

COMPANY PROFILE

السيرة الذاتية للشركة

تأسست شركة أعمار الحديد للمقاولات منذ 1429 هـ ف مدينة الدمام. شركة ذات مسؤولية

ي
تعتبر محدودة , وقد وقامت خلال السنوات الماضية بتنفيذ مجموعة من المشاريع الخاصة

(أعمار الحديد) نموذجاً لتنفيذ العمال ف قطاع المقاولات. حيث ساهمنا بدورنا بالمشاركة ف

ي

تطلعات وتوجهات المملكة العربية السعودية للبناء والنهضة ، حيث بدأت مرحلة التوسع
باهتمام أكبر لمواكبة التطور والتسارع العمران للمملكة. لقد وضعنا نصب أعيننا تطوير وتقديم

ي
أحسن الخدمات من أجل منشآت عمالنا وذلك آمال ف بناء جسور الثقة بيننا وبين عمال

ي
رشدتنا ومنحنا الثقة التامة الحقيقية من قبلهم ونحن هنا يشنا غاية الشور أن نقدم لمحة

مختصرة عن الشركة

مع تمنياتنا بنجاح جميع أعمالنا

Biography of the company:

Emaar Al-Hadeed Contracting Co. was established since 2008 in the city of Dammam. A limited liability company has done over the past years the implementation of a set of special projects.

Considered (EHCC) model for the implementation of business in the construction sector. Where we have contributed our part to participate in the attitudes and aspirations of the Kingdom of Saudi Arabia for the building and the Renaissance, where greater attention began to expand to keep up with the stage of development and the acceleration of urban Kingdom. We have put in mind to develop and provide the best services to our customers and constructors so in the hope building bridges of trust between us and our

Customers and give us the real full confidence of them here and we are pleased very pleased to provide a brief overview of the

The company successfully with all of our wishes.



LEGAL DOCUMENTANTS





وزارة التجارة والاستثمار
Ministry of Commerce and Investment

الرقم: ٢٠٥٠٠٦٠٢٣٧
التاريخ: ١٤٢٩/٠٥/٠٧ هـ

شهادة تسجيل شركة

الاسم التجاري للشركة: شركة اعصار الجديد للمقاولات
نوعها: ذات مسئولية محدودة مختطة
مدة الشركة: ٢٥ سنة
مقرها الرئيسي: الدمام / حي الحمضية / طريق الأمير نيف بلقريب من الحرم بلازا
ص.ب: ٧٦٢٨ الرمز البريدي: ٣٢٤٣٢ هاتف: ٨٣٧٥٠٤٧ فاكس: ٨٣٧٥٢٥٠
النشاط: تنفيذ عقود مقاولات إنشاء وصيانة المباني وأعمال الطرق والجسور والقيام بأعمال تركيب وصيانة لمعدات لصناعية بموجب ترخيص لهيئة العامة للاستثمار رقم (١٢٢٠٣٠٠٤١٠٢٩) وتاريخ ١٤٢٩/٠٥/٠٧ هـ

رأس المال: ١٥٠٠٠٠٠ ريال سعودي
المديرون: محمد سعد محمود الغزالي
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١١

سلطات المدير المديرون: حسب ما نص عليه عقد لشركة

يشهد مكتب السجل التجاري بمدينة الدمام بأنه تم تسجيل الشركة المذكورة أعلاه بمدينة الدمام بتاريخ ١٤٢٩/٠٥/٠٧ هـ
وتنتهي صلاحية الشهادة في: ١٤٥١/٠٣/٢٩ هـ بموجب



مدير السجل التجاري الشرائع: التوقيع: محمد بن ناصر الجراح





الهيئة العامة للاستثمار
SAGIA

ترخيص استثمار خدسي Service Investment License



رقم المنشأ:
رقم الترخيص:
تاريخ الإصدار:
م 1429/04/10

(2000138)
(1122030041029-01)
تاريخ الانتهاء:
م 1445/03/26

م 2008/04/16 86719

المركز الرئيسي

حالة الترخيص: جديدة
اسم الترخيص:
الكيان القانوني:

شركة اعمار الجديدة للمقاولات
شركة ذات مسؤولية محدودة

السلوك:

رأسمال المساهمين: 12,000,000 ريال سعودي

م.م. 1

الرمز البريدي: 32432

الهاتف:

الفاكس: +96656627585

+966138375250

اسم صاحب/ أصحاب الترخيص:
سائد ابن سعيد ابن محمد آل موسى الشامدي
الصفة:
المهنية:
السعودية:

الحصة:
10%
مئتان وأربع مئة ألف ريال سعودي

رقم المستثمر الأجنبية:
للمستثمرين:
90%
300111

النشاط: تلبية عقود مقاولات إنشاء وصيانة المباني وأعمال الطرق والجسور، والتقيام بأعمال تركيب وصيانة المعدات الصناعية.

عنه إبراهيم بن صالح النوييل
تاريخ التوقيع: 1440/03/07



هيئة العامة للاستثمار
SAGIA
Ministry of Economic Development
and Planning

تاريخ الطابعة: 1440/03/07 م. المعاملة: م. أبراهيم ابن عبد الرحمن العمر

يمكنك التحقق من صحة صلاحية الشهادة عبر زيارة الرابط
1 - 2
ممكنك التحقق من صحة صلاحية الشهادة عبر زيارة الرابط
<https://eservices.sagla.gov.sa/verify>



Membership No :98210

Classification: Second

Date of Issue: 28/11/2018

Asharqia Chamber Certifies that :

Emaar iron Contracting Company

Commercial Register No (2050060237)

Registered for this year

The certificate expires on 11/10/2023

P.O.Box SEEHAT

التوقيع

رقم العضوية: 98210

الدرجة : الثانية

تاريخ الاصدار: 1440/03/20

شهادة الغرفة التجارية الصناعية بالمنطقة الشرقية بأن:

شركة اعمار الحديد للمقاولات

المقيدة بالسجل التجاري / الترخيص رقم (2050060237)

مشاركة لدينا لهذا العام

ويُنْهَى سريان هذه الشهادة في 1445/03/26

صندوق البريد سيهات

صدرت في: 1440/03/20 الموافق: 2018/11/28 م

رقم السند: 1-455512365 / 60 تاريخ الشراك: 1429/05/07 هـ - 13510

Unified number 92000 1361

Fax 013 8570607



نعمل معاً... لغد أفضل

الرقم الموحد: ١٦٣٠٠٠٠٠٠٠

فاكس: ٠٦-٨٥٧٠٠٧٠٠





رقم الشهادة : ١٠٤٠٣٣٨٦٣٣

التاريخ : ١٤٣٩/١٠/١٨ هـ

الرقم المميز : ٣٠٠٥٢٠٣٧٨٣



الهيئة العامة للزكاة والدخل
GENERAL AUTHORITY OF ZAKAT & TAX

المملكة العربية السعودية
الهيئة العامة للزكاة والدخل
GENERAL AUTHORITY OF ZAKAT & TAX
(١٨٥)

فرع الدمام
شهادة
CERTIFICATE

تشهد الهيئة العامة للزكاة والدخل بأن المكلف / شركة اعمار الحديد للمقاولات

شركة رقم ٧٠٠١٥٥٤٥٦٢ وسجل تجاري رقم ٢٠٥٠٠٦٠٣٣٧ رخصة رقم ٢٩-٤١٠٣٠٠٣٢٣-١٠

قدم إقراره عن الفترة المنتهية في ٢٠١٧/١٢/٣١ م

وقد منح هذه الشهادة لتمكينه من إنهاء جميع معاملاته بما في ذلك صرف مستحقاته النهائية عن العقود.

يسري مفعول هذه الشهادة حتى تاريخ ١٤٤٠/٠٨/٢٥ هـ الموافق ٢٠١٩/٠٤/٣٠ م.

(الخامس والعشرون من شعبان ألف وأربعمائة وأربعون هجري)

الفروع (١) في النموذج المرفق



الختم الرسمي

هذه الوثيقة مستخرجة من النظام الآلي ولا تحتاج إلى توقيع

لا يعتد بهذه الشهادة إلا بعد التحقق من موقع الهيئة www.gazt.gov.sa



MANAGEMENT RESPONSIBILITIES



QUALITY ASSURANCE AND QUALITY CONTROL:

The Company has established the quality management system as an integral part of our Business to comply with project requirements and to maintain the highest standard in working environments.

Company's Quality Management program is supported by Quality Manual, procedure manual.

EHCCO Quality Policy/Plan:

1- It is the police of Emaar AL-Hadeed Cont. Co (E.H.C.C) to

Perform all engineering services in conformance with predetermined requirement.

Quality control shall be a first among equals along with schedule and cost control. Every individual and each engineering unit shall adopt standard of performance that gives conformance with these requirements meanwhile achieving first time correctness. The quality of all project work will be monitored to ensure that it conforms to accepted standard and practices and that it is free from errors omissions and discrepancies.

E.H.C.C has prepared a complete QA/QC manual for in-house activities following are some excerpts from the manual.

2 -Description of Responsibilities

The completeness, accuracy, and appropriateness of the design data methods being employed must be verified. A complete file of instruction, design criteria drawings, and other data will be maintained. Personnel will be assigned to check drawings and specifications. Additionally, various quality control activities will be delegated, and these activities will be monitored to ensure high quality on construction site.

Project Manager:

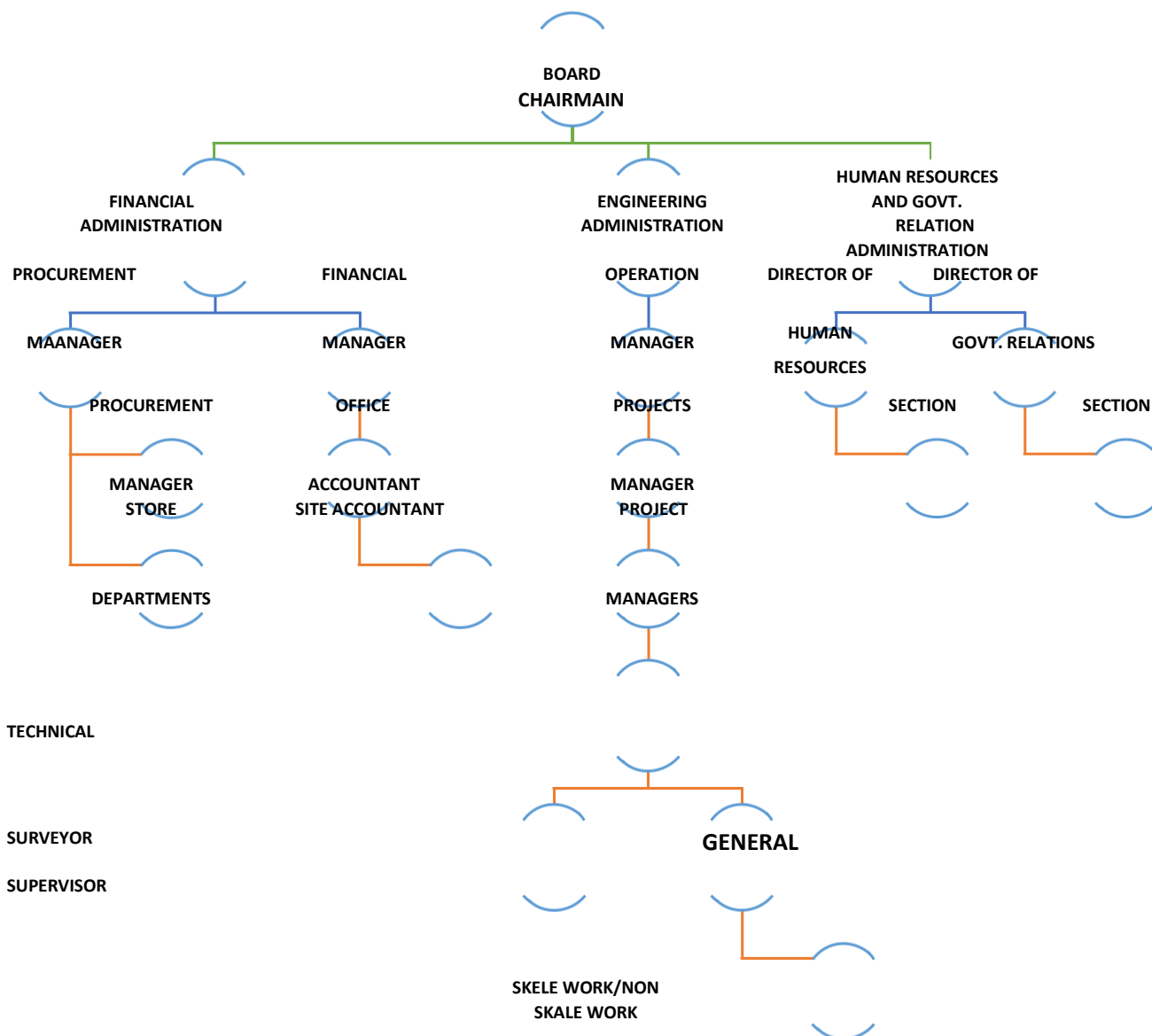
The project manager will provide general management direction to ensure that the project is performed in accordance with contract and client instructions within company and Client policies. The project manager will also participate in project QA/QC verification meetings and monitor the activities of the quality assurance program for all projects.

Project (Engineer):

The project engineer will provide instruction and monitor the day to day project execution and administration inclusive of all control, schedules and reports. The project engineer's prime responsibility is to achieve the successful completion of all project objectives accordance with the design philosophy and on schedule. The project engineer will schedule and conduct all engineering.

ORGANIZATION CHART







COMPANY PROJECTS



قائمة بأكي المشاري ع المنفذة :
List of Projects:

مجموعه شركات عبد القادر المهيدب وأوالده :

❖ مشروع إنشاء مستودعات بمساحة اجمالية 50250 م² و بقيمة (12.500.000 ريال)

2014م - 2015م

❖ Construction of warehouses with a total area 50 250 m² and the value of (12,500,000 SR) (2014-15).

❖ مشروع إنشاء مستودعات بمساحة اجمالية 9000

م² و بقيمة (5.500.000 ريال) .



2014م – 2015م

Construction of warehouses
with a total area of 9000 m²
and the

❖ ر . مشروع إنشاء مستودعات بمساحة اجمالية 9000 م² و بقيمة (5.500.000 ريال)

❖ Construction of warehouses with a total area 9000 m² and the value of (5,500,000 SR) (2014-15).

❖ ر . مشروع إنشاء مجمع سكن بمساحة اجمالية 25000 م² و بقيمة (18.800.000 ريال)

25,000 m² and the value of
(18.800. 000 SR) 2016.

Construction of a residential
complex with a total area of



❖ مشروع مركز هبة لمتلازمة الدون (الخيري) المرحلة الثانية بقيمة (14,000,000 ريال)

2017-2018 م (مشروع قائم)

❖ Hiba Down Syndrome Center Project a value of (14,000,000 SR).2017-

2018

ر شركة مصدر لمواد البناء: (Masder Building Material)

❖ مشروع إنشاء مستودعات ومكاتب إدارية بمدينة الملك عبدللا القنصادية برابغ بمساحة

150000 م2 وبقيمة (23,500,000) 2016 – 2017

❖ Construction of warehouse and administrative offices with
a total area of 150,000 m2 and the value of (SAR 23,500,000) (2016-2017).

❖ مشروع انشاء مستودعات ومكاتب إدارية بمساحة اجمالية 51000 م2 و بقيمة

(10.500.000 ريال) . 2013 – 2014 م

❖ Construction of warehouse and administrative offices
with a total area of 51,000 m2 and the value of (SAR 10,500,000) (2013-2014).

❖ ر

مشروع انشاء مستودعات ومكاتب إدارية بمساحة اجمالية 7520 م2 و بقيمة
3.500.000
ريال (2014 – 2015 م

❖ Construction warehouses and

administrative offices with a total
area of 7250 m2 and the value of (3,500,000 SR) (2014-15).

)

❖ ر

مشروع انشاء مستودعات ومعرض بمساحة اجمالية 10,650 م2 وبقيمة

5,030,000 ريال (. 2017 – 2018 م

❖ Construction warehouses and administrative offices with a total
area of 10,650m2 and the value of (5,030,000 SR) (2017-18).

ر شركة عبد اللطيف الفوزان وأوالده (Abdul Latif Al Fozan & Sons Group):

❖ مشروع إنشاء مجمع سكن بمساحة إجمالية 6215 م2 و بقيمة (6.500.000 ريال).
2010 م
ي

❖ **Construction of residential complex with a total area of 6215 m2
and the value of (6,500,000 SR) 2010.**

❖ **ر
ريال)
مشروع إنشاء مستودعات بمساحة إجمالية 4200 م2 و بقيمة (4,000,000**

2011م – 2012م

❖ **Construction of warehouse with a total area of 4200 m2 and the
value of (4,000,000 SR) 2011-2012**

شركة بيت المودة (: Bayt al Mawada Company

❖ جزئية من مشوهر المركز التجاري لبندة العزيزية بمساحة اجمالية 5000 م2 و بقيمة

(3.450.000 ريال) 2013م – 2014م

❖ Partial Project of the commercial Center of Panda Azizia a total area of 5000 m2 and the value of (3.450.000 SR) (2013-14)

شركة الشبي ع الاستثمارية Alsorayai Property Department) : (

❖ ر . مشروع البناء مستودعات بمساحة اجمالية 10.000 - 2٠ بقية 9,000.000 ريال

2010م – 2011م

❖ Construction of warehouses with a total area of 10.000 m2 and the value of (9,000,000 SR) 2010-11

شركة عالم الكهرباء : (Electricit world)

❖ مشروع البناء مستودعات للشركة عالم الكهرباء بقيمة (3,240,000 ريال) 2016 م -

2017 م

❖ Construction of warehouses for Electricity world value of (3,240,000 SR) 2016-17

شركة تطوير منيه الحياة للسياحة : (Life park)

❖ تنفيذ اعمال الكهرباء علل اربع مراحل ف منيه الملك فهد بالدامم بقيمة اجمالية

ر

ي

للمراحل (2,299,510 ريال) . 2018 م - 2019 م) مشوهر قائم (.

❖ Electricity works in king fahad park 4 stage the value (2,299,510)

2018-2019.

Our Clients:







A BlueScope Steel Company





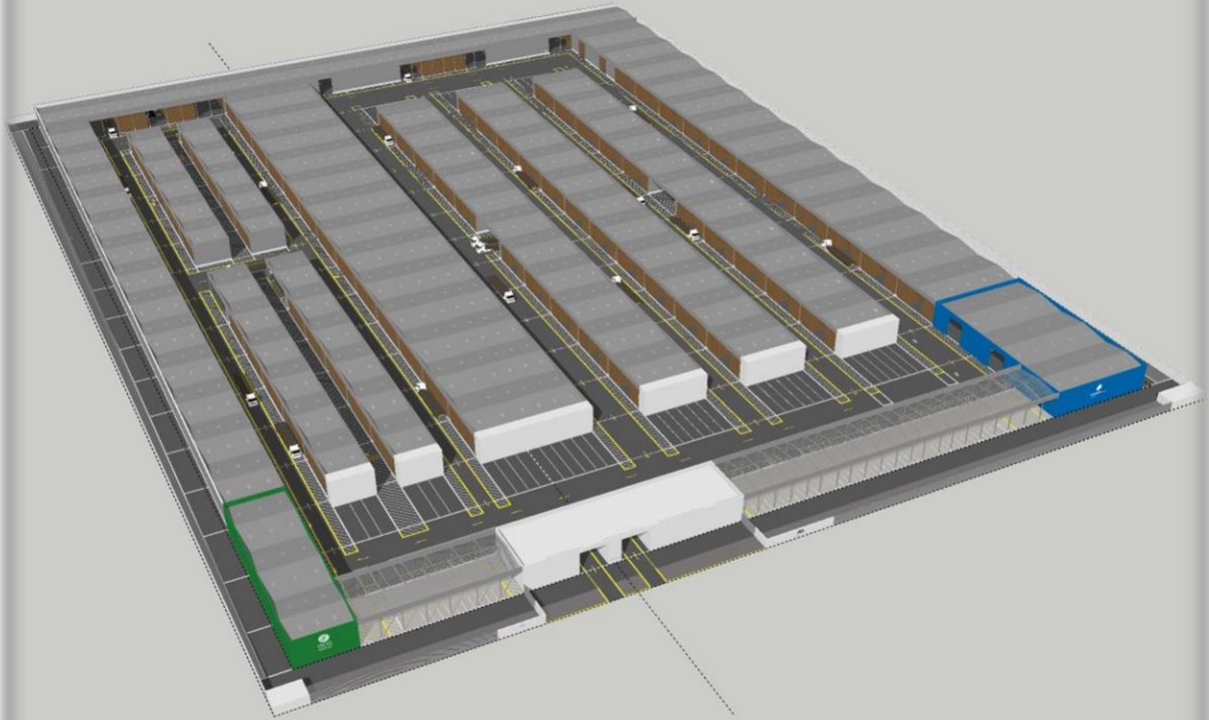
PHOTOS OF SOME PROJECTS:











Al Hada Park

Al Mubarak - Saudi Arabia August 24, 2017 108004-2-1-2

*Custom product manufacturing time for this project will be approximately 2 weeks from the time of L&S order acceptance.

