

**Contract No. LGA/098/HQ/2022/2023/W/43**  
**Package 1 - Upgrading of Central Business District (CBD)**  
**Roads in Sumbawanga Municipality**



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**HEALTH AND SAFETY MANAGEMENT PLAN (HSMP)**

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**Submitted to**  
**Supervision Consultant**



Howard Consulting Limited,

Site Office in Sumbawanga Municipality, Rukwa-Region

**Employer**



Municipal Director

Sumbawanga Municipal Council, sumbawanga municipal street P.O. Box 187, 55182  
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**Submitted by Contractor**



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## LIST OF ABBREVIATIONS AND ACRONYMS

CCEP	Community Communication and Engagement Plan
CEC	Code of Ethical Conduct
CGC	China Geo-Engineering Cooperation
CLO	Community Liaison Officer
CMP	Crime Management Plan
COVID-19	Coronavirus Disease 2019
CSR	Corporate Social Responsibility
EHSMP	Environmental Health and Safety Management Plan
EIA	Environmental Impact Assessment
EMP	Environmental Management Plan
ESM	Environmental and Social Manager
ESMP	Environmental and Social Management Plan
ESMP	Environmental and Social Management Plan
GMP	Grievance Management Plan
GPS	Global Positioning System
HIV/AIDs	Human Immunodeficiency Virus/ Acquired Immunodeficiency Syndrome
HS	Health and Safety
HSM	Health, Safety and Manager
HSMP	Health and Safety Management Plan
Km	Kilometer
LGAs	Local Government Authorities
LHS	Left Hand Side
LTI	Lost Time Injury
MCR	Monthly Compliance Report
NA	Not Applicable
NGOs	Non-Governmental Organizations
OHS	Occupational Health and Safety
OSH	Occupational Safety and Health
OSHE	Occupational Safety, Health and Environment
PPE	Personal Protective Equipment
RE	Resident Engineer
RHS	Right Hand Side
SA	Site Agent
SC	Supervision Consultant
STDs	Sexual Transmission Diseases
TAMCO	Tanzania Mines, Energy, Construction and Allied Workers Union
TARURA	Tanzania Rural and Urban Roads Agency
TB	Tuberculosis
HCL	Howard Consulting Limited
TMO	Traffic Management Officer
TMP	Traffic Management Plan
TPDF	Tanzania People's Defense Force
TRA	Tanzania Revenue Authority
TTCL	Tanzania Telecommunications Company Limited
SUWASA	Sumbawanga Urban Water Supply
URT	United Republic of Tanzania
VCT	Voluntary Counseling and Testing



## 1 INTRODUCTION

### 1.1 Project Background

The Government of the United Republic of Tanzania has received financing from the World Bank towards the cost of the Tanzania Cities Transforming Infrastructure and Competitiveness (TACTIC) Project coordinated by the President’s Office, Regional Administration and Local Government (PO-RALG) through a Project Coordination Team (PCT) and intends to apply part of the proceeds toward payments under the contracts for **Package 1 - Upgrading of Central Business District (CBD) Roads in Sumbawanga Municipality**. The road improvement is part of the Government strategy to develop its road network to support the socio-economic development of the country including facilitation of mobility, movements of goods and persons along the project corridor including the central corridor networks.

Sumbawanga Municipal (hereinafter referred to as the Employer), has awarded M/s China Geo-Engineering Corporation (hereinafter referred to as the Contractor) to undertake the work named as ‘*Contract No. LGA/098/HQ/2022/2023/W/43, Package 1 - Upgrading of Central Business District (CBD) Roads in Sumbawanga Municipality (TACTIC) Project to Bitumen Standard*; (hereinafter referred to as the Project). Which comprising Maendeleo Road (0.26 km), New Municipal Hospital Access Road (1.95 km), Kalangasa Road (0.53 km), Kasema Road (0.49 km), Airport-Senga-Wipanga Road (3.3 km), Mandela Road (0.4 km), Maweni II Road (0.4 km), Muva Road (0.2 km), SIDO-Senga-Mafulala Road (2.7 km), Sokolo Bible-Mbeya Road (2.6 km), Kimati-Ufipa Road (0.2 km) and Engineer’s Office Block.

This document is a site-specific Health and Safety Management Plan (HSMP) for the Project. It outlines environmental health and safety measures that shall be followed by the Contractor during the construction period.

### 1.2 Summary of Basic Project Information

Table 1 below presents a summary of basic project information.

*Table 1: Summary of Basic Project Information*

	Project Name	Upgrading of Central Business District (CBD) Roads in Sumbawanga Municipality (TACTIC) Project
1.	Contract Number	Contract No. LGA/098/HQ/2022/2023/W/43
2.	Project Length	13.03 KM
3.	Employer	Sumbawanga Municipal Council
4.	Engineer	Howard Consulting Limited
5.	Contractor	China Geo-Engineering Corporation
6.	Financier	World Bank
7.	Contract Signature Date	23 <sup>rd</sup> September, 2023
8.	Commencement Date	20 <sup>th</sup> November, 2023

9.	Contract Price	TShs. 20,361,688 (VAT Exclusive)
10.	Contract Duration	15 months
11.	Contract Completion Date	20 <sup>th</sup> February, 2025
12.	Defects Notification Period	365 days

Source: Project's Contract, November 2023

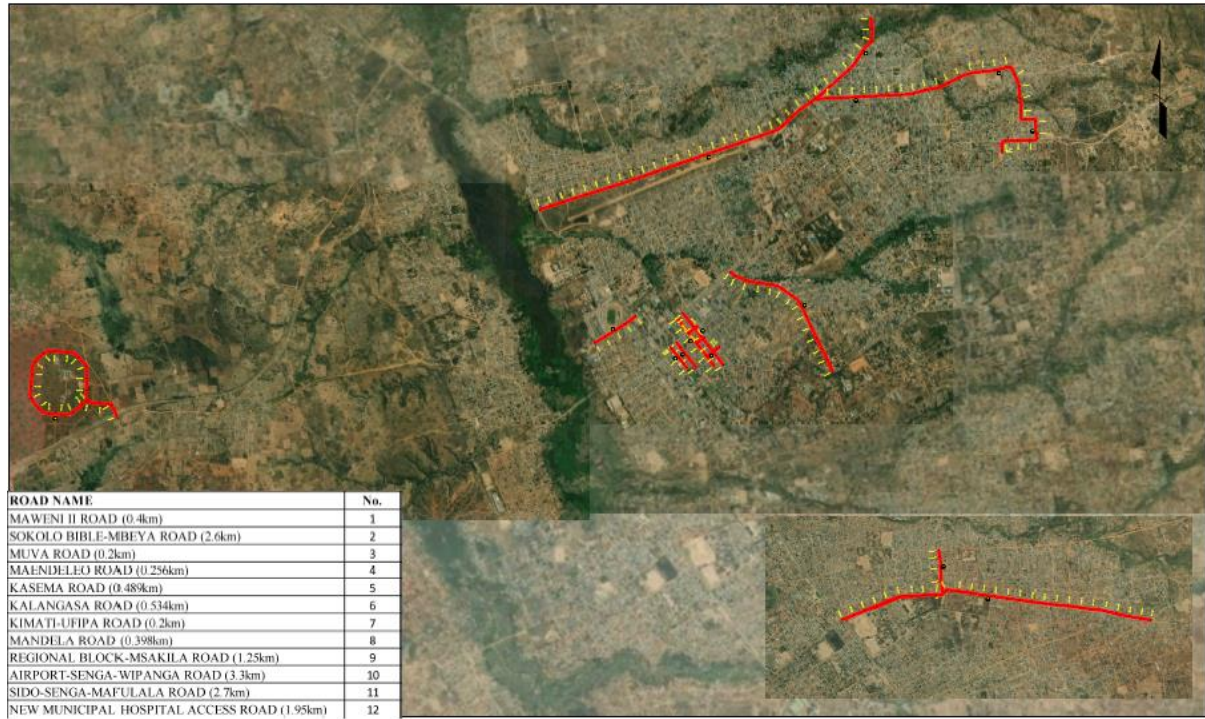


Figure 1: Location Map of the Project Road  
Source: Fieldwork November 2023

### 1.3 Objective of HSMP

The main objective of this site-specific HSMP is to ensure that appropriate mitigation measures for addressing health and safety issues are effectively implemented by the Contractor in line with Standard Specifications for Road Works (URT, 2000); and in line with Occupational Health and Safety Act No. 5 of 2003 as well as Contractor's Health and Safety Management Strategies as included in the Contract.

### 1.4 Definition of Key OHS Terms

Definition of key occupational health and safety (OHS) terms used in this document are given in Table 3 below.

*Table 2: Definitions of Key OHS Terms Used in This HSMP*

	<b>Term</b>	<b>Definition</b>
1.	Safety	Freedom from unacceptable risk of personal harm i.e. the avoidance of incidents.
2.	Hazard	A hazard is any uncorrected unsafe act or condition to aspects, production, environment or reputation, and imposes a level of risk that is not as low as reasonably practicable.
3.	Risk	Risk is the chance of something adverse happening and its severity. It is a combination of the probability or frequency of the occurrence of a defined hazard and magnitude of the consequences of occurrences.
4.	Incident	An incident is an undesired event or chain of events that may result in harm to people, damage to equipment, property and the environment or loss of production and reputation.
5.	Environmental incident	An unplanned event or chain of events that has or could have a negative impact on the environment.
6.	Near miss	An incident, which resulted in no injury, illness, damage to asset, property, reputation etc.
7.	First Aid Case	Any one-time treatment and subsequent observation of minor scratches, cuts, burns etc., which do not require medical care by a physician. Such treatment and observations are considered as first aid case even if the treatment is provided by a physician or registered medical practitioner.
8.	Medical Treatment Case	An injury that involves neither lost work days nor restricted work days but in which the injured person requires medical treatment/ is under medical attention, for some period of time by a qualified medical practitioner and can perform his normal duties simultaneously during that period
9.	Restricted workday case (RWC)	An injury that render the person unable to perform his normal duties, which results in a work assignment after the day the incident occurred that does not include all the normal duties of the persons regular job.
10.	Lost Time Injury (LTI)	An injury, which render the person unable to perform his duties either fully or partially/ attend his duties on any day after the day on which the injury was received.
11.	Occupational Illness	Any work-related abnormal condition or disorder, other than one resulting from work injury, caused by or mainly caused by exposure to environmental factors associated with the employment that includes acute and chronic illness or diseases, which may be caused by inhalation, absorption, ingestion or direct contact, cases

	Term	Definition
		resulting from anything other than a single event are considered as occupational illness.
12.	Chief Inspector	Is the person authorized by the Law to enforce the Occupational Safety and Health Act number 5, of 2003
13.	Safety Induction	Is the brief introductory training of Health and Safety given to individuals prior to join a new assignment
14.	Statutory registration	This is a process of reporting and registering the project and machineries to relevant Government health and safety regulatory authorities
15.	Statutory inspection	Is the inspection or examination of equipment stipulated in the occupational health and Safety Act No. 5 of 2003 and it is done by the chief inspector or person appointed by him under the same law
16.	Road traffic accident	An incident which has involved a vehicle/equipment and resulted in injury, illness, damage or loss of reputation.
17.	Man – hours	Is defined as man – hours worked by all persons employed on site (including site supervisory staff, managerial staff and sub – contractors).

