall bear the responiblity in such event.
- In absence of skilled operator, employing an unskilled operator in any machine by the concerned engineers or forman shall be solely under their personnel risk and the responsibility shall be borne by them in the event of any accident to the unskilled operator working in the machine.
- The operator must be cautious during the working condition of the machine. They should not put their hands on the running parts in the intension of bringing the machine to the immediate halt.
- Let the machine or equipment come to halt in its own time after switching off the same.
- Do not run the machine if any of the mechanical or electrical damage is noticed in the machine, until the damage is rectified and or confirmed by the concerned engineers.
- Operator should not leave the running machine in any of the circumstances. But if necessary, switch off the machine.
- Casual or loose clothing except the coveral uniform provided by the company is restricted from wearing by the operators while operating the machine.
- Do not let the scrap material get accumulated during the turning operation in any machine.
- Remove the scrap or unwanted material from the machine after bring it to halt.
- Dump the scrap material in the specified scrap yrad.

4. Electrical

- All the electrical connections for the machinery, equipments, power tools etc; shall be properly provided by the electrician.
- Main line connections, electrical conduits, terminals, switch boards shall be maintained periodically by the electrician.
- Only standard insulated power cables shall be used for connecting the power supply.
- Power cables shall not be allowed haphazardly in the working area.

- Highly damaged cables shall not be allowed for the connections.
- If any damaged cables or loose contacts are found, the matter shall be brought to the notice of electrician for immediate rectification.
- Use safety plugs as appropriated as per safety rules.
- Do not extend the power cable without proper plug pins or direct connection with proper insulation.
- Replace the damaged plugs with the new items as and when required.
- All the cables connected to the power tools & machinery shall be properly protected as advised by the electrician.
- Earth connection shall be given to all the items whichever is operated by power.
- Earth cable for welding machines shall be fixed rigidly before operating the welding machines.
- Electrician alone has to rectify the power connection failure if any.
- Loose contacts, spark from the plugs or main switches shall immediately be brought to the notice of electrician for rectification.
- In case, the smoke is found in the main switches or open cables, the relevant main switch shall be switch shall be switched off by any one noticed the smoke, before serious damages are happened. But not necessary to wait for the electrician for switching off.
- Electrician shall attend to that fault immediately and switch on the power only after proper investigation and rectification done by him.
- Lighting in the working area shall be adequate.
- Proper lighting shall be provided for all the passenges in the work place to avoid accidents while walking.
- Replace the non-working bulbs immediately.
- Loose contacts or loose connections shall be rectified immediately.
- Electrician should be careful while giving connections in the main power line. He should wear safety rubber gloves while in operation.

5. Fire Protection

- As the fabrication works are being done with the use of welding and gas cutting, the possibilities of fire accidents are anticipated.
- To prevent the fire hazards, the fire protection is given more impoatance.
- To implement the fire protection, the workshop or the working area shall be equipped with the fire extinguishers, water hose etc.
- The welder shall protect the area of the welding to avoid apreading of spatters, which may cause the fire.
- Similarly, the gas cutter also shall protect the area so that the fire or sparks would not cause fire hazards.
- Any material that will catch fire, such as wood, plastics, jute, pulp or clothes shall not be kept

close to the welding or gas cutting.

- Do not touch the hot material with bare hands but use leather gloves appropriately.
- Gas cylinders shall be stored and protected in a separate area.
- The gas cylinders in use shall be kept a little away from the place of operation.
- Perferably lengthy cutting hose shall be used in cutting operation.
- Always close the cylinder valves after completing the cutting operation.
- Put water or sand on smoking fire immediately after noticing it.

6. Vehicles – Driver / operators

- All the company vehicles shall be kept out side the work premises keeping the access free for other operations.
- Only the required vehicle shall be brought in side the premises for loading / un-loading the materials.
- Only the authorized / licensed driver should drive the vehicles.
- Driving the vehicles by unauthorized person is restricted to avoid any untoward accidents.
- Unauthorised persons shall be notified to the management for action.
- Vehicles should not be parked in front of the main access to the workshop.
- Also, the forklift and crane operators shall be licensed and authorized.
- Causing serious danger or accidents by the unauthorized operators either driving the vehicles or crane and forklifts operations shall be the sole responsibility of the management for employing or allowing them to operate.
- Out side vehicles shall not be allowed in side the promises without permission.