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Dr. Haitham Taha

Play Saudi

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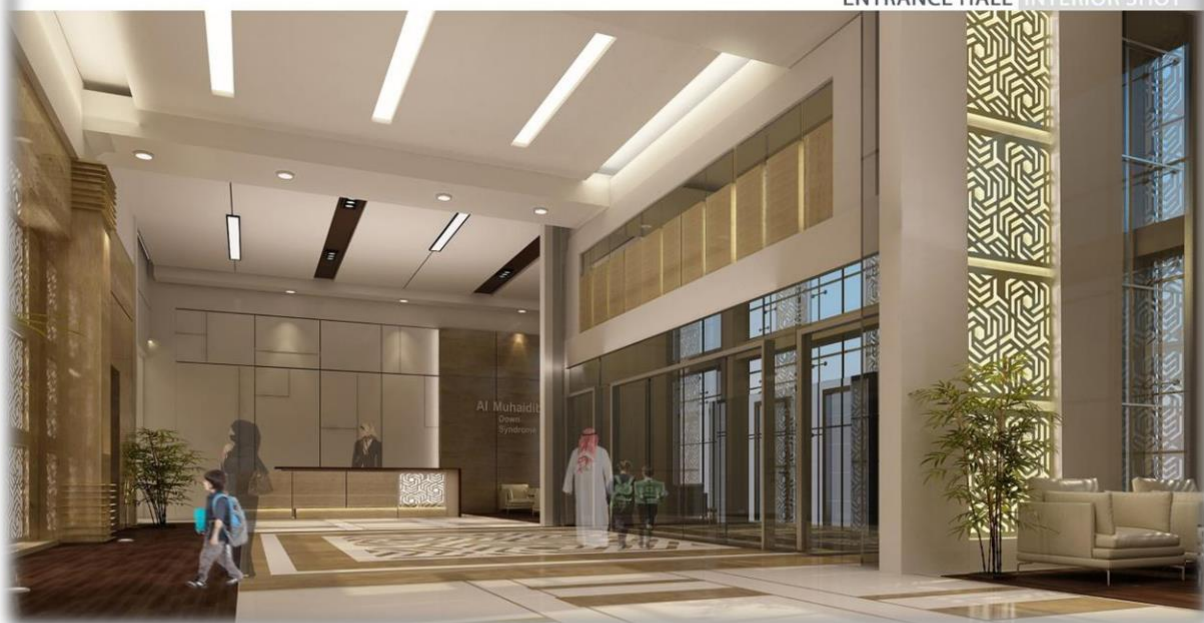
























AERIAL SHOT



MAIN SHOT

NASEEMAH AL HAWAGE



RESTAURANT

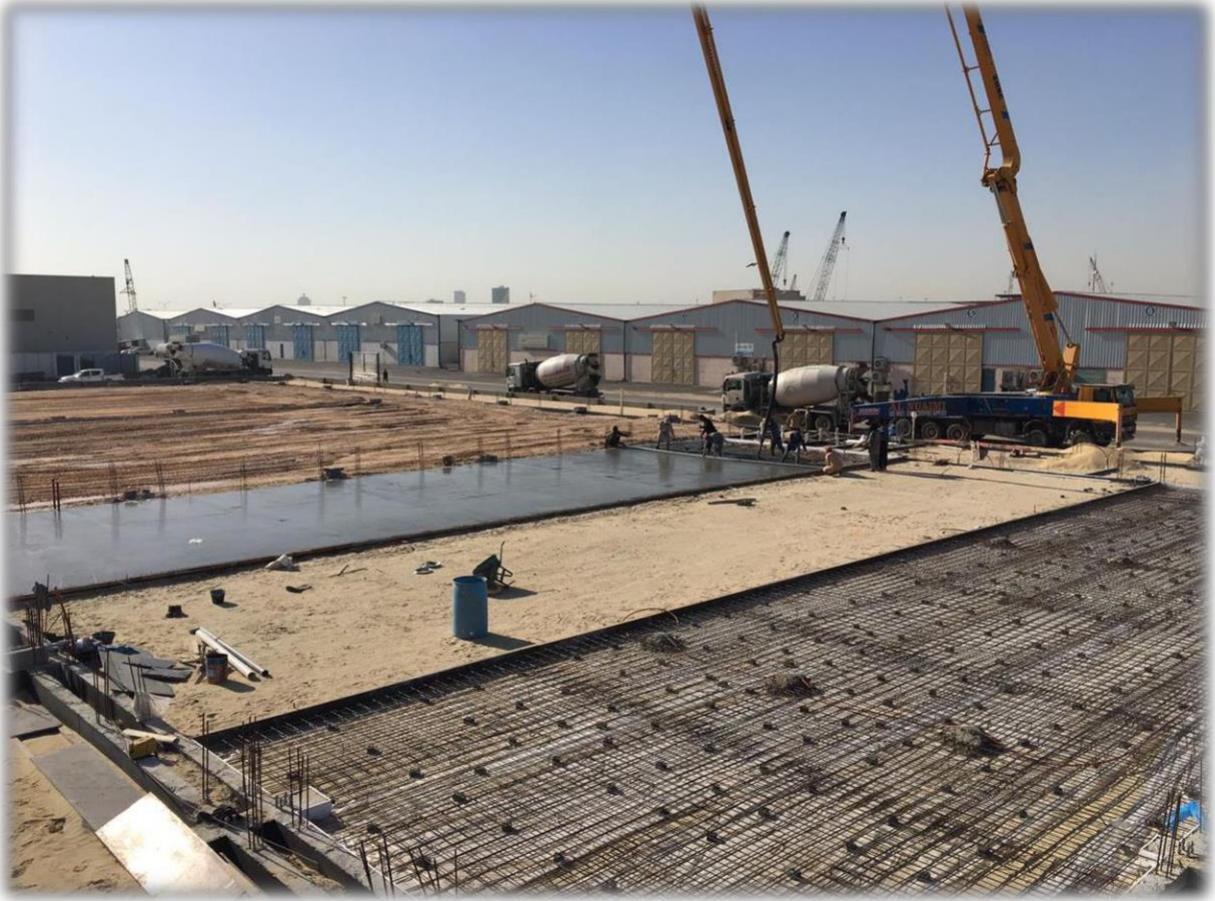
HADDAD DESIGN























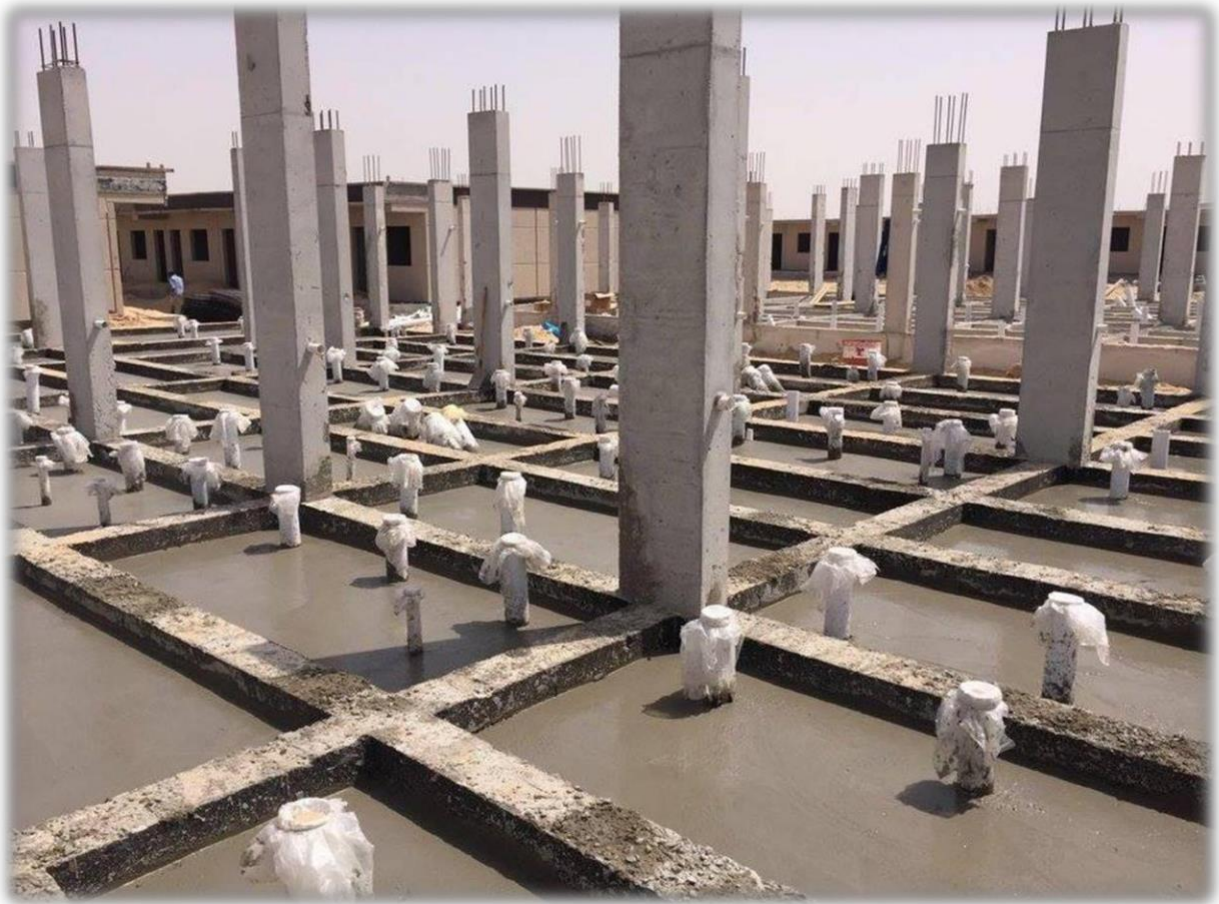
















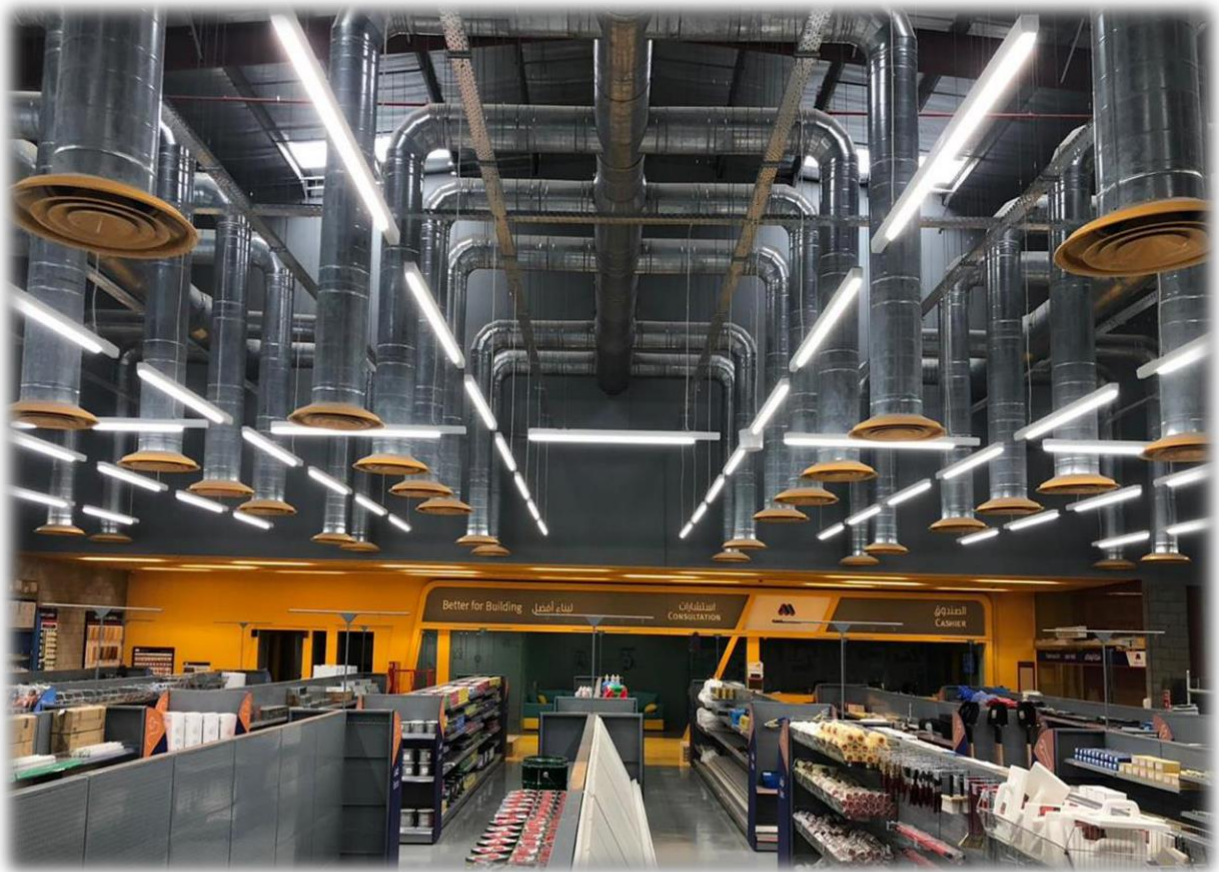












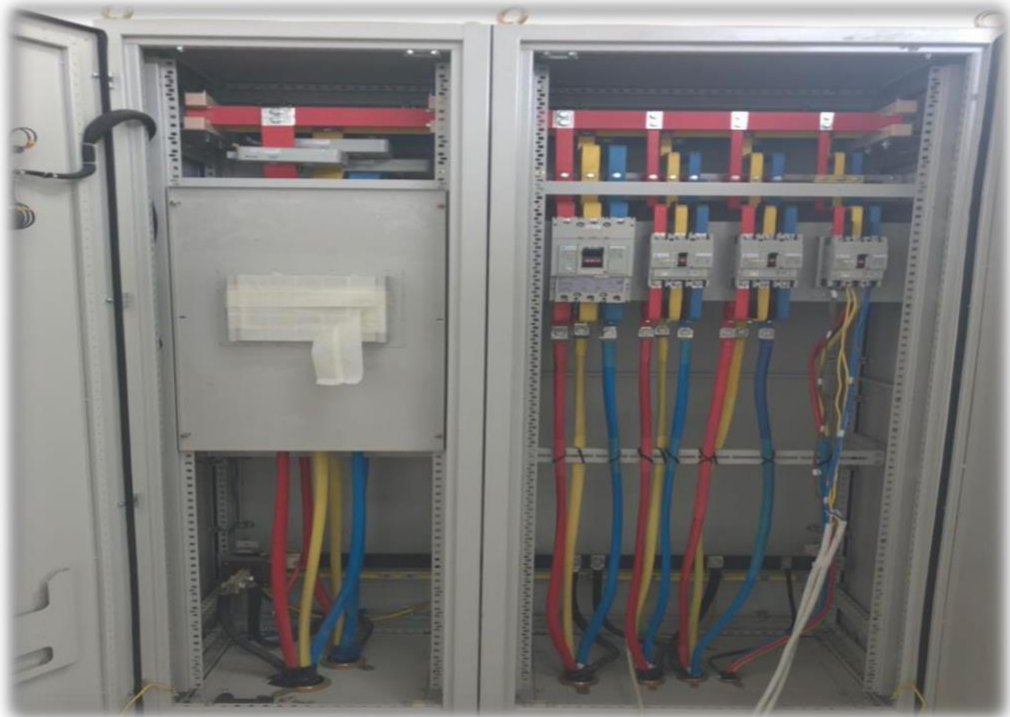








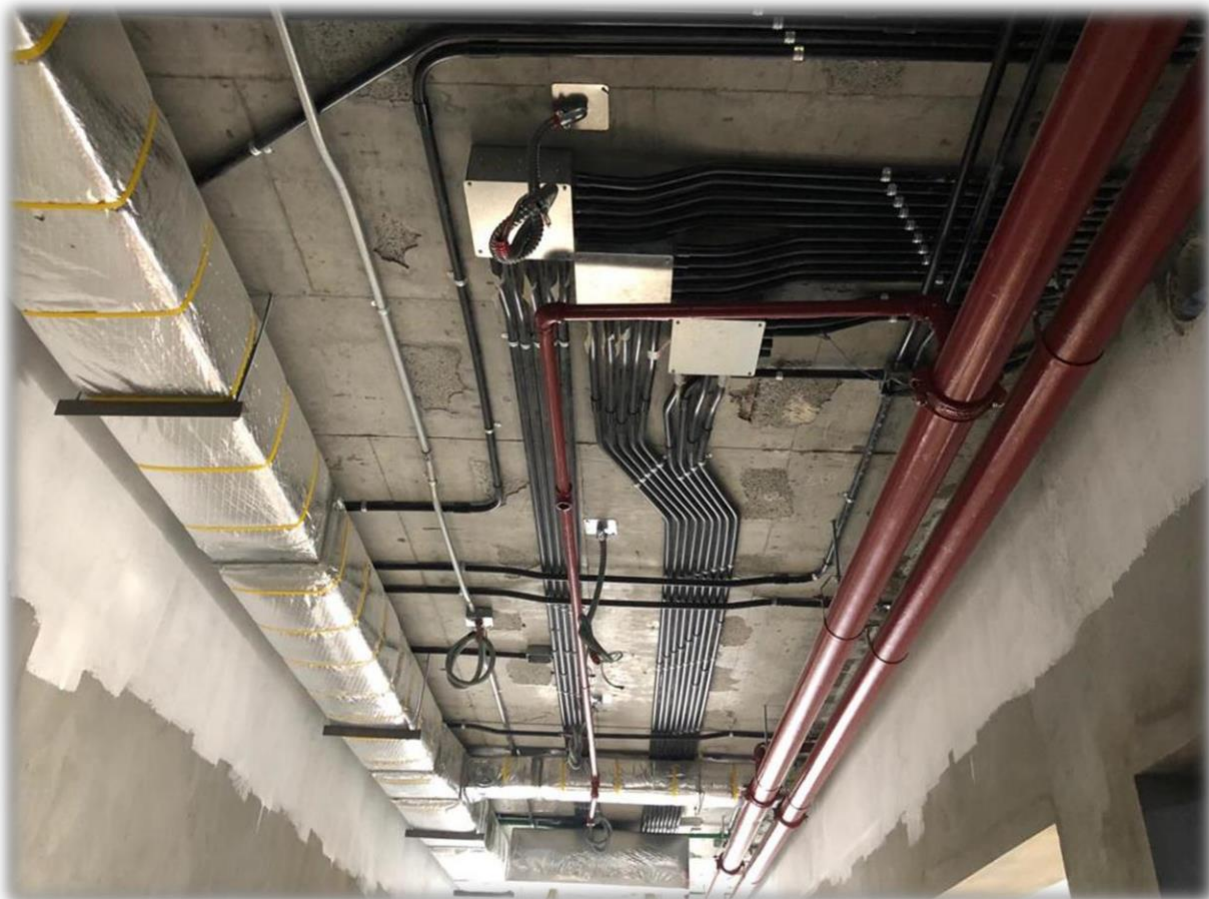
























METHOD OF STATEMENT



METHOD STATEMENT:

PURPOSE

The purpose of this method statement is to determine the prime construction guidelines as well as to execute the project in a professional organized manner. All points of this method statement shall be fully implemented during construction in order to achieve the milestones and timely completion to the required specification and quality, whilst maintaining safety standard at all times.

KICK-OFF MEETING

Immediately after receiving of Notice to Proceed (EHCCO), we will request a Kick-off Meeting. We will submit details of our Mobilization plan, Project Schedule, Project organization chart, Site facilities, Detailed Method Statement & Strategy, QA/QC program, Key Personnel Resumes etc. within 15 days from the date of EHCCO. After approval of the same site activities will commence immediately.

SCOPE OF WORK

The proposed project includes the following scope of works for the Expansion of Multi Event Center for the client, National Guard:

- 1) Engineering and Design
- 2) General/Architectural/Civil/Construction
- 3) Mechanical/Plumbing/HVAC/Fire Fighting/Fire Alarm
- 4) Electrical & Area lighting system
- 5) Storm Drainage System
- 6) Potable & Fire water distribution system
- 7) Sanitary wastewater collection system
- 8) Telecommunication/PA/CCTV/Audio Visual system
- 9) Building Management System
- 10) Roads
- 11) Landscaping/Hardscaping

REFERENCE

All the applicable SAUDI ARAMCO

SCECO standards and specifications

SASO standards and specifications

ASTM – testing and materials standards

Project Drawing and specifications

Manufacturer's recommendations for the specific materials and works



Upon receiving Notice to Proceed, we will mobilize and execute the job in the following sequences. Sequence of work in some cases may be changed depending on site circumstances or clients requirements that may arise during construction activities. Any such cases shall be discussed with client representative and agreed upon by both parties.

MOBILIZATION

- a) Site Facilities: Prior to mobilization, a drawing showing the proposed area for site offices and storage shall be prepared and submitted for approval we shall commence to develop the lay down area, portable offices and storage shall be mobilized and installed including all related facilities i.e. toilets, dining, parking, power and utilities etc.
- b) Office equipment, furniture shall be as per ARAMCO standard.
- c) Construction Equipment: shall be mobilized directly to the job site as per approved equipment schedule and shall be kept at site for the duration.
- d) Manpower: Manpower shall be mobilized to National Guard camp as per the requirements specified with the proposal.
- e) Construction Material: Prior to delivery of any construction materials to the lay down yard, it shall be confirmed that the materials are in compliance with National Guard specification and must be accompanied with Material Specification Data Sheet (MSDS). This practice shall be followed throughout the project duration. While the temporary facilities are under preparation, some site activities shall commence, such as site survey, setting out, identifying existing services and tie-ins.

INITIAL TOPOGRAPHY SURVEY:

Since the proposed project site area is approximately +/- 3098 m². It is imperative to establish temporary monumental bench marks for elevation and coordination on several fronts within clear lines of sight. All the Temporary Bench Mark shall be traversed with reference to National Guard datum's and shall be checked and approved by ARAMCO Representative. Once these points are approved block wise a topographical survey shall be carried out on the existing ground and will be recorded on a site plan which shall be witnessed by ARAMCO representative. The survey instrument shall be calibrated and a copy of the certificate provided to and checked by ARAMCO representative.



EARTH WORK

Earth works consisting of the following:

- a) Grubbing / stripping, removal of organic matter
- b) Removal of Ground Improvement Surcharge
- c) Marl capping (sub base material)
- d) Aggregate Base Course

Inspection of all the activities shall be carried out as per ARAMCO approved inspection and Test Plan (ITP) in conform with ASTM standard such as ASTM D 1557, D 2922, C136 and so on specified in the package. Proper RFI shall be submitted / recorded and document will be controlled as per procedure. Prior to use any fill material that will be tested in independent testing laboratory. For determining the proctor CBR, sieve analysis as per the ARAMCO requirement.

A) Grubbing / Stripping

Grubbing, removing the shrubs / roots and any unsuitable material from existing surface of the area shall be done in order to prepare the area for laying fill materials. Waste materials shall be dumped in the ARAMCO designated dumping area.

B) Removal of Ground Improvement Surcharge

After grubbing / cleaning, the area shall be leveled to uniform surface by the cut and fill method. We shall remove the surcharge by mechanical means using backhoe, loaders, dump trucks, etc. The surcharge will be transported to the National Guard approved location for dumping. The surcharge unloaded will be properly leveled as per the specification of RC and approved by National Guard Inspector.

C) Marl capping (sub base material)

Marl capping layer shall be laid as per the project/specifications. Prior to laying, the marl material shall spread in a designated area and any unsuitable material removed. Any lumps shall be crushed by mechanical means or manually. Only suitable material shall be used and it will be well graded, leveled to a smooth surface within tolerance using required water and compacting roller in a transverse way as per procedures to achieve the minimum compaction of density of 95% MDD. Immediately after compaction of grading, rolling, compaction, the area shall be tested, inspected. No test shall be carried out without RC Inspector presence and RFI's shall be submitted 24 hours in advance of the time for inspection.

After testing, inspection, joint survey shall be carried out and that filed survey data is agreed and signed by both parties. All field data sheets shall be preserved to use for quantity invoicing as well as QA/QC document. All test reports from laboratory shall be submitted immediately after testing within the stipulated time as laid down in the QA/QC procedure.



D.) Aggregate Base Course

Sample of aggregate base course shall be delivered to designated laboratory to determine the proctor value, CBR, sieve analysis. Reports to be submitted to Royal Commission for review for conformity with Royal Commission requirements, after all approval the materials shall be transported to site and be prepared for laying. Prior to lay, the materials shall be well mixed with the proportionate ratio of water as per procedures. Immediately after mixing material shall be laid / spread, leveled, graded rolled. Roller used shall be 10T – 15T and shall move slowly avoiding sudden break / stoppage. Once the area rolled has achieved the optimum percentage of compaction minimum 95% of MDD or more, the compaction will cease. Immediately an RFI shall be submitted for inspection, testing and survey. If inspection, testing and survey are found OK / approved then the area shall be barricaded and kept free from traffic. Any over roll of the base course surface should be avoided. Final grading of base course surface shall be within the specified tolerances.

All reports, results, data shall be submitted to National Guard for review, approval and signature.