## 1.5 Company Health and Safety Policy

CGC’s Health, and Safety (H&S) Policy, dated November 2023, is included in Annex 1. The Policy Statement states that *“Safety and Health of our workforce and our Environment Stewardship are just as important to our success as Operational and Financial Performance, Government Relation, Ethical Behaviour, Corporate Reputation, Social Responsibility and Employee Involvement and Commitment. We shall strive to make our facilities safer and better places to work and our attention to detail and focus on H&S will ensure high standards of performance.”*

CGC is committed to continual improvement in Occupational Health, and Safety (OHS) performance and to achieving an acceptable standard of occupational health, and safety, management through the development, implementation and continual improvement of management systems. The commitment includes an emphasis on working towards providing a hazards free environment in regards to OHS aspects for employees and visitors. To demonstrate responsibility towards realization of the wide-ranging policy statement, the CGC aimed to manage all health and safety issues via;

### a. Policy Statement

Safety and Health of our workforce and the statement emphasize on the following:

- i. Comply with all national applicable legal requirements, license and permit conditions as minimum standard for its OHS practices and management procedures;
- ii. Perform regular OHS audits and inspections to assess the performance of the site against adopted standards; and
- iii. Facilitate OHS meetings that enable management and staff to review and discuss H&S issues by establishing permanent channels for communications and resolution of concerns with the intention of correcting and preventing recurrence.

### b. Accident Prevention

- i. Prevent, eliminate and/or control identifiable hazards to eliminate work related injury and illness and environmental impact;

- ii. Monitor and assess all accidents and incidents through the completion of detailed reports and follow up of recommended actions;
- iii. Provide safety equipment and apparel to the employee, contractor and visitor and to provide suitable facilities to perform the task in a safe manner; and
- iv. Implement and maintain an Occupational Health and Safety Management.

**c. Environmental Stewardship**

- i. Maintain an OHS program based on the principles of continual improvement, pollution prevention and minimal risky workplaces; and
- ii. Make provisions for and maintain a medical surveillance programmed for all employees.

**d. Risk Assessment**

- i. It is our duty to ensure occupational illness and injury is preventable and that all environmental impact is minimal; and
- ii. Maintain an OHS program based the principles of continual improvement, pollution prevention and minimal risky workplaces.

**e. Emergency Preparedness**

- i. Maintaining emergency plans in cooperation with local authorities and emergency services groups to ensure a prompt, effective and integrated response to minimise harmful effects from any incidents, including presence of ambulance at the contractor’s camp, and
- ii. Providing adequate occupational health and safety and emergency response resources to all allow employee and visitors to operate in a healthy and safe manner within the workplace.

**f. Regulatory Compliance**

- i. Comply with all national applicable legal requirements, license and permit conditions as minimum standard for its OHS practices and management procedures.

**g. Training**

- i. Facilitate the training of employees and contractor in relation to their roles and responsibilities in OHS management and require to correspondingly accepting, their own duty of care responsibility to themselves and their colleagues; and
- ii. Train, supervise and provide information, to reduce risk to all employees, contractors and visitors, from inappropriate practices and through the demonstration of the correct use and handling of equipment and substances.

**h. Community Citizenship**

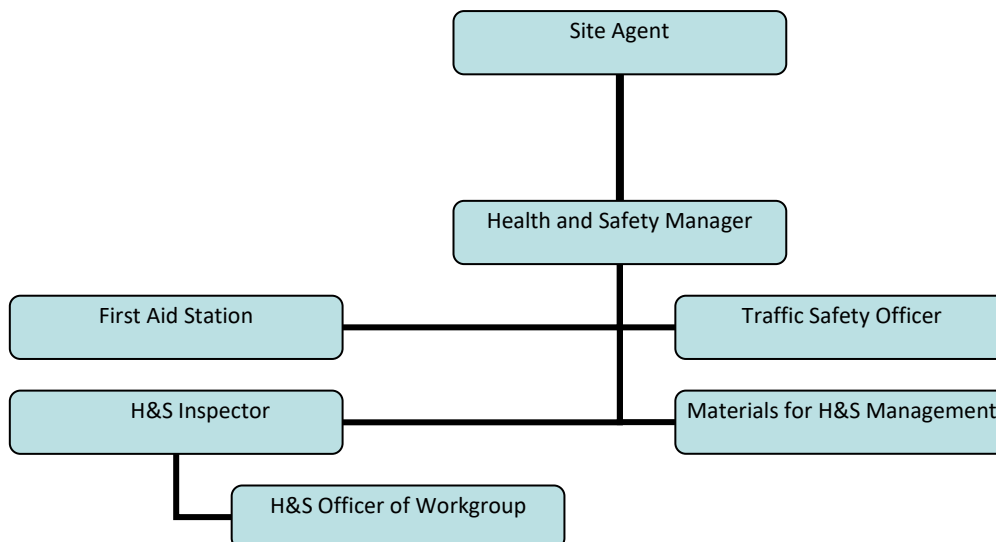
- i. Conduct our operations safely, cleanly and responsibly and will be proactive in consultation with all stakeholders’ issues of mutual interest; and
- ii. Maintain an OHS program based the principles of continual improvement, pollution prevention and minimal risky workplaces and adjacent communities at large.

**2 ORGANIZATIONAL CHART AND RESPONSIBILITIES**

**2.1 Organizational Chart**

Figure 2 below provides an organizational chart for the implementation of this HSMP.





Source: Contractor's method statement document November 2023

## 2.2 Responsibilities of Key Personnel

From the Contractor's part, Management of Health and Safety issues will be under the direct leadership of the Site Agent during the construction phase of the project. The Site Agent will be assisted by Health and Safety Manager. However, the Contractor's HSM will be assisted by appointed/support staff to facilitate the implementation of HSMP. Any non-compliance to HSMP during the construction period will be well addressed to achieve the intended construction goals with due regard to environmental protection.

Reference to the Figure 2 above, Table 4 below defines the names and responsibilities of Contractor's key personnel for the implementation of this HSMP.

Table 3: Names and Responsibilities for HSMP Implementation

	Name of personnel	Position	Roles and Responsibilities	Phone number
1.	Mr. Wang Tuquan	Site Agent	<ul style="list-style-type: none"> <li>• He shall report to the Residence Engineer</li> <li>• To implement Health &amp; safety plans and policies within the jurisdiction of his project sites.</li> <li>• To review in monthly basis the overall Health &amp; Safety policies implemented in the area of his jurisdiction.</li> <li>• To report to the Health and Safety Governing body (the Occupational Safety and Health Authority "OSHA") all LTI within stipulated time frame (the stipulated time for accident reporting is within 24 hours) and as per the requirement of Contract agreement, Contractor shall notify the Resident Engineer and Employer within 48hrs or as soon as reasonable possible after the occurrence of any accident.</li> <li>• Conduct regular safety meetings with supervisors/foremen and Health &amp; safety manager/officer assigned to his project.</li> <li>• To comply with all required statutory inspections of equipment on site</li> <li>• To monitor all safety devices and system in</li> </ul>	+255 769 463 209

	Name of personnel	Position	Roles and Responsibilities	Phone number
			<p>his project sites during his site visits.</p> <ul style="list-style-type: none"> <li>To recommend proper incentives and corrective measures according to the safety performance of all the employees in his projects.</li> <li>To liaise with Resident Engineer and Employer on safety matters.</li> <li>Shall ensure that all workers are provided with Personnel Protective Equipment (PPE) and additional PPE as per the nature of the activity</li> <li>To review and approve Health and Safety awareness training to strategic surrounding communities affected by the Project.</li> </ul>	
2.	Mr. Amani Mtui	Health and Safety Manager (HSM)	<ul style="list-style-type: none"> <li>He shall report to the Project Manager all matters related to Health and Safety</li> <li>He shall initiate and make follow up of all relevant statutory registration and inspection of equipment and machineries</li> <li>He will be responsible for preparation of Health and Safety procedures</li> <li>Advising, guiding and facilitating the Project/ Line management, supervisors and workforce on all matters pertaining to Health and Safety protection.</li> <li>Monitoring Health and Safety standards in the activities at sites and giving positive advice.</li> <li>Organizing in house training and mandatory training to employees and keeping the records of the same.</li> <li>Rendering required assistance to line management in the investigation of incidents and disseminating learning points.</li> <li>He shall review and approve all risk assessment reports from line Managers</li> <li>Carrying out periodic inspection of vehicles, plant, equipment, tools, PPE etc. and forwarding report to the concerned for corrective action.</li> <li>Compiling and maintaining Health &amp; Safety statistics pertaining to the project and rendering report to the Resident Engineer as per periodicity prescribed.</li> <li>He shall be responsible for preparing safety inspection methodology and enforce the same.</li> <li>He shall prepare all health and Safety inspection and reports</li> <li>Inspecting camps and forwarding report to the Project Manager and also following up for corrective action if any, and</li> <li>Will ensure managers/Supervisors provide safety training and information to workers</li> </ul>	0755897176
3.		Health and Safety Officer (HSO)	<ul style="list-style-type: none"> <li>He shall report to the health and safety manager all safety related matters</li> <li>He has to ensure that all workers are provided with Personnel Protective Equipment and additional PPEs as per the nature of the activity.</li> <li>He shall report the incidents near-misses to Health &amp; safety officer or Manager and take part in the investigation.</li> </ul>	

