

**NSRC GROUPS**



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Hotline : +974-66270898, 33003960, 55027697

Address : Office# 608, Retaj Business Center, Al Muntazah 77,  
B Ring Road, PO BOX 91086, Doha - Qatar



# Company Profile

***Enhance the Customer satisfaction by delivering high quality products and excellent services in a timely, accurate and reliable manner.***

***SRT&C and Construction/ Electrical Industries was always keen to abide to a set of core values which are not limited to the company's success factors, but goes beyond to be continuing source to guide us, where the company thus:***

*Make the utmost effort to satisfy customers.*

*Work with absolute integrity and with the highest ethical standards.*

*Work with finest international quality standards-ISO and BASEC.*

*Engage in the hardwork to produce the best and most appropriate to achieve safety and to reduce the proportion of fires.*

*Excellence in Customer Service.*

*Generate and provide greater value to our customers, by offering them a range of value-added services, and by guiding them the quality of electric wires and cables that are*

*suitable for their basic need.*

*Innovation and Sponsoring ideas and encourage creativity to get the best results.*



# Key Personnel

**Mrs. HONGLI MENG**

*Managing Director*



*12 years of successful Line with a Master Degree in International Business MBA International Business, with Business Executive Leadership. Established new businesses and implemented aggressive growth of these Businesses for Information Technology Systems & System Integration/ Solutions companies across Greater China, all GCC Countries, Turkey & UK. Experience as both a Change Management, Leader and Cross- functional experience in business development, direct sales, channels/alliance management and overall Go- To- Market strategy. Deep insights into enterprises transforming to Cloud Computing.*

## **AREAS OF EXPERTISE**

- ✓ *Corporate mission Fulfillment*
- ✓ *New Business Model Development*
- ✓ *Change Management and Business Transformation*
- ✓ *Profit & Loss Management*
- ✓ *Merger & Acquisitions*
- ✓ *Strategic Planning and Execution*
- ✓ *Organizational Design and Restructuring*
- ✓ *Team Building and Leadership.*



# Company Value

*SRT&C is a company in electrical installation products for commercial as well as residential projects. Our internationally renowned products are of superior quality and very competitive on the local market. at SRTC&C.*

*we understand that the client plays an important role for our existence. that is why our service is a personal one, whereas our client is central and is always treated with respect and integrity. Our associates are professionals that can advise and deliver project projects according to deadlines, and always complying with thier promises, without any excuse. for that reason, we are committed constantly develop ourselves not only as company but also personally and collectively, to always offer the client the best service that deserves. our associates treat each other with respect and understand that we all need each other and that it is together that we will comply with our promise and ultimately reach our goal.*

*we have a great respect for the environment, our employee, our suppliers and customers.*



# CONSTRUCTION MATERIAL

*Sino Resoure Trading and Contracting WLL. provide efficient supply of key primary materials to our esteemed customers with competitive prices. Our wide range of products includes:*

## PRODUCTS:

### *Washed Sand*





# CONSTRUCTION MATERIAL

## *Dune Sand*



*Gabbro Aggregate, Lime Stone & All kind of Mixed materials*





# WORLDWIDE CONTACTS

## Head Office - Beijing - China

Tel : +86-10 68785229  
Fax : +86-10 68785592  
Mob : +974 - 3313 2466  
Mail : [info@nsrcgroups.com](mailto:info@nsrcgroups.com)  
Website : [www.sincreso.com](http://www.sincreso.com)



Address : The 9th floor, unit B, haifu International Mansion, No.22  
Chegongzhuang, W.Road, Hairdian Dist, Beijing, China 103048.

## Head Office - Qatar

Tel : +974- 4431 8188  
Mail : [sales@nsrcgroups.com](mailto:sales@nsrcgroups.com)  
Website : [www.nsrcgroups.com](http://www.nsrcgroups.com)

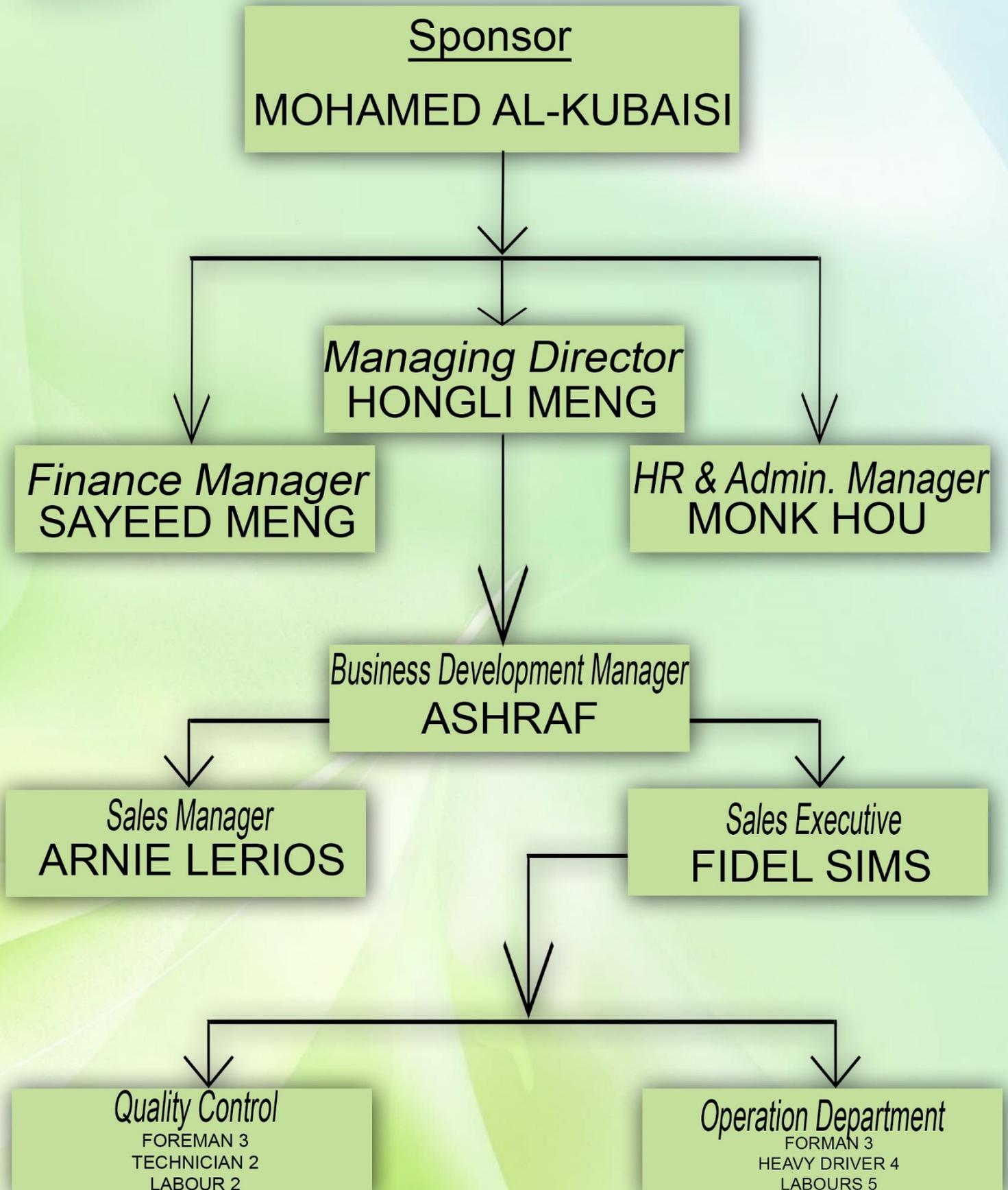


Hotline : +974- 3121 8188,3128,1882,3109,0988  
Address: Office# 608, Retaj Business Center, AL Muntazah 77,  
B Ring Road, PO Box 91086, Doha-Qatar

**INDIA TURKEY OMAN UK KUWAIT**



# Organizational Chart





# CERTIFICATE



This Certificate is granted to the organization



## SINO RESOURCE TRADING & CONTRACTING W.L.L

Office No: 606, Retaj Business Centre, Al Muntazah 77,  
B Ring Road, P.O Box: 91086,  
Doha, Qatar

Has been assessed and found to be in accordance with the standard requirements,

## ISO 9001:2015 Quality Management System

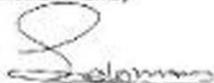
For the full scope of certification

Supply and delivery of washed sand, dune sand, backfill materials, limestone, road base (sub - base), gabbro aggregates and all kind of rock stones. Trade in electrical cables, wires and switches, building materials. Construction and general contracting.