7. First Aid

- In general accidents may happen due to any reason but mostly due to negligence of the personnel in implementing or violation of safety rules and procedures.
- By implementing the safety procedure or rules, even though it is not possible to avoid 100% accidents there is possibility to avoid fatal accidents.
- In the event of accidents whether small or serious, the person shall be given first aid immediately in the workshop before he is sent for proper treatment in the hospital.
- The first aid box with necessary general medical shall be made available in the workshop.
- A trained person shall attend the injured person with proper care and attention.
- Care shall be taken by the management to send the injured person immediately to the hospital for better treatment.
- All the accidents whether small or serious shall be reported to the concerned safety officer,

8. Safety Training

- Even-though the safety awareness programe is brought forth to the workmen, a proper training in first aid and fire fighting shall be provided to them in general.

- As far as first aid is concerned, dew personnel from stores and workshop shall be trained in clinical practice.
- They shall be trained to clean the wounds, understanding the type of wound, arresting the blood by proper bandaging, application of external medicine etc. and also, rescuing a person from critical condition.
- The fire fighting training shall be consisting of usage of fire extinguishers, putting off the different methods, rescuing the person cayght in fire (if any) etc.

9. Reports

- As it is understood that most of the accidents happen due to the violation of safety rules and procedures, every accident shall be brought to the notice of safety officer concerned and recorded in the ***accident report***.
- To minimize the accidents to the personnel, a document called ***safety violation report*** shall be maintained by the safety officer.
- This safety violation report shows the personnel frequently violating the safety rules.
- Such personnel shall be warned and brought to the notice of the management for futher action.

Site Safety on Electrical

1. All the electric issues shall be proceeded by electrician at site, his skill shall meet the size of project.
2. Before using electric equipment, shall wear the safety provision and to check the equipment operate well, No device allowed to work with fault. Switch off the power when stop of device operation
3. No work allowed under higher or lower voltage cable, no operation shed, stock pile and others allowed at such place as well.
4. Using electric comply with “three pole five wire rule”, the wire shall comply with the relevant requirement, And the color of wire shall be distinguished , L1 pole yellow , L2 pole green, L3 pole red, earth pole block, protective pole green/yellow,. No integrating all wire in one core allowed.
5. Each device with its own switch board. And it shall be inspected and maintained once a month.
6. Protective melt wire shall match the capacity of equipment. No combine a few melt wire replacing one melt wire allowed. No other metal replacing melt wire allowed.
7. Height fixing of lighting equipment shall be more than 3m outdoor, and more than 2.4m indoor, high power halogenate sodium lamp shall be more than 5m.
8. The voltage for hand-hold lamp shall be less than 36V,
9. Trolly wire shall fixed on the special pole, No other replacement like tree or scaffolding allowed. Wire pole shall be made from wood, concrete or bamboo.
10. The emergency lighting equipment shall be prepared at the project site.

Site Safety rule for hoisting

a. Comply the 6 disciples for safety, when entering the site.
b. Inspect clamp, mechanical rigging, stationary ring in order, and trial of hoisting required, before erection.

c. The command and signal must be uniformed, when hoisting.
d. Operator at high altitude shall tie safety belt, the base for safety belt tied to shall stable.
e. No drink is required for high altitude operator, No joking when working at high altitude.
f. Dressing simply when work at high altitude, No hard bottom shoe, high heel shoe, plastic shoe and shoe with nail permitted.
g. Strong ladder provided for climbing, worker climbing to high altitude shall tie with falling-prevent device.
h. Stop hoisting and high altitude operation, when gale above 6 degree, thunder storm or heavy fog.
i. No people around allowed. When disassembly lifting strand.
j. Force used shall be uniformed, slow, and with steady support, when use tommy bar. Avoid slipping-off occurred.
k. No releasing safety belt allowed, before position, well weld or fixed.
l. No long time hoisting and stagnation of heavy object.
m. The strand for hoisting is not allowed to touch electrical wire and electric welding wire or fraction with hard object.
n. Clean snow before high altitude operation and climbing in winter.
o. No excess swing, no impaction to other object, when hoisting and transferring of objects.
p. Comply with the relevant safety requirement in “ten prevention for hoisting”.