EXCAVATION

Major excavation activities are involved in this project for underground piping pits, catch basin manholes drains, sanitary waste, potable water, fire water, sewage and power cabling. Utilities tie-in shall be completed prior to starting excavations. The whole area within the project boundary shall be subject to walkthrough to identify the presence of any existing underground utilities which should be identified on the previous as-built drawings. Accordingly the points / area shall be identified / marked. Generally the area free of underground utility / power cable shall be excavated by mechanical means such as backhoe/JCB but the areas in close proximity of utilities shall be excavated manually, only after obtaining approved excavation permit from National Guard.

Excavation and the related activities shall be carried out in compliance with OSHA system as well as National Guard standards and regulations, where possible all excavations shall be benched at 45° for safety purposes. For any excavation depth below 1.20m where benching is not possible, complete shoring system shall be installed or suitable proprietary alternative system. Excavation Procedures:

- 1) Obtain excavation permit, which shall be accompanied with the as built / IFC drawing, walkthrough checklist clearly identifying any existing underground utilities.

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- 2) Excavation areas shall be barricaded with standard warning signs like "CAUTION", 'DEEP EXCAVATION', 'MEN AT WORK', 'PPE REQUIRED'. 'KEEP CLEAN"
- 3) Any area identified as having existing underground utilities shall be excavated manually to avoid any potential damage / accident.
- 4) All other area free of any existing utilities shall be excavated by machine.
- 5) Any required shoring materials and dewatering equipments / sets shall be kept ready and available at site during excavations.
- 6) Excavations exceeding a depth of 1.20m shall be provided with shoring and/or benching as required. Inspection and approval from the client shall be obtained prior to granting access for personnel.
- 7) For deep excavations where ground water will be encountered, a dewatering system with standby pump shall be installed and shall run continuously. Once the water table has been lowered sufficiently then excavation will commence.
- 8) Excavated materials shall be kept away from the bank at least a distance of 3.0m.
- 9) Surplus materials shall be shifted to stock piling area and waste materials shall be disposed off to National Guard designated dumping area.
- 10) All points of excavation area shall be protected with barriers, warning lights and reflective signs.
- 11) A night watchman/attendant shall be delegated to monitor the dewatering system and a mechanic shall be available on call out 24 hours a day.
- 12) All excavations for structures by machine equipment shall be stopped at 300mm higher than that of designed level as indicated in IFC drawing. Bottom 300mm shall be excavated by hand to avoid any disturbance to stable soil.
- 13) Excavations for pipe trench shall be excavated fully to the designed elevations as per IFC drawing by machine provided the area is free of underground utilities.
- 14) Excavation area dimension at the bottom shall be kept in such a way that shall allow a man to move around freely beyond and around the structure for placement of shuttering, rebar, concrete and other related construction activities.
- 15) In case of any incidental over excavation, that portion shall be refilled using selected fill in accordance with all QA/Qc applicable clauses.
- 16) Excavations shall be maintained in dry condition and dewatering shall be kept running without interruption until backfilling is completed one layer (300m) above ground water table.



DEWATERING

Dewatering pumps, heads, well points, and accessories shall be a proprietary system of latest design. Pump set header shall be of 6" diameter and dewatering water shall be disposed off to the nearest available ditch approved by National Guard. Each set of pump shall cover a maximum 300Lm of header. A standby / spare pump shall be kept ready for use in case the event of any breakdowns. Round the clock mechanic / attendant shall be deployed with dewatering system. All safety regulations shall be followed strictly and fire extinguishers will be kept adjacent to pumps. A submersible water pump shall be kept at site to remove any pockets of stagnant water which may accumulate from adjacent areas or rain water.

CONCRETE WORKS

This section deals with all concrete works to be carried out for buildings and other utilities under this contract.

Lean concrete: Lean concrete required for any permanent concrete structures (National Guard) for the project. This includes but is not limited to pits, manholes, catch basins, foundations. Lean concrete shall be as per the specifications and procedures of National Guard. The concrete shall be 17Mpa.

Test: Prior to pouring required but inspection is required to ensure that the location and elevation of lean concrete is correct, as per IFC drawing and specification. RFI shall be signed off by National Guard.

Following shall be maintained prior to pour lean concrete:

- 1) Areas to receive lean concrete shall be dry, compacted to required density, tested, leveled and location surveyed and approved.
- 2) Top of lean concrete shall be marked by surveyor in accordance with IFC drawings.
- 3) Thickness of lean concrete shall be as indicated on the IFC drawings. But in no case shall be less than 50mm.
- 4) External dimension of lean concrete shall extend 100mm beyond all structures.
- 5) Curing shall be for a minimum of 72 hours using burlap/plastic sheet and potable water.

FORM WORK

Formwork materials for concrete work shall be used as per National Guard standard specification, marine plywood 18mm thick and lumber of regular standards quality shall be used or a suitable approved proprietary system. Prior to use, material samples shall be viewed by National Guard inspector. Wherever required, PVC chamfer inserts shall be used for exposed edges. All accessories, tie rods, clamps, rail supports shall be suitable for the pour to be made.



Following points shall be maintained for installation of formwork:

- 1) Size and dimension of formwork shall be within the specified tolerances for the size/dimension of the structure, as per IFC drawing.
- 2) Forms should be cleaned and free from spatter, holes and defects.
- 3) Supports shall be designed to bear the load of concrete to be poured.
- 4) Forms shall be constructed to be easily removable after concrete pouring preventing damage to concrete edges.
- 5) Forms shall be cleaned and coated by using used release oil or any specified surface coating agent before repeating use.
- 6) Time for removal of forms shall be as per National Guard code: In general for foundation footing 48 hours and for suspended or elevated structures 28 and 14 days respectively.
- 7) Concrete cover shall be maintained as per National Guard codes but in no case shall be less than 50mm.

REBARS

Rebar material shall be as per specification provided with ITB according to National Guard specification MTC shall be submitted to National Guard for review and approval. After approval materials shall be delivered to site for use. Cutting and bending schedule shall be prepared as per IFC and submitted to National Guard for review and approval. Rebar shall be cut and bent as per the approved cutting / bending schedule. Installation shall be as per contract procedures and rebar shall be inspected prior to pouring for compliance with the latest revision IFC drawing and ITP.

Critical points for inspection of size, cleanliness, spacing bending cover level:

Rebar shall be new and far from rust or surface imperfections. All cut ends of epoxy coated rebar shall be touch up with epoxy coating. Rebar shall be transported in bundles along with identifying tag mentioning drawing number / structure name. Rebar shall be placed on wooden sleeper skids to prevent damage or ground contact. Cutting, bending, handling placing and installation shall be as per National Guard standard procedure and ACI 318. Rebar shall not be welded. Accurate concrete cover shall be maintained as per specification. Overlapping splices shall be as per National Guard procedure specification in general 60D unless otherwise noted storage concrete spacer block shall be used for clearing covering. Spacer block shall be tied with rebar using / embedded wire with spacer. Rebar chairs shall be used between to mesh top and bottom. PVC coated tie wire shall be used.



STRUCTURAL CONCRETE

Structural concrete is required on this project for foundations pits, catch basins, manholes and super structures. Concrete shall be provided as per National Guard specifications and as specified in the Bid documents.

Concrete mix design from an approved supplier shall be submitted to the National Guard for review and approval prior to commencement. After approval concrete trial mix shall be made at the concrete batch plant which shall be witnessed by the National Guard representative. After approval of the mix design concrete shall be produced and delivered to the site.

Following major points for concrete shall be taken care of:

1.) Design mix

- Design mix shall be as per National Guard specification.
- Only concrete shall be used that meets the approved design.
- The components of the concrete shall be in accordance with the specification.
- Water shall be potable water, clean as per description laid down in the QA/QC documents of Bid documents.

2.) Cement – Cement shall be type I

3.) Admixture - Admixture shall be as per approved design with silica fume content as per specification and design.

4.) Slump - Slump 150 – 200 as per design.

5.) Aggregate – maximum size of aggregate shall be 20mm crushed stone along with fine aggregate as per specification.

SAMPLING AND TESTING

As per National Guard code a total of seven cylinders shall be taken for each 38m³ of concrete samples with mark up date, load & ticket no. to be accompanied with the name of structure. Three cylinders shall be tested at 7 days and three shall be at 28 days. One spare cylinder sample shall preserve at designated place and may be tested if necessity arises.

All the pre-pouring check list and sampling shall be witnessed by the National Guard inspector and proper documentation shall be preserved.



STRUCTURAL CONCRETE POURING

In compliance with the ACI standards for concrete pouring, the following are the major points to be taken care of:

- 1) Concrete shall be correct to approved design mix.
- 2) Immediately after arriving at job site, sample, slump test, and temperature test shall performed as per standards.
- 3) Relevant forms and check list shall be completed and recorded.
- 4) During pouring, concrete shall not be dropped from high levels. The maximum gap between hose end and chutes to pouring point shall not be more than 1.0 meter.
- 5) During mass concrete pouring, layer thickness shall be a maximum of 600mm in one round.
- 6) Supervisor shall carefully observe formwork and re-bars during pouring to check for any dislodging of fitter and shall correct immediately.
- 7) Extra water shall not be added to the concrete on site, under any other circumstances.
- 8) Vibrators shall be used as per pouring procedures. Vibrator over use shall be avoided to prevent segregation of aggregates. Spare vibrators shall be kept available.
- 9) Expansion joints shall be checked and maintained at alignment levels.
- 10) Curing of the concrete shall be by potable water as per ACI code, 7 to 14 days variable, as per the type of structure.

REMOVAL OF FORMS

Removal of forms shall be performed with care to prevent any edge damage. All forms shall be properly cleaned and all surplus materials and debris shall be removed from site. RFI shall be submitted for inspection of concrete surface. Curing shall be continued for the specified period.

Any honey combs or imperfection in the concrete surface shall be clearly marked during the inspection. When curing is completed, the concrete surface shall be dried out and cleaned. All honey combs or imperfections shall be repaired with approved proprietary materials in accordance with manufacturer's guidelines.

RFI shall be submitted to RC for inspection of repaired points to prior to applications of protective coatings and membranes.



PROTECTIVE COATING

The coating materials shall be in compliance with National Guard specification and material approval. Pre-inspection shall be done prior to application of protective coating. After receipt of National Guard approval, coating to concrete surface shall commence. Application of the coating materials shall be strictly as per recommendation of the manufacturer and as per the standard procedure detailed in National Guard QA/QC procedures. After each coat has been applied it shall be inspected for uniformity and DFT. Application of each layer shall produce an optimum DFT in 2 coats. In case of any deficiency a 3rd coat shall be applied, and the coated surface shall be fully dried out and inspected again. After approval, backfilling shall be commenced.

BACKFILLING

Large scale backfilling is required on the project for foundations, pits, catch basin, manholes, pipe trenches, duct bank, drains and cable trenches etc.

Backfilling shall be carried out as per National Guard specification and procedure laid down in the QA/QC document provided with the bid documents.

MATERIAL

The type and grade of the fill material shall be as per specification.

1) Sand: Fill material shall be sweet sand fine free of contamination of organic/inorganic foreign materials. Material shall be used for backfilling around all structural concrete as well as sand bedding for power cable, underground piping / encasing as per IFC drawing and specification. Proctor value shall be determined by independent test laboratory according to ASTM applicable code. Minimum compaction density shall be 95% determined by nuclear method. Testing / inspection shall be as per ITP. All test reports from independent laboratories shall be submitted to the National Guard immediately after receipt from laboratory.

For filling, activities shall be carried out in the following procedure:

- 1) Material used shall be fine, clean and free of contamination from rubbish, debris, or organic material.
- 2) The area for filling shall also be cleaned and free of water, debris, and foreign materials.
- 3) Each layer of backfilling shall average 300mm thick and laid at a uniform rate. Thickness may vary in accordance with the QA/QC document of ITB.
- 4) After laying the fill material, it shall be spread in a uniform way, watered and compacted. Compaction shall be performed in order to achieve the optimum percentage of compaction.



- 5) Small vibratory compaction equipment shall be used around any structures and adjacent utilities. Large areas shall be compacted by using vibratory roller of 10 – 15 Ton.
- 6) Immediately after compaction, RFI shall be submitted for inspection and testing. After approval the succeeding activities shall be carried on.
- 7) Final layer of backfilling including sand, marl or base course shall be inspected which includes survey for elevation, and grade tolerance. All activities shall be in compliance with National Guard procedure and relative ASTM code.

UNDER-GROUND PIPING

RPM Storm water drain pipe

After receiving pipes, fittings, in warehouse / yard pipes shall be visually checked / inspected to identify any damage, scratches or deficiencies. In event of any damage, crack, scratches or deficiencies they shall be marked and set aside. QC documents from supplier / manufacturers shall be collected and compared with specified specification. If everything is OK then pipes shall be moved to job site. During loading / unloading soft lifting belts shall be used. Jute cloth lifting belt point shall be wrapped with soft cloth. Pipes shall not be dropped. Pipe shall be stored on an even surface with ends sealed. Pipe trenches shall be well prepared with sweet clean sand bedding free of stone, clods, and lumps. Sand bedding shall be uniformly leveled and stabilized by spraying adequate water and compaction. Loose sand bag shall be placed at every two to three-meter interval. Pipes shall be laid on sand bags and be aligned, straightened and supported from sides in order to prevent from movement, sagging, misalignment during connection. RFI shall be submitted for inspection and approval. After approval, fill with granular material / clean sweet sand around pipes ensuring all joints are kept exposed for testing / inspection during hydro testing, leak testing etc. Hydro testing shall commence and all joints will be continually monitored for leaks, movement or pressure loss. Testing shall be carried out to be inspected by contractor. In case of any leakage or pressure loss is detected will be immediately rectified and pipe shall be re-tested. If no leaks are observed, then RFI shall be submitted for inspection by National Guard Inspector. After approval, the pipes shall be correctly covered with clean sweet sand / granular materials as per IFC drawing / Royal Commission specification. Backfilling will be continuous process up to top layer. Wherever concrete encasement is present as per IFC drawing shall be concrete shall be backfilled using the same procedure. In case of any requirement for spools, as per IFC drawing, that will be fabricated in workshop and installed at location. However, spools shall be hydro tested at workshop and witnessed by National Guard Inspector.

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SANITARY WASTE WATER COLLECTION SYSTEM

The following material shall be used but the installation procedures shall generally be same as above.

- UPVC, GRP and RPM pipes

POTABLE AND FIRE WATER DISTRIBUTION SYSTEM

The following material shall be used but the installation procedure shall be same as above UPVC pipes:

- Ductile-Iron and UPVC Pipes

Cable Installation / Laying underground.

Cable trenches shall be excavated in accordance with the specification and procedures. Sweet sand bedding for cable is 100mm – 150mm thick in one layer shall be placed in trench. Cables shall be mugger tested to determine the continuity. Reading of the mugger test shall be recorded on the prescribed form and shall be submitted to National Guard for review and approval. After approval, cable drum shall be placed on pulling stand at one end of the trench at a suitable position. Cables shall be pulled manually using rollers as necessary. Cable should not be twisted or kinked and should be laid straight in bottom of the trench. Repeat mugger test to determine the continuity, if satisfactory then insert numbering tag on each cables and cover cables with one layer sweet sand 100-150mm and continue with remaining layers of backfilling including cable tiles and warning tape as backfilling proceeds up to the top layer.

Connection / Terminations

Cables connection / termination shall be carried out as per standard procedure of National Guard as well as manufacturer's instruction. Connectors, lug type shall be as per UL listed standards. On completion of terminations, RFI shall be submitting inspection and approval from the National Guard.

Conduit installation in Duct bank

Specified conduit in the duct bank shall be installed as per National Guard procedure. PVC spacer / chair shall be used to maintain the required spacing in between ducts and from the side and bottom. Conduit/ducts shall be fixed firm to prevent any movement during concrete pouring. Nylon ropes shall be provided in all conduits/ducts to facilitate cable pulling. Duct bank concrete shall be colored with red oxide.

Low Current System

Executed by sub-contractor approved by National Guard and method of statement will be submitted accordingly.



ELECTRICAL

Electrical scope of work for this project includes the supply and installation, tie-in, testing and commissioning of:

- 1) Main switch gear
- 2) Ring Main Unit (RMU)
- 3) Transformers and LV panels
- 4) LV main Distribution Panel
- 5) LV distribution pillars & panels
- 6) Interface Circuit Breaker
- 7) Interface main Circuit Breaker
- 8) Cables
- 9) Grounding cables
- 10) CT Kwh meter
- 11) Conducting
- 12) Street Lighting.

Main switch gear, Bulk Metering 34.5Kv Switch Gear, Ring Main Unit (RMU), materials shall be provided through secured shipments from reputable specialist companies and shall be transported to the site for unloading directly to the final location. If this is not possible the materials shall be stored in a secure facility on site or other approved location.

Installation procedure shall be followed in accordance with manufacturer's instructions and installation manual. All items shall be separately labeled and tagged to identify each part and location.

Transformer: If possible all transformers shall be directly taken to site lay down yard in order to avoid repeated loading & unloading. Transformers will meet NEMA standards all applicable specification, standard code ANSI, NEMA, IEEE. Shop drawings and data sheets must be available with transformers. Transformer shall be securely wrapped crated / packaged and labeled to ensure safe handling during shipment and to avoid damage due to mishandling. Wherever necessary temporary bracing shall be used to lift hoist lower and maneuver the transformer in to position. Transformers shall be installed on the constructed foundation pad for that purpose. Foundations top elevation shall be as per detailed approved drawings.

Distribution Panel Board: All panel boards shall conform to NEMA standards, project design and specifications. Type of panel boards shall be surface mounted and flush mounted as specified on the IFC drawings.

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Installation: The panels shall be mounted on walls or support frames or stand and with required conduits. Wall mounted panels shall be securely fastened to the wall using utility expansion bolts or proprietary mounting channels and supports.

Testing of Panel Boards:

Test Circuits for correct connections in accordance with wiring diagram. Testing, Insulation resistance to ground on non-ground conductors.

Test equipment enclosure for continuity to the grounding system Testing operation of circuits and controls.

All test reports shall be submitted to National Guard for approval.

Interface Circuits Breakers:

Circuit breakers shall conform to NEMA standards and shall be of molded case design as per specifications. Prior to installation, breakers shall be checked and tested individually for the following:

- Number of poles.
- Rated voltage and continuous current.
- Rated interrupting current trip setting.

Power, Control & Communication Cables: cables shall be as per Royal Commission specification as provided with ITB document. Low voltage cables shall be rated 600V with a minimum temperature rating of 90° (degree) armored

/ unarmored. Cables shall only be delivered to job site in rolls or drums as per provided at the point of manufacturing.

Low Current System

Executed by the Contractor and approved by National Guard and method of statement will be submitted accordingly.

Utility Tie-in and Interface connection with existing system.

All specified tie-ins with existing system shall be carried out in the following sequence.

- 1) Tie-ins schedule shall be submitted with separate method statement to National Guard for approval prior to any tie-ins being commenced.
- 2) All other activities not requiring prior approval will be carried out beforehand.
- 3) Immediately upon approval of the method statement the work will be carried out as per installation procedures and the approved method statement.

4) All involved agencies / departments shall be informed at least 24 hours in advance or longer if required of any tie-ins to be done.

5) After, each tie-in testing / commissioning shall be done as per National Guard procedures and approved QA/QC Plan.

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FABRICATION AND ERECTION OF STEEL STRUCTURES

Steel structures are required for the following buildings:

1. Multi Event Center
2. New Auditorium
3. Multi-Purpose Hall
4. Fire/Ambulance Bay Area/Car Park
5. Guard House

PRE-ENGINEERED BUILDING

1. Drawing will be given to certified pre-engineered builders with complete dead load, live load, and horizontal load after the approval of National Guard.
2. The pre-engineer certified builder will design the superstructure with reaction.
3. After approval of RC for shop drawings and sections submitted by certified builder and any reaction given, foundation will be re-designed accordingly.
4. Approved pre-engineer builder will submit details, fabrications and erections for all sector approval.
5. After the approval of the said drawing, steel erection will commence immediately.

PRE-CAST PANELS AND MEMBERS

Immediately after NTP we will finalize the vendors for design and erection of pre-cast panels and column and T-Beams etc., we will seek approval of National Guard for the vendor. After approval we will submit the design calculation to National Guard for approval along with the delivery schedule for the Project. Once these are approved method statement, Safety plan and lifting will be submitted to National Guard for approval. All necessary safety procedures will be followed strictly as per the National Guard as well as OSH. All necessary forms of National Guard will be used through out the work of erection. During the erection all safety and quality procedure will be followed as per National Guard specifications and procedures.

The project of Multi Event Center building consists of Column, Beam, Double tee slab, Panels and hollow core slab. All the items what so ever will be produced according to Q.D.C./Approved venders system as per the required strength and finish.

These items are being checked during and after production according to vender's quality control system. Production & Erection tolerances as specified in the - P C I - shall be taken into consideration.

Repair procedure if required should be followed at site after erection (included in vendors' submittal).

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ERECTION & RELATED ACTIVITIES

Axis and reference grid lines are marked on the foundations.

Sequence of erection should be as per site priorities.

Levels of grade slabs-beams and foundation are checked with respect to the given bench marks & the data given on the drawings.

Leveling shims are used to levels the structure or bearing pads are placed at required locations, following the specified bearing materials and leveling shims in the drawings.

If there is any major difference or variation in level, the main contractor should rectify the same by chipping or adding concrete as per requirement.

Adequate access & approach to site should be provided in a good condition, leveled, firm and wide enough for the maneuvering of the cranes and trailers.

Crane Requirement (Capacity)

65 ton required for erection of PC elements up to a maximum of 13.5 ton 100 ton

required for erection of PC elements up to a maximum of 21.5 ton

175 ton required for erection of double tee slabs up to a maximum of 21.5 ton

List of Lifting Accessories

Wire Rope Sling 10t x 10mtr - 04pcs Two

Leg Sling 30t x 8mtr – 02pc

Pfeifer Lifting Loop 4 ton – 08pcs Pfeifer

Lifting Loop 2.5ton – 08pcs

PLUMBING/SEWER/A.C. PIPES

All the required piping for water, Sewer, National Guard Storm water will be installed according to the utilities drawing and specifications. These pipes/conduits will be fixed before following activities. All the sleeves coming under ground will be installed before the grade slab and piping for water, conducting coming in the wall will be installed before the plastering and flooring. We will use approved material for the above said utilities and will be installed as per drawings. Before plastering and flooring these will be got approved from National Guard representative. The changes or deviations will be recorded for the as built drawings.



MASONRY WORKS

We will use only approved Masonry Blocks for the CMU works manufactured by a licensed producer that meet the required minimum compressive strength as specified. Before commencing the Masonry work the layout shall be accurately marked on the floor or grade beam as per Architectural Drawings.

After clearly marking the layout, we will request immediate inspection from client for approval. After receiving approval, the Masonry work will commence at ground floor level. Construction of Masonry walls will be performed as per the specification and drawings. Reinforcement of CMU will be installed as per National Guard specification, approved drawings and QA/QC plan. Mortar for laying the CMU shall be batched as per the approved mix design/proportions using only approved raw materials and potable water.

During construction, openings will be formed for Doors and Windows as per the IFC drawings. The openings will be true to size, elevation plumb ness and square. CMU will not be laid exceeding 1.0 m. height in a single day in accordance with the standards for Masonry and slab joints. Where indicated on the drawings chicken mesh will be fixed to masonry walls with masonry nails ensure bonding between concrete and rendering/plaster. Curing of mortar with potable water will be continued for a period of seven days.