	Name of personnel	Position	Roles and Responsibilities	Phone number
			<ul style="list-style-type: none"> <li>• Shall explain to workers the activities to be done with safety measures to be taken</li> <li>• Shall make sure all workers from different work sections attends the tool box talk</li> <li>• Report to the HSM any potential hazards on their jurisdiction</li> <li>• Participate in accident/ incident investigations</li> </ul>	
4.	Workers to be selected for attending mandatory OHS trainings – see Section 3.1.4.	Health & Safety Representatives will be appointed after attending mandatory OHS trainings given by OSHA.	<ul style="list-style-type: none"> <li>• Ensure that all the works are carried out strictly as per the HSMP.</li> <li>• Ensure that employees are aware of the hazards and associated risks on their relevant jurisdiction.</li> <li>• Enforce/monitor proper use of PPE.</li> <li>• Identify potential hazards and take remedial measures.</li> <li>• Determining the cause of any accidents/incidents</li> <li>• Educate other employees in the safe use of equipment and tools.</li> <li>• To enforce all safety procedures for all crews and the equipment on site</li> <li>• To submit all relevant health and safety reports to the HSM.</li> <li>• They shall make sure all crew of their groups attends the tool box talk</li> </ul>	Not applicable
5.		Nursing Officer/First Aider	<ul style="list-style-type: none"> <li>• Report to assistant health and safety officer on the number and type of provided first aid services</li> <li>• Provide first aid services to injured workers and others in work sites.</li> <li>• Supervise trained first aiders.</li> <li>• Manage first aid kits.</li> <li>• Keep proper records of all injured workers receiving first aid services,</li> <li>• Make referrals for major injuries.</li> <li>• Participate in HSE trainings as facilitator/trainer.</li> <li>• Monitor and keep records of health related incidents.</li> </ul>	Will be determined after recruitment of nurse/first aider
6.	Employees	Not applicable	<ul style="list-style-type: none"> <li>• They shall report all health and safety related matters to the assistant health and safety officer</li> <li>• Complying with company Health&amp; safety plan, rules and regulations.</li> <li>• Promptly reports all unsafe conditions and hazards to the assistant health and safety officer.</li> <li>• Reports all incidents or injuries to the assistant health and safety officer/ HSM.</li> <li>• Wearing and taking care of personal protective Equipment provided to them.</li> <li>• Participating in all Health&amp; safety and toolbox meetings to which they are asked to attend and to pay particular attention to the hazard analysis and emergency procedures covered.</li> <li>• Maintaining proper housekeeping in the worksites and camps.</li> <li>• Always abides to the instructions related to Health&amp; safety.</li> <li>• Attend safety induction sessions.</li> </ul>	



### 2.3 Checking OHS Compliance

Contractor including his staff and day worker will be required to adopt and exemplifies the commitment to conduct commitment of construction activities in accordance with applicable laws, rules, and regulations with high ethical standards. The Monthly Compliance inspection shall be initiated by the Health and Safety Manager who will be assisted by safety representatives/team. The OH&S monthly compliance or non-compliance report will be incorporated in monthly compliance report. The inspection of OH&S compliance will include the following but not limited:

- i. Presence of Safety Gears including wearing prescribed Personal Protective Equipment (PPE)
- ii. Provision of Occupational Health and Safety training (e.g. Toolbox Talk & Induction training) and fire training to the workers;
- iii. Provision of first aid services including presence of First Aid Kit, First Aider, etc.,
- iv. Presence of fire extinguishers and including regular servicing of fire extinguishers according to the existing laws
- v. Sanitation and Hygiene like presence of toilets at all strategic areas including active sites.
- vi. Presence of road safety signs, flagmen; and
- vii. There will be a standby ambulance stationed at the contractors' camp for transferring the casualties to the health centers or hospitals for treatment.

### **3 HEALTH AND SAFETY MANAGEMENT**

#### **3.1 Training Improving Health and Safety Management**

The aims of safety training programmers are:

- i. To update the safety awareness and technical skills of person in the field of application.
- ii. To orient new employees to working environment;
- iii. To identify and rectify hazards and convey the same to the workforce.
- iv. To prepare the persons to select appropriate safety measures to contain any unforeseen hazards/emergency situations.

To achieve the above aims, the trainings elaborated in the following subsection will be conducted.

##### **3.1.1 Health and Safety Induction Training**

New or reassigned employees shall be given health & safety induction training concerning to health & safety management and general safety rules and procedure, site specific Health & Safety rules and their responsibility and accountability in safety performance. Health & Safety induction shall be given to all categories of personnel at site by Health, and Safety Manager (HSM). Health & Safety induction shall be recorded in the prescribed format – see HS Training Checklist in Annex 2. All employees shall acknowledge such training by signing relevant document – see HS Training Register in Annex 3.

Important topics in the HS induction training will include the following:

- i. Contractor's Health and Safety safeguards policies;
- ii. The importance of Personal Protective Equipment (PPE) in construction activities;
- iii. Firefighting;
- iv. The importance of road safety signs;
- v. Incident, emergency and evacuation response procedures;
- vi. The importance of first aid;
- vii. Proper use of work equipment; and
- viii. Hazards and risks specific to the workplace including control measures for those risks; etc.

As road construction involve some interaction with the public, establishment of health and safety training program to public institutions along the project road will be taken into consideration. Key target institutions will include primary and secondary schools.

##### **3.1.2 On the Job Training**

Based on the work section/sites, workers will be given on the job trainings. These trainings shall be focused on the safe ways of working in particular work section/sites including hazards involved. This shall be conducted by the foremen/supervisors in collaboration with HSM and trainees' performance after the training shall be assessed to evaluate the effectiveness of the training. All risk assessment and related knowledge shall be done by the HSM or registered Risk Assessment consultant/Expert

### 3.1.3 Refresher Courses

Refresher courses shall be conducted to update the skill and safe methods of work for a particular job. This shall be conducted periodically for welding/cutting, plant and equipment operation, defensive driving and hazards in electrical installation

### 3.1.4 Mandatory OHS Trainings

These refer to the trainings offered by government institutions/authorities responsible for occupational health and safety (OHS). As per the requirements of the Occupational Health and Safety Act No. 5 of 2003, employers are required to have selected individuals amongst the workers who should attend mandatory training programs offered by OSHA for the safety, health and welfare of persons at work places. Such trainings targets First Aiders and HSM Representatives.

About fifteen (10) workers will be selected from different work sections/sites including Contractor's camp, Contractor's workshop, Engineer's camp, Road section, Crusher Plant, Steel fixers, Earthwork team, Surveyors team, Batching plant, Structure team, and Carpentry. Selection of workers will consider the following criteria:

- i. Good knowledge of reading and writing English and Swahili;
- ii. Good relationship with supervisors;
- iii. Team work and hard workers;
- iv. Willingness to do extra work;
- v. Ability to train and guide other workers;
- vi. Leadership skills;
- vii. Accepted by majority in the working unit;
- viii. Selected workers should have a permanent contract.

The trainings are expected to be conducted between January, March, April and November in a year, subject to availability of trainers from OSHA.

### 3.1.5 Tool Box Talks

While Toolbox Talks cannot serve as a substitute for an employee's formal safety training, they do serve as a great way to address safety issues and concerns that may be plaguing a workplace. A Toolbox Talk (TBT) is an informal group discussion that focuses on a particular safety or health issue. These tools will be used daily to promote workers' H&S culture. Toolbox talks are also intended to facilitate H&S discussions on the job site.

Toolbox talks shall be conducted twice or thrice in a week. TBT shall be designed to highlight relevant safety and individual health issue to the workforce to raise their level of awareness. Such talks shall recall the risk assessment report and defects reported on previous performance. These shall be prepared and presented by HSM.

All tool box talks that will be carried out shall be formally recorded on dated and signed by attendees (see Annex 4: Tool Box Talks Records) and the copies shall be kept with the project safety focal point. The topics listed below are not meant to be comprehensive tool box discussions, instead they are provided as a reminder of areas that will be covered:

- i. Common safety mistakes;
- ii. Electrical safety;
- iii. Hazard communication;
- iv. Fire safety;
- v. Ergonomic safety;
- vi. Housekeeping;

- vii. Heat stress;
- viii. Traffic safety;
- ix. Workplace stress;
- x. Risks associated with inhalation of dust, toxic fumes, exposure to high temperature, noise, vibration, radioactive substances; and
- xi. Relationship with local communities.

### **3.1.6 Safety Culture Promotion and Suggestion Scheme**

Safety culture promotion schemes refers as a combination of how workers feel about safety and what they actually do and it has three key elements: working practices and rules for effectively controlling hazards, a positive attitude towards risk management including compliance with the control processes, and the capacity to learn from accidents, near misses and safety performance indicators and bring about continual improvement. Safety culture promotion scheme shall be developed and implemented at site to promote safety awareness amongst the workforce. The aim of safety culture promotion is to reduce the number of on job incidents of which individuals with best safety performance shall be recognized and rewarded.

A safety suggestion scheme shall be executed at site to inspire the workforce to come up with good safety practices and suggestions for improving working condition. Through a suggestion scheme worker will be encouraged to contribute to improving the safety performance by generating, analyzing and implementing safety ideas that have a positive safety impact on the project. The suggestion scheme process will involves writing of suggestions by the employees and dropping the same in a suggestion box whereby a designated employee empties the suggestion box/boxes regularly at a predefined interval. Contractor's designated committee of the employees will meet and pass through all the received suggestions. The best suggestion shall be selected and the person shall be recognised and rewarded. And the following tips will be used to improve and strengthening safety culture promotion and suggestion:

- i. Safety suggestion box will be installed at all strategic points/areas in the active sites especially at contractor's camp, quarry, and crusher site;
- ii. Communication. Safety information will be widely and easily available for every employee and staff including updating them on health and safety policies and procedures; and
- iii. Training. Employees will be provided adequate health and safety training. By ensuring they are well trained, giving them the skills and knowledge necessary to carry out their jobs safely and effectively.

### **3.1.7 Code of Conduct**

The training of contractor's staff/workers in health and safety matters is essential in ensuring that workers are aware of the risks to health and safety generated by their work and in enabling them to take appropriate action. The Contractor's code of practice/conduct sets out the legal framework covering the provision of health and safety training and explains the arrangements which Contractor are required to put in place to ensure that appropriate training is delivered. The contractors' code of conduct on health and safety will be done based on/consist:

#### ***i. Legal Requirement to Train as stated***

The Occupational Health and Safety Act 1 No. 5 of 2003 place a duty upon employers to provide training to its workers as necessary to protect the health and safety at work of employees. Contractor's code of practice is to ensure selected workers are provided /attend mandatory training programs offered by OSHA (refer section 3.1.1 -3.1.4)

## **ii. Health and safety training**

Training shall:

- a) be repeated periodically where appropriate;
- b) be adapted to take account of any new or changed risks to the health and safety of the employees concerned; and
- c) Take place during working hours.