Site Safety rule for HSFG installation

1) 1 Check the type and size of bolt to comply with drawing indication, ensure no damaged bolts, before installation of high strength bolt.
2) No force-in bolt to bolt hole (e.g by hitting), No gas scalpel to enlarge the bolt hole, installation of high strength bolt.
3) Screwing the bolt in sequence for group of bolt connection along the contacted surface, from center to outer and insert direction in order, and must tighten the bolt in the same day, when install the high strength bolt.
4) Keep the frication surface dry and no work in raining weather, when install the high strength bolt.
5) The first, second and final screwing of high strength bolt shall be in the same day, and no final screw allowed in the raining day.
6) Operator shall wear safety belt, work basket and ensure tied properly
7) Electrical wrench, crowbar, positioning key etc shall be protected by safety wire, shear off the head of bolt shall put into the workbasket.

Site Safety rule for coating

1) There shall be good ventilation system at site, if the condition not so, the ventilation equipment shall be provided before painting.
2) Using brush, subdue, blaster clean the rust, shall avoid to touch the eye and wear the protective glasses.
3) When coating the paint harm body, the protective respirator shall be wear, if it harm eye, the shutter glasses shall be provided.
4) When coating of anti-rust red lead, prevent lead poisoning, Operation with respirator.
5) Coating of nitryl or volatility flammable base paint, the fire shall be avoid around.
6) Operation with safety belt when work at high altitude.
7) In order to avoid the static centralization, the container of pain shall connect to earth by wire.
8) When coating large area, (Indoor) lighting and electric device shall be provided according with the fire proofing level and the law of fire safety.

9) When operators feel headache, he shall leave from the working location and going to the ventilation space, if the feeling no change, seeing doctor is required.
10) When mixing the paint or take the flammable object, no smoking allowed, the used oil, cotton yarn, and brush is not allowed to throw away to site.
11) There shall be tie when using A shape stair, and not allowed to stand on the top step, no standing on it to move allowed, the slip stop shall be provided when working on the smooth floor.
12) Not allow to change the side to work on the A shape stair
13) No fire close to the paint storage, there shall be fire extinguish nearby and no sunlamp around.
14) When mixing the paint and coating work, no flowing allowed, to aware the wind direction to avoid affect the surrounding environment, Enclosing provision needed.