Certificate No : ICAM190093  
Certificate Date : March 14, 2019  
Issue Date : March 14, 2019  
Valid Until : March 14, 2020  
Registration No : 301Q0093  
Surveillance Audit : 1<sup>st</sup> Year  2<sup>nd</sup> Year



Signed on behalf of ICA By

  
President



The certificate may be rendered invalid if there is any lack of fulfillment of conditions set out in the rules of ICA  
Certification Body for competence with ISO 17021:2011 'Conformity Assessment'.  
Email: president@ica-cb.com Website: www.ica-cb.com





# CERTIFICATE



This Certificate is granted to the organization



## SINO RESOURCE TRADING & CONTRACTING W.L.L

Office No: 606, Retail Business Centre, Al Muntazah 77,  
B Ring Road, P.O Box: 91086,  
Doha, Qatar

Has been assessed and found to be in accordance with the standard requirements,

## ISO 9001:2015 Quality Management System

For the full scope of certification

Supply and delivery of washed sand, dune sand, backfill materials, limestone, road base (sub - base), gabbro aggregates and all kind of rock stones. Trade in electrical cables, wires and switches, building materials. Construction and general contracting.

Certificate No : ICAM190093  
Certificate Date : March 14, 2019  
Issue Date : March 14, 2019  
Valid Until : March 14, 2020  
Registration No : 301C0093  
Surveillance Audit : 1<sup>st</sup> Year  2<sup>nd</sup> Year

Signed on behalf of ICA By

  
President



The certificate may be rendered invalid if there is any lack of fulfillment of conditions set out in the rules of ICA  
Certification Body for compliance with ISO 17021:2011 'Conformity Assessment'.  
Email: president@ica-cb.com Website: www.ica-cb.com





# CERTIFICATE



This Certificate is granted to the organization



## SINO RESOURCE TRADING & CONTRACTING W.L.L

Office No: 606, Retaj Business Centre, Al Muntazah 77,  
B Ring Road, P.O Box: 91086,  
Doha, Qatar

Has been assessed and found to be in accordance with the standard requirements,

## ISO 45001:2018

### Occupational Health and Safety Management System

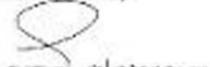
For the full scope of certification

Supply and delivery of washed sand, dune sand, backfill materials, limestone, road base (sub - base), gabbro aggregates and all kind of rock stones. Trade in electrical cables, wires and switches, building materials. Construction and general contracting.

Certificate No	: ICAM190095
Certificate Date	: March 14, 2019
Issue Date	: March 14, 2019
Valid Until	: March 14, 2020
Registration No	: 301Q0095
Surveillance Audit	: 1 <sup>st</sup> Year <input type="checkbox"/> 2 <sup>nd</sup> Year <input type="checkbox"/>



Signed on behalf of ICA by

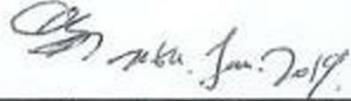
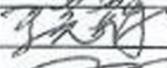
  
President



The certificate may be rendered invalid if there is any lack of fulfillment of conditions set out in the rules of ICA Certification Body for compliance with ISO 17021:2011 'Conformity Assessment'.  
Email: president@ica-cb.com Website: www.ica-cb.com





		<b>MATERIAL SUBMITTAL</b>			
CONTRACT NO. : GC16101100		REF.: 3963-1-MS-0026		REV.: 0 Date: 20/1/2019	
CONTRACT TITLE :EPIC FOR REPLACEMENT OF OLD 3-PHASE TEST SEPARATORS AT ALL DEGASSING STATIONS IN DUKHAN					
Proposed Material	:	Civil material (Sharp gravel)			
Alternative	:	N/A			
Ref. Drawing	:	N/A			
Document/Spec. Reference	:	3963-DGEN-1-14-0002 Rev. A			
Location/Area of Use	:	Fixed on the slope inside of JALM station			
Manufacturer/Vendor	:	Sino resource trading & contracting			
Vendor included in QP PVL	:	YES <input checked="" type="checkbox"/>	NO [Pro justification]		
Specification Requirements					Remarks
Description	Specified	Proposed			
Sharp gravel	100-200mm	100-200mm			
Submitted By:			Legend		
Signature: 			C: Civil <input checked="" type="checkbox"/>	M: Mechanical <input type="checkbox"/>	
Name: Weng Xilin			I: Instrumentation <input type="checkbox"/>	E: Electrical <input type="checkbox"/>	
Designation: PM			LS: Landscaping <input type="checkbox"/>	G: General <input type="checkbox"/>	
QP Comments:					
 					
Designation With Reference Indicator	Approved	Approved withComments	Rejected	Date	
Lead Project Engineer				2019.1.20	
Senior Project Engineer				20.1.20	
Others					



QAF v: QD-C-021-06  
rev: (07/2012)

## INFRASTRUCTURE DEPARTMENT



### CONSULTANT REVIEW COMMENTS SHEET



#### Material Submittal

STATUS	APPROVED WITH COMMENTS								<b>B</b>			
PROJECT TITLE:	Lusail Development Primary Infrastructure CP 7C 1B						PROJECT No:			CP	7C	1B
Submission Ref.:	LUS	CP7C 1B	WAA	MAT	UT	00744	CONTRACT No:	5	2	9	3	
CONTRACTOR:	WCT - Al Ali Joint Venture						CG REF:		DATE:	21	02	2019
Subject:	Washed Sand for Duct Surround • Telecom, SSD and ELV Manufacturer: M/s Qatar Sand Treatment Plant, Qatar Supplier: M/s Sino Resource Trading & Contracting, Qatar											

S/No.	COMMENTS	EXPECTED ACTION
1.	M/s WCT AL ALI JV has stated their difficulty in obtaining dune sand (letter attached). Hence contractor is proposing washed sand for the referenced application; found recommendable.	Info
2.	Washed sand shall be stored properly protected from contaminations / stone pieces. Washed sand thickness around the utility ducts shall be as per the IFC requirements. Proper filling around the duct pipes shall be ensured.	WCT-AL ALI
3.	Recommended for approval. Cost impact "If any" to be agreed with LREDC prior to procurement. Subject to PM CM and LREDC acceptance.	Info

Reviewed By: Senior Materials Engineer

Signed By: Senior Resident Engineer

Name: George Jacob	Name: Nenad Loncaric
Signature:	Signature:
Date: 21.02.2019	Date: 21.02.2019

#### Status

<input type="checkbox"/> A-Approved	<input checked="" type="checkbox"/> B-Approved with Comments	<input type="checkbox"/> C-Revise & Resubmit	<input type="checkbox"/> R-Rejected	<input type="checkbox"/> D-Reviewed for information
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QD-LUS-C-MAT-01 | Rev. 2, June 2013 ▶ Form Info

LREDC - INFRASTRUCTURE DEPARTMENT

Material Approval Request

Contractor

Consultant

PM/CM



PARSONS



Material Submission No.

LUS-CP07C1B-WAA-MAT-UT-00744R0

Workflow No.

WF-009384

Submission Date

Feb 19, 2019

Project Title

LUSAIL-COMMERCIAL BLVD-ID D3, A4 INT. ROAD, UTILITIES

Contract No.

5293

Project No.

CP07C-1B

New Submittal

Re-Submittal

Contractor

WCT-AL ALI JV

Material

Fine Washed Sand

Mechanical  Electrical  Architectural  Civil  Plumbing   Other  Utilities

Type

Fine Washed Sand

Description

Fine Washed Sand for Dry Utilities (SSD, TEL and ELV)

Origin

Qatar

Manufacturer

Qatar Sand Treatment Plant

Supplier

Sino Resource Trading & Cont.