## **iii. Health and safety policy**

Contractors' policy requires that workers and staff are equipped with the knowledge, competence, confidence and capacity to deal effectively with health and safety issues, through the provision of appropriate resources, supervision, information, instruction and training. The Policy requires progressive improvement in health and safety management. Therefore training and re-training requirements should be carried out through the assessment of training needs using job descriptions, personnel specifications and staff development review, rather than as the result of an accident.

## **iv. Responsibilities for training**

The code of ethics ensures that all recruited workers received the necessary information, instruction and training to carry out their duties competently before starting their duties. This should start with health and safety induction. Where training has been identified as necessary to minimize risks through a risk assessment process (e.g. manual handling) then the project manager/HSM must ensure that the training is provided and that worker attend the training and have understood its content.

## **3.2 Safety Inspection and Follow up Actions**

Contractor's HSM along with SC's staff shall carry out frequent inspection with the focus on safety aspects at site and prepare inspection reports. The frequency of inspection shall be determined by site activities and general conditions. Monthly H&S inspection checklists for Contractor's camp, SC's camp, road sites, diversion roads, borrow pits, crusher plant site, and quarry sites are included in Annex 5 to 11. However, the inspection shall be conducted at a minimum of once a month. Where high – risk activities are being carried out inspection shall be done at least once daily.

The inspection reports shall be discussed with the site managers and various sub – contractors (if any). In addition to these, the site staff will accompany the HSM and Supervision consultant's (SC) staff for their site safety inspection. Remedial action to rectify any deficiency identified or unsafe practices discovered during the safety inspection by HSM shall be implemented immediately.

## **3.3 Health and Safety Management System**

Contractor's health and safety management covers.

### **3.3.1 Reporting of Accidents, Incidents, Near Misses and Investigation and Accident Statistics**

Tanzania laws on incident reporting and investigation procedures shall be adhered. Such law requires reporting to the Chief Inspector of Occupational Safety and Health (OSH) Department all *Lost Time Injuries* (LTI) within twenty-four hours from the time of incident. CGC will play this role to ensure that local requirements are followed. As per Contract Agreement the

Contractor shall notify the Resident Engineer's Office and Employer as soon as reasonable possible after the occurrence of any accident which has resulted in damage or loss of property, disability or loss of human life, or which has or which could reasonably be foreseen to have a material impact on the environment. All incidents including near misses shall be reported to the Resident Engineer, regardless the potential of the incident.

OSHA's Occupational Accident Log Book (Annex 12) will be used to record all accidents and incidents. All the incidents shall be investigated to find out the root causes and to prevent the recurrences of the same kind of incidents. If Resident Engineer's Office asks for the detailed investigation and the findings shall be submitted to as soon as possible. The methodology for the incident investigation shall be "Find out the facts, not the faults".

Incident data, if properly collected and analysed, indicates the trend and can show where and how problems arise. An internal monthly safety report (see Annex 13) of the project shall be included in the Monthly Compliance Report (MCR) after the end of each month.

### **3.3.2 Hazard Identification, Risk Assessment and Impacts Identification and Mitigations**

The purpose of the hazard identification and risk assessment is to identify all potential hazards and associated risks during construction. The contractor will take relevant measures to control all critical, high and moderate hazards. Low potential hazards will be totally eliminated.

Depending on the severity of hazards, we will be able to take necessary preventive and control measure to mitigate the hazards. Prior to the commencement of any activity, detailed hazard identification shall be done by the site supervisory staff with the assistance of HSM and the hazards shall be communicated to the whole team deemed to execute the task. The hazards analysis done shall be produced to RE Office for approval and mitigating measures shall be taken up to their satisfaction. Risk Assessment (RA) shall be done per Occupational Safety and Health Act, No. 5 of 2003, i.e. an expert registered with OSH Department shall be commissioned to undertake RA. The following Table 5 (next page) present identified hazard areas and associated risks, while health and safety impacts including its management are presented in Table 6.

Table 4: Identified Hazard Areas/Activities and Associated Risks

S.N	Risks/Hazard type	Identified Hazard	Potential Risks
	Physical Risk	Earthwork: Excavation and trenching risks	<ul style="list-style-type: none"> <li>i. Damaging underground services pipes, main lines or cables which is result from deeply excavation and lack of prior inspection.</li> <li>ii. Collapsing of soil during and after excavation may result from the following conditions: Mechanical failure of soil, vibrations and weight of vehicles and plant, storage of materials and Equipment near the edge of the trench, variation in the nature of the plant, the sides of the trench being struck by heavy objects</li> <li>iii. Falling into trenches [vehicles; staffs and any member of the public] of which is result from collapsing of soil or careless driving of the driver.</li> <li>iv. Wrong stacking/disposing of excavated materials.</li> <li>v. Obstructing public traffic through depositing fill materials and surface dressing activities</li> <li>vi. Health and Safety hazard due to generation of dust and noise</li> <li>vii. Injuries due to laceration from sharp objects</li> <li>viii. Traffic accident due to Steep downhill/or uphill and sharp curves</li> <li>ix. Workers being struck by falling rock from the sides of the trench</li> <li>x. Workers/members of the public being struck by excavating equipment</li> <li>xi. Health hazard due to excessive exposure to radioactive radiations while using nuclear gauge</li> </ul>
		Heavy Equipment and Machine Risks	Heavy equipment such as bulldozers; graders; Loaders; dump trucks; Mobile cranes; compactors; bitumen spreader; pneumatic Equipment; tarmac cutting machines; mobile power generators and hand compactors. These Equipments are likely to cause the generation of noise and vibrations may lead to temporary deaf and damaging of adjacent buildings.
		Damage to properties due to improper operations or failure of equipment	Accident may happen which will cause injury or death of people and damage of property because of speeding, defective vehicles, incompetent drivers, overloading the vehicle or careless driving.
		Lifting and Lifting Equipment risks: the use of cranes and related Equipment may cause the following risk:	<ul style="list-style-type: none"> <li>i. Overloading may cause accident anytime</li> <li>ii. Wrongly loaded cargos may fall and hit employees or the public because of wrong shackles on the load</li> <li>iii. Incident may happen because of wrong communications between operators and signal man, hydraulic failure, wrong operations, mechanical failure and improper tandem lifting</li> <li>iv. Electrocution if come into contact with electric power line during lifting</li> <li>v. Wrong anchorage may lead to overturn of the crane</li> </ul>
		Risks at Borrow pits	<ul style="list-style-type: none"> <li>i. Collision with trucks or heavy Equipment</li> <li>ii. Dust; vibration and noise</li> <li>iii. Project trucks and heavy equipment colliding with public traffic</li> <li>iv. Creation of insect breeding grounds due to stagnant water</li> <li>v. Drowning of communities, especially children when borrow pits are ponded with water during rains</li> <li>vi. Falling when the borrow pits are very deep</li> </ul>
		Safety risks on the Quarry and Crusher Sites	<ul style="list-style-type: none"> <li>i. Being hit by flying rocks</li> <li>ii. Being trapped by machineries</li> <li>iii. Dust generation during drilling of rocks as well as crushing of stones</li> <li>iv. Generation of noise and vibrations during rock drilling as well as crushing of stones</li> <li>v. Fall from quarry face or any other elevated platforms</li> <li>vi. Improper blasting, like loading too much of explosive or fire at wrong place</li> <li>vii. Staffs operating unsafely</li> <li>viii. Interference from public activities</li> <li>ix. Risk from collapsing structures</li> <li>x. Premature explosion or misfire</li> <li>xi. Trip hazard</li> </ul>

S.N	Risks/Hazard type	Identified Hazard	Potential Risks
			<ul style="list-style-type: none"> <li>xii. Eye or general body injury due to rock chips ejected during drilling</li> <li>xiii. Accident, including over turning of Equipment of during clearing of face in the quarry with excavator or wheel loader</li> <li>xiv. Accident involving Equipment and staff during loading and transport of stones to the crusher plant</li> <li>xv. Accident involving falling stone/rock over a worker</li> <li>xvi. Risk of person falling off quarry face</li> </ul>
	Risks of welding and cutting with flames and in confined space		<ul style="list-style-type: none"> <li>i. Fumes and micro-metallic residuals may hurt the technician</li> <li>ii. Intensified light may be harmful to eyes of the employees</li> <li>iii. Heat may hurt the skin of employees</li> <li>iv. Fire outbreak may damage facilities, equipment and staff</li> <li>v. Suffocation due to shortage of oxygen when welding</li> <li>vi. Restricted escape</li> </ul>
	Risks of Portable tools		<ul style="list-style-type: none"> <li>i. Laceration</li> <li>ii. Crushing the body part by falling equipment</li> <li>iii. Vibration noise and dust</li> <li>iv. Being hit by flying objects</li> <li>v. Use of wrong tools which are not proper tools when working on site</li> </ul>
	Risks of Working at height		<ul style="list-style-type: none"> <li>i. Fall from height</li> <li>ii. Risk associated by being hit or being hit by Falling objects</li> <li>iii. Protruding sharp objects</li> </ul>
	Risks of Compressors and pressure vessels (air pump etc.)		<ul style="list-style-type: none"> <li>i. Injecting higher pressure in the receiver than it can accommodate</li> <li>ii. Bursting and general Equipment failure</li> <li>iii. Wrong operations</li> <li>iv. Risks associated with getting trapped by revolving/or rotating parts</li> </ul>
	Risks during road marking		<ul style="list-style-type: none"> <li>i. Speeding public traffic</li> <li>ii. Inhalation of fumes</li> <li>iii. Skin damage caused by road paints</li> <li>iv. Interference from public activities</li> </ul>
	Electricity and electrical Equipment risks		<ul style="list-style-type: none"> <li>i. Poor wiring</li> <li>ii. Scratched cables</li> <li>iii. Wrong connections; routing of cables and/or wiring</li> <li>iv. Equipment failure</li> <li>v. Electrocution and unsafe act of staffs</li> </ul>
	Risks at the concrete butch plants		<ul style="list-style-type: none"> <li>i. Equipment failure</li> <li>ii. Incompetent operation</li> <li>iii. Generation of high level of dust during loading and mixing of cement with aggregate</li> <li>iv. Generation of noise and vibration during the operation of the batch plant</li> <li>v. Unsafe act such as climb the plant etc.</li> <li>vi. Risk of being hit by falling objects</li> <li>vii. Revolving/rotating parts</li> <li>viii. Safety risks during loading and unloading the plants (e.g. reversing og trucks)</li> </ul>