After completion of Masonry walls and proper curing, chasing out for installation of electrical conduits, boxes, piping, ducts, etc. will commence. All embedded items will be installed as per Electrical, Plumbing and Sanitary IFC drawings and to the applicable codes.

DOORS & WINDOWS

All doors and windows shall be procured from approved specialized manufacturers. Prior approval by National Guard is required before placement of purchased orders. Fixing of doors and windows will be as per the National Guard specification. All doors and windows shall be installed in the correct locations and positions as indicated in the IFC drawings. External doors and windows shall be properly secured and weather proof sealed in accordance with the specifications. All door and windows shall operate freely without obstruction on hindrance thru their full arc of movement.

HARDWARE & IRONMONGERY

All hardware and ironmongery for doors and windows shall be procured only from approved specialized manufacturers/agents. Prior approval by the National Guard shall be obtained before placement of purchased orders. All materials will be of the required standard, quality, and durability to meet the requirements of the specifications. All shall operate freely as the design intended and shall be installed in accordance with manufacturers' instructions.



PLASTERING

After inspection and approval of CMU works. We will spray the wall with potable water 24 hours before plastering; the wall should slightly damp and be free from obstacles, dust, and mortar projections. Before commencing a 1m² sample will be prepared for client's approval. According to the specifications and requirement we will plaster/render the walls with cement mortar in proportions of 1:4. All the plaster/render will be properly batched using approved raw materials. Finished surfaces are within +/- 2mm tolerance. Plaster/render area shall be cured for seven days using potable water. Plaster/mortar will be batched a proprietary bonding agent using mechanical Mixer to the required consistence. Application shall be done by competent experienced masons using the correct hand tools and levels.

CEILING WORKS

All materials and finishes for ceilings shall require approval from National Guard before procurement. After approval, insulation shall commence. All suspended or fixed ceilings in the buildings will be installed as per IFC drawings and specifications. Height of the ceilings shall be as indicated on the drawing. We will mark the correct height for the ceilings using laser level. Suspended ceilings shall be installed in accordance with the manufacturer's instructions. All the ceiling works will be completed before any flooring work. We will use proprietary scaffold platforms to install the ceilings including runners, hangers for the gypsum boards, ceiling tiles, etc. All hangers and support will be fixed with screws and plugs or bolts as required. Correct elevation and alignment of all ceilings shall be monitored as work proceeds and corrected if necessary

FLOORING

Prior to work commencing we will remove any dust with vacuum cleaners and brushes. Any protruding concrete/mortar slots on the floor surface shall be removed and cleaned. All floors shall be checked for levelness within the specified tolerances. Any low spots shall be filled using proprietary leveling compound. When all floor areas are satisfactory level and clean, the application of floor finishes may commence. All floor finishes shall be approved by National Guard prior to procurement. All floor finishes shall be installed strictly in accordance with manufacturers' instructions using proprietary adhesives and or fixings. Completed floor finishes shall be adequately protected until handover of the building.

Marble Fixing:

- 1.) Metal channel to be fixed in proper way to the masonry wall after rough plastering.
- 2.) Hole to be made in 4 corners in each unit of marble and tie wires to be fixed in this above holes suitable glue.
- 3.) The marble unit will be fixed in top of the channel and tie work will be fixed to the rough plastering and this will be the base of the above 2 more rows, this equals should be follows in every three (3) layers.



Ceramic tiling:

Floor Tile

Prior to work commencing, floor shall be prepared as for flooring finishes detailed above. Sections of tiles shall be laid out in accordance with the required patterns and orientation to establish the optimum positioning to minimize small cuts. Once the lay out is divided mark out guide lines on the floor, mix adhesives as per manufacturer's instructions and commence tiling. Spread adhesives evenly using the steel trowel preventing any voids or bubbles. Lay each tile bedding into the adhesive firmly with a slight twisting motion to ensure a solid bed. Remove surplus adhesive with a damp sponge or cloth. Lay small areas of tile about 1m² at a time to ensure good bond with adhesive before the adhesive forms a skin. Check periodically with a spirit level and straight edge for levelness. Leave floor tiles to set for 24 hours before applying grout.

Mix and apply grout in accordance with the manufacturer's instructions. Force grout into joints using appropriate tools. Remove any surplus grout with a damp sponge or cloth and finish joints with a small rounded stick or rod to achieve the desired finish.

Movement joints of 6/8mm shall be provided at walls, steps, columns, etc. and, where the specified, or large floor areas. These joints shall be filled with proprietary flexible waterproof filler.

Wall Tile

Prior to work commencing all walls shall be clean, free from dust, grease, projections, holes, etc., check all walls for flatness alignment and dimensions, a perfectly flat surface is required. Newly plastered surfaces should be left to thoroughly dry out for minimum 28 days before tiling. Decide the lay out location of tiles and any features or pattern tiles to minimize small cuts, starting at the lowest point of each wall fix a horizontal batten to the wall and begin tiling on top of the batten, draw vertical (plumb) lines on the wall from the batten up to the ceiling to check for vertical alignment of tiles. Lay small areas of tile about 1m² at a time to ensure good bond with adhesive before the adhesive forms a skin. Check periodically with a spirit level and straight edge for levelness. Leave floor tiles to set for 24 hours before applying grout.

Mix and apply grout in accordance with the manufacturer's instructions. Force grout into joints using appropriate tools. Remove any surplus grout with a damp sponge or cloth and finish joints with a small rounded stick or rod to achieve the desired finish.

Movement joints of 6/8mm shall be provided at corners, columns, etc. and, where the specified, or large floor. These joints shall be filled with proprietary flexible waterproof filler.



PAINTING WORK

Painting work will comprise primer, putty, first and second coat of paint. All the walls and ceilings will be

washed prior to paint and will be cleaned from dust, voids and protruded materials. The surface will be prepared first with filling for voids, gaps, depressions with putty then apply the primer. After inspection of the primer surface and approval from the client, we will apply the first coat of paint. After inspection and clearance from client the second coat will be applied. The same procedure will be applied to external walls where ever applicable.

LIGHTING FIXTURES

We will install the fixtures for all buildings as per drawings and as approved by the National Guard. Before fixing we will ensure that the catalogue no and the type of fixture will be as per specification and approval.

FIRE FIGHTING/FIRE ALARM SYSTEM

Fire Fighting and Alarm system will be executed by Professional Specialist Contractor approved by the National Guard. All Materials and Equipment's used in this work will meet NFPA & UL, CSA, NEC, SEC and Royal Commission Specifications and Standards. The following procedures will be adopted during execution of Fire Alarms and Fire Fighting System.

All materials shall be submitted to National Guard for approval prior to procurement. All water pipes, control valves, sprinklers and fittings shall be installed in accordance with approved drawings from National Guard.

Water supply to the Fire Fighting System shall be equipped with jack pump to maintain the pressure in the whole system as required per National Guard Specification. Pressure gauge should be provided to monitor the pressure in the system meets the minimum requirement.

Electrical Pump and Standby Diesel Pump shall be installed to provide the specified pressure in the system at all times.

Installation of Addressable Fire Alarm Control Panel, smoke, heat, duct detectors/sensors, Manual Call Point and Bell shall be in accordance with approved drawings from National Guard and shall meet NFPA Standards.

Water Pipes shall be identified by the color RED.

Addressable Fire Alarm Control Panel shall be located in an accessible secure area for immediate observation and response.

Electrical Cables used are single conductor twisted pair, 2.5mm square single and double pair.

Complete system shall be pressure tested to ensure that Fire Fighting System is working properly and effectively.

Testing and Commissioning for the whole system shall be done and reports for provided each individual component.

Final Inspection from client and manpower.

Interfacing between Fire Alarm System and Sprinklers System to start Fire Pump is as per NFPA Standard.

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LAN AND COMMUNICATION SYSTEM

All conducting, junction boxes etc. will be done before plastering. Wire pulling will be before false ceiling whichever is applicable. We will engage with any sub-contractor approved by the National Guard. **PROCEDURE**

As per IEEE, NFPA, NEC and SES STANDARD specification, for Tele / Data / Clock & Bell System Installation, Termination, Testing/Commissioning shall be as follows:

Telephone & Data System (LAN / WAN / MAN) and Outlets:

Check the Telephone & Data system (EPBAX, Data Patch Panel Switches & Outlets) and other related materials and accessories are as per the approved materials.

Install the Telephone & Data switch system and other related materials and accessories as per IEEE / NEC / SES Standard / IFC drawing and Typical Installation drawing.

If wireless LAN System is there, then place the Module (Transmitter / Receiver) in a place from where maximum reception is there.

For Cable LAN System then pull the CAT-6 Cable Single run for every individual outlet, to the switch and maintain the color code. Check for the continuity for all structure cable.

Install and check all patch cord at both end (Switch as well as user end). Check for Fiber cable terminations and connectors at switch side.

Check the complete system is working properly (for maximum mbps, without any data loss) and for which Room/Corridor it belongs put Tag# number accordingly.

Provide adequate cooling for the switch room.

Do Testing / Commissioning for the system and make report for every individual outlet.

Final Inspection from client

ROAD CONSTRUCTION

Road Construction within limits of this project shall be in conformity with National Guard road construction procedure, specification, for all materials including asphalt, MCI, National Guard, Sub grade and sub base.

Materials:

Sub grade: Sub grade materials shall be in conformity with Royal Commission codes and ASTM as specified in the Bid documents.

Sub base course: Base course materials shall be as per National Guard codes and ASTM as specified in

the Bid documents.

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MC1- / MC-70 (Prime Coat): MC-1 / MC-70 shall be as per specified National Guard codes.

Asphalt Binder course / Wearing Course: All asphalt materials shall be as per National Guard specifications supplied by approved asphalt batching plant. Application / implementation of relative specified National Guard code & ASTM to all operations will be ensured. Asphalt design mix from National Guard approved batching plant shall be submitted to client for approval prior to commencing. After receiving approval, asphalt paving shall proceed. After base course inspection is completed and approved planning and coordination of laying asphalt pavements shall commence. All base course areas shall be primed with MC1, when the MCI has dried and has been absorbed into the base course, laying of the binder course shall commence. For each delivery of the asphalt the details shall be recorded for asphalt mixing, loading time, arrival time at job site, lying time and temperature and be witnessed by National Guard representative. The above same proceedings shall be followed for the tack coat and wearing course.

Testing: Samples shall be collected and be tested in independent licensed testing laboratory. Results shall be submitted to National Guard for review and approval. Field density tests for the sub grade / sub base shall be as per National Guard specification.

Inspection: Inspections shall follow the procedures in the ITB based on National Guard standard procedures, codes, and specifications summarized hereunder:

- 1) All inspections shall be conducted by National Guard designated inspector as per ITP and inspection methods of National Guard specification. RFI shall be submitted 24 hours before the required inspection time.
- 2) All earth works items up to base course shall be tested for compaction by the nuclear method. Prime advantage of this method is getting spot result without waiting for a report which facilitates progress of the works avoiding delays.
- 3) Survey, elevation, coordinates shall be checked / inspected with reference to temporary bench marks established prior to the start of the project.
- 4) Asphalt prime coat MC1 / 70 shall be sprayed on complete dust free and dry surface in a uniform way as per National Guard specification. Any dust and windblown sand shall be brushed and removed prior to spraying prime coat the area shall be inspected and approved by National Guard. Prime coat shall be applied, asphalt binder coarse shall be laid after prime coat has dried and absorption into the base course. National Guard shall inspect the completed binder course. National Guard shall be applied on the asphalt binder course prior to laying the asphalt wearing course. Asphalt wearing course shall be laid after tack coat has dried in accordance with National



Guard specification. We shall comply with all the applicable points laid down in QA/QC document, National Guard specifications, ITP, and technical notes on IFC drawings. The following control points shall be followed throughout the road works:

- 1) Trial mix of asphalt prior to delivery
- 2) Check base course surface is clean and level
- 3) Prime coat MC1 / MC-70 applied correctly and properly dried
- 4) Asphalt binder course correctly to required thickness and elevations
- 5) Periodic sampling of asphalt as per specifications
- 6) Tack coat ROYAL COMMISSION-2 applied correctly and properly dried
- 7) Monitoring of asphalt temperature control method using standard approved format
- 8) Asphalt wearing course laid correctly to required thickness and elevations
- 9) Surface smoothness and falls of asphalt correctly as per drawings
- 10) Testing and sampling ensuring, compaction, marshal stability and all related tests as per National Guard requirements.
- 11) Checking final elevation, curing and hardening before allowing use

Landscaping

Landscaping shall be commenced upon completion of all other external activities in the specified area. The area shall be cleaned of vegetation and rubbish prior to installation of irrigation and drainage system. All materials shall meet the National Guard specifications. After National Guard approval for all components of landscaping, irrigation and drainage systems, procured materials shall be delivered site. The complete systems shall have installed as per IFC drawings and shall be tested, inspected and approved by National Guard. After approval by RC the planting shall be carried out as per IFC drawing, National Guard specifications and procedures. Planting shall be inspected and approved by National Guard. After planting is complete any remaining areas shall be covered with gravel mulch, as per IFC drawing.



Close-out Documentation.

QC dossier

During execution of the works, our Q.C. Engineer will record and maintain all the reports, documents in the files. After completing the project, we will submit the Q.C. dossier with all the documents related to the Quality Control.

AS-Built Drawing

Our field Engineer and draughtsman will mark up the drawings as and when there are changes during execution. All the changes will be marked with red line and upon completion all drawings so marked will be stamped as AS-Built drawings and submitted to client.

De-mobilization

All our temporary utilities first will be disconnected from source of supply with the permission of concerned authorities.

After demobilization of facilities, offices, lay down yard, we will clear the area, practicing good housekeeping and the area will be restored to original clean & tidy.

Note: Throughout the construction activity we shall comply with National Guard specification, procedures, standard, contract documents and construction drawings.



QUALITY CONTROL PROGRAM



1. SCOPE OF WORK

The scope of this Quality Control Program is to cover the procedures utilized by Naba International Co. for construction of Road Network & Walkways. These procedures establish the construction method to execute the works involved in this specific project.

We shall execute the work with all required materials, manpower, equipment, supervision, tools and tackles, testing and commissioning of the facility as per the contract requirement and specifications of National Guard.

The QC personnel and staff shall be responsible for the Quality of workmanship for all activities throughout the project / contract duration.

The QC personnel of *EHCCO* will be responsible for ensuring adherence to National Guard Procedures and Specifications throughout the project.

This plan establishes a Quality Control system which ensures complete inspection and testing of all items of work including works performed by sub-contractors and third parties.

2. PURPOSE

The purpose of this Quality Control Plan is to maintain a high level of quality by monitoring and inspecting every phase of the work whilst ensuring all works are performed in accordance with the drawings, procedures standards and specifications to the full satisfaction of RC.

3. QUALITY POLICY

The policy of Quality Control is that construction method should be followed in strict conformance with the drawings, specification, procedure and standards. The Quality Control Plan and Inspection and test plan shall be strictly adhered to at all-time throughout the project by all concerned.

The quality policy begins with the **Project Manager** through staff to craft Workers / Crew.

This quality control plan may be supplemented, amended or modified in part during the execution of the project to satisfactorily meet the construction requirements on the specific requirements of RC.

4. REFERENCES

All the applicable National Guard Specification, Standards, Project Construction drawings, & Project documents Manufacturer's, Recommendations for the specific materials and works.

The following are the main specifications.

- Imported sand fill material – sec. 02315
- Sub-base and base course material – sec. 02315
- Asphalt – sec. 02840
- UPVC pipes and Sleeves – section 02585
- Concrete works – sec. 03310, 03205, 07100
- Chain link fence and gate- sec. 02820
- Ductile Iron pipes and fittings – sec. 02085
- Submersible pump – 15130
- Road sign- sec. 02891
- Fire hydrant – sec. 02081

5. PROJECT DESCRIPTION

Please see the detailed scope of work contained in the project document for specific details on the construction of Road network and Walkways.

6. DEFINITION

Quality

The totality of characteristics of a product or service that reflect its ability to satisfy customer or end receiver expectations. It is a chain process of satisfaction.

Quality Assurance

All activities and functions connected with the attainment of the quality. The assurance of quality of work and materials.

Quality Assurance controls the operational techniques and activities that sustain the work or service quality to specified requirements. It is a continuation process of work for the implementation specification, standard of National Guard requirement.

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Quality Manual

A document which sets out the general quality policies, procedures and practices of an organization and is the main reference for procedures and construction methods.

Quality System

The organization structure, responsibilities, activities, resources, and events that together provide organized procedures and method of implementation to ensure the capability of the organization to meet the quality requirement.

Initial Inspection

The process of measuring, examining, testing, gauging or otherwise comparing the item with the requirements of the contract.

Defect

Ay of non-conformances of an item to the specified requirements.

Final Inspection

The last inspection before handover or acceptance of work, item or project.

Test Report

The individual record for a required test or inspection

NCR – Non Conformation

The non-fulfillment of specification requirements as indicated by the observations or test result.

RFI – Request for Inspection

An action for any activity to be checked/inspected by Royal Commission Inspector as per discipline of activity.

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7. QUALITY OBJECTIVE

- The main objectives of this project QA/QC plan are in accordance with contractor's

quality policy.

- To follow the approved method statement and procedures, as they apply during the execution of this project.
- To provide National Guard and contractor management the assurance that the work phase related quality objectives are met as

Owners engineering procedures.

8. ORGANIZATION

Project Manager

- Directly responsible for all Project Department Manager for all activities related to this project. Coordinates with Royal Commission to ensure that design interfaces between the disciplines are identified and conform to National Guard Quality Standards.

Procurement Manager

- Ensure that all procurement is executed based on approved submittals / approved materials
- Preparation of material and equipment status report to control and ensure of timely delivery
- Coordination with vendor & suppliers to update the availability of materials.
- Coordination and planning the timing of deliveries of all materials and equipments as per contract schedules.

QA/QC Manager

- Directly responsible to the quality control department for all activities related to the project.
- To ensure that the QA/QC plan is strictly adhered throughout the project.
- Coordination with Project Manager, Procurement Manager and QC personnel
- Coordination with National Guard QC personnel, attending meetings, fulfilling the requirement of the quality manual.
- Control and rectification of NCR's throughout the project.
- Conducting weekly QC meetings with QC personnel and construction Engineers/Supervisors.
- Preparation and submission of weekly and monthly QC report.



QA / QC Engineer

- Report directly to the QA/QC Manager.
- Coordination with the Project Manager.
- Ensure that QA/QC procedures are properly implemented as per National Guard specification and standards.
- Responsible to report all deficiencies in the quality of work to the quality manager.
- Responsible to evaluate the interpretation of the work methods and processes.
- Ensures compliance with the requirements of the weekly and monthly QC reports of the project.
- Coordination with Engineers and supervisors for any matter related to QA/QC plan.
- Has authority to stop the work in any work area where discrepancies remain uncorrected.
- Monitoring all construction activities and determining when it is necessary to conduct inspection and testing.
- Maintain daily log book, records and approved drawings with latest revision at site all times.
- Ensuring any changes in the field work shall incorporated immediately into the as-built drawing.



9. ORGANIZATION CHART

We acknowledge the importance of an independent quality control and assurance group within our project organization and this will be organized as follows:

i. ORGANIZATION FLOW CHART LOGIC

- The group will consist of a Quality Control Manager who is a key staff member assigned to quality control and is directly responsible to *EHCCO* and Quality Control Engineers from each discipline that are technically qualified to check standards. The quality control and assurance group will only answer to *EHCCO* Project Management.
- QC / QC Manager will confirm the daily progress achieved from Construction Department and will ensure that all the works are executed as per National Guard specification and standards.
- On completion of any particular activity, by *EHCCO*. the *EHCCO* QA/QC Engineer will inform the National Guard representative / National Guard inspecting engineer on the prescribed form, the details and location of inspection to be done.

ii. QA/QC RECORD

- QA / QC records are those documents which are pertinent to the QA / QC functions. They include but not limited to:
 - Audit schedule
 - Audit Report
 - QA / QC Activity Report
 - Management correction action report and logs.
 - Inspection survey report.
 - Notes and documentation
- The orderly filing of the original of QA / QC reports will be ensured by the QA/QC Manager through the site Document Controller and Administration Department.

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iii. FINAL CHECK OUT

A final check out of all major component and system will be performed prior to commissioning and completions of the facilities. The checks will ensure that the material and equipment are installed fully in accordance with specifications and standards and are in proper functioning order as originally intended by the Project Designer/Architect.

CRAFT

MEN

INSPECTOR



QA / QC ORGANIZATION CHART

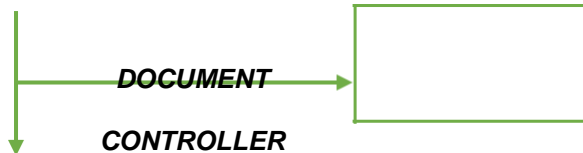
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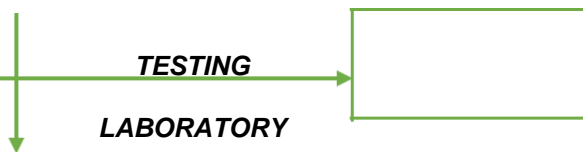


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ENGINEER**



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QUALITY SYSTEM

10. GENERAL

The quality system employed on this project as per this QA/QC plan is based on the guidelines set down by National Guard Quality System model for quality assurance in production and installation servicing.

EHCCO. shall submit the names, qualifications and location of all QC personnel and agencies, including independent test laboratory. Those shall be used during the construction phase.

Project Manager shall be responsible for the overall performance of the project. QA / QC engineer shall be responsible for the daily project QC program.

Inspection and testing requirements shall be carried out in accordance with procedure and specification.

Weekly QC inspection schedule shall be submitted to National Guard to schedule the inspection activities.

The approved copy of QA / QC program shall be distributed to all concrete personnel.

11. QUALITY SYSTEM DOCUMENT

LEVEL 1 - QUALITY SYSTEM

Project quality plan is the level-1 and the governing document of the quality management system

The quality QA / QC manager shall review & update the QA / QC Plan based on the comment from the project team and client to ensure that it reflect the actual function of the project.

LEVEL 2 - QUALITY SYSTEM DOCUMENT

Quality procedures and project procedures employed by the contractor form the level 2 quality management system



LEVEL 3 - QUALITY SYSTEM DOCUMENT

Work inspection and test plan form the level 3 documents.

The inspection and testing plan and acceptance criteria are covered in this section.

LEVEL - 4 QUALITY SYSTEM DOCUMENT

The following documents cover this level:

1. Construction specification
2. National Guard Engineering standards
3. Technical clarification.

12. CORRECTIVE AND PREVENTIVE ACTION

The requirement of corrective and preventive action shall be identified from the following reports:

1. Nonconformance report from the National Guard.
2. Nonconformance report from the contractor.
3. QC Weekly Report.
4. Quality Monitoring Report
5. Internal Quality audits
6. National Guard audits
7. Training and guidance to the project team and work force at all level.

13. HANDLING, STORAGE AND DELIVERY

The handling storage and delivery shall be controlled in accordance with the following procedures:

Up on receiving material, internal inspection shall be carried out as per procedure. All information of material will be noted on the material receiving form.

After completion of inspection material shall be packed as original shop for protection.

- Any missing part or deviation will be immediately reported to National Guard.

All material arriving at the store or site will be shown in the material receipt. / Inspection record form.

Damaged material shall be replaced unless modified or repaired.