Local Agent

Sino Resource Trading & Cont.

Spec. Reference

Spec. Pg. No.

QCS 2014 Sec 3 Part 4

Drawing Reference

As per IFC

Date required on Site

Delivery Period

Submitted as:

Specification

Alternative

Supporting Information

Sample MSDS

Attached

Not Attached

N/A

Literature

Calculations

Attached

Not Attached

N/A

Area

LUS-CP07C-1B Utilities

Component Works

Utility

Discipline

Utilities

Is Approval of Local Authority required?

Yes

No

If Yes, specify

The approval will not relieve the contractor from the responsibility for conformity to specifications, standards and contractual obligations.

Contractor

Name Zarina Sirotol

Signature / Stamp

Consultant Comments

Approved

Rejected

Sample Required

Test Required

Additional Information Required

Approved with Comments

Revise and Resubmit

Additional Comments:

See Attached Comments

*[Handwritten signature]*

▶ We certify that the submission is in full compliance with contractual requirements and local authorities regulations.

Consultant

Received on

18/2/2019

Actioned on

Name HE-NAO LONGKAEK

Signature / Stamp



Recommended for Approval

Final Approval

PM/CM

We certify that the submission is in full compliance with contractual requirements and local authorities regulations.

LREDC Project Manager

Name

Name

Received on

Received on

Actioned on

Signature / Stamp

Actioned on

Signature / Stamp



مصنع قطر لمعالجة الرمال  
**QATAR SAND TREATMENT PLANT**  
 ( Totally owned by Qatar Industrial Manufacturing Co.)  
 (مملوكة بالكامل للشركة القطرية للصناعات التحويلية ش.م.ق.)

Ref. No:  
 Date :-

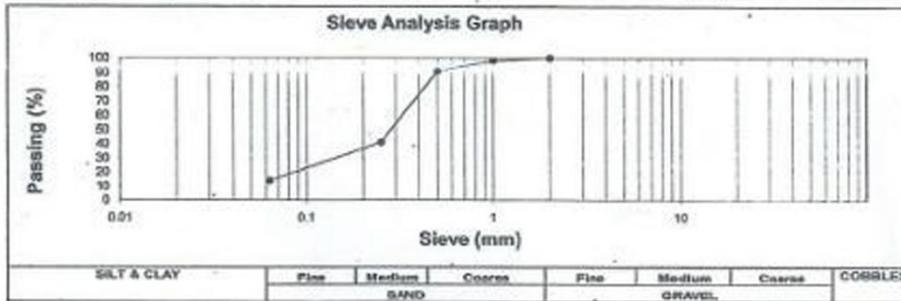
**LAB. TEST REPORT**  
 Washed Fine Sand

الرقم :  
 التاريخ :

Date Sampled	03.10.2018	Date Reported	06.10.2018
Report No.	QSTP/F/S/138	Plant Name	Finlay
Material Description	Washed Fine Sand	Material Size	0 mm - 1 mm

**Sieve Analysis (BS EN 933-1:2012)**

Test sieve size (mm)	Cumulative Retained (%)	Cumulative Passing (%)	Passing Specification BS EN 12520 - Table D.1(0/4 MP)	
			Min (%)	Max (%)
2	0	100	100	100
1	2	98	85	99
0.5	9	91	55	100
0.25	59	41		(± 25)
0.063	86	14		(± 5)



SILT & CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES
	SAND			GRAVEL			

**Chemical & Physical Analysis**

Analysis	Result Obtained	Specification QCS 2014
Colour	Brown	N/A
Oven Dried (Mg/m <sup>3</sup> )	2.44	N/A
S.S.D (Mg/m <sup>3</sup> )	2.50	N/A
Apparent (Mg/m <sup>3</sup> )	2.59	Min. 2.6
Water Absorption (%)	2.31	Max. 2.3%
Material Fine Than 0.063 mm (%)	12.29	Max. 3%
Shell Content (%)	0.00	Max. 3%
Moisture Content (%)	7.00	N/A
Bulk Density Un-Compacted (Mg/m <sup>3</sup> )	1.59	N/A
Bulk Density Compacted (Mg/m <sup>3</sup> )	1.71	N/A
Clay Lumps & Friable Particles (%)	0.00	Max. 2%
Organic Impurities (with standard colour plate)	Less than standard plate No. 1	Colour standard not darker than plate No. 3 <sup>1</sup>
Acid-soluble Chlorides (%)	0.03	Max. 0.05%
Acid-soluble Sulphate <sup>2</sup> (%)	0.39	Max. 0.4%
Silica Content (%)	80	N/A

REMARKS: Specification limits as per QCS 2014 Section 5 Part 2.

Bassam H.Abu Herb  
 QUALITY CONTROLLER  
 Mob. 55818379  
 E-mail: cstp.fab@qst.com



**SINO RESOURCE TRADING & CONTRACTING WLL**  
**HEALTH, SAFETY, and ENVIRONMENT (HSE)**  
**MANAGEMENT PLAN SINO RESOURCE**



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# **SINO Resource**

*Trading and Contracting W.L.L*

**Doc. No:SRTC-HSE 18**

**REVISION No.: 00**

**PAGE: 02**

**OF: 33**

## **TABLE OF CONTENTS**

<b>1.0 ABBREVIATION .....</b>	<b>03</b>
<b>2.0 GENERAL DEFINITIONS .....</b>	<b>04</b>
<b>3.0 PURPOSE .....</b>	<b>05</b>
<b>4.0 COMMITMENT OF PROJECT PLAN .....</b>	<b>05</b>
<b>5.0 HEALTH &amp; SAFETY POLICY .....</b>	<b>06-08</b>
<b>6.0 ENVIRONMENT MANAGEMENT .....</b>	<b>08-09</b>
<b>7.0 SPILL CONTINGENCY ACTION PLAN .....</b>	<b>09</b>
<b>8.0 HEALTH MANAGEMENT .....</b>	<b>10</b>
<b>9.0 SAFETY MANAGEMENT .....</b>	<b>10-28</b>
<b>10.0 RISK ASSESSMENT &amp; JOB SAFETY ANALYSIS .....</b>	<b>28</b>
<b>11.0 EMERGENCY RESPONSE .....</b>	<b>29-30</b>
<b>12.0 ROLES &amp; RESPONSIBILITIES .....</b>	<b>31-33</b>
<b>HEALTH HAZARD INFORMATION (ATTACHED)</b>	
<b>SAFE HANDLING INFORMATION (ATTACHED)</b>	