S.N	Risks/Hazard type	Identified Hazard	Potential Risks
			<ul style="list-style-type: none"> <li>ix. Health risks associated with the use of wet cement</li> <li>x. Risk of fall from height</li> </ul>
		Risks of explosives and blasting	<ul style="list-style-type: none"> <li>i. Wrong/poor communication may lead the employees go to the risk area</li> <li>ii. Incompetent operation may lead to misfire or delay</li> <li>iii. Mixing the igniting agent with explosives may lead to incident anytime</li> <li>iv. Wrong placement of the material may cause misfire</li> <li>v. Undesirable transportation/or shifting</li> <li>vi. Generation of noise and Vibration during blasting</li> <li>vii. Flying rocks and stones</li> <li>viii. Theft of explosives from magazine</li> <li>ix. Explosion at the magazines – possible causes of explosion need to be explained</li> </ul>
		Risks in Mechanical workshops	<ul style="list-style-type: none"> <li>i. Body injuries due to manual handling of materials</li> <li>ii. Death or body injuries due to incompetent operation</li> <li>iii. Electrocution due to bare wires and cables</li> <li>iv. Body injuries due to arc welding and grinding cutting</li> <li>v. Ear injury/damage due to exposure to excessive deafness caused by Noise</li> <li>vi. Suffocation due to inhalation of fumes</li> <li>vii. Over exertion while lifting heavy loads causing back injury</li> <li>viii. Lifting loads at unsafe position causing material to drop and cause injury to hands and legs etc.</li> <li>ix. Falling from height while carrying out repair and maintenance at height in unstable or unsafe position</li> <li>x. Accident resulting from getting trapped by moving part of equipment (belt, pulley etc.) when wearing loose clothes</li> <li>xi. Getting burnt by hot oil and coolant</li> <li>xii. Injury associated with handling Equipment without PPE e.g. by machining chips (from drill, grinder, lathe etc.), stepping on or striking against objects (e.g. due to poor housekeeping), electric shock</li> <li>xiii. Risk of being hit by a tool falling from height,</li> <li>xiv. Improper disposal of hazardous materials (use oils and batteries)</li> <li>xv. Inhalation fumes</li> <li>xvi. Fire and explosion resulting from built up of gases e.g. (charging of batteries) or welding works (e.g. oxy-acetylene welding), accumulated flammable materials</li> <li>xvii. Risk of electrical shock: This may result from the use electrical tools with electrical leakage, or working on potentially energized electrical system (either by negligence or switching on of a main when one is working across it)</li> <li>xviii. Risk of injury from hot coolant or oil (from engine) or pressurized systems such as air condition gas or hydraulic oil from Equipment during repairs</li> </ul>
		Risks in Steel Fixing Workshop	<ul style="list-style-type: none"> <li>i. Eye injury as caused by metal chips during the cutting of steel</li> <li>ii. Body injury associated with possible slippage of steel material during automated bending of steel</li> <li>iii. Body injury that may result from metal chips protruding from steel bars resulting into tetanus infection</li> </ul>
		Construction of cement-stabilized pavement layers	<ul style="list-style-type: none"> <li>i. URTI infection due to inhalation of cement</li> <li>ii. Health hazard due to excessive exposure to atomic radiations resulting from either improper use or wrong storage of nuclear gauge</li> <li>iii. Traffic accident involving construction Equipment, workers, and non-Project traffic</li> </ul>

S.N	Risks/Hazard type	Identified Hazard	Potential Risks
	Chemical Risks	Gases	<ul style="list-style-type: none"> <li>i. Suffocation of store personnel poor ventilation in poorly ventilated storage area</li> <li>ii. Fire outbreak caused by exposure of gases to open-flame</li> <li>iii. Explosion of gas cylinders due to wrong placement</li> <li>iv. Fire outbreak due to leaks of flammable gases</li> <li>v. Fire outbreak due to high temperature gradient of flammable gases</li> </ul>
		Gas Leak	<ul style="list-style-type: none"> <li>i. Fire outbreak due to leaks of flammable gases</li> <li>ii. Suffocation of store personnel poor ventilation in poorly ventilated storage area</li> </ul>
		Fuel and fueling	<ul style="list-style-type: none"> <li>i. Fire outbreak or Equipment damage caused by Wrong marking; and</li> <li>ii. Fire outbreak due to exposure to open-flame</li> </ul>
		Cement and hydrated lime	<ul style="list-style-type: none"> <li>i. Upper Respiratory Tract Infection (URTI) due to inhalation of cement dust</li> <li>ii. Dermatitis infection due contact of cement with Skin</li> <li>iii. Hazardous effect of cement to eyes</li> <li>iv. Water pollution due to contamination of water sources</li> <li>v. General environmental pollution due to unsafe disposal of wastes originated from cement and hydrated lime</li> </ul>
		Risks associated with bitumen	<ul style="list-style-type: none"> <li>i. Being burnt of body parts due to direct contact with hot bitumen</li> <li>ii. Environmental pollution caused by unsafe disposal of waste originated from bitumen</li> <li>iii. Respiratory disorder caused by inhaling fumes from hot bitumen</li> <li>iv. Dermatitis caused by handling bitumen</li> </ul>
	Ergonomic risks	Risks of manual lifting	<ul style="list-style-type: none"> <li>i. Back injuries due to lifting extra heavy/sized load</li> <li>ii. Being crushed by falling objects due to wrong lifting procedure</li> <li>iii. Occupational illness caused by fatigue</li> </ul>
	Psychosocial risks	Communications Risk	<ul style="list-style-type: none"> <li>i. Personnel unrest due to abusive languages from supervisors</li> <li>ii. Equipment damage due to language misunderstandings</li> <li>iii. Accidents caused by wrong signage and posters</li> </ul>
		Site security risks	<ul style="list-style-type: none"> <li>i. Theft due to poor performance of guards waking long hours</li> <li>ii. Property damage by Visitors accessing Project sites</li> <li>iii. Work delays due to public interruption of the site</li> </ul>
		Risk of traffic flow	<ul style="list-style-type: none"> <li>i. Incidents/accidents due to working within public traffic</li> <li>ii. Incidents or accidents caused by speeding public and Project vehicles</li> <li>iii. Work delays due to Interference between Project and public vehicles</li> </ul>
	Hygiene risks	Risks on Sanitary facilities	<ul style="list-style-type: none"> <li>i. Environmental pollution resulting from workers relieving themselves in the bush</li> <li>ii. Outbreak of water borne diseases resulting from lack of toilets or dirty toilets</li> </ul>
		Respiratory and gastrointestinal diseases	<ul style="list-style-type: none"> <li>i. Pneumoconiosis caused by cement dust</li> <li>ii. Respiratory disorder caused by inhaling fumes from hot bitumen</li> <li>iii. Water borne diseases</li> </ul>
		Control of Skin and Parasitic Diseases	Skin and parasitic diseases such as skin ulcers, respiratory allergy 'occupational asthma' Respiratory Tract Infection and malaria.

Table 5: Identified Positive and Negative Health and Safety Impacts and Its Mitigation Measures

IMPACTS				CONTROL MEASURES	
PHASE	MAIN PROJECT ACTIVITIES	CHAINAGE	DESCRIPTION	Mitigation/Enhancement Measures	RESPONSIBILITY
<b>NEGATIVE</b>					
<b>MOBILIZATION</b>	Establishment of Contractor's camp and Engineer's camp	Sido street and Sumbawanga Municipal Office building	Use/handling equipment in inappropriate ways (Desk, chairs etc.) <ul style="list-style-type: none"> <li>Falls</li> <li>falling objects</li> <li>Serious body injury</li> </ul>	<ul style="list-style-type: none"> <li>Staff instructed to use makeshift steps (chairs/ tables etc.) in appropriate ways</li> <li>Provision of safety induction training to staffs</li> <li>First aid boxes and first will be available</li> </ul>	<b>Contractor</b>
			<b>Defective equipment</b> <ul style="list-style-type: none"> <li>Falls</li> <li>falling objects</li> </ul>	<ul style="list-style-type: none"> <li>All access equipment suitable for purpose, checked before use and maintained in good condition.</li> <li>Reporting procedure in place for identified defective items with prompt removal /remedial action.</li> </ul>	<b>Contractor</b>
			Vehicles movement at entrance and exit point <ul style="list-style-type: none"> <li>Pedestrian being ran over or crushed by vehicles resulting in serious injury of fatal injury</li> <li>Fatal injuries due to being crushed between the vehicles, property or vehicle damage</li> </ul>	<ul style="list-style-type: none"> <li>Drivers will be given safety induction and safety awareness trainings.</li> <li>Use of security guards and flagmen to control vehicles access, safety induction and driver's safety awareness training</li> <li>First aid facilities to be available</li> </ul>	<b>Contractor</b>
			<b>Traffic congestion Sumbawanga Street Road Projects</b> <ul style="list-style-type: none"> <li>Pedestrian being ran over or crushed by vehicles resulting in serious injury of fatal injury</li> <li>Fatal injuries due to being crushed between the vehicles, property or vehicle damage</li> </ul>	<ul style="list-style-type: none"> <li>Flagmen will be stationed at all project roads in sumbawanga street junction to control traffic and from the campsite</li> <li>Contractor will provide road safety awareness induction training to drivers and community</li> </ul>	<b>Contractor</b>

PHASE	MAIN PROJECT ACTIVITIES	IMPACTS		CONTROL MEASURES	
		CHAINAGE	DESCRIPTION	Mitigation/Enhancement Measures	RESPONSIBILITY
			<b>Generation of Solid and Liquid Wastes</b> <ul style="list-style-type: none"> <li>Spread of occupational diseases</li> <li>Eruption of pandemic diseases</li> </ul>	<ul style="list-style-type: none"> <li>Contractor will construct a septic tank to store waste water instead of discharging to the environment (nature)</li> <li>Contractor will implement solid waste management programme to control generated solid waste like installing dustbins for collecting hazardous and non-hazardous solid waste in separate form</li> <li>First aider and first aid facilities will be available</li> </ul>	<b>Contractor</b>
			<b>Manual Handling Unstable / unwieldy loads</b> Falls, falling objects	<ul style="list-style-type: none"> <li>Contractor will ensure shelving is not overloaded</li> <li>Storage facility with heavy / bulky objects at lower levels to be organized.</li> <li>Frequently used items will be stored at easily accessible locations.</li> <li>Use team handling where necessary.</li> <li>Staff will be trained in moving and handling techniques.</li> </ul>	<b>Contractor</b>
			<b>Dust generation due to bare ground and movement of construction equipment.</b> <ul style="list-style-type: none"> <li>Cough</li> <li>Flue</li> </ul>	<ul style="list-style-type: none"> <li>Dust suppressive agents such as water will be used</li> <li>Provision of PPE (e.g. Mask to workers)</li> <li>First aid facilities and first aider will be provided</li> </ul>	<b>Contractor</b>
			<b>Increased Transmission of STIs/HIV</b>	<ul style="list-style-type: none"> <li>Contractor employed <b>GENUINE LIFE LIMELIGHT CO. LTD</b> that will be responsible for providing HIV/AIDS and family planning awareness programme</li> <li>Condoms to be supplied at the campsite</li> </ul>	<b>GLL (Sub contractor)</b>
	Quarry site/area at Kizungu village	<b>Muze ward at Kizungu Village</b>	<b>Inappropriate use of access equipment</b>  <b>Overreaching, stretching etc.</b> <ul style="list-style-type: none"> <li>Falls</li> <li>falling objects</li> </ul>	<ul style="list-style-type: none"> <li>Use of access equipment restricted to those trained and competent in use.</li> <li>Workers will be given safety induction and safety awareness trainings.</li> <li>First aid facilities and first aider will be provided</li> </ul>	<b>contractor</b>