Job Safety Analysis

-- END --

CHAPTER 9 - LIST OF CLIENTS AND IN SERVICE EXPERIENCE

9.1) DESIGN & BUILD PROJECTS

S/No.	Name of Project	Name of Client	Completion Date
1	Design and Build of Laffan Aluminum Factory at New Industrial Area (Main Contractor)	Mr A Hameed Mostafawi	On-going
2	Design and Build of QBC Steel Engineering Factory at New Industrial Area (Main Contractor)	QBC	On-going
3	Supply and Installation of Super Structure for Coco Cola Factory at New Indstrial Area	Coco Cola	On-going
4	Design and Build Maitenance Workshop at QP Dukhan Support and Service Area (Main Contractor)	Weatherford	On-going
5	Design and Build Engineering Workshop at QP Dukhan Support and Service Area (Main Contractor)	Gulf Drilling International	Dec-13
6	Design and Build GDI HQ Building at Dukhan DSSA (Main Contractor)	Gulf Drilling International	Mar-13
7	Design and Build Lulu Precast Factory at Mesaieed Industrial Area (Super Structure Subcontractor)	Redco International	Jan-13
8	Construction of New Factory at New Industrial Area for DOPET (Civil & Structure subcontractor)	Doha Petroleum Construction	Feb-12
9	Design and Build of Warehouse Faciliates at New Industrial Area for BCEC (Main Contractor)	Black Cat Engg & Construction	Jan-12
10	Design & Build of Tee Hangar at Qatar Equestrian Federation (Main contractor)	Qatar Olympic Committee	Nov-11
11	Steel Bridge for NDIA CP10 (1.5km, 3 Bridges)	Oversea Bechtel Inc / SGW JV	Jan-10
12	Steel Work for NDIA CP16 (17 Buldings, 27,000m2)	Oversea Bechtel Inc / Punj Lloyd Ltd	Oct-10
13	Design & Build of Warehouse Faciliate at DSSA (Main Contractor)	Gulf Drilling Internationa	Aug-10
14	Design & Build of One Workshop at Ras Laffan Industrial City (Main Contractor)	Doha Petroleum Construction	May-10
15	Steel Structure - 15sty Hleytan Office Tower at Cornuche Rd	Dubai Islamic Bank / KG	Dec-08
16	Steel Structure - 44sty Doha Highrise Office Tower at Corniche	H.E.Sheikh Saud Al Thani / China State	Jun-09
17	Steel Structure for 5sty Fitness Center at Corniche Rd		Jul-09
18	Design & Build of 3 Blk Two Sty Accommodation Blgs at DSSA (Main Contractor)	Black Cat Engg & Construction	Apr-08
19	Design & Build Steel Roof for Swimming Pool and Auditorium at Al Maha School	KG	Jul-10
20	Design & Build of 6 Skylight Structure at Al Maha School	GSSG Group	Aug-10
21	Modification Work for Steel Structure for Anode Service Plantat at QataLum	Kempe	Mar-10
22	Metal Clading Installation for Workshop and Emergency Center at QataLum	Alsc JV	Jun-10
23	Design and Installation of Mezzanine Structure at Doha College	Rumaillah Services	May-09
24	Installation of Workshop, Warehouse and Accommodation Buildings at Al Khor	CEM Spa	Feb-10
25	Construction of Accommodation Buildings at Al Khor	Astaldi	Feb-10
26	Installation of Pipe Rack, Shelter at Stripping Plant, Dukhan	QP / BCEC	Mar-10
27	Design & Construction of 3 Steel Store Building at Shaniyah	PEO / Domopan	Apr-10
28	Installation of Warehouse at NDIA CP60	OBI / Cat International,	May-10
29	Installation of Warehouse at ST10 Industrial Area	National Import & Export	May-10
30	Installation of Canteen Building at Ras Laffan Safety College	QP/SEG	Jun-10
31	Fireproofing for Steel Bridge at Doha Sport City	Aspire / Alisaz Int'l	Dec-08

CHAPTER 9 - LIST OF CLIENTS AND IN SERVICE EXPERIENCE

9.2) STEEL STRUCTURE PROJECTS

S/No	Project Description	Construction Period	Client	Project Cost	Expected Completion Date
1.	New Doha International Airport Contract Package 16 - Fuel System Description: Canopy steel roof for 17 building units Tonnage: 2400 ton	12 months	NDIA (Punj Lloyd Ltd: PM, Mr N R Das - 5573487)	32,820,000	Dec 2009
2.	New Doha International Airport Contract Package 16 - Fuel System Description: Standing seam metal roof for 17 building units Area: 31,400m2	9 months	NDIA (Punj Lloyd Ltd: PM, Mr N R Das - 5573487)	11,680,000	Februrary 2010
3.	New Doha International Airport Contract Package 10 - Bridge Description: Approach Light Bridge Length: 1.70km	8 months	NDIA (SGW JV: PM, Mr Choo -left)	4,752,000	Aug 2010
4.	Al Maha School Description: Steelwork, metal work & skylights Area: 3,712m2	6.0 months	GSSG (CEO, Mr Prodeep - 4637334)	3,920,000	Oct 2011
5	Domestic Waste Management Centre Description: Steel roof, spiral stair, ladder and handrail QTY: 1,200m2 roof, 2 steel Stair; 36 cat ladder	4.0 months	Keppel Seghers (MM -Mr Victor, 33012013)	2,165,000	Oct 2012
6	Design & Build 2 Entrance Gate At Qatar University Description: Steel roof, ladder and handrail QTY: 2,200m2 roof, 2 Steell Stair; 8 cat ladder	6.0 months	QU (PM -Mr Karim, 55995477)	2,020,000	Dec 2013
7	Design & Build Shooting Ranges & Training Complex At Lehsaynia Description: Steel roof, spiral stair, ladder and handrail QTY: 2,500m2 roof, 9 Spiral Stair; 21 cat ladder	6.0 months	KG / PEO (PM -Mr Nick, 5562-1943)	2,851,000	May 2014
8	Governmental Building (1) at Musheireb Package (A) Description: Steel Support for Seats and Stage at Auditorium Area: 760m2	2.0 months	Sarteur (PM -Mr Paolo Carassia, 55958253)	1,280,000	On-going