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**Doc. No:SRTC-HSE 18**

**REVISION No.: 00**

**PAGE: 04**

**OF: 33**

## **2. GENERAL DEFINITIONS**

**ACCIDENT:** UNPLANNED EVENT THAT COULD LEAD TO INJURY OR DAMAGE. **HAZARDS:** ANYTHING WITH THE POTENTIAL TO CAUSE HARM. **INCIDENT:** IT MEANS AN UNDESIRABLE EVENT THAT THE POTENTIAL TO CAUSE A SERIOUS ACCIDENT. **NEAR MISS:** ANY INCIDENT WHICH HAD POTENTIAL TO BE AN ACCIDENT (CAUSING INJURIES OR DAMAGE TO PROPERTY). **RISK ASSESSMENT:** CAREFUL EXAMINATION OF WHAT IN YOUR WORK PLACE, COULD BE CAUSE HARM TO PEOPLE OR PROPERTY. **ACCIDENT PREVENTION:** THE APPLICATION OF MEASURES DESIGNED TO REDUCE ACCIDENT OR THE POTENTIAL FOR ACCIDENT WITHIN A SYSTEM, ORGANIZATION OR ACTIVITY. **AN ACCIDENT PREVENTION PROCEDURE IS ONE WHICH AIMS TO AVOID INJURY TO PERSONAL AND OR PREVENT DAMAGE TO PROPERTY.** **HEALTH:**IT MEANS FREE FROM ILLNESS OR INJURY ATTRIBUTABLE TO OCCUPATIONAL CAUSES. **ACCIDENT INVOLVING DEATH:** AN ON THE JOB ACCIDENT RESULTING THE DEATH OF PERSON(S) EMPLOYED BY THE OWNER, MAIN CONTRACTOR OR SUBCONTRACTOR AT WORK PLACE. **APPROVED:** COMPLYING WITH THE WRITTEN STANDARDS, OR WHERE NO SUCH STANDARD EXIST COMPLYING WITH THE WRITTEN LEGISLATION. **INTERESTED PARTY:** INDIVIDUAL OR GROUP CONCERNED WITH OR AFFECTED BY THE HSE PERFORMANCE OF THE ORGANIZATION. **COMPANY SRTC<sup>TM</sup>:** MEANS SINO RESOURCE TRADING AND CONTRACTING. **COMPETENT PERSON:** IT MEANS A PERSON WHO IS QUALIFIED BECAUSE OF HIS KNOWLEDGE, TRAINING AND EXPERIENCE TO PERFORM THE DEFINE WORK PROPERLY AND SAFELY. **COLD WORK:** WORK WHICH CANNOT CREATE A SOURCE OF IGNITION. **ELECTRICAL WORK:** WORK ON ANY ITEM OR PIECE OF EQUIPMENT, WHICH IS CAPABLE OF BEING ELECTRICALLY CHARGED OR ACTIVATED. **DAMAGE TO PROPERTY:** MEANS ANY INCIDENT THAT CAUSE SERIOUS DAMAGE TO PROPERTY I.E. EQUIPMENT, MATERIALS, STRUCTURES OTHER THAN CAUSED BY FIRE EXPLOSION THAT MADE THE EQUIPMENT INOPERABLE AND REQUIRED MATERIAL AND STRUCTURAL REPLACEMENT. **DIRECT CONTROL:** SUPERVISION WHERE THE SUPERVISING WORKER IS PRESENT AT THE SITE AND IS IN CONTROL OF THE ACTIVITIES OF THE LESS EXPERIENCES WORKERS. **FALLING OBJECT:** MEANS ANY INCIDENT INVOLVING MATERIAL OR TOOLS FROM HIGHER LEVEL THAT CAUSED OR COULD CAUSE INJURY TO PERSONAL AND/ OR DAMAGE TO PROPERTY OR EQUIPMENT.



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**TRADING&CONTRACTING W.L.L**

**Doc. No:SRTC-HSE18**

**REVISION No.: 00**

**PAGE: 06**

**OF: 33**

THE MANAGEMENT IS IN OF A GREAT OPINION THAT THE SAFETY NEEDS TO HAVE THE SPECIFIC TIME AND ATTENTION AND ALSO THE DELIBERATION WILL TO IMPLEMENT THE SAFETY NORMS. THE SITE MANAGEMENT ALSO REALIZED THE SAFETY IS DELIBERATE FUNCTION AND THEREFORE THE HSE FUNCTION SHALL BE ADDRESSED ON TOP WITH ZERO LOSS ARISE DUE TO UNDUE OR UNTOWARD INCIDENTS TO THE ORGANIZATION AND ITS PRINCIPALS.

#### **5. OCCUPATIONAL HEALTH AND SAFETY POLICY**

SINO RESOURCE TRADING AND CONTRACTING, IS COMMITTED TO ACHIEVE ACCIDENT FREE AND HEALTHY WORK PLACE BY ENCOURAGING ITS EMPLOYEES, SUBCONTRACTORS, VENDORS CUSTOMERS AND VISITORS TO ADOPT THE BEST SAFETY PRACTICES AMONG THE INDUSTRIES TO MAINTAIN AN ACCIDENT FREE AND HEALTHY WORK ENVIRONMENT AND EXCEL IN HEALTH AND SAFETY PERFORMANCE.

TO ACHIEVE THE COMMITMENT, THE MANAGEMENT SHALL ADOPT THE FOLLOWING HSE MANAGEMENT PROGRAMS ACROSS THE ORGANIZATION.

- PROVIDE VISIBLE AND ACTIVE LEADERSHIP IN REGARDS TO HEALTH SAFETY.
- ENHANCE THE SAFETY AWARENESS AMONG ALL BY IMPARTING TRAINING.
- IDENTITY, CONTROL AND MONITOR THE HAZARDS AT WORK SITE DURING THE COURSE OF PROJECT.
- IDENTIFY EXPECTED EMERGENCIES THAT ARE LIKELY TO OCCUR DURING EXECUTION OF PROJECT AND GET PREPARED WITH RESOURCES TO TACKLE THE EXPECTED EMERGENCY.
- SITE MANAGEMENT SHALL BE EMPOWERED TO TAKE ALL PREVENTIVE MEASURES TO MAINTAIN THE INJURY FREE WORK ENVIRONMENT DURING PROJECT.
- COMPLY ALL THE LEGAL AND OTHER RELEVANT REQUIREMENT PERTAINING TO HEALTH & SAFETY.

THIS POLICY WILL BE COMMUNICATED TO ALL LEVELS OF EMPLOYEES, SUBCONTRACTORS, VENDORS, CUSTOMERS, VISITORS AND SUBJECT TO CONTINUAL IMPROVEMENT DURING COURSE OF TIME. THE MANAGEMENT OF PARADIGM ENGINEERING, TRADING & CONTRACTING IS COMMITTED TO IMPLEMENT, MAINTAIN AND CONTINUALLY IMPROVE AN EFFECTIVE OH&S MANAGEMENT SYSTEM, IN LINE WITH OHSAS 18001:2008 INTERNATIONAL STANDARDS REQUIREMENTS.

SINO RESOURCE TRADING & CONTRACTING HAS HIGHLY MOTIVATED, ENERGETIC,



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Doc. No: SRTC-HSE 18

REVISION No.: 00

PAGE: 07

OF: 33

## **5.1 GENERAL SAFETY GUIDELINES FOR ALL STAFF MEMBERS / WORKERS**

### **GENERAL GUIDELINES:**

**1. ALL SITE IN-CHARGE IS TOTALLY RESPONSIBLE FOR MAINTAINING THE SAFE WORKING CONDITIONS AT SITE FOR ALL THE TIME. 2. ALL EXECUTING ENGINEERS ARE RESPONSIBLE FOR MAINTAINING THE SAFE WORKING CONDITIONS DURING THE EXECUTION AND THE PENDENCY OF THE JOB. 3. ALL CONCERNS ARE ADVICE TO REPORT ALL NEAR MISS INCIDENT AND HIGH RISK POTENTIAL INCIDENTS OCCURRING AT SITE TO THE HSE DEPARTMENT. 4. THE PERSON WORKING AT SITE IS RESPONSIBLE FOR HIS OWN SAFETY AS WELL AS SAFETY OF HIS COLLEAGUE EMPLOYEE WORKING ON THE SAME FLOOR LEVEL OR THE BELOW LEVEL AREA. 5. SMOKING IS STRICTLY PROHIBITED AT THE SITE. 6. CONSUMPTION OF ALCOHOL / DRUGS AT WORK IS STRICTLY PROHIBITED 7. BEFORE STARTING ANY HOT WORK, SHIFT THE FIRE EXTINGUISHER AT SITE AND KNOW HOW TO OPERATE THE FIRE EXTINGUISHER. 8. USE OF MOBILE PHONE WHILE EXECUTING THE JOB BY WORKERS IN ANY FORM IS STRICTLY PROHIBITED AT SITE. 9. ALL INDIVIDUAL WORKING AT SITE IS RESPONSIBLE TO KEEP THE AREA AND CLEAR. 10. ALL INDIVIDUAL WORKING AT SITE IS ADVICE TO ENSURE THAT NO PROJECTED ITEMS ARE LET OUT IN AISLES AS WELL AS ON THE FLOOR. 11. ALL INDIVIDUAL WORKING AT SITE IS ADVICE TO DROP THE MATERIAL IN THE WASTE BASKET. 12. USE OF PROPER LADDER / SCAFFOLD FOR THE MAN MOVEMENT IS RECOMMENDED. 13. MOUNT THE LADDER / SCAFFOLDING PROPERLY AND SUPPORTING TO THE RIGID STRUCTURE. 14. 14 USE FULL BODY HARNESS WHILE WORKING OR CLIMBING AT HEIGHT. 15. Do NOT SEAT OR TAKE ANY WORKING POSITION AT THE EDGE OF THE FLOOR AT HEIGHT. 16. Do NOT SLEEP IN THE WORKING AREA. 17. ALWAYS FACE THE OPENING DURING MAN / MATERIAL MOVEMENT. 18. ENSURE THAT THE GROUND OPENING ON THE FLOOR SHALL BE BARRICADED WITH SAFETY NET. 19. KEEP ALL MATERIAL / LOAD / EQUIPMENT REQUIRED TO LIFT IN THE ACCESSIBLE APPROACH OF THE CRANE. 20. No MATERIAL SHALL BE DRAGGED OR PULLED OUT DURING ANY MATERIAL MOVEMENT. 21. KNOW THE WEIGHT OF THE LOAD, RATING OF EQUIPMENT AND LIFTING TACKLES ARE SUITABLE FOR HANDLING THE MATERIAL.**