		IMPACTS		CONTROL MEASURES	
PHASE	MAIN PROJECT ACTIVITIES	CHAINAGE	DESCRIPTION	Mitigation/Enhancement Measures	RESPONSIBILITY
			<b>Vehicles movement at entrance and exit in access road</b> <ul style="list-style-type: none"> <li>Pedestrian being ran over or crushed by vehicles resulting in serious injury of fatal injury</li> <li>Fatal injuries due to being crushed between the vehicles, property or vehicle damage</li> </ul>	<ul style="list-style-type: none"> <li>Drivers will be given safety induction and safety awareness trainings.</li> <li>Contractor will use flagmen to control vehicles to and from the quarry site</li> <li>Safety training and induction will be provided to driver's and other employees</li> <li>Contractor will install traffic safety signs to control traffic</li> </ul>	<b>Contractor</b>
			<b>Generation of Solid and Liquid Wastes</b> <ul style="list-style-type: none"> <li>Spread of occupational diseases</li> <li>Eruption of pandemic diseases</li> </ul>	<ul style="list-style-type: none"> <li>Contractor will construct a septic tanks to store waste water instead of discharging to the environment (nature)</li> <li>Contractor will implement solid waste management programme to control generated solid waste like installing dustbins for collecting hazardous and non-hazardous solid waste in separate form</li> <li>First aid facilities and first aider will be provided</li> </ul>	<b>Contractor</b>
			<b>Manual Handling Unstable / unwieldy loads</b> <ul style="list-style-type: none"> <li>Falls</li> <li>falling objects</li> </ul>	<ul style="list-style-type: none"> <li>Will ensure shelving is not overloaded</li> <li>Organize storage with heavy / bulky objects at lower levels.</li> <li>Frequently used items will be stored at easily accessible locations.</li> <li>Use team handling where necessary.</li> <li>Staff will be trained in moving and handling techniques.</li> </ul>	<b>Contractor</b>
			<b>Dust generation due to bare ground and movement of construction equipment.</b> <ul style="list-style-type: none"> <li>Cough</li> <li>Flue</li> </ul>	<ul style="list-style-type: none"> <li>Dust suppressive agents such as water will be used</li> <li>Appropriate PPE will be provided to all workers</li> <li>First aid facilities and first aider will be provided</li> </ul>	<b>Contractor</b>
			<b>Noise generation</b>	<ul style="list-style-type: none"> <li>vehicles and machinery will be fitted with effective exhaust silencers and timely maintained in order to ensure better and efficient working order</li> <li>will be shifting of workers after 8 hours for the area that noise will be 85dBA</li> <li>Appropriate PPE will be provided to all workers</li> </ul>	<b>Contractor</b>
			<b>Increased Transmission of STIs/HIV</b>	<ul style="list-style-type: none"> <li>Contractor employed <b>GENUINE LIFE LIMELIGHT CO. LTD</b> that will be responsible for providing HIV/AIDS and family planning awareness programme</li> </ul>	<b>GLL (Sub contractor)</b>

PHASE	MAIN PROJECT ACTIVITIES	IMPACTS		CONTROL MEASURES	
		CHAINAGE	DESCRIPTION	Mitigation/Enhancement Measures	RESPONSIBILITY
	Borrow pit sites	Acquiring in progress	<b>Inappropriate use of equipment</b> <b>Overreaching, stretching etc.</b> <ul style="list-style-type: none"> <li>Falls</li> <li>falling objects</li> </ul>	<ul style="list-style-type: none"> <li>Use of equipment restricted to those who have not trained and competent in use.</li> <li>Only trained and competent/licensed workers will be allowed to use the equipment (e.g. excavator)</li> <li>Workers will be given safety induction and safety awareness trainings.</li> <li>Appropriate PPE will be provided to all workers</li> </ul>	contractor
			<b>Manual Handling Unstable / unwieldy loads</b> Falls, falling objects	<ul style="list-style-type: none"> <li>Ensure shelving is not overloaded</li> <li>Organize storage with heavy / bulky objects at lower levels.</li> <li>Frequently used items stored at easily accessible locations.</li> <li>Use team handling where necessary.</li> <li>Staff to be trained in moving and handling techniques.</li> </ul>	
			<b>Vehicles movement at entrance in access road</b> <ul style="list-style-type: none"> <li>Pedestrian being ran over or crushed by vehicles resulting in serious injury of fatal injury</li> <li>Fatal injuries due to being crushed between the vehicles, property or vehicle damage</li> </ul>	<ul style="list-style-type: none"> <li>Drivers will be given safety induction and safety awareness trainings.</li> <li>Contractor will use flagmen to control vehicles access, safety induction and driver's safety awareness</li> <li>Contractor will install traffic safety signs to control traffic</li> </ul>	Contractor
			<b>Increased Transmission of STIs/HIV</b>	<ul style="list-style-type: none"> <li>Contractor employed <b>GENUINE LIFE LIMELIGHT CO. LTD</b> that will be responsible for providing HIV/AIDS and family planning awareness programme</li> </ul>	GLL (Sub contractor)
			<b>Noise generation</b>	<ul style="list-style-type: none"> <li>vehicles and machinery will be fitted with effective exhaust silencers and timely maintained in order to ensure better and efficient working order</li> <li>Shifting of workers after 8 hours for the area that noise will be above 85dBA will be done</li> <li>PPE to be provided to all workers</li> </ul>	Contractor
			<b>Dust generation due to bare ground and movement of construction equipment.</b>	<ul style="list-style-type: none"> <li>Dust suppressive agents such as water will be used</li> <li>Appropriate PPE such as mask will be provided to workers</li> </ul>	Contractor
	Establishment of Asphalt and stone crushing plants	Muze Ward at Kizungu Village	<b>Defective equipment</b> <ul style="list-style-type: none"> <li>Falls,</li> <li>falling objects</li> </ul>	<ul style="list-style-type: none"> <li>All equipment will be checked before use and maintained in good condition.</li> <li>Reporting procedure will be in place for identified defective items with prompt removal /remedial action.</li> <li>Frequent maintenance of vehicles and machines will be done</li> </ul>	Contractor

PHASE	MAIN PROJECT ACTIVITIES	IMPACTS		CONTROL MEASURES	
		CHAINAGE	DESCRIPTION	Mitigation/Enhancement Measures	RESPONSIBILITY
			<p>Vehicles movement at entrance and exit point</p> <ul style="list-style-type: none"> <li>• Pedestrian being ran over or crushed by vehicles resulting in serious injury of fatal injury</li> <li>• Fatal injuries due to being crushed between the vehicles, property or vehicle damage</li> </ul>	<ul style="list-style-type: none"> <li>• Drivers will be given safety induction and safety awareness trainings.</li> <li>• Use of security guards and flagmen to control vehicles access, safety induction and driver's safety awareness training</li> </ul>	<b>Contractor</b>
			<p><b>Traffic congestion to all Sumbawanga streets project roads</b></p> <ul style="list-style-type: none"> <li>• Pedestrian being ran over or crushed by vehicles resulting in serious injury of fatal injury</li> <li>• Fatal injuries due to being crushed between the vehicles, property or vehicle damage</li> </ul>	<ul style="list-style-type: none"> <li>• Flag person will be stationed at all Sumbawanga streets project roads to control traffic in order to avoid traffic accident</li> <li>• Contractor will provide road safety awareness induction training to drivers and community</li> </ul>	<b>Contractor</b>
			<p><b>Generation of Solid and Liquid Wastes</b></p> <ul style="list-style-type: none"> <li>• Spread of occupational diseases</li> <li>• Eruption of pandemic diseases</li> </ul>	<ul style="list-style-type: none"> <li>• Contractor will construct a septic tank to store waste water instead of discharging to the environment (nature)</li> <li>• Contractor will implement solid waste management programme to control generated solid waste like installing dustbins for collecting hazardous and non-hazardous solid waste in separate form</li> </ul>	<b>Contractor</b>
			<p><b>Manual Handling Unstable / unwieldy loads</b> Falls, falling objects</p>	<ul style="list-style-type: none"> <li>• Will ensure shelving is not overloaded</li> <li>• Organize storage with heavy / bulky objects at lower levels.</li> <li>• Frequently used items will be stored at easily accessible locations.</li> <li>• Use team handling where necessary.</li> <li>• Staff will be trained in moving and handling techniques.</li> </ul>	<b>Contractor</b>
			<p><b>Dust generation due to bare ground and movement of construction equipment.</b></p>	<ul style="list-style-type: none"> <li>• Dust suppressive agents such as water will be used</li> <li>• PPE to be provided to all employees</li> </ul>	<b>Contractor</b>
			<p><b>Increased Transmission of STIs/HIV</b></p>	<ul style="list-style-type: none"> <li>• Contractor employed <b>GENUINE LIFE LIMELIGHT CO. LTD</b> that will be responsible for providing HIV/AIDS and family planning awareness programme</li> </ul>	<b>GLL (Sub contractor)</b>