CHAPTER 10 - Prequalification Occupational Health and Safety (OH&S) Questionnaire

1	Contractor Details	
	Company Name	**HXsteel International Engineering W.L.L**
	Address	**7th Floor, IBQ Building at Airport Rd, Doha, Qatar, P.O.Box 23917**
	Telephone No.	**+974 - 44215631**
	Email address	**info@hxsteel-engineering.com**
	Website	**www.hxsteel-engineering.com**

2	Occupational Health and safety Arrangements	
	Do you have an OHS Policy ? (if yes, attach a copy)	Yes ⊗ No ○
	Do you have a Corporate OHS Manager ? (if yes, attach CV)	Yes ⊗ No ○
	Do you employ an OHS Consultant? (if yes, attach details)	Yes ⊗ No ○
	Do you have an accredited OHS Management system ? (if yes, attach details)	Yes ⊗ No ○
	Do you have an OHS Risk Assessment system ? (if yes, attach details)	Yes ⊗ No ○
	Do you have an OHS Training Program? (if yes, attach details)	Yes ○ No ⊗
	Do you have an OHS Auduit Program ? (if yes, attach schedule)	Yes ○ No ⊗

3 **Contractor Occupational Health and Safety Performance. Please provide details for the 3 most recent years, if you need clarification of the performance criteria, please ask**

Perforamnce Criteria	Year	2008	Year	2009	Year	2010
Number of man hours worked	**129600**		**244800**		**168480**	
Number of incidents	**0**		**0**		**0**	
Number lost time injuries of more than 2 days off work	**0**		**0**		**0**	
Number of fatalities (attach brief description of each)	**0**		**0**		**0**	

4 **Contractor Confirmation**

I , hereby confirm that the details in this Prequalification OH & S Questionaire are an accurate description of the Company's Occupational Health and Safety arrangements and performance

Name	Signature	Date
Zhang Hua		08-Dec-10

Chapter 11 - Project Track Record

New Doha International Airport CP16

(HXsteel Delivered Both Structural Steelwork and Cladding for **Total 18 Buildings)**

GSE Shelter

Fuel Farm Workshop

Distribution Building

Chapter 11 - Project Track Record

New Doha International Airport CP16

(HXsteel Delivered Both Structural Steelwork and Cladding)

Fuel Farm Depot Office

New Doha International Airport CP10

(HXsteel Delivered the Entire Steel Bridge Structure, 3 Bridges at 1.7km)

South Side Bridge

North Side Bridge for Approach Light

Chapter 11 - Project Track Record

Steel Structure for 15sty Hleytan Office Tower at Old Salata

Steel Structure for 5sty Fitness Centre at Corniche Road

It is being designed as Transferring - Down Hung Structural system (all perimeter structure down-hung from roof truss), the tranfer beam span = 26m, transfer beam depth = 2.5m

Chapter 11 - Project Track Record

Steel Structure for QU Gate

Steel Structure for Shooting Range at Lehsaynia

Steel Structure for Coco Cola Factory at Industrial Area

Chapter 11 - Project Track Record

Design and Construct 3 Blk of Double Sty Accommodation Building at Dukhan

Design and Construct Warehouse with Mezzanine at Dukhan

Design and Construct One Workshop and One Warehouse at Al Khor

Chapter 11 - Project Track Record

Design and Construction of Tee Hangar for Qatar Olympic Committee

Include Carwash, Oil Change
Mechnical workshop facilites
mezzanine floor = office

Chapter 11 - Project Track Record

Installation of Oil Stripping Plant at Dukhan for Balck Cat Engineering

Construction of Emergence Centre Building for QataLum

Construction of Cold Storage Building for Qatar Import and Export Co.