Material control shall maintain the original of all delivery documents and copies of the material receipt, inspection report, and projection notes.

Steel material and sections shall be stored on cross timbers above ground level.

Piping materials shall be protected and stored on cross timbers above ground level or pipe rack.

The material shall be stored and separated based on material specification, grade, and type. Material shall be clearly marked and stored in an easily identifiable manner.



14. MATERIAL ISSUE

1. Material required by each discipline shall be required by respective Supervisor / Foreman through material issue request.
2. All transaction of material for a day shall be update by indexing the computerized material system.
3. Inventory shall be regularly verified against physical count and maintained on all materials in the stock.
4. All care shall be taken to prevent damage to the material while in use.
5. All material shall be traceable to manufactured serial number, heat number, cart number, and also reference document for the traceability of the material.
6. Color coding shall be following to identify different grade of similar material.

15. CONTROL OF QUALITY RECORDS

The quality records shall be controlled in accordance with this QA / QC plan.

16. INTERNAL AUDIT

Contractor personnel who are trained as internal auditors and are not member of project team shall carry out regular quality audits and shall be performed in accordance with National Guard Procedures.

17. EXTERNAL AUDIT

Only personnel who are trained as auditors or authorized by the National Guard shall perform audits in contractor site facility office.

18. AS-BUILT DRAWING

- The drawing shall be updated continuously and copies of as-built will be kept in contractor site office for reviewing periodically by the National Guard field engineer.
- The final as-built shall have all changes made identified by entries in red ink giving the full details of the drawing changes and the accompanying text.
- All As-built drawing will be photographically microfilmed after acceptance by the National Guard. The quality of these documents shall be such that they reproduce both legible text and clear illustrations when retrieved.
- Each as-built drawing shall be labeled As-Built in 6mm high printed letters and the drawing in 12mm high printed letters. A rubber stamp may be used for this purpose.



19. HAND OVER

All the documents related to QA / AC shall be handed over to the National Guard as per their standards and requirements.

20. INSPECTION AND TEST PLAN

Please see attachment details of table form inspection and test plan.



SAFETY PROGRAM



01 - MISSION STATEMENT

TO ALL PROJECT EMPLOYEES:

A primary critical success factor for the project is to achieve ZERO Lost Work Day Cases. It is our sincere desire to complete this project without sustaining any incidents or injuries, and we require expect your support in so doing. Your commitment to the accident prevention program, participation and cooperation are essential to meeting our project and company objectives in providing a safe working environment for all our employee, clients, sub-contractors and suppliers.

The project safety culture can be manifested in the following statement.

“The work is never so urgent that we cannot take the time to do it safely. It is the responsibility of each individual that everyone leaves the job in the same condition they arrived.”

Project Manager

Date

Safety Manager

Construction Manager

Date



02-INTRODUCTION

The information in this Safety Plan has been compiled to serve as reference for EHCCO. /NG project. This Safety Plan has been prepared to assist EHCCO. personnel and its contractors in satisfying their moral, legal, and contractual responsibilities. Each sub-contractor shall have their own safety program, specific to the hazards of their work and a method of measuring its performance. EHCCO. shall audit the overall program compliance and performance on the project and forward the information/data to the client

03 - SAFETY OBJECTIVES, MISSION AND ASSIGNMENT:

Safety Objectives:

Consistent with the signed corporate safety policy statement, management is committed to a safety program throughout the execution of work.

Safe execution of work

Zero incident and accident goal

The project safety program is administered in accordance with OSHA regulation for construction (CFR 1926). Saudi Government legislation, National Guard safety rules and regulations, applicable ANSI standards.

Responsibilities for Safety:

a) Project Manager:

The Project Manager represents senior levels of management on the project site and is accountable for the following activities:

Ensuring the safety performance and accountability of subordinates. Safety values of the project.

Issue memo of concern when goals are missed.
Include safety as part of each project meeting.
Empowering everyone to act on the vision.

Visibly demonstrating to the organization that personal commitment to safety is a number one priority.

Review all accident / incident investigation reports.

Ensure implementation of the Clients approved project-specific safety program.



b) **Construction Manager:**

The Construction Manager is essential in the implementation of the accountability program. The success of the program is contingent upon the support of this level of management. The Construction Manager is accountable for the following activities:

Ensure all employees receive required training
Enforce the disciplinary program

Monitor toolbox meetings.

Ensure the quality of his respective site employees and sub-contractor safety performance.

Participate in incident investigations.
Planning safety into work activities.

c) **Supervisor:**

Conduct pre-task evaluations of work scope & area. Hold weekly safety meeting with all employees.

Correct all safety deficiencies

Enforce project policies and procedures.

Monitoring the behavior of the people and provide coaching to change the attitude and behavior positively towards working safely.

04 - PERSONAL PROTECTIVE EQUIPMENT (PPE)

A. GENERAL

This procedure provides guidelines for contractors on the requirements for conducting a hazard assessment of the workplace to determine the need for appropriate personal protective equipment (PPE), communicating the assessment results to employees eliminating defective PPE and training employees in the proper use of PPE.

B. HAZARD ASSESSMENT & EQUIPMENT SELECTION:

At the start of the project, a hazard assessment shall be performed to determine any hazards that requires the use of PPE. This assessment designed to identify potential hazards to foot, head, eye, face, body and hand. The assessment consists of a walk through survey that examines the following:

Sources of motion (i.e; Machinery, Tool Processes, Personnel Movement).

Sources of high temperatures that could results in burns, eye injury, or ignition of PPE.
Sources of chemical exposure

Sources of harmful dust

Sources of light radiation (i.e; welding, brazing, cutting, etc.) Sources
of falling objects or potentially dropped objects.

Sources of sharp objects with potentially to puncture feet or hands.
Sources of rolling or pinching objects that could crush feet.

Electrical hazards, and
Layout of workplace and worker placement.

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Hazards should be identified and noted during the course of the walk-through where hazards exist, identify the type, level of risk, and seriousness of potential of injury for each hazards. Review, any hazards identified and consider the use of guards or engineering contracts that will eliminate or minimize the hazards.

Select PPE based on the degree of protection required for the hazard and the protection provided by the PPE.

C. HEAD PROTECTION:

Employees shall wear hardhats that are in good condition and meet applicable regulatory standards (ANSI [American National Standard Institute] Z 89.1-1981 and ANSI Z89.2-1971) alteration of hardhat is prohibited.

Hard hats shall be worn in the proper manner (brim to the front). The only exception is for welder whose hardhats may have to be reversed to accommodate welding shields while performing welding operations. When not welding, welders must wear hard hats with brim to the front.

D. HEARING PROTECTION:

Hearing protection is required where high levels of noise are present (above 80db project specific) and when mechanical tools are used which may reach the prescribe level

E. EYE AND / OR FACE PROTECTION:

Employees shall wear approved ANSI Z87.1-1989 safety glasses with the side shields in all work areas except offices. Additional eye and/or face protection, such as goggles, face shield, and welding shields, shall be required when engaged in operations such as welding burning, grinding, chipping, handling chemicals, (i.e.; corrosive liquids or molten materials), drilling overhead, use of cartridge actuated tools, and pouring concrete.

Employees and visitors may wear photo-gray safety lenses, where permitted, anywhere on the jobsite, but permanently tinted lenses may be worn only in outside work areas. Wearing of contact lenses shall be addressed in the site-specific safety rules.

Prescription glasses must meet the approved applicable regulatory standards and must be equipped with side shields. Cover all glasses (Over specs) or goggles shall be required for prescription glasses that do not meet the standard.

Employees engaged in welding shall use filter lenses or plates specified by the applicable regulatory standards. Safety plates on both sides shall protect these lenses. Employees assisting welders should not look directly at the welding process and shall use approved eye protection. Where welding operation may be seen by passing members of the public i.e. drums & pedestrians all welding operations will be shielded from view with fire blankets.

Employees engaged in operations using lasers shall use laser safety goggles suitable for the density of the laser beam being used. Such goggles shall be marked showing the visible light transmission, the laser wavelength for which such goggles were intended, and their optical density.

Employees shall be informed of the exact location of eyewash stations.

F. FOOT PROTECTION:

Work shoes or boots shall be constructed of hard leather and with a steel toecap inserted to provide sufficient protection on the front end of the shoe. Shoes shall cover the heels. Shoes (like boots) that cover the ankles are recommended. Sneakers, sandals and other shoes of this description are not to be worn at any time in working areas.

Additional foot protection, such as metatarsal foot guards, must be worn when operating tamps, jackhammers, or when there is potential for a foot injury.

Rubber boots with steel toecaps shall be worn when working with concrete or in water.

G. RESPIRATORS:

The appropriate respirators shall be worn and used in when effective engineering controls are not feasible, or while they are being instituted to control occupational diseases caused by breathing air contaminated with harmful dust, fogs, fumes, mists, gases, smokes, sprays, or vapors.

H. HAND PROTECTION:

Gloves shall be worn when handling material or liquid that could burn, cut, tear or cause injury to the skin. Use-caution when wearing gloves around certain machinery. Protect hands from nip or pinch points.

I. SEAT RESTRAINTS:

Seat belts shall be worn and used by all employees operating or riding in any motor vehicle. Seat belts shall not be worn on any equipment without a rollover protective structure in place unless otherwise directed by the Project/Site Safety Representative.

J. SAFETY HARNESES:

Safety harnesses with lanyards and shock absorbing units shall be worn and used in all cases when working 1.8 meters and above ground and a 100% safe working platform that complies with the 100% fall protection policy has not been provided. Safety harnesses shall also be worn when ascending ladders whether the ladders are engaged or open. A 100% tie off policy shall be maintained.

K. COMMUNICATION AND TRAINING:

Communicate PPE requirements to all affected employees at the project/site. Enforce the use of PPE for protection against the hazards identified. Train employees who are required to wear PPE. This training must include:

When PPE is required; That
PPE is required;

How to wear, adjust, and maintain PPE;

How to determine if PPE is damaged or defective; and The
limitations of PPE.

Employees must demonstrate understanding of this training and the ability to use PPE properly before beginning work that requires PPE. If a trained employee later demonstrates a lack of understanding or skill in PPE, they must be retrained.

A written certification is required to document training. The Project / Site Safety Representative maintain this certification.

L. DEFECTIVE OR DAMAGED PPE:

Defective or damaged PPE must be immediately removed from use. Employees must inspect PPE prior to use to insure it is fit for use.

M. EMPLOYEE OWNED PPE:

All personally owned safety equipment (i.e.; harnesses, lanyards, hard hats, etc.) must meet project's / site's PPE inspection requirements.

Personally owned PPE must be approved by Project / Site management prior to use on projects / site.

05 - PERSONAL PROTECTIVE EQUIPMENT/S (PPEs) and CLOTHING

GENERAL REQUIREMENT:

The following Personal Protective Equipment (PPEs) items are the minimum requirement and must be worn by everyone including casual visitors in all work areas at all times:

Hard hat Safety Shoes

- in compliance with
ANZ189.1-1987 or equivalent
- in compliance with ANSI
Z41.1-1991 or equivalent

Safety glasses- in compliance with ANZI7.1-1989/CSAZ94.3-92 or equivalent

Cover-alls or/ Long Sleeves

- heavy duty



Additional PPEs shall be provided to and worn as and when required by affected employees such as:

Earplugs / earmuffs:

When exposed to a noise level above 85 **dB**, 8-hour Time Weighted Average (**TWA**) or engaged in noisy operations such as air blowing, concrete breaking, cutting, chipping, bolt tightening, use of cartridge actuated tools, use of circular saw, sandblasting, etc. or when performing activities in or passing through areas identified to be “**High Noise Area**” e.g. process area or close to high noise producing equipment such as compressors, welding machines, etc. Ear protection shall have a minimum of 20 dB NRR (noise Reduction Rating) and shall conform to ANSI S3.19 – 1974 or equivalent recognized regulatory standards.

Face shield (in addition to) eye protection:

When conducting any activities, which pose potential, eye and face injuries. Where face shield is required, it must be appropriately attached to the Hardhat. Face shield is a secondary protection. Primary protection (safety glasses or mono-goggles must always be used in conjunction with face shield. Face shields must comply with ANSI Z87.1-1989 or equivalent standards. Activities that require face and eye protection include but are not limited to:

Grinding / torch cutting
Concrete chipping

Pressure testing (when directly involved in monitoring test pressure) Air blowing

Spray painting

Chemical cleaning / handling
Insulation work

Hand (working) gloves:

In all activities requiring hand protection from sharp / rough objects. Hand gloves however, shall not be used in situations where the individuals is exposed to “**running nips**” or working close to moving “**rotating**” machines / objects such as magnetic drills, table saws, belts, shafts, etc. as they can be caught and trap the hand before it can be withdrawn from the glove. Examples of activities that require hand protection include but are not limited to:

Cable pulling Hand digging

Rigging / lifting work Piping works

Rebar / form work
Cladding work
Structural erection, etc.

Fire resistant **welding gloves, leggings and apron** – shall be provided for welders.

Welding helmet combined with head protection, with # 10- # 14-shade lens – for all welders. A combination of welding helmet and head protection is necessary in conditions where the welder is exposed to fall hazards from overhead or nearby, activities.



Cutting / burning goggles combined with face shield and with a minimum of #4 filter lenses – when reforming gas cutting operations, brazing, etc.

Full body harness with shock absorbing lanyard – in all elevated (unprotected) areas, 6 feet (1.8 meters) and above heights where personnel is exposed to accidental fall. Full body harness shall be provided to and worn by confined space entrants, erectors, scaffolders, personnel in man basket and similar hazardous operations at heights. Lanyard with a locking snap hook shall always be attached to a stable structure or lifeline capable to withstand a minimum of 5000 lbs. force. Anchorage point of lanyard must be at or above shoulder height to limit the free-fall distance to a maximum of 6 feet. These falls protection devices shall meet the minimum requirements of OSHA – 29 CFR 1926.502, ANSI A10.14-1991 or other recognized regulatory standards. Shock absorbing lanyard shall not however be employed where, because of the nature of task and working condition, it may pose an extra hazard to the wearer as in the case of confined space entry or in a congested space where the use of the decelerating device is not reasonably feasible. In such cases, site safety representatives or judgment of safety experts sought must make further evaluation.

Disposable cover-all – for personnel engaged in painting, vessel cleaning confined space entries, insulation and similar activities.

Disposable dust masks – for all personnel exposed to light / non-toxic nuisance airborne particulates such as dust and similar air contaminants.

Chemical Cartridge (Air Purifying) Respirators – where required, in activities such as painting, insulation work and similar activities where respiratory hazards from mist of paints, thinner, organic vapors, minute fibers, etc. exist or possible. Respirators required in a hazardous atmosphere shall be of **NIOSH / MSHA** approved type or equivalent, whose worded label on the cartridge / canister / filter includes the prefix ‘**TC**’ indicating Tested & Certified. Air purifying respirators must only be used where oxygen content is sufficient (above 19.5%).

Chin Strap – must be used for all personnel engaged in elevated work where hardhats may fall or those working outdoors where hard-hats could be wind-blown.

Self-contained Breathing Apparatus (SCBA) – shall be employed as standby emergency rescue equipment in confined space entries and similar hazardous operation. ONLY trained personnel shall use SCBAs. Scott Air Pak / Survivor or equivalent **NIOSH / MSHA** approved brands are recommended.

Airline Respirator – shall be employed in operations where affected employees are subject to continuous or prolonged exposure to a potentially oxygen deficient / toxic atmosphere e.g. vessel cleaning, painting / sandblasting in a confined space, etc. When employed, it must be of NIOSH approved type.

Chemical (mono) Goggles Combined with face shield – when exposed to chemical splash hazards such as during chemical handling, chemical cleaning work, when working in a process area and the like.

Air Supplied Protective Hood – for sandblasters. Must be of NIOSH approved type.

Sleeveless shirts and tank tops will not be permitted. Long sleeve shirts are recommended to be worn at construction site, except, when directly working with rotating machines such as magnetic drills, etc.

Sandals, tennis shoes or any other street type footwear shall not be allowed. Loose fitting clothes and jewelry shall not be allowed around or near rotating or moving machines. Long hair which could come in contact with or be caught in moving machinery shall not be allowed or appropriately protected.

Adequate quantity of extra PPE's (hard-hats, safety glasses, ear protection, etc.) shall be maintained at the site warehouse / material section for immediate issuance / replacement that may be required on project including those for necessary issuance to visitors.

Appropriate safety eyewear glass cleaner shall be made available to site employees.

All relevant requirements on proper usage, selection and maintenance of personal protective equipment (PPE's) shall be in compliance with the manufacturer's requirement.

06. FIRST AID:

General:

The Project recognizes the fact that the health and welfare of the employees and that their basic health needs must be met at the higher level in order for them to perform and execute their assigned tasks safely and efficiently. The project also recognizes that immediate treatment of injuries and illness directly benefits that employee and project.

The objectives of having First Aid facility on the project areas follow:

☐ To provide and meet the basic health care needs of project employees.

☐ To attend all First Aid cases, injuries requiring medical treatment and other medical emergencies and notify the project owner safety Coordinator immediately.

☐ To maintain an acceptable level of health and hygiene within the site, lay down areas, and man camp.

☐ To conduct health education programs where necessary.

☐ To conduct and participate actively in health care promotion and coordinate with the project safety manager for the implemation of the **"NO ACCIDENT"** program.

☐ To conduct basic CPR/First Aid training as directed by the project coordinator

CPR / First Aid Personnel Duties and Responsibilities:

They must be able to deal efficiently and diligently with employees of varied nationalities, culture and background. The CPR / First Aid personnel are an active participant in the promotion and implementation of the health care and injury treatment program on the project. They shall competently

perform the following duties and responsibilities and must be willing to perform other duties and responsibilities asked for the Project Manager and Project Safety Manager.

Assist in medical examination and administer prescribed treatment to patient and or the injured.

Maintain a detailed record of all cases attended to.

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Maintain a file of all patients attended to and keep them in a locked filing cabinet.

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Keep an inventory of up to date medicines ready to be dispensed and all equipment and supplies of the medical facility.

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Sterile gloves shall be used in all invasive or open cases when patients' blood or body fluids shall come in contact with any part of the body of the first aider.



The CPR / First Aid person shall not apply stitches or sutures to a wound.



07 - EATING AND SANITATION:

This procedure outlines the guidelines for maintaining the sanitation of the project/site eating, rest room and other related facilities used by employees at the Project site.

Site management is responsible for assuring that these facilities are maintained in an orderly and sanitary condition at all time.

A. EATING FACILITIES:

The location of eating facilities shall be identified at the start or opening of the project/site. Eating facilities are to be located in area, which will allow the employees to eat without direct exposure to work activities or to be exposed to any chemicals, fumes, or airborne contaminants from any near by process or operation activities.

Designated eating areas will be provided with suitable tables and chairs adequate for the number of employees that will be using the facility. The eating facility should, at a minimum, be covered to provide shade and protection from the weather. The shelter that is built over any designated eating area must be designed and built to withstand all anticipated forces association with poor wather condition comparative to the climate of Saudi Arabia.

Designated facilities shall be kept clean and orderly at all times. Debris and food scraps shall not be allowed to accumulate in or near the facility.

An adequate number of waste receptacles shall be provided, which will be appropriate construction, and equipped with snug fitting led for the purpose of minimizing the attraction of insects, mice and other vermin. All waste receptacles shall be emptied on a daily basis.

B. WASHING FACILITIES:

Where employees are engaging in the application of paints coatings etc., or in other operations involving substances, which may be harmful to the employees. These washing facilities may be in the form of ordinary scope and water or in the form of special compounds designed specifically for the removal of harmful chemicals and other contaminants from the skin.

Washing facilities for the employees should be appropriately provided throughout the site.

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C. DRINKING WATER:

An adequate supply of potable iced drinking water is required to be available at all times in the working areas.

The water shall be tested regularly to ensure employees have safe drinking water.

Portable containers used to dispense drinking water equipped with tap, faucet, or drinking fountain and shall be capable to being tightly closed and sealed.

Any container used to store or dispense drinking water shall be clearly marked as to the nature of its contents, the date of the water, and shall not be used for any other purpose. Common/shared drinking cups are prohibited, where single service cups are supplied, or sanitary container for the unused caps, and a receptacle for disposing of the used cups.

D. TOILET FACILITIES:

Toilet facilities, whether portable, chemical or permanent, shall be kept clean, maintained in good working order, and provided with an adequate supply of toilet paper.

Project site management will ensure that all site toilet facilities used by employees are cleaned and serviced on a scheduled basis that will prevent the facilities from becoming unsanitary and unusable.

Each toilet facility shall include both a toilet seat and a urinal.

Toilets shall be provided for employees according to the following table:

Number of employees	Minimum No. of facilities
20 or less	One (1)
20 or more	One-toilet seat and one (1) urinal
per 20 workers.	
200 or more	One (1) toilet and one (1) urinal

per 50 workers.



08- BARRICADES

GENERAL

This procedure outlines the barricading requirements for us to follow on the project. Barricade will generally not be accepted as the primary means of barricading off a hazard and may only be used as described within the procedure. Physical hard barriers will be used as the primary means to barricade hazards and hazardous work areas.

PHYSICAL BARRIERS

Physical barriers will be erected to provide protection against hazards and dangers, hazardous work areas and hazardous work in all cases where the hazard or danger will exist for a period longer than 8 hours. Barricade tape will be used to wrap around the physical barrier or in conjunction with the physical barrier to provide additional warning of the hazards or danger that exist and / or to increase the visibility of the barrier.

1. Barriers will be constructed of material of substantial strength such as scaffold tubing or 50mm x 100mm lumber or proprietary traffic cones as required.
2. Barricades and cones shall be visible at all times where a hazard or danger exists and additional signs may also be required.
3. All streets, roads, highways, and other public thoroughfares, construction roads which are closed to traffic, shall be protected by effective barricades or cones on which shall be placed acceptable and highly visible warning signs. Barricades or cones shall be located at the nearest intersecting, highway, street or road on each side of the blocked section.
4. All floor openings, open trenches and other excavations shall be provided with suitable floor opening covers, barriers, signs and lights to the extent that adequate protection is provided to the employees and public. Obstructions such as material piles and equipment shall be provided with similar warning signs and lights.
5. All barricades, cones and obstructions shall be illuminated by means of warning lights from sunset to sunrise.
6. Materials stored upon or alongside construction roads and public streets and highways shall be so placed, and the work at all times shall be so conducted as to cause the minimum obstruction and inconvenience to the traffic.
7. All barricades, cones, signs, lights and other protective devices shall be correctly installed and maintained.
8. Signs, signals, barricades and cones shall be removed when the hazard no longer exists.



BARRICADE WARNING TAPE

Three (3) types of barricade tape will be utilized on this project as a visual warning for employees. Barricade tape does not offer physical protection for floor edges, roof edges, floor openings, trenches, excavations, etc, and shall not be used for physical protection.

Barricade tape will be used with physical barriers to increase the visibility of the barrier and to indicate the type of hazard that exist. Barricade tape may also be used to rope off low risk hazards that will not take longer than 8 hours to remove all hazards and make the area safe.

Other exceptions are where barricade tape may be used is where people are stationed outside the hazardous work area to help control accidental entrance into that area while performing short duration work. Examples are where a crane lift is being performed or where a truck is being off loaded.