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Doc. No:SRTC-HSE 18

REVISION No.: 00

PAGE: 08

OF: 33

**22. ENSURE THAT ALL LIFTING TOOLS AND TACKLES ARE IN GOOD CONDITION. 23. Do NOT HANG THE LOAD IN SUSPENDED POSITION ONCE THE MATERIAL IS LIFTED BY THE CRANE. 24. ENSURE THE SAFE CLEARANCE OF SITE FOR THE SIGNAL MAN GIVING THE SIGNAL TO CRANE OPERATOR. 25. DON NOT WALK THROUGH UNDER THE SUSPENDED LOAD. 26. CARRY OUT THE TESTING OF ALL INTERLOCKS OF LIFTING CRANE BEFORE PUT IT INTO OPERATION. 27. ONLY AUTHORIZED PERSON IS AUTHORIZED TO GIVE THE ELECTRICAL CONNECTIONS. 28. LOOSE ELECTRICAL CABLES / WITH JOINTS ARE NOT PERMITTED ON SITE. 29. OVERLOADING OF ELECTRICAL GADGETS ARE STRICTLY PROHIBITED. 30. Do NOT EXPOSE THE ELECTRICAL CABLES TO THE MECHANICAL IMPACT. 31. Do NOT LAY THE CABLES ON THE GROUND. 32. USE RATED ELECTRICAL CABLES AND GADGETS FOR THE ELECTRICAL CONNECTION. 33. ALL CABLES SHALL BE ROUTED THROUGH THE PROPER CONDUIT. 34. ENSURE THAT ALL SAFETY PROVISIONS ARE INCORPORATED IN THE ELECTRICAL CONDUIT. 35. DAILY TOOL BOX SHALL BE CONDUCTED AT SITE BY THE EXECUTIVE ENGINEER / SUPERVISOR. 36. ALL LIFTING TOOLS AND TACKLES MOBILIZED AT SITE SHALL BE CERTIFIED BY THE THIRD PARTY. 37. ALL THE INDIVIDUALS WORKING AT SITE ARE EMPOWERED TO DETECT THE UNSAFE ACT AND UNSAFE CONDITIONS AND INFORM TO SITE SUPERVISOR TO CORRECT THE NOTICED UNSAFE ACT / UNSAFE CONDITION AND TO HSE DEPARTMENT. 38. ON OBSERVING THE UNSAFE ACT & UNSAFE CONDITION HSE DEPARTMENT REPRESENTATIVE IS AUTHORIZED TO STOP THE JOB. 39. ALL DRIVERS DEPLOYED FOR DRIVING THE HEAVY VEHICLES AND MACHINERIES AT SITE SHALL ESSENTIALLY PASS THROUGH THE DEFENSIVE DRIVING TRAINING. 40. PHOTOGRAPHY AT SITE IS STRICTLY PROHIBITED.**

## **6. ENVIRONMENT MANAGEMENT**

**To MAINTAIN THE GOOD HOUSEKEEPING AND PROTECT THE WORK ENVIRONMENT AT SITE FOLLOWING STEP WILL BE TAKEN.**

- **DISSEMINATE THE INFORMATION ON ENVIRONMENTALLY ACCEPTABLE PRACTICES TO ALL EMPLOYEES OF THE APPLICABLE STANDARDS AND REGULATION.**
- **DEDICATED TEAM FOR GOOD HOUSEKEEPING UNDER THE DIRECT SUPERVISION OF PROJECT MANAGER.**
- **IDENTIFICATION OF WASTE DISPOSAL AS HAZARDOUS, FLAMMABLE AND Non HAZARDOUS.**
- **SEGREGATION OF WASTE SEPARATED DURING THE STAGE OF HOUSEKEEPING SUCH AS WOOD, IRON, PLASTIC AND CONCRETE MUCK TO ENSURE THE GOOD PRACTICES AND EASY DISPOSAL.**
- **ALL FUEL FILLING OPERATIONS ARE MECHANIZED, NO MANUAL FUEL REFILLING IS PERMITTED ON SITE.**



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**Doc. No.:SRTC-HSE18**

**REVISION No.: 00**

**PAGE: 09**

**OF: 33**

• **TO PROTECT THE OIL / DIESEL SPILLAGE DURING REFILLING ARRANGEMENT OF BUND WALL SHALL BE MADE.** • **WASTE DISPOSAL IS CARRIED OUT BY THE RECOMMENDED AGENCY AS RECOMMENDED BY SCENR ENVIRONMENTAL REGULATIONS.** • **NOT DISTURBING THE PLANTS AND NATURAL RESOURCES AVAILABLE AT SITE.** • **COVERED DISPOSAL OF SEWAGE / WC WASTE AS PER THE GUIDELINES ISSUED BY SCENR ENVIRONMENTAL REGULATIONS.** • **CLASSIFICATION AND REPORTING OF ENVIRONMENT EMERGENCY AS PER THE GUIDELINES OF CLIENT HSE DEPARTMENT GUIDELINES.** • **EMERGENCY RESPONSE FOR ENVIRONMENTAL EMERGENCIES. FOLLOWING ENVIRONMENTAL EMERGENCIES ENVISAGED DURING THE EXECUTION OF THE PROJECT**

- 1. SPILLAGE OF DIESEL / OIL DRUM.**
- 2. GAS LEAKAGE**
- 3. EMISSION OF WELDING FUMES DURING WELDING**

## **7. SPILL CONTINGENCY ACTION PLAN**

**1. ON DETECTING ANY ENVIRONMENTAL EMERGENCY OF OIL SPILLAGE / GAS LEAKAGE OR ANY OTHER SERIOUS NATURE AFFECTING THE SITE ENVIRONMENT SHALL BE IMMEDIATELY BROUGHT TO THE NOTICE OF SITE HSE DEPARTMENT OF SINO RESOURCE TRADING & CONTRACTING, AND PROJECT MANAGER. 2. SITE HSE OFFICER - IN-CHARGE WILL REPORT TO CLIENT HSE DEPARTMENT ABOUT THE EXIGENCY AND TO THE CIVIL DEFENSE EMERGENCY DEPARTMENT. 3. SITE HSE OFFICER WILL MOBILIZE ALL RESOURCES SUCH AS OIL SOAKING PAD TO COLLECT THE SPILLAGE OF OIL. 4. IN CASE OF GAS LEAKAGE SITE SUPERVISOR / HSE OFFICER WILL ATTEMPT TO CLOSE THE ISOLATION VALVE OF THE CYLINDER. 5. ON ARRIVING THE CIVIL DEFENSE EMERGENCY RESPONSE TEAM, SITE HSE OFFICER WILL GUIDE TO THE CIVIL DEFENSE TEAM TO HANDLE THE EMERGENCY. 6. THE ENVIRONMENT INCIDENT REPORT SHALL BE IMMEDIATELY INFORMED TELEPHONICALLY AND SUBMIT PRELIMINARY REPORT TO CLIENT HSE DEPARTMENT WITH IN THE STIPULATED PERIOD OF 24 HOURS. 7. THE MITIGATION MEASURES RECOMMENDED SHALL BE IMPLEMENTED AND RECORDED BY SITE HSE OFFICE**