Chapter 11 - Project Track Record

Design and Build of 3 Stores at Shahanya

Design and Build of Warehouse at NDIA for Cat Int'l

Design and Build of GDI Workshop at DSSA

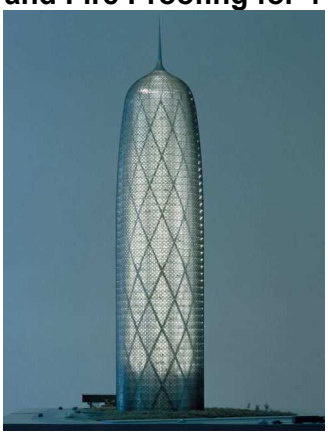
Design and Build of QBC Steel Engineering Factory at Industrial Area

Chapter 11 - Project Track Record

Design and Build of Workshop and Dukhan DSSA for BCEC

Design and Build of Workshop at Ras Laffan for DOPET

Installation and Fire Proofing for 44sty Office Tower at West Bay



Fire Proofing for Link Bridge of Torch Tower

Chapter 11 - Project Track Record

Design and Build MACE NDIA Project Office

(Total-subcontract from others)

Design and Construct Steel Roof for Lulu Precast

(18,700m2)

Construct Factory Platform for Jersey Glass

Chapter 11 - Project Track Record

Construction of PEB Building for Coco Cola Factory

Design and Build of SEW Factory

Construction of Stands for Msherieb Auditorium

Chapter 11 - Project Track Record

Design and Build of Laffan Aluminum Factory

Design and Build of Doha Technical Laboratiry

Design and Build GDI HQ Office at DSSA

Chapter 11 - Project Track Record

Design and Build of Steelwork for Budget Terminal Building at Changi Airport, Singapore