1. YELLOW / BLACK BARRICADE TAPE:

This type of barricade tape shall serve as a warning / caution to indicate to employees that the potential hazards exists employee may enter without permission from contractor. This barricade tape shall be used for, but not limited to the following:

- Identification of trip hazardous, low hanging objects etc.
- Materials storage on the site.

2. RED / WHITE BARRICATION TAPE:

This type of barricade tape shall indicate “DANGER” and potential serious hazard may be present. NO EMPLOYEE, other than that craft assigned to work inside a red barricade may enter without first obtaining permission from the contractor. This barricade tape shall be used for, but not limited to the following:

- a) Over head work
- b) Live electrical components
- c) Scaffold under construction
- d) Around swing radius of equipment with a rotating super structure.



3. **MEGENTA (PURPLE) YELLOW:**

This barricade tape shall be used to indicate "DANGER – RADIATION", and that possible exposure may be present. Signs must be posted to protect areas where radiation operations are in progress.

BARRICADE ERECTION:

- 1) Erect the barrier or cones and install the tape to enclose the specific area to be protected only. Do not block passage way or access ways unless entirely necessary. If passage way or access ways must be blocked, contract supervisor for coordination with other craft and / or possible alternatives.
- 2) Erect barriers or cones and install tape in a secure and neat manner that will maintain a height of between 1 meter and 1.2 meter (40" and 45") from the floor or ground surface.

09 - EXCAVATION AND TRENCHING

A. GENERAL:

This procedure provides guidance to us for the protection of personnel working in and around excavations and trenching:

1. **Excavation:**

Any man made cavity or depression on earths surface formed by earth removal which produces unsupported earth conditions by reason of excavation work.

2. **Trenching:**

A narrow excavation below the surface of the ground with its width at the lowest level below ground surface not greater than 9 meters (15 feet) wide.

3. **Competent person:**

One who has specific training in and is knowledgeable about soil classification, the use of protective systems and requirements of the standard.



B. GENERAL REQUIREMENT:

Prior to commencing excavation or trenching an approved excavation permit is required, and owner shall be advised of the proposed work to allow them to determine the location of all underground installations (i.e; sewer, telephone, water, fuel, electric and gas lines) over head hazards are to be assessed and dealt with at this time also.

Excavations, trenching and adjacent areas shall be inspected by a competent person, after every rainfall, as soil conditions change and as needed throughout the shift. If there is evidence of possible slides, or cave-ins, indications of failure of protective systems, hazardous atmospheres, or other hazardous conditions, necessary safety precautions to eliminate these conditions must be taken before any additional work in that section of the excavation begins.

Employees shall not work in excavations where water is accumulating unless adequate precautions have been taken to protect employees against the hazard posed by the water accumulation. If water accumulation is controlled or prevented by water removal equipment, the competent person must monitor the removal activities to ensure proper operation and provide adequate warnings, if necessary.

C. ACCESS:

In trenching 1.2meters (4 feet) or more in depth ladders, steps, ramps, or other safe means of access and egress shall be provided and located at intervals of 7.5 meters (25 feet) or less lateral travel. If a ladder is used, the ladder will be extend 2 meter (6 feet) above the original surface of the ground and must be secured.

Walkways, ramps or bridges with standard guard rails will be provided for all excavations and trenching, where employees are required or permitted to cross over. The crossing will be solidly made and tightly secured each end uniformly sized, placing.

D. SET BACK:

Employees shall be protected from excavated or other materials or equipment that could pose a hazard by Falling or Rolling in to adjacent excavation. Protection shall be maintained by placing and keeping such materials or equipment at least 1 meter (3 feet) from the edge of any excavation, or by the use of retaining devices that are sufficient to prevent materials or equipment from the Falling or Rolling in to excavations or by combination of both.

E. DUST:

Dust conditions should be kept to a minimum level by the use of regular sprayed water or other safe means of stabilization.



F. **CONFINED SPACE:**

Every trench or excavation with a depth of 1.2 meters (4 feet) or greater shall be tested at least daily for gases and atmosphere deficiency in accordance with the project requirements for working in Confined Spaces.

G. **EXCAVATION PROTECTIVE SYSTEM (PROTECTION OF EMPLOYEES):**

Each employee in an excavation shall be protected from cave-ins by an adequate protective system.

Protective systems shall have the capacity to resist all loads that are intended for the system, could reasonably be expected to be applied or transmitted to the system protective system shall have the capacity to resist all loads that are intended for the system, could reasonably be expected to be applied or transmitted to the system.

Sides, slopes and faces of all excavations will be scaled, benched, Rock-bolted, wire-meshed, or secured by some other equally effective means. Portable trench boxes or sliding trench shields may be used instead of shoring or sloping. Such boxes or shields must be of a strength at least equivalent to the sheeting or shoring that would be required in the face of the nature of the soil of material which the trench is made. All protective systems shall be visually inspected at the start of each work period by a competent person. Prior to access being granted.

H. **SOIL CLASSIFICATION:**

When using protective systems requiring soil classification each soil and rock deposit shall be classified by a competent person as "Stable Rock, Type A, Type B or Type C."

The classification shall be made based on the results of at least one (1) visual and at least one (1) manual analysis. Such analysis shall be conducted by a competent person using acceptable visual and manual test or other recognized methods of soil classification. The manual test consists of soil plasticity dry strength, thumb penetration, pocket penetrometer or result from a hand operated shear vane. The test will be documented utilizing the attached form signed and dated by the competent person.

SLOPING / BENCHING SYSTEM

The slopes and configurations of sloping and benching systems for excavation 1.5 meter to 6 meters (5 feet to 20 feet) in depth must be selected and constructed by the employer or his designee and shall be in accordance with the following requirements.



A competent person must do soil analysis to determine the soil or rock type.

Soil or Rock Type		Maximum Allowable Slope (Horizontal Allowable Slope)
Stable Rock	Vertical	90 degree
Type A	250 mm (3/4 ft)	: 300 mm (1 ft) 53 degrees
Type B	300 mm (1 ft)	: 300 mm (1 ft) 45 degrees
Type C	450 mm (1-1/2 ft)	: 300 mm (1 ft) 34 degrees

Note!!! Simple slope excavations in Type A soil, which are open 24 hours or less (short term) and which are 10.6 meters (12 feet) or less in depth shall have a maximum allowable slope of ½ Horizontal: 1Vertical (63 degrees).

Simple slope excavation in Type A soil, which are open 24 hours or less (short term) and which are greater than 10.6 (12 feet) in depth shall be ¾ H:IV (54°).

The competent person must classify the soil as Type A. The required permit and classification must be filed on the project.

No soil classification is required if 450 mm Horizontal to 300 mm Vertical (1-1/2 ft : 1 ft) or 34° is used. The excavation must comply with applicable **OSHA** 1926 Standards.

SUPPORT SYSTEM, SHIELD SYSTEM, OTHER PROTECTION SYSTEMS

Designs of support systems, shield system and other protective systems shall be selected and constructed by the employer or designee and shall be in accordance with applicable **OSHA** 1926 Standards.

10 - FORMWORK / REBAR WORK, MASONRY WORK,

CONCRETE PLACING & CURING:

Form Work / Rebar Work

The design and construction of formwork shall conform to applicable Client's requirements / guidelines and approved design codes and standards.

The timber to be used will be of suitable material quality and of adequate strength.

Site Engineering or qualified third party shall design a formwork that will adequately support substantial imposed loads and Client's approval of the design must be sought prior to the actual concrete placing. Construction and dismantling of the same shall be performed by competent persons or under supervision by a competent supervisor with adequate exposure on such operation. Formwork shall be maintained so that it will safely support all vertical and lateral loads that may be imposed upon it during the pouring and vibrating of concrete.

Protruding rebar onto which employees could fall or bump against shall be appropriately guarded or removed to eliminate potential harm. Rebar caps shall be provided. Rebar work must be performed where it will not hamper nearby activities and will not cause mobility restriction in the area.

Masonry Work

A limited access zone shall be established prior to the start of any masonry walls. Such limited access zone is a restricted zone running along the masonry wall that is under construction. Only those directly involved in the masonry work may enter this zone.

Limited access zone must be located at a distance "away from the wall" of at least 1.5 times the height of the masonry wall.

When working from a cantilever platform, a continuous guard rail (top and mid rail) must be installed along the edge of the platform to keep masons from being exposed to potential fall especially when working their way backwards. The edge of the platform immediately adjacent to the masonry wall (front edge), may not have guardrails installed provided that the effective gap or clearance between the edge of the platform and the wall does not exceed 14 inches. During the initial laying of the masonry blocks where, the side

of the structure to be masonry walled adjacent to front-edge of the platform remains open or partially walled. Masons must be protected with full body harness or temporary guard rails along that front edge of the platform installed until such time that the laying of masonry blocks reaches at least the height of the guard rail. Full body harness when use, must have an attached shock-absorbing lanyard.

To prevent masonry, wall from possible failure, collapse or overturning, they must be adequately supported or braced until permanent supports are in place.

When masonry blocks or bricks have to be stockpiled on the platform, make sure that the platform has been designed and erected to withstand the load that such materials would impose upon it. If so allowed, ensure that the masonry materials are placed over the strongest part of the platform (i.e. close to the posts / standards) and not at its center or mid-span. If in doubt the scaffolding provider or manufacturer.

Concrete Placing / Pouring:

Only authorized personnel shall be allowed in concrete pouring / placing operations. Unauthorized persons shall stay clear of the pour area. A clear area will be maintained at least 1.5 x the highest point of formwork.

Subcontractors personnel for concrete pouring services i.e. concrete mixer's driver, operators and attendants shall wear the required minimum personal protective equipment i.e. safety shoes, hard hats and safety glasses at the construction site. Upon qualifying subcontractor for such services, Site Management have to make sure that such safety requirements are properly communicated to and taken into account by the responsible party in order to avoid safety apprehension and possible work delay during the actual concrete pouring / site delivery.

Flagman or equipment spotter shall be designated to direct maneuvering / reversing of concrete mixers / concrete pumps in an operating plant or congested construction area where overhead and ground hazards exist. It is the immediate responsibility of the area supervisor to make sure such practice is observed.

Collection, disposal and cleanup of concrete spoils or splatters shall immediately take place following concrete placing / pouring to prevent the same from hardening in the area.

Where concrete placing is to be performed inside operating plant, hot work / vehicle entry permit shall first be obtained prior to entry and proper coordination pre-arranged with

Client's representatives, to prevent work delay.

Combustible curing burlaps shall be removed immediately from the work area as soon curing is through, and stored well away from open flames, welding / cutting operation or from smoking area. While required to remain within a work area for curing treatment, such

combustible burlaps must be kept wet by spraying with water to eliminate any potential fire hazard.

De-nailing / Housekeeping:

De-nailing of used timbers / concrete forms to be re-used must be performed immediately following removal of concrete forms and whenever it is necessary such as in the case of timber crating generated from delivered construction equipment / instruments / materials. De-nailing must be performed in a designated area, identified with appropriate notice such as "De-nailing Area" and properly roped off.

While formwork, rebar or concrete works are underway, good housekeeping in the work vicinity must be maintained at all times. Timbers with protruding nails must be immediately collected and placed in the designated de-nailing area and access ways are maintained free of obstructions and tripping hazards.

11 - ABRASIVE BLASTING AND PAINTING / COATING

ABRASIVE BLASTING:

Abrasive blasting for the project will be conducted at a location approved by the Client. The location generally must be downwind of the work site, considering prevailing wind in the plant, appropriate enclosure of the area shall be provided to contain dust generation and blowing into other areas.

Only qualified / well trained sand blasters will be permitted to perform abrasive blasting operation. The immediate surrounding of blasting operation shall be kept clear of any unauthorized persons.

Abrasive blast cleaning operator will be provided with an approved, air supplied protective hood, and in good condition.

Sand blasting attendants will be provided with and required to wear NIOSH / MSHA approved air-purifying respirators during the course of operation.

An appropriate notice i.e.; **“Caution, High Noise Area, Wear Ear Protection”** will be conspicuously installed and maintained at conspicuous locations at the abrasive blasting area.

All personnel within or in close proximity to blasting area subject to excessive noise, are required to wear earplugs during which the abrasive blasting is in progress.

A bonding system that bonds nozzle hose, blasting equipment and the material being cleaned will be provided, and this bonding system shall be earthed to prevent build up of static charges. A competent site electrician shall be assigned to periodically test the ground continuity to ensure proper grounding.

A portable, gravity fed eyewash will be provided and maintained filled with potable water within the immediate reach of blasting personnel and attendants in the area.

No hot work or open flame will be allowed within at least 50 feet of the blasting / painting area.

Paint storage shall be kept well ventilated, identified, isolated from work operation and posted with “Danger, Flammable, and No Smoking” notices.

Compressed air hoses will be secured properly, fixed with proprietary hose couplers and doubly secured with safety wires.

PAINTING:

Safe work permit will be obtained before any painting work starts in a permit required area.

Where spray painting is to be conducted, the immediate surrounding must be cleared of other materials / equipment and vehicles that could be damaged be or subject to paint mists.

Painting works will not, at any time be allowed near or below an on-going hot work or within 50 feet of ignition source / open flame.

Only the quantity of paint required for the specific work for the particular work shift will be allowed in the area. No excess or extra quantity of paint or any flammable solvent / thinner will be stored at any time at work site.

Where painting work is being conducted, a readily accessible 20lbs capacity portable dry chemical (ABC) type fire extinguisher shall be available within the immediate work vicinity.

Paint storage shall be:

Adequately ventilated

☐

Adequately equipped with fire extinguishers [at least two 20-lbs. cap. Of dry chemical (ABC) type per storage van].

☐

Away from combustible material / hot work (at least 50 ft.)

☐

Provided with warning notice, i.e. "Danger, Flammable, No Smoking".

☐

An appropriate air purifying MSHA / NIOSH approved respirator suited to protect painters from respiratory hazard from mist of paint will be provided to and work by the exposed / affected personnel.

PIPE SUPPORTS:

Pipe stands or A-frames used for supporting pipes subject to painting / grit-blasting / storing, shall be substantially stable and provided with pipe-stopper at both ends to prevent rolling or displacement of pipes or tubes.

Ends of pipe stands shall be as close as possible to the end supports and in no case exceed 12 inches beyond the end-support, to prevent tipping over or toppling when so loaded only at one end.

Proper wooden Tonnage shall be adequately installed to prevent pipes / tubes from rolling.

Where required, engineering calculations / designs of pipe stands / A-frame supports shall be sought to ensure structural stability against bending / failure with respect to anticipated maximum load.

Pipe stands must be located where they will not pose traffic hazards or obstructions to public and construction equipment / vehicles. Exposed ends of pipe stands that may pose bumping hazards at night time must be identified with luminous warning tape or blinking warning lights at night.

Where the potential for building up static charges in the work area exists, pipe supports shall be appropriately earthed to the ground.



BREATHING AIR FOR ABRASIVE BLASTING OPERATORS:

The required purity test and monitoring of the hood-supplied breathing air for abrasive blasting operators including air filter cartridge replacement requirements, shall be in accordance with Section VII – 11.0 (Respiratory Protection) of this program.

12 - WELDING, CUTTING & GRINDING SAFETY

Work Permit

All welding / cutting / grinding works shall be performed in full compliance with the requirements cited in all applicable procedures of Client and shall not be prepared without the required permits being granted.

Hot work permit must be obtained and all stipulated requirements totally complied with and verified by the concerned permit receiver (the foreman or supervisor) prior to performing any welding / cutting / grinding work.

It is the immediate responsibility of the responsible permit receiver, to see to it that all stipulated conditions / requirements on the permit are enforced throughout the course of activity.

General Requirements

Only qualified / competent welders will be allowed to perform welding work on the project.

Appropriate Personal Protective Equipment (PPE) such as welding shield cutting goggles, helmets, flame resistant gloves / aprons, leggings, wind screens / personnel protective barrier, forced air ventilation (where required) and similar equipment will be provided to welders and affected personnel in the immediate area. Welders shall wear welding helmet with # 10 to # 14 shade lens. Oxy-acetylene cutting goggles shall have # 3 to # 6 shade lens. A combined welding helmet and head protection shall be employed where fall hazards from nearby overhead works exist.

No welding / cutting operation will be conducted unless the area is clear of any flammable / combustible materials or heavy dust concentration that can potentially create a fire hazard.

No welding / cutting operation will be conducted unless at least one (1) unit of 20lbs capacity dry chemical portable fire extinguisher is readily available in the immediate area at least 3 meters away from the machine and no more than 7.5 meters' distance from the point of hot work. Fire extinguisher shall not be attached or installed directly to the machine.

All sewers / process drains within 75 feet (23 meters) of the hot work area (if any), in an existing plant will be covered with noncombustible material prior to and during the course of welding / cutting operation.

The welder must inspect all leads, grounds, clamps, welding machine, hoses, torches, gauges and cylinders to ensure that each is in sound physical and mechanical condition, and, initiate required action (if any) before putting them into operation.

A trained fire watch will be provided and remain stationed at the hot work vicinity to constantly monitor hot work operations, stop work if required and help ensure compliance with work permit-associated fire safety requirements until the job is completed.

Cutting operations will be done in a manner such that, the torch flame will not be directed to oxy-acetylene gas cylinders or to any combustible material.

Post-welding / cutting inspection will be observed by the responsible crew and work In-charge (foreman / supervisor) after every completion of welding / cutting work and at the end of work shift. After-the-job inspection is important in order to detect possible smoldering fire that can result from stray hot splatters from welding / cutting work.

At least two persons are present at the hot work area throughout the work.

All electric arc welding equipment will be properly earthed and screw clamp type electrode holders will be used.

Gas welding / cutting equipment hose connections and pressure regulators will be de-pressurized and disconnected and welding machine turned off at the end of each work shift or when they are not in use.

Welding or cutting of empty drums/ barrels which have or might have contained flammable substances, shall, before welding / cutting/ heating is undertaken on them, either be filled with water or thoroughly cleaned / freed of such substances, ventilated and gas tested. Before heat is applied to such drums/ barrels or similar hollow structures, a vent or opening must be provided for the release of any built-up pressure during the application of heat.

Approved torch igniter shall be available and used for all oxy-acetylene cutting operations.

Cigarette lighters or matches are not allowed.

Open acetylene valve a quarter turn only to give a pressure not exceeding 15psig. Oxygen cylinder valve shall be opened completely.

Nothing shall be placed on top of oxy-acetylene manifolds that will damage the manifold or interfere with the quick closing of the valve.

Approved acetylene wrench shall be provided and kept available at the cylinder valve at all times during cutting operation.

Be sure work piece is securely held down (both sides of the cut, if practical).

Feed the wheel thru the work as fast as possible without slowing the wheel in the cut. Don't "baby" the wheel through the cut.

Always allow newly mounted wheels to run at operating speed, with guard in place, for at least one minute before grinding.

Always wear eye and face protection when grinding.

Don't force a wheel onto the grinding machine or alter the size of the arbor hole.

Don't use a wheel that fits the arbor too loosely. If the wheel doesn't fit the machine, get one that does.

Don't start the grinding machine unless the machine guard is in place.

Don't stand directly in front of a grinding wheel when a grinder is started.

Use of Fuel Gas

Fuel gas must not be used from cylinders through torches or other devices, which are equipped with shut off valves without reducing the pressure through a suitable regulator, attached to the cylinder valve or manifold.

Before connecting a regulator to the cylinder valve, the valve shall be opened slightly and closed immediately to allow freeing the valve of dust or dirt that might otherwise enter the regulator, otherwise known as '**cracking**'. The person cracking the valve must stand on one side of the outlet not in front of it. Cracking must be performed in an area away from ignition source.

The cylinder valve must always be opened slowly to prevent damage to the regulator. For quick closing, valves of fuel gas cylinders shall not be opened more than 1 ½ turns.

Acetylene cylinder must always have an approved **acetylene wrench** readily available for immediate use.

Before a regulator is removed from a cylinder valve, the cylinder valve shall always be closed and the gas released from the regulator.

In Case of Fuel Gas Leak

If, upon opening the valve on a fuel cylinder, there is found to be a leak around the valve stem, the valve shall be closed and the gland-nut tightened. If this action does not stop the leak, the use of the cylinder must be stopped and the cylinder tagged "**Do Not Use**" and removed from service.

In the event that the fuel gas leaks from the valve rather than from the valve stem, and the gas cannot be shut off, the cylinder shall be immediately tagged **“Defective, Do Not Use”** and subsequently removed from the service.

If a leak develops at a fuse plug or other safety device, the cylinder must be immediately tagged **“Defective, Do Not Use”** and removed from service.

In case of a fuel gas leak, quickly prompt nearby personnel to immediately abort any introduction of ignition source in the immediate area. Other potential ignition sources such as power tools shall be unplugged however, it must be done with extreme caution since removing a plug from an outlet can itself produce a spark.

Should a leak cannot be exactly located, apply a diluted soap solution in the valve / manifold area and look for sign of bubbles. A bubble will indicate the exact location of leak.

Compressed Gas Cylinders – Handling, Use, Storage and Transport

Handling, use, storage and transport of compressed gas cylinders e.g. oxygen, acetylene, argon, nitrogen and similar compressed gas cylinders shall be in full accordance with the applicable procedure of Client's and relevant provisions of this program. As minimum, the requirements prescribed under this section, for handling, use, storage and transport of compressed gas cylinders shall be observed.

Oxygen cylinders in storage shall be separated from fuel-gas cylinders or combustible materials especially oil or grease. Oxygen and acetylene cylinders must be separated at least 20 feet (6.10 meters) apart or isolated by 5 feet (minimum) high non-combustible material with at least ½-hour fire rating.

Empty and full cylinders shall be stored separately with empty cylinders plainly marked with **“EMPTY”** and full ones **“FULL”** to avoid confusion and mix up.

Warning notices such as: “Danger, No smoking” will be provided and maintained in all compressed (oxy-acetylene) gas cylinders' storage areas.

All compressed gas cylinders including empty ones shall be kept upright and chained at all times and properly capped when not in use. At no circumstance, cylinders will be located or stored closer than 15 meters (50 feet) from sources of heat or ignition such as open flame operation, generators, welding machines, compressors, ovens, etc.

Flammable and highly combustible substance such as thinner, paint, gasoline, oil, grease, excelsior, etc. shall not be stored within 15 m. (50 feet) of compressed gas cylinder storage areas.

No compressed gas cylinders of any kind shall be placed, stored or left in a confined space including vessels, tanks, pipes, deep excavations and similar enclosed work area, whether empty or full due to potential hazard of leakage.

Compressed gas cylinder storage area shall be located in an open / well-ventilated area, with sun protection (shed). When stored inside the building, cylinders shall be located in a well-protected, well-ventilated and dry location area. Regardless of the storage location, compressed gas cylinders shall be stored where they are not subject to being knocked over or damaged by passing or falling objects.

Compressed gas cylinders shall not be located where they can become part of an electrical circuit. Electrode must not be struck against the cylinder to strike an arc.

Cylinders when transported, shall be secured, kept upright and have their caps properly in place.

Cylinders may be moved by tilting and rolling on bottom edge slightly upright but never dragged.

All compressed gas cylinders i.e. oxygen, acetylene, argon, nitrogen, etc. shall be clearly identified by color and name of the contents.

Lifting / hoisting compressed gas cylinders shall be done ONLY by means of approved material basket or cradle. Hoisting by choker slings is STRICTLY prohibited.