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**Doc. No:SRTC-HSE18**

**REVISION No.: 00**

**PAGE: 10**

**OF: 33**

## **8. HEALTH MANAGEMENT**

**1. ARRANGEMENT OF FIRST AID BOXES AT SITE AS PER THE NORMS. 2. DEPLOYMENT OF TRAINED FIRST AIDER AT ALL TIME AS PER THE NORMS. 3. PERIODIC WORKERS CAMP INSPECTIONS. 4. POTABLE DRINKING WATER FACILITY AT SITE CONDUCTIVE TO WEATHER CONDITIONS. 5. PROVISION OF URINALS AT SITE 6. PROVISION OF REST ROOM FOR WORKERS AT SITE. 7. PROVISION OF SMOKING BOOTH AT SITE 8. ALL EMPLOYEES WORKING IN HIGH NOISE AREAS 85 dB (FOR 40 HOURS PER WEEK) SHALL BE PROVIDED WITH THE EAR PLUG AS PROTECTION MEASURE. 9. ALL RECORDS OF MEDICAL TREATMENT CASES WILL BE MAINTAINED IN REGISTER FORM.**

## **9. SAFETY MANAGEMENT SYSTEM**

**1. EXCAVATION 2. SAFE ACCESS AND FALL PROTECTION 3. SCAFFOLDS & LADDERS 4. ELECTRICAL 5. FIRE PREVENTION & CONTROL 6. HAZARD MANAGEMENT 7. PERSONNEL PROTECTIVE EQUIPMENT 8. TRAINING 9. SAFETY INSPECTIONS 10. TRAFFIC SAFETY 11. NEAR MISS REPORTING 12. INCIDENT REPORTING 13. INCIDENT INVESTIGATIONS 14. SAFETY MEETINGS 15. MONTHLY REPORT 16. SUBCONTRACTORS SAFETY MANAGEMENT 17. LEGAL COMPLIANCE / COMPLIANCE OF SAFETY NORMS 18. SAFETY MOTIVATIONAL ACTIVITY 19. PENALTY 20. SIGNAGE 21. LIFTING TOOLS AND TACKLES 22. WORK PERMIT PROCEDURE**



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**Doc. No:SRTC-HSE18**

**REVISION No.: 00**

**PAGE: 11**

**OF: 33**

## **9.1 SAFETY MANAGEMENT SYSTEM**

### **1. EXCAVATIONS:**

**PRIOR TO OPENING AN EXCAVATION, UNDERGROUND INSTALLATIONS (E.G., SEWER, COMMUNICATION LINES, WATER, FUEL, ELECTRIC LINES) SHALL BE LOCATED AND PROTECTED FROM DAMAGE OR DISPLACEMENT.**

**UTILITY COMPANIES AND OTHER RESPONSIBLE AUTHORITIES SHALL BE CONTACTED TO LOCATE AND MARK THE LOCATIONS AND, IF THEY SO DESIRE, DIRECT OR ASSIST WITH PROTECTING THE UNDERGROUND INSTALLATIONS. WHEN REQUIRED, THE CONTRACTOR SHALL OBTAIN A "WORK PERMIT" (EXCAVATION PERMIT) FROM AUTHORITIES PRIOR THE INITIATION OF ANY EXCAVATION WORK. REQUESTS FOR THE PERMITS WILL BE PROCESSED THROUGH THE PWT COORDINATOR.**

**EXCAVATION INSPECTION AND TESTING PROCEDURES SHALL BE FOLLOWED.**

**i. WHEN PERSONS WILL BE IN OR AROUND AN EXCAVATION, A COMPETENT PERSON SHALL INSPECT THE EXCAVATION, THE ADJACENT AREAS, AND PROTECTIVE SYSTEMS DAILY, AS NEEDED THROUGHOUT THE WORK SHIFTS, AND AFTER EVERY RAINSTORM OR OTHER HAZARD-INCREASING OCCURRENCE. ii. IF EVIDENCE OF A SITUATION THAT COULD RESULT IN POSSIBLE CAVE-INS, SLIDES, FAILURE OF PROTECTIVE SYSTEMS, HAZARDOUS ATMOSPHERES, OR OTHER HAZARDOUS CONDITION IS IDENTIFIED, EXPOSED WORKERS SHALL BE REMOVED FROM THE HAZARD AND ALL WORK IN THE EXCAVATION STOPPED UNTIL ALL NECESSARY SAFETY PRECAUTIONS HAVE BEEN IMPLEMENTED. iii. IN LOCATIONS WHERE OXYGEN DEFICIENCY OR GASEOUS CONDITIONS ARE KNOWN OR SUSPECTED, AIR IN THE EXCAVATION SHALL BE TESTED PRIOR TO THE START OF EACH SHIFT OR MORE OFTEN IF DIRECTED BY THE SAFETY MANAGER. A LOG OF ALL TEST RESULTS SHALL BE MAINTAINED AT THE WORK SITE.**

## **ELECTRIC GAS-OIL-STEAM COMMUNICATION CATV WATER SEWER • PROTECTIVE SYSTEMS**

**A) THE SIDES OF ALL EXCAVATIONS IN WHICH EMPLOYEES ARE EXPOSED TO DANGER FROM MOVING GROUND SHALL BE GUARDED BY A SUPPORT SYSTEM, SLOPING OR BENCHING OF THE GROUND, OR OTHER EQUIVALENT MEANS.**



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**Doc. No:SRTC-HSE18**

**REVISION No.: 00**

**PAGE: 12**

**OF: 33**

**B) EXCAVATIONS LESS THAN 5 FT. (1.5 m) IN DEPTH AND WHICH A COMPETENT PERSON EXAMINES AND DETERMINES THERE TO BE NO POTENTIAL FOR CAVE-IN DO NOT REQUIRE PROTECTIVE SYSTEMS. C) SLOPING OR BENCHING OF THE GROUND SHALL BE IN ACCORDANCE WITH APPROVED ENGINEERING DESIGN. D) SUPPORT SYSTEMS SHALL BE IN ACCORDANCE WITH APPROVED ENGINEERING DESIGN. E) PROTECTIVE SYSTEMS SHALL HAVE THE CAPACITY TO RESIST WITHOUT FAILURE ALL LOADS THAT ARE INTENDED OR COULD REASONABLY BE EXPECTED TO BE APPLIED TO THE SYSTEM. F) SHORING SHALL BE USED FOR UNSTABLE SOIL OR DEPTHS >5 FT (>1.5 m) UNLESS BENCHING, LAY-BACK, OR OTHER ACCEPTABLE PLAN IS IMPLEMENTED BY THE CONTRACTOR. G) IF THE STABILITY OF ADJOINING BUILDINGS OR WALLS IS ENDANGERED BY EXCAVATIONS, SHORING, BRACING, OR UNDERPINNING DESIGNED BY A QUALIFIED PERSON SHALL BE PROVIDED TO ENSURE THE STABILITY OF THE STRUCTURE AND TO PROTECT EMPLOYEES. H) SIDEWALKS, PAVEMENTS, AND RELATED STRUCTURES SHALL NOT BE UNDERMINED UNLESS A SUPPORT SYSTEM IS PROVIDED TO PROTECT EMPLOYEES AND THE SIDEWALK, PAVEMENT, OR RELATED STRUCTURE. I) WHERE IT IS NECESSARY TO UNDERCUT THE SIDE OF AN EXCAVATION, OVERHANGING MATERIAL SHALL BE SAFELY SUPPORTED.**

#### **• PROTECTION FROM WATER**

**A) DIVERSION DITCHES, DIKES, OR OTHER MEANS SHALL BE USED TO PREVENT SURFACE WATER ENTERING AN EXCAVATION AND TO PROVIDE GOOD DRAINAGE OF THE AREA ADJACENT TO THE EXCAVATION. B) EMPLOYEES SHALL NOT WORK IN EXCAVATIONS IN WHICH THERE IS ACCUMULATED WATER OR IN WHICH WATER IS ACCUMULATING UNLESS THE WATER HAZARDS POSED BY ACCUMULATION IS CONTROLLED. C) FREEZING, PUMPING, DRAINAGE, AND SIMILAR CONTROL MEASURES SHALL BE PLANNED AND DIRECTED BY REGISTERED/ PTW CERTIFIED ENGINEER AND AREA CONTROL AUTHORITIES. CONSIDERATION SHALL BE GIVEN TO THE EXISTING MOISTURE BALANCES IN SURROUNDING SOILS AND THE EFFECTS ON FOUNDATIONS AND STRUCTURES IF IT IS DISTRIBUTED OR AS INDICATE UNDER CLIENTS SAFETY GUIDELINES.**