PHASE	MAIN PROJECT ACTIVITIES	IMPACTS		CONTROL MEASURES	
		CHAINAGE	DESCRIPTION	Mitigation/Enhancement Measures	RESPONSIBILITY
			<b>Noise generation</b>	<ul style="list-style-type: none"> <li>vehicles and machinery will be fitted with effective exhaust silencers and timely maintained in order to ensure better and efficient working order</li> <li>Workers will be shifted after 8 hours for the area that noise will be above 85dBA</li> <li>PPE to be provided to all employees</li> </ul>	<b>Contractor</b>
	Transportation of equipment and construction materials.	<b>Not applicable</b>	<b>Driving around corners that may cause vehicle collision</b>	<ul style="list-style-type: none"> <li>Provision of side mirrors, horn and restriction on use of vehicles and equipment with no side mirrors and audible alarm.</li> <li>Installing road safety signs</li> </ul>	<b>Contractor</b>
			<b>Driving across the elevated area</b>	<ul style="list-style-type: none"> <li>vehicles only driven by suitably trained and qualified drivers</li> <li>Provision of safety induction training</li> </ul>	
			<b>Driving fast that may cause Vehicles collision</b>	<ul style="list-style-type: none"> <li>Vehicles and equipment only driven and operated by suitably trained and qualified drivers.</li> <li>Segregation of pedestrian from equipment operation site</li> <li>Vehicle speed limit will be monitored</li> </ul>	<b>Contractor</b>
			<b>Uneven loading of the forks that may cause Fall of the load</b>	<ul style="list-style-type: none"> <li>Fork Lift only driven by suitably trained and qualified drivers.</li> <li>Enforcement of rules restricting forklift operators to ensure loads are well secured before operating.</li> <li>Checking tyre pressure level, never travel with forks lifted up</li> </ul>	<b>Contractor</b>
	Construction of Access roads to the quarry, borrow pit, and crusher sites	<b>Not applicable</b>	<b>Defective equipment, collapse of ladder</b>	<ul style="list-style-type: none"> <li>All access equipment suitable for purpose checked before use and maintained in good condition.</li> <li>Frequent documented checks on stepladder to ensure safe working condition (6 monthly / termly)</li> <li>Reporting procedure in place for identified defective items with prompt removal /remedial action.</li> </ul>	<b>Contractor</b>
			<b>Risk of traffic congestions, accidents to vehicles, and adjacent road dwellers along the project area.</b>	<ul style="list-style-type: none"> <li>Provision of safety induction training to drivers</li> <li>Availability of flagmen to control traffic along the project area</li> <li>Installation of road safety signs</li> <li>Provision of road traffic awareness to workers and community</li> </ul>	<b>Contractor</b>



		IMPACTS		CONTROL MEASURES	
PHASE	MAIN PROJECT ACTIVITIES	CHAINAGE	DESCRIPTION	Mitigation/Enhancement Measures	RESPONSIBILITY
			<b>Manual Handling Unstable / unwieldy loads</b> <ul style="list-style-type: none"> <li>Falls</li> <li>falling objects</li> <li>serious body injury</li> </ul>	<ul style="list-style-type: none"> <li>Will ensure shelving is not overloaded</li> <li>Organize storage with heavy / bulky objects at lower levels.</li> <li>Frequently used items will be stored at easily accessible locations.</li> <li>Use team handling where necessary.</li> <li>Staff will be trained in moving and handling techniques.</li> <li>Appropriate PPE will be provided</li> </ul>	Contractor
			<b>Dust generation due to construction activities and movement of equipment.</b>	<ul style="list-style-type: none"> <li>Dust suppressive agents such as water will be used</li> <li>Use of personal protective equipment (PPE)</li> </ul>	Contractor
			<b>Increased Transmission of STIs/HIV</b>	<ul style="list-style-type: none"> <li>Contractor employed <b>GENUINE LIFE LIMELIGHT CO. LTD</b> that will be responsible for providing HIV/AIDS and family planning awareness programme</li> </ul>	GLL (Sub contractor)
			<b>Noise generation</b>	<ul style="list-style-type: none"> <li>vehicles and machinery will be fitted with effective exhaust silencers and timely maintained in order to ensure better and efficient working order</li> <li>Workers will be shifted after 8 hours for the area that noise will be above 85dBA</li> <li>Use of personal protective equipment (PPE)</li> </ul>	Contractor
			<b>Deep cutting</b> <ul style="list-style-type: none"> <li>Fall</li> <li>Falling of objects</li> <li>Serious body injury</li> </ul>	<ul style="list-style-type: none"> <li>Contractor will follow excavation limit standard as instructed in environmental code of practice for road works 2009.</li> <li>Sloping and benching the sides not greater than 1:2 of the excavation to protect against wall falling.</li> <li>Contractor will install warning signs</li> <li>Use of personal protective equipment (PPE)</li> </ul>	Contractor
Construction/Operation	Operations of Contractor's and Engineer's camps	K8+900 LHS approximate 30-40m offset	<b>Use of incorrect equipment (desk, chairs etc.)</b> <ul style="list-style-type: none"> <li>Falls</li> <li>falling objects</li> <li>Serious body injury</li> </ul>	<ul style="list-style-type: none"> <li>Staff instructed not to use makeshift steps (chairs/ tables etc.)</li> <li>Provision of safety induction training to staffs</li> <li>PPE to be provided to all employees</li> <li>First aid box and first aider will be available</li> </ul>	Contractor
			<b>Vehicles movement at entrance and exit point</b> <ul style="list-style-type: none"> <li>Pedestrian being ran over or crushed by vehicles resulting in serious injury of fatal injury</li> <li>Fatal injuries due to being crushed between the vehicles, property or vehicle damage</li> </ul>	<ul style="list-style-type: none"> <li>Drivers will be given safety induction and safety awareness trainings.</li> <li>Use of security guards and flagmen to control vehicles access, safety induction and driver's safety awareness training</li> </ul>	Contractor

		IMPACTS		CONTROL MEASURES	
PHASE	MAIN PROJECT ACTIVITIES	CHAINAGE	DESCRIPTION	Mitigation/Enhancement Measures	RESPONSIBILITY
			<b>Traffic congestion to Sumbawanga municipal streets roads project</b> <ul style="list-style-type: none"> <li>Pedestrian being ran over or crushed by vehicles resulting in serious injury of fatal injury</li> <li>Fatal injuries due to being crushed between the vehicles, property or vehicle damage</li> </ul>	<ul style="list-style-type: none"> <li>flagmen will be stationed at all Sumbawanga municipal streets project roads to control traffic in order to avoid traffic accident</li> <li>contractor will provide road safety awareness induction training to drivers and community</li> </ul>	<b>Contractor</b>
			<b>Fire and explosion risk due to inflammable/gas liquids.</b> <ul style="list-style-type: none"> <li>Serious body injury</li> <li>Loss of properties</li> <li>fatal</li> </ul>	<ul style="list-style-type: none"> <li>Fire signage and emergency lighting shall be provided</li> <li>Fire extinguishers will be installed</li> <li>Workers will be trained on how to suppress fire</li> <li>Emergency assembly point will be identified</li> </ul>	<b>Contractor</b>
			<b>Population influx and a resultant increase in crime rates and other vices</b>	<ul style="list-style-type: none"> <li>Contractor shall employ security guards' company for overseeing site properties and controlling crime cases and all visitors</li> </ul>	<b>Contractor</b>
			<b>Risks of Leakage of Hazardous Materials</b> <ul style="list-style-type: none"> <li>Loss of soil fertility</li> <li>Eruption of diseases</li> <li>fatal</li> </ul>	<ul style="list-style-type: none"> <li>Contractor will implement solid and liquid waste management programme to control hazardous waste generated waste</li> </ul>	<b>contractor</b>
			<b>Increasing of HIV/AIDS and other STI's</b> <ul style="list-style-type: none"> <li>fatal</li> <li>loss of man-power</li> </ul>	<ul style="list-style-type: none"> <li>Contractor employed <b>GENUINE LIFE LIMELIGHT CO. LTD</b> that will be responsible for providing HIV/AIDS and family planning awareness programme</li> </ul>	<b>GLL (Sub contractor)</b>
			<b>Manual Handling Unstable / unwieldy loads</b> <ul style="list-style-type: none"> <li>Falls</li> <li>falling objects</li> <li>serious body injury</li> </ul>	<ul style="list-style-type: none"> <li>Will ensure shelving is not overloaded</li> <li>Organize storage with heavy / bulky objects at lower levels.</li> <li>Frequently used items will be stored at easily accessible locations.</li> <li>Use team handling where necessary.</li> <li>Staff will be trained in moving and handling techniques.</li> </ul>	<b>Contacto</b>
			<b>Dust generation due to construction activities and movement of equipment.</b> <ul style="list-style-type: none"> <li><b>Cough</b></li> <li><b>Flue</b></li> </ul>	<ul style="list-style-type: none"> <li>Dust suppressive agents such as water will be used</li> <li>Use of personal protective equipment (PPE)</li> <li>First aid facilities and aider will be available</li> </ul>	<b>Contractor</b>

PHASE	MAIN PROJECT ACTIVITIES	IMPACTS		CONTROL MEASURES				
		CHAINAGE	DESCRIPTION	Mitigation/Enhancement Measures	RESPONSIBILITY			
	Disruption or Relocation of public utilities (water pipelines, fiber's optic cable and standing poles, TTCL's transmission line)	Many sections of the project road	<b>Ergonomic hazards due to lifting heavy loads</b>		<ul style="list-style-type: none"> <li>Use appropriate mechanical lifting aides</li> <li>Ensure proper housekeeping at working area to eliminate tripping hazards</li> <li>Provide safe/secured working platform</li> </ul>	<ul style="list-style-type: none"> <li>Contractor</li> <li>Local Authority</li> <li>Local Government</li> </ul>		
			<b>Exposure to dust, bad fumes/ smoke</b>		<ul style="list-style-type: none"> <li>Will ensure that work areas are devoid of all flammable solvents and ensure all chemical bottle are caped</li> <li>Dust suppressive agents such as water will be used</li> <li>Use of personal protective equipment (PPE)</li> </ul>	<ul style="list-style-type: none"> <li>Contractor</li> <li>Local Authority</li> <li>Local Government</li> </ul>		
			<b>Exposure to fire explosions/ heat</b>		<ul style="list-style-type: none"> <li>Provision of Fire Extinguishers on site</li> </ul>	<ul style="list-style-type: none"> <li>Contractor</li> <li>Local Authority</li> <li>Local Government</li> </ul>		
	Operation of Asphalt plant, borrow pits and quarry materials.	<ul style="list-style-type: none"> <li>Asphalt plant in Muze Ward at Kizungu Village</li> <li>Quarry site in Muze Ward at Kizungu Village</li> <li>Borrow pits Acquiring in progress</li> </ul>	Crushing	<b>High Noise level</b>		<ul style="list-style-type: none"> <li>Hearing loss</li> </ul>	<ul style="list-style-type: none"> <li>Use proper personal protective equipment</li> <li>Job shifting or/and job rotation</li> <li><b>Notification:</b> Residents and businesses along the road will be notified when work is likely to cause offensive noise to impact on the public.</li> </ul>	Contractor
				<b>High Dust level</b>		<ul style="list-style-type: none"> <li>Use proper personal protective equipment (including dust mask)</li> <li>Dust suppression to be done</li> <li>Community notification will be undertaken where appropriate where work is likely to cause dust impact on the public and nearby residents.</li> </ul>		
				<b>Tripping &amp; falling materials</b>		<ul style="list-style-type: none"> <li>Removal of all tripping hazards</li> </ul>		
				<b>Working at height during maintenance</b>		<ul style="list-style-type: none"> <li>provision of safety induction to all workers and close supervision</li> <li>Provision of working at height training</li> </ul>		
			Blasting	<b>High Noise level</b>		<ul style="list-style-type: none"> <li>Hearing loss</li> </ul>	<ul style="list-style-type: none"> <li>Use proper personal protective equipment</li> <li>Job shifting or/and job rotation</li> </ul>	contractor
				<b>High Dust level</b>		<ul style="list-style-type: none"> <li>Respiratory diseases</li> </ul>	<ul style="list-style-type: none"> <li>Use proper personal protective equipment (including dust mask)</li> <li>Dust suppression</li> </ul>	
	<b>Tripping &amp; falling materials</b>			<ul style="list-style-type: none"> <li>Personal injuries</li> </ul>	<ul style="list-style-type: none"> <li>Removal of all tripping hazards</li> </ul>			