Before cylinders are moved, transported or lifted, regulators shall be removed and protective caps put in place. Before removing regulators, valves must be closed and the gas totally bled off.

Check valves / flashback arresters shall be installed on all oxy-acetylene cutting rigs.

Grinders and Abrasive Wheels

All grinders shall be equipped with protective guard allowing only the working segment of the wheel or disc to be exposed. This guard shall never be removed. Deliberate removal of this guard or use of grinder without such guard shall be subject to stern disciplinary action.

Ensure that the design classification of abrasive wheel / cutting disc is appropriate for the material to be ground or cut. (i.e. Aluminum Oxide wheel denoted by letter "A" for high tensile strength material, Silicon Carbide – denoted by letter "C" for low tensile strength material, etc.).

Check and ensure that the grinding tool is of approved voltage (i.e. not exceeding 125 volts) and equipped with "press" activated ON/OFF switch.

Under no circumstances shall, the spindle speed of grinding machine (RPM) exceed the rotating speed marked on the cutting / grinding disc.

Grinders shall be switched off and held until the rotation of wheel is completely stopped before they are placed down.

Abrasive wheels that have been dropped or damaged shall no longer be used as the impact may result in breakage during the actual use.

Abrasive wheels must be thoroughly checked to ensure they are free of cracks or damage before they are mounted by means of a '**Ring Test**'. This is to be achieved by gently "tapping" the side of the wheel with a light non-metallic object such as handle of a screwdriver at about 1-2 inches from the periphery and 45° off the vertical centerline (each side). Tapping is repeated after every 45 degrees rotation of the wheel until completed. (A sound of undamaged wheel will give a clear metallic tone and a cracked one will produce a "**dead sound**" and not a clear ring.)

Any and all portable power outlets for electrically operated grinders must be GFCI protected.

13. FIRE PREVENTION / PROTECTION

FIRE PREVENTION FOR CONSTRUCTION:

1. Good housekeeping shall be maintained in all work areas at all times.
2. Fire protection equipment will be provided in all areas where combustible materials are present. Regular inspections will be made by the safety department to assure the Fire Extinguishers are ready for use.
3. A clear access to all Fire Extinguisher / Equipment will be maintained at all times.
4. Fire protection equipment is to be used only for that purpose.
5. Smoking will be permitted only in designated area.
6. "Strike Anywhere" matches are not to be used on the project.

REQUIREMENTS:

Adequate distance for allies and egress of mobile Fire Fighting Equipment shall be maintained around and between all temporary structures and permanent facilities.



Fire proofed cabinets or other fire resistant storage facilities shall be used wherever important documents are stored.



Provide portable or permanently mounted extinguisher shall be available within 10 meters of a workforce involving welding, or the use of an open flame.



Each welder shall use welding blankets in order to contain weld splatter, sparks and airborne particulates.



At least one permanently mounted Fire Extinguisher shall be provided in each building near the door. Additional extinguisher shall be mounted so as to have one available within 20 meters of any point inside the building.

Extinguisher shall be located within 15 meters of any point on the perimeter of material stored in fuel or combustible materials storage area. Additionally, these areas shall be identified with signs restricting vehicle access and prohibiting Fire ignition sources and smoking.

All Fire prevention / Fire Fighting equipment shall be inspected monthly to ensure they are in a good working order and replaced if faulty. Records and inspections shall be maintained.

Fuel containers shall be metal re-sealable type equipped with air-vent.

Stored oxygen cylinders shall be separated from gas cylinder by either a fire retardant partition of at least 2 meters high or kept a minimum distance of 6 meters away.

To minimize ignition hazards, electrical wiring and equipment shall be installed in accordance with the National Electrical Code, NFPA 70-1975.

A fire extinguisher rated not less than 5 A shall be provided for each 250 square meters of building area and in each yard storage area. Travel distance to any Fire Extinguisher shall not exceed 20 meters from any protected area inside or outside a building.

Extinguishers rated not less than 10B shall be provided within 15 meters of any area in which more than five 20liters of flammable or combustible liquids or 2.27kgs of flammable gas are being used.

Carbon Tetrachloride extinguishers are prohibited extinguishers shall be conspicuously located where they shall be readily accessible and immediately available in case of fire, and their locations shall be conspicuously marked.

FLAMMABLE LIQUIDS AND GASES:

If the flashpoint is between 100°F – 200°F (37.8°C – 93.3°C) a liquid is classed as combustible liquid. If the flashpoint is below 100°F (38°C), it is classed as a flammable liquid.

Storage of flammable / combustible liquids shall be only in an approved area and in an approved cabinet or cage.

Only approved safety containers shall be used for handling, and storage of flammable / combustible liquids.

CUTTING AND WELDING:

The area of welding and cutting operations (especially – below) shall be continually watched during and immediately after operations for up to 15 minutes after hot work is completed.



All welding and cutting operations shall have fire extinguishers in the immediate area. Fire extinguishers for this use (Fire watch) are to be checked out of the storage area prior to starting welding and cutting operations.



Fire blankets are to be used to retain all sparks, slag or hot pieces of metal to prevent contact with electrical circuitry, machinery, equipment or people.



Practical welding screens are to be used to protect personnel from ultra-violet rays (Flash burns).



FIRE CLASSIFICATIONS:

Fire classified as class A, B, C, D or special, depending upon the type of materials involved, these classifications are defined as follows:

Class A: Fire in ordinary combustible materials such as wood, cloth, paper, trash, rubber and plastic.



Class B: Fire in flammable liquid, oil, grease, oil base paint, lacquer and flammable gas.



Class C: Fires involving energized electrical equipment or systems, resulting in the extinguishing media conducting electricity. (When electrical equipment or systems are de-energized, extinguishers for class A or B fire can be used safely).



Class D: Fires in combustible metals, such as magnesium, titanium, zirconium, sodium, lithium and potassium.

Special: Fires in certain reactive chemicals that fall outside the other four classifications and that, in some cases, require special extinguishing agent or techniques.

FIRE WATCH:

The fire-watch personnel will be properly trained and equipped with the proper firefighting equipment. The fire watch will be responsible to watch for fires, prevent fires, put fires out, and give the alarm. Each fire watches person will be responsible for a maximum area described by an Eight Meter Circle on a horizontal plane. All open flame operations will be within the responsibility area of a Fire-Watch. Fire Watchers will wear an orange reflective vest for easy identification.

14 - EMERGENCY EVACUATION / PREPAREDNESS PLAN

GENERAL REQUIREMENTS

1. All Al-Nab site employees shall be fully familiar with and adhere to an approved Emergency Plan on the project. A thorough discussion on Plant's Evacuation Procedure will be conducted by the designated Site Safety Personnel during each Pre-Deployment Site Safety Orientation to new site employees and returnees and occasionally reiterated in the regular Weekly Safety Toolbox Meetings.
2. A copy of this section "Emergency Evacuation / Preparedness Plan" along with the site-specific Emergency Evacuation Plan or Plant Drawing showing specific locations of safe assembly areas, exit gates, etc. shall be maintained at site Safety Department and posted at conspicuous locations within the office complex for ready reference.
3. Every Foreman / Supervisor must be constantly aware of the actual number of his men in his respective area. At the start of work shift, everyone must sign-in on the group's attendance sheet and an actual number accounted for by responsible Foreman / Supervisor. Knowing and checking the actual number of workmen under respective supervision at the start of work shift is necessary in order to provide an accurate reference should an actual head count is necessary in the event of an actual plant emergency.
4. Where required, a daily work force report (actual number of men on site) shall be submitted to Client on the schedule agreed upon on the project.
5. Before starting any activity at a new work location, the location and access routes to the pre-determined Safe Assembly Area(s) shall be checked or familiarized with by the responsible foreman / supervisors and the same shall be communicated to their workmen, to ensure an organized action and prompt evacuation from the work area should the need arise. In addition to the designated emergency access routes/assembly areas, an alternate safe access/location shall be anticipated and, availed of when the situation so warrants (i.e. in situations that the pre-determined routes / assembly areas become inaccessible or obstructed for some reason).

6. Every personnel working on site/ in-plant shall check prevailing wind direction at the start of work shift and from time to time during the course of work. Wind direction can be determined through windsocks, or observation of other indicators.

7. Constant awareness of the specific alarms applicable to the actual work site or zone where activity is taking place, and of the basic steps to be taken in case of emergency shall be exercised by every individual while on the project site.

8. Visiting Al-Nab Personnel and casual visitors on project site have to know the basic Emergency Procedure being enforced on the project upon arrival at site and, under no circumstances, shall roam around the work site / plant site without being accompanied by a representative from the responsible department.

9. Individual alertness on emergencies shall not only be confined to responding to emergency situations arising from or within Client's facility. The possibility of confronting emergencies that could arise from external source or adjacent plants outside Client's control such as a toxic / gas cloud release, spill of hazardous material etc. that can be wind-blown to the worksite shall also be anticipated and appropriate immediate actions to be taken mentally rehearsed. Relevant information on such potential occurrence (i.e. safe evacuation routes, exit gates) shall be pre-arranged with Client's representatives and incorporated into the site-specific contingency plan.

10. Action to be taken in the event of:

An emergency, or on hearing an Emergency Alarm (1-1-1) or the local emergency alarms or approved means of warning applicable to the construction site, every superintendent, area supervisor, foreman, equipment operator, fire watch and safety officers, shall ensure the following:

All work is to stopped at once.

All equipment, machines and power tools are to be shut down. Wind direction is checked through windsocks or other indicators.

All men are evacuated on foot in an orderly manner to a pre-determined Safe Assembly Area or Muster Point in a crosswind direction.

All Foremen will wait for their employees in the muster areas. Foremen will ensure all employees working in remote areas and in confined space (if any) have been alerted and have proceeded to the muster area.

Foremen will conduct a head count of their employees. If any employee is found to be missing, foreman shall inform any Senior Al-Naba representative at the muster area immediately, identifying the employee(s)' name and his/their last known location. The senior Al-Naba personnel, having received the information must subsequently relay same information to Al-Naba Project Manager, Safety Personnel or Client's representative, whoever is immediately available.

No attempt shall be made to locate missing employee(s) until a search is authorized by the emergency squad when so determined that a search and rescue party can be reasonably protected during such operation.

No one is permitted to return to work until INSTRUCTION has been received from Plant Authorities that it is safe to do so. (Note: Return to work instruction could be either verbal instruction at the respective safe assembly areas or via plant's "30 second Blast" All Clear Alarm).

11. No one resumes work unless a new Work Permit (if applicable) is applied for and approved. (Note: All issued work permits are automatically cancelled during actual emergencies and must be revalidated or replaced with new ones upon resuming work.)

12. Should the extent of the any disaster necessitate general evacuation from the site, such as in the case of potential "gas cloud", etc., instruction / confirmation from the plant will be sought and/ or, if actual situation warrants, workers from respective safe assembly areas shall proceed to the pre-designated emergency assembly areas or move away from the area.

13. Vehicles / buses which can serve as an immediate means of emergency transport in the event of mass evacuation from the area, shall be parked in such a manner that they can be immediately started and moved without delay as need warrants. However, the use of any vehicle / bus to vacate the area shall only be availed of, in emergency cases that do not pose flammable vapors in the immediate surrounding, and, shall therefore require prior clearance from plant authorities and understanding of the hazards involved.

14. Respective work areas shall have designated site safety officers / safety wardens to ensure proper interpretations of the Area Alarms whenever sounded and to properly and promptly lead the work force as well in the event of actual area emergencies. Assigning safety personnel in working areas shall not however, relieve the responsible foreman/supervisors of their defined roles and duties within their respective areas of supervision and in responsive handling of emergencies.

Site Emergency Evacuation Flowchart:

a. A quick guideline for site employees in responding to emergencies is shown on the 'Site Emergency Evacuation Flowchart'. The flow chart upon approval of this program & prior to construction activities shall be disseminated to field supervision and posted at office complex for common reference throughout the duration of the job.

Emergency assembly Areas / Muster Points:

- a. Designated Emergency Assembly Areas / Muster Points on Client's Construction Site will be identified by Al-Naba in conjunction with Client's Representatives prior to start of the construction activities. Copy of the Plot Plan showing the specific locations of safe assembly areas / muster points will be posted in jobsite offices and the information disseminated to all site employees.
- b. If the designated assembly point is not accessible during an actual emergency, for some reason (i.e. it is downwind or in close proximity to the scene of emergency), then personnel must take the safest route away from the emergency location, towards alternate assembly points / safe assembly areas or open area in a cross or upwind direction.
- c. Locations of the specific assembly areas / muster points shall be well emphasized during the Pre-Deployment Site Safety Orientation and any change (if any) of the location of such designated areas during the course of project construction, shall be promptly communicated to all site employees.

Plant Alarms:

Specific alarms indicating emergency occurrence shall be properly communicated to all site personnel through thorough discussion during their Pre-deployment Safety Orientation and occasionally during the weekly Safety Toolbox Meetings. Copies of these specific plant alarms will be prominently posted in jobsite offices. Alarm Codes displayed on sign board will be installed.

15 - HAND AND PORTABLE POWER TOOLS

HAND TOOLS:

Hand tools are tools that are powered manually. The greatest hazards posed by hand tools result from misuse and improper maintenance.

The supervisor, foreman, and employees themselves responsible for the safe condition tools or equipment's. Al-Nab shall not issue or permit the use of unsafe tools:

Appropriate personal protective equipment shall be used.

Hand tools shall be regularly cleaned and, where necessary, slightly oiled to prevent corrosion.

When using saw blades, knives, or other tools the user, should direct the tools away from site areas and away from other employees working in close proximity.

Cracked saw blades must be removed from service immediately.

Non-conductive and properly insulated hand tools will be used in areas where activities are exposed to electrical risk.

Appropriate type of hand tools will be used depending upon the nature of work, as determined by the competent foreman or supervisor. All tools must be used only for the purpose for which they were designed. Any and all power tools brought into the project site shall be maintained in a safe condition. No improvised tools are allowed.

POWER TOOLS

It shall be ensured that all portable power tools to be used on the project do not exceed 125 volts maximum rating and are either grounded or double insulated type. Where the use of power tools exceeding 125 volts is a must, a proper coordination with or written permission (where required) from the Client Representative will be obtained.

All portable power tools to be used on site will be of finest quality, free from any defects and properly grounded and protected with Ground Fault Circuit Interrupter (GFCI). Approved (CSA or UL listed) GFI Tester shall be used to ensure correct installation.

A designated competent electrician will perform an assured grounding (periodic) inspections of all power tools to ensure their proper maintenance.

Rotating tools such as grinders will have to be switched off and held until rotation has completely stopped before they are placed down.

All portable power tools will be equipped with properly functioning "dead man" switch.

No grinder will be used without its original guard properly in place. A grinder without guard will be immediately removed. All grinders shall be marked with the designated maximum running speed (RPM Rating) and must be ensured that the maximum speed of the spindle does not (at any time) exceed the maximum periphery speed (RPM Rating) marked on the grinding disc or wheel.

Never carry a tool by the cord or box.

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Follow instruction in the users' manual for first use.

Wear proper apparel for the task. Loose clothing, ties or jewelry can become caught in moving parts.

Remove all damaged portable electrical tools from use and tag them "DO NOT USE". Only authorized / competent persons will be allowed to operate portable power tools.

Frayed cords or damaged plugs will be readily removed from use and properly replaced.

ONLY the designated competent maintenance / electrical personnel will perform repair of defective power tools.

No electrical hand tools, power cords and outlets will be used in damp locations or in wet conditions. They must be kept dry and shall not be used unless protected with GFCI.

Extension cords will be of three-wire conductor type and will be kept as short as possible. Cords which are subject to physical damage such as when laid across roads / access ways, will be appropriately protected or where possible, rerouted or kept at least 2 meters off the ground.

Loose clothing / hand gloves will not be allowed on activities around rotating equipment such as magnetic drills, table saw, bending machines, etc.

Electrical tools shall meet clients' standards.

Should there be any construction-associated work on a plant existing electrical facilities, prior approval from Client's shall be sought.

Pneumatic Tools:

Only trained personnel will be allowed to operate pneumatic tools such as impact wrench, jackhammer, chipping hammer, etc.

Hose connections will be made by a proper hose coupler and additionally secured by safety wire.

Pneumatic tools when used at elevated locations shall be tied off with a cable or rope to a stable structure or support to hold the tools in the event of an accidental fall or loss of control of the operator.

The operator shall ensure a firm grip and control of pneumatic tools during the operation to hold them from spinning or jerking that can result in injury.

Hearing protection (earplugs) will be worn by the operator and affected personnel where the use of pneumatic tools create high noise in the area. The area is considered to be high noise and requires ear protection, when a normal conversation is no longer possible. Earplugs when used shall have at least a minimum of 20-dB noise reduction rating (NRR).

Air hoses shall not be used for removing dirt from the body or close in proximity to anyone working.

16- HAZARDOUS ENERGY CONTROL PROCEDURE (LOCK OUT/TAG OUT)

GENERAL

This procedure establishes the minimum requirements for the isolation of hazardous energy sources to ensure the safety and health of employees where unexpected start up or release of stored or residual energy could cause injury.

The following principles must apply to energy isolation task to ensure an appropriate level of safety and compliance with safety standards of all (lock out / tag out) hazardous energy control shall be performed in full compliance with the requirements cited in all applicable procedures of client.

DEFINITIONS

Authorized employee:

A single authorized individual who shall, on behalf of him self and his entire work crew, faithfully execute the requirement of this hazardous energy control procedure.

Hazardous Energy:

Any source of chemical, Mechanical, Electrical, Thermal, Pneumatic, Electromagnetic, Nuclear or other energy of a sufficient magnitude to produce personal injury or illness.

HAZARDOUS ENERGY CONTROL SURVEY:

A summary of all hazardous energy sources and associated hazardous energy isolation devices that must be identified and isolated in order to achieve a zero energy state prior to the performance of any specified maintenance, inspection or construction activity.

HAZARDOUS ENERGY ISOLATION DEVICE:

A mechanical device that physically prevents the inadvertent transmission or release of hazardous energy i.e.; electrical disconnect switch, circuit breaker, slip blind, blind flange, mechanical block etc.

LOCK OUT:

The placement of lock out device on an energy isolation device and the equipment being controlled cannot be operated or the energy released.

1. Only individually keyed padlocks shall be used. Padlocks are to be numbered and color coded for easier detection and identification.
2. Lockout locks are only to be used for the intended purpose.
3. A lockout device of the standard scissors type that will allow the placing of more than one padlock is required.
4. A piece of chain or cable may be necessary to complete a lockout on some valves or controls shall be used whenever needed.
5. When voltage exceeds 600 volts, components must be adequately grounded.

DANGER TAGS:

1. Danger tags, on the spot warning of dangerous conditions, shall conform to OSHA specification 1910.145 for accident prevention tags in the USA.
2. Only standardized danger tags or a client's equivalent, as described below, shall be used on the project.

"DANGER DO NOT USE" "DANGER DO NOT OPERATE".
3. The tag must be signed, employees badge number shown, dated and attached to each lock attached to an energy isolation device.
4. If device, valve, switch, control or piece of equipment is locked out, a danger tag shall be attached.
5. No device, valve, switch, control or piece of equipment shall be operated with a danger tag and / or lockout attached regardless of circumstances.

17 - LIFTING EQUIPMENT AND RIGGING GEAR

- 1) All rigging equipment shall be free from defects, in good operating condition and maintained in a safe condition and shall bear the serial number of the manufacturer and the Safe Working Load (SWL) capacity marked on it. All rigging equipment will also be accompanied by the manufacturer's certificate indicating the serial number and capacity.
- 2) A designated, competent employee of Al Naba prior to initial use on the jobsite shall inspect rigging equipment and monthly thereafter to ensure that it is safe. Records shall be kept on jobsite of each of these inspections by Al Naba and shall be made available to the client upon request. Any defective rigging equipment or materials that are observed shall be destroyed or immediately removed from the Site.
- 3) No hand spliced slings will be accepted or used on the Project. Wire rope sling with aluminum ferrule is not allowed on the Project.

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4) Al Naba will ensure all spreader bars have an engineered design and a test certificate for the Safe Working Load (SWL) capacity clearly marked on it. Al Naba will keep relevant documentation on record and make it available upon request to the client.

All hooks (on chain hoists, come-along, lever-hoists, torques and other lifting tackles) for lifting purposes must be equipped with manufacturer-fitted safety latches. Fabricated safety latches and/or welded safety latches attached to the hooks are not allowed on the Project. Lifting hooks when mobilized to the Project must carry the manufacturer's certificate and inspected.

Homemade or job-built hooks are not allowed on the Project.

18 - HOUSE KEEPING:

This procedure is designed to give Supervisors and employee's guidance in maintaining a neat work area which should encourage safe work habits, each craft will be responsible for cleaning up their work area. No job is complete until the area has been cleaned up.

GENERAL

Housekeeping plays an important role in assessing safety performance on the project:

- a) During the course of construction, all debris and scrap material shall be kept away from the work area. Work areas shall be cleaned at the end of each shift.
- b) Container shall be provided by Contractor for the collection and separation of waste, trash, oily and used rags and other refuse. Metal (Dumpster type) containers must be used and emptied promptly.
- c) Garbage and other waste shall be disposed of at frequent and regular intervals in a manner approved by Owner.
- d) Contractor shall notify Owner of any hazardous waste it will generate during performance of the work. Contractor has the direct responsibility of maintaining proper storage of these wastes while on site and will verify to Owner in writing that the wastes have been disposed of in a legal manner in accordance with the Royal Commission.
- e) Contractor shall not pour, bury, burn, not in any way dispose of a chemical on the work jobsite, without the permission of Owner.
- f) Contractor shall clear all combustible debris to a solid waste disposal site properly licensed by the Royal Commission. *No open burning of debris or rubbish will be permitted at the project jobsite.*

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g) Materials and supplies shall be stored in locations, which will not block access-ways, and arranged to permit easy cleaning of the area. In areas where equipment might drip oil or cause other damage to the floor surface, a protective cover of heavy gauge, flame resistant oil-proof sheeting shall be provided between the equipment and the floor surface sheeting so that no oil or grease contacts the concrete. This requirement is applicable to both finished and unfinished floors.

h) All hoses, cables, extension cords, and similar materials shall be located, arranged, and grouped so that they will not block any access-way and will permit easy cleaning and maintenance.

ORDERLINESS

a) Keep tools and working materials in proper containers.

b) Store trash, waste, and scrap in proper containers.

GENERAL HOUSEKEEPING RULES TO REMEMBER:

1. Clean up after our self, pick up our trash and debris and dispose of it properly, or place it where it will not pose a hazard to others. Institute a routine cleaning schedule for our workstation.

2. Remove protruding nails and other sharp objects or hammer them flat to prevent someone from stepping on them or snagging themselves.

3. Store material safely.

4. Put cigarette stubs in butt cans.

5. Keep small items in boxes or bins.

6. Keep the floor clear of tools, rod ends and metal shavings.

7. Keep walkways clear.

8. Ensure that work tables are occupied only by work at hand and the tools required for the work being done.

9. Do not leave aerosol cans on fob tables.

10. Store or contain material properly so that fire has no place to start.
11. Clean up tools and work areas as your job progresses.
12. Keep cords and hoses 2 meters overhead or lay them flat out of walkways.
13. Keep all material, tools and equipment in a stable position (tied, stacked or chocked) to prevent rolling or falling.
14. Maintain clear access to all work areas.
15. Keep stairways clear of debris.
16. Clean up liquid spills right away.
17. Keep barricades orderly and in a good state of repair.
18. Never throw tools, materials or scrap to the ground when cleaning up at an elevated level or platform.
19. Always maintain good lighting (illumination) of the work areas.
20. Inspection of job tools is part of good housekeeping. Worn or broken tools must be discarded immediately.