#### **• PROTECTION FROM FALLING MMATERIAL**

**A) EMPLOYEES SHALL BE PROTECTED (BY SCALING, ICE REMOVAL, BENCHING, BARRICADING, ROCK BOLTING, WIRE MESH, OR OTHER MEANS) FROM LOOSE ROCK OR SOIL THAT COULD CREATE A HAZARD BY FALLING FROM THE EXCAVATION WALL: SPECIAL ATTENTION SHALL BE GIVEN TO SLOPES THAT MAY BE ADVERSELY AFFECTED BY WEATHER, MOISTURE CONTENT, OR VIBRATION.**



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**Doc. No:SRTC-HSE18**

**REVISION No.: 00**

**PAGE: 13**

**OF: 33**

**B) MATERIALS, SUCH AS BOULDERS OR STUMPS, THAT MAY SLIDE OR ROLL INTO THE EXCAVATION SHALL BE REMOVED OR MADE SAFE. C) EXCAVATED MATERIAL SHALL BE PLACED AT LEAST 3.2FT (LM) FROM THE EDGE OF AN EXCAVATION OR SHALL BE RETAINED BY DEVICES THAT ARE SUFFICIENT TO PREVENT THE MATERIALS FROM FALLING INTO THE EXCAVATION. IN ANY CASE, MATERIAL SHALL BE PLACED AT A DISTANCE TO PREVENT EXCESSIVE LOADING ON THE FACE OF THE EXCAVATION.**

**• MOBILE EQUIPMENT AND MOTOR VEHICLE PRECAUTIONS**

**A) WHEN VEHICLES OR MOBILE EQUIPMENT ARE USED OR ALLOWED ADJACENT TO AN EXCAVATION, SUBSTANTIAL STOP LOGS OR BARRICADES SHALL BE INSTALLED. THE USE OF A GROUND GUIDE IS RECOMMENDED. B) WORKERS SHALL STAND AWAY FROM VEHICLES BEING LOADED OR UNLOADED TO AVOID BEING STRUCK BY SPILLAGE OR FALLING MATERIALS. C) EXCAVATING OR HOISTING EQUIPMENT SHALL NOT BE ALLOWED TO RAISE, LOWER, OR SWING LOADS OVER PERSONNEL IN THE EXCAVATION WITHOUT SUBSTANTIAL OVERHEAD PROTECTION. D) EMPLOYEES SHALL NOT BE PERMITTED TO WORK ON THE FACES OF SLOPED OR BENCHED EXCAVATIONS AT LEVELS ABOVE OTHER EMPLOYEES EXCEPT WHEN EMPLOYEES AT LOWER LEVELS ARE ADEQUATELY PROTECTED FROM THE HAZARD OF FALLING MATERIAL OR EQUIPMENT. E) WHEN OPERATIONS APPROACH THE LOCATION OF UNDERGROUND UTILITIES, EXCAVATION SHALL PROGRESS WITH CAUTION UNTIL THE EXACT LOCATION OF THE UTILITY IS DETERMINED. WORKERS SHALL BE PROTECTED FROM THE UTILITY AND THE UTILITY SHALL BE PROTECTED FROM DAMAGE OR DISPLACEMENT. F) EMPLOYEES SHALL WEAR A HARNESS WITH LIFELINE SECURELY ATTACHED TO IT WHEN ENTERING EXCAVATIONS CLASSIFIED AS CONFINED SPACES OR THAT OTHERWISE PRESENT THE POTENTIAL FOR EMERGENCY RESCUE.**

**2. SAFE ACCESS AND FALL PROTECTION**

**1. CLEAR AND SAFE ACCESS SHALL BE IDENTIFYING AND ARRANGED PRIOR TO THE COMMENCEMENT OF ANY ACTIVITY OR OPERATION. 2. MEANS OF ACCESS CONSTRUCTED OF METAL (EX: ALUMINUM LADDERS) SHALL NOT BE USED FOR ELECTRICAL WORK OR WHERE THEY MIGHT CONTACT ELECTRICAL CONDUCTORS. 3. WHEN A STRUCTURE HAS ONLY ONE MEANS OF ACCESS BETWEEN LEVELS, THAT MEANS SHALL BE KEPT CLEAR TO PERMIT FREE PASSAGE OF EMPLOYEES. IF WORK IS PERFORMED IN AN AREA THAT RESTRICTS FREE PASSAGE, SECOND MEANS OF ACCESS SHALL BE PROVIDED.**



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Doc. No:SRTC-HSE 18

REVISION No.: 00

PAGE: 14

OF: 33

**4. WORK PLACE SHALL HAVE AT LEAST TWO OR MORE MEANS OF ACCESS, AT LEAST ONE MEANS OF ACCESS SHALL ALWAYS BE AVAILABLE FOR FREE PASSAGE OF EMPLOYEES. 5. ERECTION AND DISMANTLING PROCEDURES, INCLUDING PROVISIONS FOR PROVIDING FALL PROTECTION DURING THE ERECTION OR DISMANTLING WHEN THE ERECTION OR DISMANTLING INVOLVES WORK AT HEIGHTS THAT EXPOSE THE WORKERS TO FALLS OF 6 FT (1.8 m) OR MORE. 6. JOB-MADE MEANS OF ACCESS SHALL BE DESIGNED TO SUPPORT, WITHOUT FAILURE, AT LEAST FOUR TIMES THE MAXIMUM INTENDED LOAD. 7. MEANS OF ACCESS SHALL NOT BE LOADED BEYOND THE MAXIMUM INTENDED LOAD FOR WHICH THEY WERE DESIGNED OR BEYOND THEIR MANUFACTURED RATED CAPACITY. 8. THE WIDTH OF ACCESS WAYS SHALL BE DETERMINED BY THE PURPOSE FOR WHICH THEY ARE BUILT AND SHALL BE SUFFICIENT TO PROVIDE SAFE PASSAGE FOR SUPPLYING MATERIALS AND MOVEMENT OF PERSONNEL; EXCEPT FOR LADDERS, IN NO CASE SHALL THE WIDTH BE LESS THAN 18 IN (45.7 CM). 9. LOAD-CARRYING TIMBER MEMBERS SHALL BE A MINIMUM OF 1,500 LB-FT/IN<sup>2</sup> (10,342.1 KPA) (STRESS GRADE) CONSTRUCTION GRADE LUMBER. 10. LUMBER SHALL BE REASONABLY STRAIGHT-GRAINED AND FREE OF SHAKES, CHECKS, AND SPLITS, CROSS GRAINS, UNSOUND KNOTS OR KNOTS IN GROUPS, DECAY AND GROWTH CHARACTERISTICS, OR ANY OTHER CONDITION THAT WILL DECREASE THE STRENGTH OF THE MATERIAL. 11. SUPPORTING MEMBERS AND FOUNDATIONS SHALL BE OF SUFFICIENT SIZE AND STRENGTH TO SAFELY DISTRIBUTE LOADING. 12. SUPPORTING MEMBERS SHALL BE PLACED ON A FIRM, SMOOTH FOUNDATION THAT WILL PREVENT LATERAL DISPLACEMENT.**