Design and Construction of Steelwork for NTU New Campus, Singapore

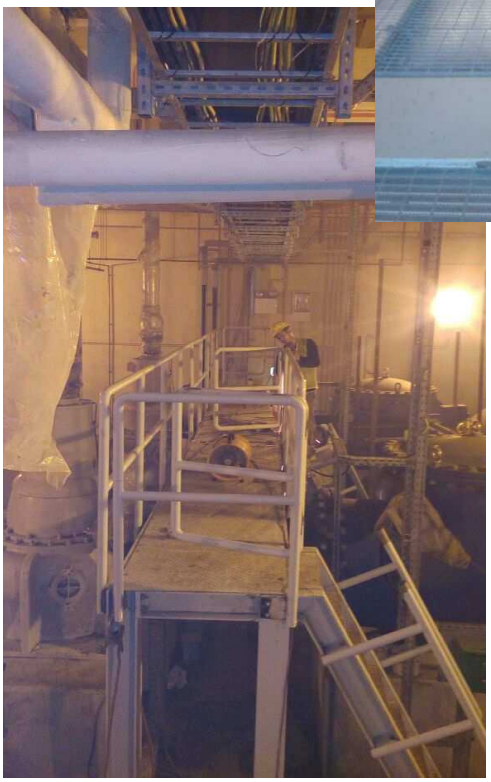
Chapter 11 - Project Track Record

5 No of Steel Trees @ North Gate Mall

Metal Work Contract @ Lusail CP1 Infrastructure

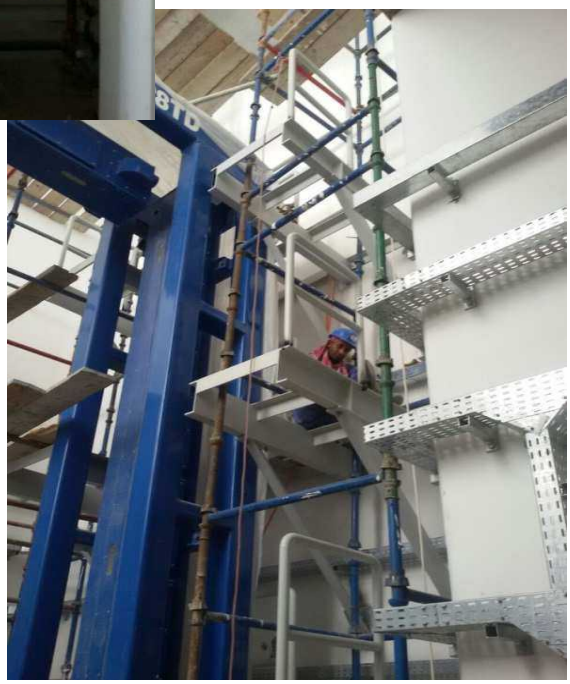
Chapter 11 - Project Track Record

Metal Work Contract @ Lusail CP1 Infrastructure

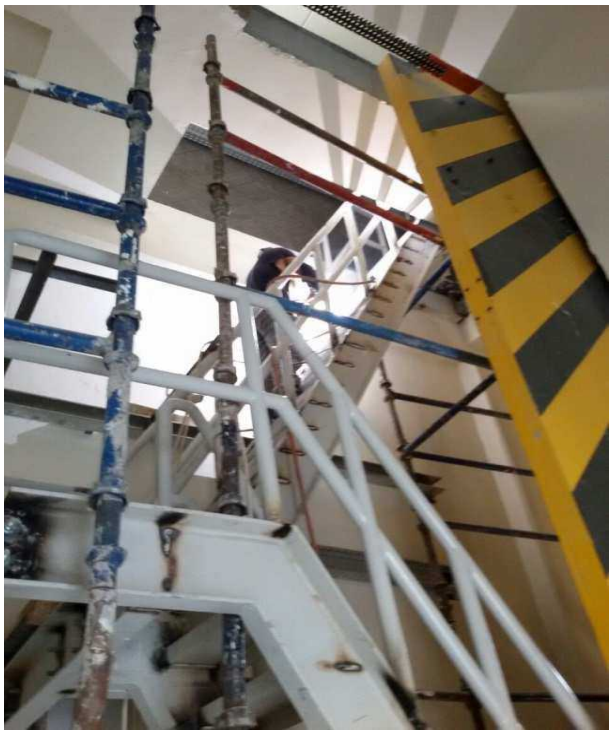


Chapter 11 - Project Track Record

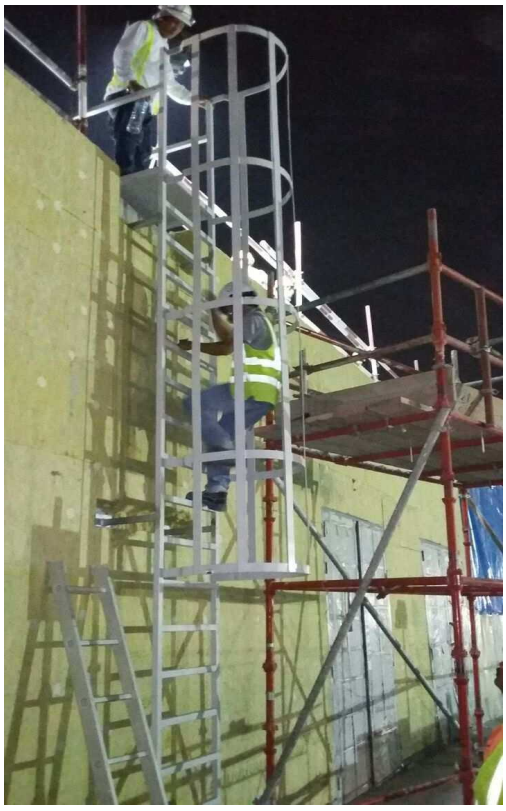
Metal Work Contract @ X Facilities at Abu Samura (Saudi Border)