MATERIAL STACKING:

All material should be piled in the place set aside for it and chocked or tied to prevent rolling or falling. Each kind of material has its own characteristics.

Before stacking or piling material, you have to consider how the material will be taken out of the pile. If it's going to be a fast moving operation with a big tonnage being unloaded in a short time, be sure to leave space for workers and the equipment that will have to do the work.

Be courteous and safe. Never pile material in such a way that it will endanger anyone who has to work on it or will make a backbreaking job for the worker who breaks down the pile.

20 – CONFINED SPACE :

This procedure outlines the requirements for working in Confined Spaces.

Its purpose is to identify Confined Spaces, safe work practices, and required training for designated responsible employees.

A. RESPONSIBILITIES

The Site Manager is responsible for compliance with this procedure. Overall compliance will be monitored by the Project Safety Manager.

B. IDENTIFICATION OF CONFINED SPACE WORKERS

1. Qualified Person: An employee who by virtue of training and/or experience is capable of authorizing Confined Space entry, determining atmospheric conditions, and validating an entry permit. This authorization is delegated by Site management and must also include the authority to cancel or terminate entry at his or her discretion if hazardous conditions arise or are suspected.
2. Confined Space Attendant (also referred to as “standby personnel”): An employee trained in basic rescue techniques, hazard recognition, communication methods, and control of Confined Space entrants. The attendants will wear a white reflective vest.
3. Confined Space Worker/Entrant: An employee authorized to work in a Confined Space who has received appropriate training to perform his assigned duties under the entry permit program. Entrants shall be provided the opportunity witness atmosphere monitoring and equipment calibration data. Entrants will be trained in confined space entry.
4. Rescue Team: A team of rescue personnel, either in-plant or members of an outside organization, with the responsibility to respond to Confined Space emergencies and perform advanced rescue if and when required.

C. CONFINED SPACES:

1. Confined Spaces are identified as any area with a limited means of access/egress and subject to oxygen deficiency, accumulation of flammable vapors, or any

airborne contaminant that exceeds established Permissible Exposure Limits *(PEL).

2. Identification of Confined Spaces will be determined first by use of the Project identification system whereby signs have been posted to alert employees of areas that have been classified as Confined Spaces. All Confined Spaces will be treated as 'Permit-Required Confined Spaces' and therefore a Confined Space where atmospheric evaluation is recommended. Management will accept the responsibility to evaluate all potentially hazardous areas and initiate the terms of this procedure.

Reference: OSHA Subpart Z 29 CFR Part 1910.

Level I

1. A Level I Confined Space is a space with limited means of access/egress and contains or has the potential to contain a physical or atmospheric hazard(s) that may expose personnel to risk of death, incapacitation, and impairment of ability to self-rescue, injury or acute illness.

2. Examples of Level I Confined Spaces are:

a) Any space with oxygen content below 19.5% or above 23.5%. This includes all inert spaces.

b) A Confined Space that contains an atmospheric concentration above the Permissible Exposure Limit (PEL) of a material that could cause an acute illness or inability to self-rescue.

3. All Confined Spaces are considered to be a Level I Confined Space unless they have been evaluated and determined to be a Level II Confined Space by the Owner Safety Manager.

4. **ALL LEVEL I CONFINED SPACES WILL BE TAGGED. "Level I Confined Space – WARNING-SEE PROCEDURE AND PERMIT FOR SAFEGUARDS AND PROTECTIVE EQUIPMENT".**

5. Requirements for entry into a Level I Confined Space are:

a) Comply with the written entry procedure.

b) Isolate the Confined Space.

c) Test for atmospheric hazards prior to entry and as needed during the entry.

d) Evaluate the Confined Space for physical hazards.

e) Provide and use a retrieval system to perform non-entry rescue of entrants from Confined Spaces. Retrieval systems may include retrieval lines,



harnesses, and lifting devices. The retrieval system must be specified on the permit.

- f) Provide and use personal protective equipment as specified in the permit and procedure.
- g) Provide adequate lighting to work safely and to exit the space in the event of an emergency.
- h) Install barriers to prevent personnel from falling into the Confined Space and to prevent objects from falling onto employees in the Confined Space.
- i) Maintain an **"ENTRY – EXIT PERSONNEL ACCOUNTABILITY LOG"**.
- j) A Level I permit is valid for one shift.
- k) A safety Inspector will be on site at all times when a Level I entry takes place.
- l) A Hot Work Permit will be required for any hot work performed in a Confined Space.

D. TRAINING AND RESPONSIBILITIES OF DESIGNATED EMPLOYEES:

Each affected employee must be trained prior to his initial assignment, prior to change in assigned duties, if new hazard has been created or special deviations have occurred.

1) Qualified Person

- a. Persons to authorize or in charge of entry will be trained in and perform assigned duties as follows:

Ensure that required procedures, practices, and equipment for safe entry are in effect before allowing entry.

Conduct appropriate atmospheric evaluation of the Confined Space via the use of testing equipment on which he has been trained to operate.

Determine that all requirements of the entry permit have been met before allowing entry.

Ensure that operations remain consistent with the terms of the entry permit at all times.

Cancel entry authorization at any time conditions are inconsistent with the guidelines of this procedure.



Terminate entry authorization upon completion of the scheduled work.

Determine that unauthorized personnel are prohibited from entry at all times.

b. Specified training/instruction for Qualified Persons will

include: Use and calibration of Monitoring Equipment

Hazard Communication

Respiratory Protection

Permit Authorization and Termination

Hazard Recognition

Contacting Advanced Rescue Personnel

2) Confined Space Attendant

a. Persons authorized as attendants will be trained in and perform assigned duties as follows:

Remain stationed outside the Confined Space at all times during entry operations.

Maintain an accurate count of all persons inside Confined Spaces.

Ensure that permits specifically required by certain projects will be used as required.

Recognize potential permit space hazards and monitor conditions to ensure that a safe atmosphere remains.

Maintain continuous communication with authorized entrants.

Authorize evacuation of Confined Spaces when hazardous conditions or permit violations exist.

Prevent entry of unauthorized personnel.

Contact of advanced rescue personnel if required

Wear a white reflective vest.

Attendants will not be permitted to monitor more than one confined space at a time.

b. Specific training/instruction for Confined Space Attendants will

include: Hazard Communication

Respiratory Protection

Hazard Recognition

Communication Techniques

Basic Rescue

Evacuation Authority

3) Authorized Entrants

a. Employees who work as authorized entrants will be trained in and perform assigned duties as follows:

Be aware of Confined Space hazards that may be encountered.

Recognize hazard exposure symptoms.

Understand exposure hazards and their results.

Maintain contact with the attendant.

Recognize the need and initiate self-evacuation when necessary or when they perceive that danger is present.

Hazard Recognition.

Communication Techniques

Use of Personal Protection Equipment

Self-rescue

Hazard Communication

E. PERMIT REQUIREMENTS:

1. All employees will work within the provisions outlined in the Confined Space Entry Permit. All portions of the Permit will be completed by the Qualified Person. The completed permit will be posted at the Confined Space entrance and will then become the responsibility of the attendant. Upon completion of the shift or the work (whichever is the first to occur), the attendant will sign the permit to indicate that all entrants have safely exited the Confined Space and return the permit to the Qualified Person for retention.
2. Upon placement of the permit, the attendant is responsible for control of the work area and has full authority to cease operations or terminate entry at any time. These actions will be reported to the Qualified Person immediately following their occurrence. The authority of the attendant will be superseding on by the Qualified Person and /or a recognized member of the Safety Department who believes work should be stopped based on suspicion of imminent danger.
3. A blanket Confined Space Entry Permit may be requested for spaces opened for extended periods of time and in which permanent or temporary/portable ventilation equipment is utilized. Ventilation equipment should be capable of maintaining a class "C" atmosphere in the space when utilized. The blanket Confined Space Entry Permit is subject to Owner's Safety approval.
4. Voltage shall not exceed 24volts for electrical tools during use inside a confined space, without the approval of Owner.

F. RESCUE OPERATIONS:

1. The Project Safety Manager/or Management Designee will be responsible for developing a list of hazards that may be encountered by the rescue team while on site. This list will be communicated to the designated rescue source nearest each unit/ plant location.
2. In the event of an emergency, Project Personnel, trained in advanced rescue, will be utilized to assist in directing the rescue effort pending the arrival of the designated rescue team.

G. SUBCONTRACTOR / MULTI EMPLOYERS:

1. All employees shall follow the provisions of this procedure.
2. The Safety Department shall be responsible for the coordination of multi-employer employees entering the same confined space.
 - a. The Safety representative will complete a review of each group's activities to be performed in the confined space.
 - b. The Safety representative will develop a safety action plan and a pre-job meeting conducted with the respective supervisors.
 - c. The supervisors will review the provisions of the plan with their respective employees as part of the employees Safety Task Assignment.
3. The Safety Representative shall review each respective supervisor's STA Form prior to issuing a permit for the confined space.

H. PROGRAM REVIEW:

1. This program shall be reviewed annually and revised as necessary to protect employees from confined space hazards.
2. The program shall be reviewed any time that there is;
 - an unauthorized entry of a confined space;
 - a hazard discovered that was not addressed by the permit;
 - the occurrence of an injury or near miss; and
 - employee complaints.

NOTE: ALSO REFER TO OWNER CONFINED SPACE PROCEDURE FOR OPERATING FACILITIES, WHICH WILL BE ISSUED AT A LATER DATE.

I. **CONFINED SPACE TERMS AND DEFINITIONS:**

Acceptable Environmental Conditions: Confined Space workplace conditions in which uncontrolled hazardous atmospheres are not present and which include an additional environmental criterion the employer may require for employee entry into a permit-required Confined Space.

Attendant: An individual stationed outside the permit-required Confined Space who is trained as required by this standard and who monitors the authorized entrants inside the permit-required Confined Space. An attendant may not monitor more entrants nor more permit spaces than the entry permit specifically authorizes.

Authorized Entrant: An employee who is authorized by the employer can enter a permit-required Confined Space. Authorized entrants may rotate duties, serving as attendants if the permit program and the entry permit so state. Any properly trained person with the authority to authorize entry by other persons may enter the permit space during the term of the permit provided the attendant is informed of that entry.

Blanking or Blinding: The absolute closure of a pipe, line, or duct by fastening across its bore a solid plate or “cap” which completely covers the bore; which extends at least to the outer edge of the flange at which it is attached; and which is capable of withstanding the maximum upstream pressure.

Double Block and Bleed: The closure of a line, duct, or pipe by locking and tagging a drain or vent which is open to the atmosphere in the line between two locked-closed valves.

Emergency: Any occurrence (including any failure of hazard control or monitoring equipment) or event(s) internal or external to the Confined Space which could endanger entrants.

Engulfment: The surrounding and effective capture of a person by a liquid or finely divided solid substance.

Entry: The act by which a person intentionally passes through an opening into a permit required Confined Space and includes ensuing work activities in that space. The entrant

is considered to have entered as soon as any part of the entrant's face breaks the plane of an opening into the space.

Entry Permit: The written or printed document established by the employer, the content of which is based on the employer's hazard identification and evaluation for that Confined

Space (or class or family of Confined Spaces if a number of spaces may contain similar hazards) and is the instrument by which the employer authorizes his employees to enter that permit required Confined Space. The entry permits: defines the conditions under which the permit space may be entered; states the reason(s) for entering the space; the anticipated hazards of the entry; for entries where the individual authorizing the entry does not assume direct charge of the entry; lists the eligible attendants, entrants, and the individuals who may be in charge of the entry; and establishes the length of time for which the permit may remain valid.

Entry Permit System: The employer's written procedures for preparing and issuing permits for entry and returning the permit space to service following termination of entry and designates by name or title the individuals who may authorize entry.

Hazardous Atmosphere: An atmosphere, which exposes employees to a risk of death, incapacitation, injury or acute illness from one or more of the following causes:

- a flammable gas, vapor or mist in excess of 10 percent of its lower flammable limit. (LFL);
- an airborne combustible dust at a concentration that obscures vision at a distance of five feet (1.52m) or less;
- an atmospheric oxygen concentration below 19.5 percent or above 23.5;
- an atmospheric concentration of any substance for which a permissible exposure limit is published in Subpart Z of 29 CFR Part 1910 and could result in employee exposure in excess of its permissible limit(s). When an air contaminant for which OSHA has not determined a permissible exposure limit may be present in the permit space atmosphere, OSHA recommends JANA consult other sources of information such as Material Safety Data Sheets, which comply with the Hazard Communication Standard 1910.1200, for guidance in establishing the acceptable environmental conditions for entry by their employees; and /or
- any atmospheric condition recognized as immediately dangerous to life or health.

Hot Work Permit: The employer's written authorization to perform operations which could provide a source of ignition, such as riveting, welding, cutting, burning, or heating.

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Immediately Dangerous to Life or Health (IDLH): Any condition which poses an immediate threat of loss of life; may result in irreversible or immediate severe health effects; may result in eye damage; irritation or other conditions which could impair escape from the permit space.

Immediate – severe Health Effects: Any acute clinical sign(s) of a serious exposure-related reaction manifested within 72 hours after exposure.

Inserting: Rendering the atmosphere of a permit space nonflammable, non-explosive, or otherwise chemically non-reactive by such means as displacing or diluting the original atmosphere with steam or a gas that is non-reactive with respect to that space.

In plant Rescue Team: A group of two or more employees designated and trained to perform rescues in permit spaces in their plant.

Isolation: The separation of a permit space from unwanted forms of energy, which could be a serious hazard to permit space entrants. Isolation is accomplished by such means as blanking or blinding; removal or misalignment of pipe sections or spool pieces; double block and bleed; or lockout and / or tag out of all energy sources.

Lower Explosive Limit (LEL): Minimum concentration of a combustible gas, vapor, or dust in the air which ignite in the presence of an ignition source.

Line Breaking: Means the intentional opening of a pipe, line, or duct that is or has been carrying flammable, corrosive, or toxic material, an inert gas, or any fluid at a pressure or temperature capable of causing injury.

Low-hazard Permit Space: A permit space where there is an extremely low likelihood that an IDLH or engulfment hazard could be present and where all other serious hazards have been controlled.

Not Permitted Condition: Any condition or set of conditions whose hazard potential exceeds the limits stated in the entry permit.

Oxygen –deficient Atmosphere: An atmosphere containing less than 20 percent oxygen by volume.

Oxygen-enriched Atmosphere: An atmosphere containing more than 23.5 percent oxygen by volume.

Permissible Exposure Limit (PEL): The maximum eight-hour time weighted average of any airborne contaminant to which an employee may be exposed. However, at no time shall the exposure level exceed the ceiling concentration for that contaminant.

Permit-required Confined Space (permit space): An enclosed space which:

Is large enough and so configured that an employee can bodily enter and perform assigned work;

Has limited or restricted means for entry or exit (some examples are tanks, vessels, silos, storage bins, hoppers, vaults, pits and dike areas);

Is not designed for continuous employee occupancy; and,

Has one or more of the following characteristics:

Contains or has a known potential to contain a hazardous atmosphere;

Contains a material with the potential for engulfment of an entrant;

Has an internal configuration such that an entrant could be trapped or asphyxiated by inwardly converging walls or a floor which slopes downward or tapers to a smaller cross section; or,

Contains any other recognized serious safety or health hazards.

Permit-required Confined Space Program: The employer's program for preventing unauthorized employee entry and for ensuring safe entry into and work within permit spaces by authorized employees.

Retrieval Line: A line or rope secured at one end to the worker by a chest-waist or full-body harness or wristlets, and with its other end secured to either a lifting (or other retrieval) device to an anchor point located outside the entry portal.

Threshold Limit Value (TLV): The American Conference of Governmental Industrial Hygienists (ACGIH) has established three (3) categories of TLV for airborne contaminants and they are defined as follows:

Threshold Limit Value-Time Weighted Average (TLV-TWA): The time weighted average concentration for a normal eight-hour work day and for a 40-hour week to which nearly all workers may be repeatedly exposed, day after day, without adverse effect.

Threshold Limit Value-Short Term Exposure Limit (TLV-STEL): A STEL is defined as a 15-minute time weighted average exposure which should not exceed at any time during a work day even if the eight hour TWA is within the TLV. Exposures as the STEL should not be longer than 15 minutes and should not be repeated more than four times per day. These should be at least 60 minutes between successive exposures at the STEL.

Threshold Limit Value-Ceiling (TLV-C): The concentration that should not be exceeded even instantaneously.

ATTACHMENTS:

CONFINED SPACE PERMIT

CONFINED SPACE ENTRY LOG

21 – HOT WEATHER WORK :

Heat stress can be a serious health hazard for employees required to work while exposed to the sun or other heat sources, Supervisors and Foreman should look continuously for symptoms and signs of heat stress related disorders in employees.

A. Two heat stress-related disorders are noted in table:

Disorder	Symptoms	Signs
Heat Exhaustion	Weakness Fatigue Blurred vision Dizziness Headache	High pulse rate Extreme sweating Pale face Insecure gait Normal to slightly elevated temperature.
Heat Stroke	Chills Restlessness Irritability	Red face, Hot dry skin Disorientation, High Temp. (≥ 104F) Erratic behavior shivering, collapse convulsions, unconsciousness.

B. AI – Naba must provide a suitable number of trained persons to render first aid as follow:

- i. To give first aid for heat exhaustion, lay the person down flat in a cool environment, loosen his clothing and give him plenty of drink.
- ii. To give first aid for heat stroke, immediately start aggressive cooling of the person and get immediately to a hospital.

C. AI – Naba must protect employees from heat stress by:

- i. Providing cool, Potable water.

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- ii. Providing frequent cool-down breaks in a heat stress shelter which shall be build nearby each building or work area.
- iii. Timing the heaviest work load for during the coolest part of the work day.
- iv. Encouraging worker to drink water and cool down.

FALL PROTECTION This procedure provides guidance to all employees on the project from falls when they are working at elevated position or are exposed to potential fall hazard. This procedure explains how to eliminate fall hazards prevent falls, and eliminate or reduce injury if a fall dose occurs.

“UNPROTECTED SIDE AND EDGE” Each employee on a walking/working surface (horizontal and vertical surface) with an unprotected side or edge which is 6feet (1.8m) or more above a lower lever shall be protected from falling by the use of guardrail or personal fall arrest system.

DEFINITIONS

Anchor Points – A secure points of attachment for lifelines, lanyards, or deceleration devices. An anchorage must be capable of supporting a minimum dead weight of five thousand (5000) pounds (2,268 kilograms) for each person attached to it. An anchor point is often a beam, girder. Column or floor.

Competent Person – Any supervisor who has been trained to inspect fall arresting equipment such as horizontal and vertical lifelines.

Lanyard – A rope (nylon or steel cable) suitable for supporting one person.

Lifelines – A vertically suspended rope with one end attached to a stationary object (such as a structural member), capable of supporting at least five thousand (5000) pounds (2,268 kilograms) of dead weight and the other end attached to lanyard or safety harness.

Qualified Inspector – Any experienced craftsperson or supervisor who has demonstrated to Project/Site Management his or her ability and competency to inspect equipment.

Retractable Lifeline – A fall-arrest device that allow free travel, without slack rope, but locks instantly when a fall begins. Retractable lifelines may be used, but horizontal movement must be limited.

Rope Grabs (Fall Arrestor) – Automatic lifeline devices that act by inertia (resistance to movement) to grab the lifelines may be used, but horizontal movement must be limited.

Safety Harness – A safety harness is an approved design of straps which may be secured about the employee’s body in a manner to distribute the fall arrest forces over at

least the thighs, pelvis, waist, chest and shoulders, with a means for attaching it to other components of a personal fall arrest system.

Static Line or Catenary Line – A cable or rope strung horizontally and/or vertically from one substantial object to another, providing a means of travelling between those two objects while maintaining fall protection between those objects.

Structural/Substantial Object – Any object to which a lifeline or lanyard may be attached that will support five thousand (5000) pounds (2,268 kilograms) of dead weight.

TRAINING: All personnel performing work at elevated positions shall meet the following requirements.

Must be trained in the use, inspection, and maintenance of fall arrest systems; Must demonstrate competency in initial training;

Must undergo refresher training as required by changes in the workplace and/or equipment, or as other events indicate that refresher training may be required.

PERSONNEL RESPONSIBILITIES: When working at an elevation of 1.8 meters (six feet) or more aboveground, grade, floor, or approved work surfaces such as platforms and scaffolds, or when working in an area where a fall potential of greater than 1.8 meter exists, employees will utilize a full-body harness with two lanyards and shock absorbing unit and proper means of attachment.

If traversing at an elevation, employees must be tied off at all times, which requires utilizing either two (2) independent shock-absorbing lanyards or a dual (Y) lanyard with a shock-absorbing device.

FULL-BODY HARNESS: Contractors/Subcontractors will provide full-body harness meeting ANSI (American National Standards Institute) safety belts **NOT** allowed.

Standard full-body harnesses are not designed for a combined personnel and tool weight in excess of 137 kilograms (three hundred pounds). Personnel weighing more than 137 kilograms, with tools, must consult the Project/Site Safety Representative prior to using fall-arresting equipment.

The body full body harness shall be equipped with two shock absorbing lanyards.

LANYARDS: Lanyards must meet the following requirements:

Maximum length of lanyard is 1.8 meters (6 feet) in length, and be equipped with self-locking hooks on each end.

The lanyards must be equipped with shock absorber.

Snap hooks must be of a double-locking design to prevent accident disengagement. When not in use, the lanyards must be secured and attached to the harness to prevent tripping or snagging.

The lanyards must not be dragged.

The lanyards must not be hooked back into itself unless designed for that purpose. Knots must be tied in a lanyard. This will reduce the strength of the lanyard.

ANCHOR POINTS: Anchor points may be existing structure, a pipe, or a temporary engineered device such as an installed eyebolt, slide rail, or cable arrangement (e.g., static line). These anchor points must be inspected daily prior to use, by a qualified inspector. Engineered anchor points must be inspected by a competent person.

Anchor points for lanyards/harness and vertical lifelines must meet the following requirements:

Safely support one person falling 1.8 meters (6 feet)

Be installed in a manner that prevents accidental disengagement from support structures; Be inspected by a competent person on a periodic basis.

Be placed where attachment and detachment can be done without causing loss of balance;

Be placed above shoulder height to reduce fall distance; and Be free of sharp edges to avoid cutting the lanyard.

The following are examples of anchor points for individual using harnesses, lanyards or vertical lifelines;

Adequate for Use

☐ Structural beams 15.24 centimeters (6 inches) or greater in depth for one (1) or more people;

☐ Pipes four 10.16 centimeters (4 inches) or greater for one (1) person;

☐ Pipes six 15.24 centimeters (6 inches) or greater for two (2) people;

☐ Fixed permanent ladder rails and clips for one (1) person;

☐ Permanent platform handrail post below mid-rail for one (1) person.

Not Adequate for Use

Platform or scaffold handrail (except as noted above);
Scaffold ladders;

Conduit/instruments;

Any part of a valve; and Ladder
cage and rungs.

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