#### • FALL PROTECTION

**WHILE WORKING ABOVE 2 M OF HEIGHT ADEQUATE ANCHORING POINTS AND FALL PROTECTION PROVISIONS SHALL BE ARRANGED. ADEQUATELY INSPECTED FULL BODY HARNESS SHALL BE WORK AND ANCHORED TO THE RIGID AND INDEPENDENT ANCHORAGE POINT ABOVE THE SHOULDER LEVEL. IF WORKING BEYOND 10 M, ROPE GRABS CAN BE INSTALLED TO A RIGID AND FIXED SOURCE AS A ANCHORAGE POINT, ONE ROPE GRAB AND ONE ROPE IS LIMITED TO ONE PERSON ONLY. ROPE GRAB SYSTEM IS BEST ADVISABLE OPTION FOR WORK IN CRADLES AND SUSPENDED WORK PLATFORMS. LANYARDS WITH SHOCK ABSORBER SHALL BE USED ABOVE 6 M AND WITHIN 10 M HEIGHT.**



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**Doc. No:SRTC-HSE18**

**REVISION No.: 00**

**PAGE: 15**

**OF: 33**

• **STANDARD GUARD RAILS AND HAND RAILS**

**1. A STANDARD GUARDRAIL SHALL CONSIST OF TOP RAILS, MIDRAILS, AND POSTS, AND SHALL HAVE A VERTICAL HEIGHT OF 42 IN +/- 3 IN (106.6 CM +/- 7.6 CM) FROM THE UPPER SURFACE OF THE TOP RAIL TO THE FLOOR, PLATFORM, RUNWAY, OR RAMP LEVEL. STANDARD GUARDRAIL SYSTEMS SHALL BE PROVIDED WITH TOE BOARDS ON ALL OPEN SIDES/ENDS AT LOCATIONS WHERE PERSONS ARE REQUIRED OR PERMITTED TO PASS OR WORK UNDER THE ELEVATED PLATFORM OR WHERE NEEDED TO PREVENT PERSONS AND MATERIAL FROM FALLING FROM THE ELEVATED PLATFORM. 2. CAPABLE OF WITHSTANDING, WITHOUT FAILURE, A FORCE OF AT LEAST 200 LB (60.9 KG) APPLIED WITHIN 2 INCH (5 CM) OF THE TOP EDGE, IN ANY OUTWARD OR DOWNWARD DIRECTION, AT ANY POINT ALONG THE TOP EDGE. 3. WHEN THE FORCE DESCRIBED IN A, ABOVE, IS APPLIED IN A DOWNWARD DIRECTION, THE TOP EDGE OF THE GUARDRAIL SHALL NOT DEFLECT MORE THAN 3 IN (7.6 CM) NOR TO A HEIGHT LESS THAN 39 IN (99 CM) ABOVE THE WALKING/WORKING LEVEL. 4. MIDRAILS, SCREENS, MESH, INTERMEDIATE VERTICAL MEMBERS, SOLID PANELS, AND EQUIVALENT STRUCTURAL MEMBERS SHALL BE CAPABLE OF WITHSTANDING, WITHOUT FAILURE, A FORCE OF AT LEAST 150 LB (68 KG) APPLIED IN ANY DOWNWARD OR OUTWARD DIRECTION AT ANY POINT ALONG THE MIDRAIL OR OTHER MEMBER. 5. TOE BOARDS SHALL WITHSTAND WITHOUT FAILURE A FORCE OF 50 LBS (23 KG) APPLIED IN ANY OUTWARD OR DOWNWARD DIRECTION AT ANY POINT ALONG THE TOE BOARD. 6. FOR WOOD RAILINGS:**

**A) TOP RAILS SHALL BE OF AT LEAST 2-IN X 4-IN (5-CM X 10.1-CM) LUMBER,**

**B) MIDRAILS SHALL BE AT LEAST 1-IN X 6-IN (2.5-CM X 15.2-CM) LUMBER, AND**

**C) POSTS SHALL BE AT LEAST 2-IN X 4-IN (5-CM X 10.1-CM) LUMBER SPACED NOT TO EXCEED 8 FT (2.4 M) ON CENTERS. 7. FOR PIPE RAILINGS:**

**A) TOP RAILS AND MIDRAILS SHALL BE AT LEAST 1.5 IN (3.8 CM) NOMINAL DIAMETER (SCHEDULE 40 PIPE), AND**

**B) POSTS SHALL BE AT LEAST 1.5 IN (3.8 CM) NOMINAL DIAMETER (SCHEDULE 80 STEEL PIPE) SPACED NOT MORE THAN 8 FT (2.4 M) ON CENTERS. 8. FOR STRUCTURAL STEEL RAILINGS:**

**A) TOP RAILS AND MIDRAILS SHALL BE AT LEAST 2-IN X 2-IN X 38-/IN (5-CM X 5-CM X 0.9-CM) ANGLES, AND**

**B) POSTS SHALL BE AT LEAST 2-IN X 2-IN X 38-/IN (5-CM X 5-CM X 0.9-CM) ANGLES SPACED NOT MORE THAN 8 FT (2.4 M) ON CENTERS.**



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**Doc. No:SRTC-HSE18**

**REVISION No.: 00**

**PAGE: 16**

**OF: 33**

**9. GUARDRAIL SYSTEMS SHALL BE SO SURFACED AS TO PREVENT INJURY TO AN EMPLOYEE FROM PUNCTURES OR LACERATIONS AND TO PREVENT SNAGGING OF CLOTHING. 10. TOP RAILS AND MIDRAILS. A) MIDRAILS SHALL BE HALFWAY BETWEEN THE TOP RAILS AND THE FLOOR, PLATFORM, RUNWAY, OR RAMP. B) THE ENDS OF THE TOP RAILS AND MIDRAILS SHALL NOT OVERHANG THE TERMINAL POSTS EXCEPT WHERE SUCH OVERHANG DOES NOT CREATE A PROJECTION HAZARD. C) SYNTHETIC OR NATURAL FIBER ROPES SHALL NOT BE USED AS TOP RAILS OR MIDRAILS. WIRE ROPE MAY BE USED AS TOP RAILS OR MIDRAILS IF TENSION IS MAINTAINED TO PROVIDE NOT MORE THAN 3-IN (7.6-CM) DEFLECTION, IN ANY DIRECTION FROM THE CENTER LINE, UNDER A 200-LB (90.7-KG) LOAD, IF SUPPORT POSTS ARE LOCATED NOT MORE THAN 8 FT (2.4 M) APART, AND IF THE WIRE ROPE IS FLAGGED AT NOT MORE THAN 6FT (1.8 M) INTERVALS WITH HIGH-VISIBILITY MATERIAL. 11. TOE BOARDS. TOE BOARDS SHALL BE 1-IN X 4-IN (2.5-CM X 10.1-CM) (MINIMUM 4-IN (10.1-CM) (NOMINAL) VERTICALLY) LUMBER OR THE EQUIVALENT. A) TOE BOARDS SHALL BE SECURELY FASTENED IN PLACE AND HAVE NOT MORE THAN 14/ IN (0.6 CM) CLEARANCE ABOVE FLOOR LEVEL. B) TOE BOARDS SHALL BE MADE OF ANY SUBSTANTIAL MATERIAL, EITHER SOLID OR WITH OPENINGS NOT GREATER THAN 1 IN (2.5 CM) IN GREATEST DIMENSION. C) WHERE MATERIAL IS PILED TO SUCH A HEIGHT THAT A STANDARD TOE BOARD DOES NOT PROVIDE PROTECTION, PANELING OR SCREENING FROM FLOOR TO TOP RAIL OR MIDRAIL SHALL BE PROVIDED. D) GUARDRAILS RECEIVING HEAVY STRESSES FROM EMPLOYEES TRUCKING OR HANDLING MATERIALS SHALL BE PROVIDED ADDITIONAL STRENGTH BY USING HEAVIER STOCK, CLOSER SPACING OF POSTS, BRACING, OR BY OTHER MEANS. 12. HANDRAILS. A) A STANDARD HANDRAIL SHALL BE OF CONSTRUCTION SIMILAR TO A STANDARD GUARDRAIL EXCEPT THAT IT IS MOUNTED ON A WALL OR PARTITION AND DOES NOT INCLUDE A MIDRAIL. B) HANDRAILS SHALL HAVE SMOOTH SURFACES ALONG THE TOP AND BOTH SIDES. C) HANDRAILS SHALL HAVE AN ADEQUATE HANDHOLD FOR ANYONE GRASPING IT TO AVOID FALLING.**