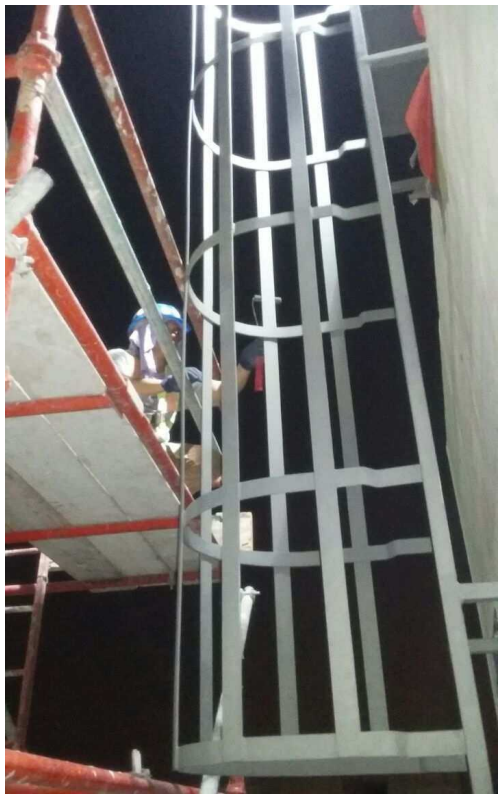


Chapter 11 - Project Track Record

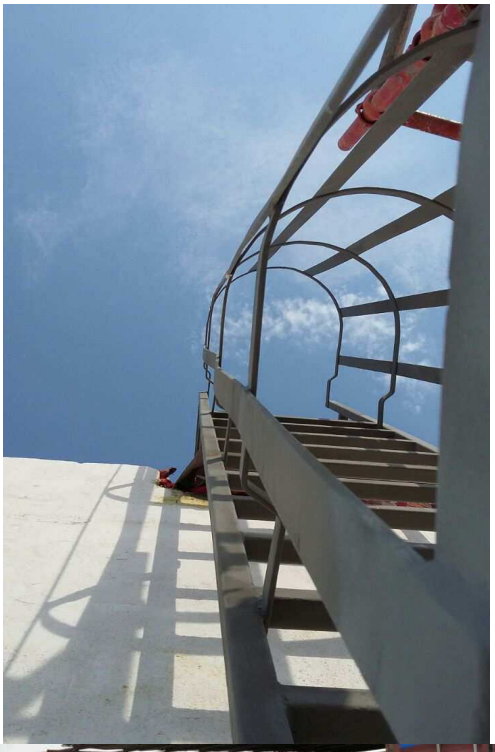


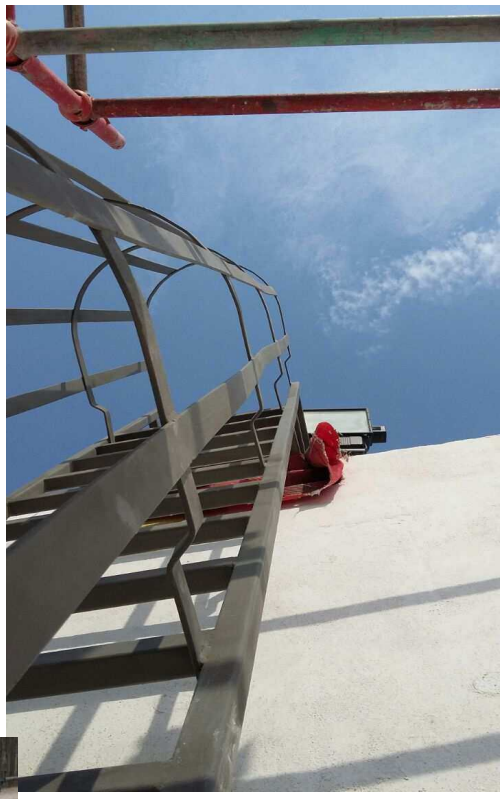
Metal Work Contract @ People Mover System - Education City





Chapter 11 - Project Track Record





EPC Fire Waterline and Permanent Power Supply at DSWMC