PHASE	MAIN PROJECT ACTIVITIES	IMPACTS		CONTROL MEASURES	
		CHAINAGE	DESCRIPTION	Mitigation/Enhancement Measures	RESPONSIBILITY
			<b>Flying objects (crushed stone)</b> <ul style="list-style-type: none"> <li>Death</li> <li>broken bones</li> </ul>	<ul style="list-style-type: none"> <li>Provision of safety induction to all workers and close supervision</li> <li>Will be special alarm 30 minutes before blasting</li> <li>Adequate safe distance from blasting will be maintained and measured for future reference</li> <li>The adequate number of guards must be posted at safe distances. Any persons within this perimeter must have safe cover and must be adequately warned.</li> <li>Warning signs, prearranged blasting times, or warning sirens shall be done including notifying respective authorities and surrounding local community</li> <li>During blasting, other activities in the immediate vicinity will be temporarily stopped;</li> </ul>	
			<ul style="list-style-type: none"> <li>Air pollution/emission control including air blast</li> </ul>	<ul style="list-style-type: none"> <li>Drilling machines equipped with dust collectors will be done.</li> <li>Water sprinkling through mobile tanker at regular intervals on haul roads within the mine will be used</li> <li>Dust respirators to workmen shall be provided</li> </ul>	<b>Contractor</b>
			<b>Transport of material from and to quarry/ borrow pit sites</b> <ul style="list-style-type: none"> <li>Personal injuries</li> <li>Death</li> <li>Equipment damage due to truck and machine collision or trucks to human</li> </ul>	<ul style="list-style-type: none"> <li>Contractor will prepare Traffic management control procedure and close supervision</li> <li>Ensure proper trucks and equipment maintenance, preventive maintenance &amp; use of competent equipment operators</li> <li>Contractor will ensure flagmen and security guards are there all the time to control access and use competent operators</li> </ul>	<b>Contractor</b>
			<b>Deep cutting</b> <ul style="list-style-type: none"> <li>Fall</li> <li>Falling of objects</li> <li>Serious body injury</li> </ul>	<ul style="list-style-type: none"> <li>Contractor will follow excavation limit standard as instructed in environmental code of practice for road works 2009.</li> <li>Sloping and benching the sides not greater than 1:2 of the excavation to protect against wall falling.</li> <li>Fencing area and ensuring availability of security guards all the time to control people</li> </ul>	<b>Contractor</b>

PHASE	MAIN PROJECT ACTIVITIES	IMPACTS		CONTROL MEASURES	
		CHAINAGE	DESCRIPTION	Mitigation/Enhancement Measures	RESPONSIBILITY
			<b>Vibration</b>	<ul style="list-style-type: none"> <li>• Proper blast design will be made to control ground vibration</li> <li>• Proper quantity of explosive, suitable stemming materials and appropriate delay system will be adopted to avoid overcharging and for safe blasting.</li> <li>• Reduce the charge weight of explosives per delay. This is most easily done by reducing the number of blast holes fired on each delay</li> <li>• Overly confined charges such as those having too much burden or too much sub-drilling should be avoided. The primer should not be placed in the sub-drilling. Where it appears that a later row of blast holes will have inadequate relief, a delay period should be skipped between rows, and</li> <li>• Ground vibrations can be reduced by blasting during periods of high local activity such as the noon hour</li> </ul>	<b>Contractor</b>
	Transportation of equipment and construction materials.	<b>Not applicable</b>	<b>Driving around corners that may cause vehicle collision</b> Serious injury or fatal injury to drivers, operators and pedestrian	<ul style="list-style-type: none"> <li>• Provision of side mirrors, horn and restriction on use of vehicles and equipment with no side mirrors and audible alarm.</li> <li>• Installing road safety signs</li> </ul>	<b>Contractor</b>
			<b>Driving across the elevated area</b>	<ul style="list-style-type: none"> <li>• vehicles only driven by suitably trained and qualified drivers</li> <li>• Provision of safety induction training</li> </ul>	<b>Contractor</b>
			<b>Driving fast that may cause Vehicles collision</b> Serious injury or fatal injury to drivers and pedestrian	<ul style="list-style-type: none"> <li>• Vehicles and equipment only driven and operated by suitably trained and qualified drivers.</li> <li>• Segregation of pedestrian from equipment operation site</li> </ul>	<b>Contractor</b>
			<b>Uneven loading of the forks that may cause Fall of the load</b> Serious body injury or to pedestrian	<ul style="list-style-type: none"> <li>• Fork Lift only driven by suitably trained and qualified drivers.</li> <li>• Enforcement of rules restricting forklift operators to ensure loads are well secured before operating.</li> <li>• Checking tyre pressure level, never travel with forks lifted up</li> </ul>	<b>Contractor</b>
Earth works – Construction of Realigned sections and existing road	<b>Sumbawanga Municipal Street Roads Project</b>	Risk of traffic congestions, accidents to vehicles, and adjacent road dwellers along the project area.	<ul style="list-style-type: none"> <li>• Provision of safety induction training to drivers</li> <li>• Availability of flagmen to control traffic along the project area</li> <li>• Installation of road safety signs</li> <li>• Provision of road traffic awareness to workers and community</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Contractor</b></li> <li>• <b>Local government</b></li> </ul>	

		IMPACTS		CONTROL MEASURES	
PHASE	MAIN PROJECT ACTIVITIES	CHAINAGE	DESCRIPTION	Mitigation/Enhancement Measures	RESPONSIBILITY
			<b>Manual Handling Unstable / unwieldy loads</b> <ul style="list-style-type: none"> <li>Falls</li> <li>falling objects</li> <li>serious body injury</li> </ul>	<ul style="list-style-type: none"> <li>Will ensure shelving is not overloaded</li> <li>Organize storage with heavy / bulky objects at lower levels.</li> <li>Frequently used items will be stored at easily accessible locations.</li> <li>Use team handling where necessary.</li> <li>Staff will be trained in moving and handling techniques.</li> </ul>	<b>Contractor</b>
			<b>Dust generation due to construction activities and movement of equipment.</b>	<ul style="list-style-type: none"> <li>Dust suppressive agents such as water will be used</li> <li>Use of personal protective equipment (PPE)</li> <li>Community notification will be undertaken where appropriate where work is likely to cause dust impact on the public and nearby residents.</li> </ul>	<b>Contractor</b>
			<b>Increased Transmission of STIs/HIV</b>	<ul style="list-style-type: none"> <li>Contractor employed <b>GENUINE LIFE LIMELIGHT CO. LTD</b> that will be responsible for providing HIV/AIDS and family planning awareness programme</li> </ul>	<b>GLL (Sub contractor)</b>
			<b>Noise generation</b>	<ul style="list-style-type: none"> <li>vehicles and machinery will be fitted with effective exhaust silencers and timely maintained in order to ensure better and efficient working order</li> <li>shifting of workers after 8 hours for the area that noise will be above 85dBA</li> <li><b>Notification:</b> Residents and businesses along the road will be notified when work is likely to cause offensive noise to impact on the public.</li> <li>Where possible, the contractor shall locate construction equipment at least 250 m away from inhabited areas</li> <li>Contractor shall provide protection devices like earplugs to all workers near construction equipment.</li> </ul>	<b>Contractor</b>
			<b>Deep cutting</b> <ul style="list-style-type: none"> <li>Fall</li> <li>Falling of objects</li> <li>Serious body injury</li> </ul>	<ul style="list-style-type: none"> <li>Contractor will follow excavation limit standard as instructed in environmental code of practice for road works 2009.</li> <li>Sloping and benching the sides not greater than 1:2 of the excavation to protect against wall falling.</li> <li>Contractor will install warning signs</li> </ul>	<b>Contractor</b>
	Structure works – Construction of Realigned sections and existing road	<b>Sumbawanga Municipal Streets Roads Project</b>	<b>Working at height during maintenance</b> <ul style="list-style-type: none"> <li>Death</li> <li>broken bones</li> </ul>	<ul style="list-style-type: none"> <li>provision of safety induction to all workers and close supervision</li> <li>Provision of working at height procedure</li> </ul>	<b>Contractor</b>

		IMPACTS		CONTROL MEASURES	
PHASE	MAIN PROJECT ACTIVITIES	CHAINAGE	DESCRIPTION	Mitigation/Enhancement Measures	RESPONSIBILITY
			<b>Risk of traffic congestions, accidents to vehicles, and adjacent road dwellers along the project area.</b>	<ul style="list-style-type: none"> <li>Provision of safety induction training to drivers</li> <li>Availability of flagmen to control traffic along the project area</li> <li>Installation of road safety signs</li> <li>Provision of road traffic awareness to workers and community</li> </ul>	<ul style="list-style-type: none"> <li><b>Contractor</b></li> <li><b>Local government</b></li> </ul>
			<b>Manual Handling Unstable / unwieldy loads</b> <ul style="list-style-type: none"> <li>Falls</li> <li>falling objects</li> <li>serious body injury</li> </ul>	<ul style="list-style-type: none"> <li>Will ensure shelving is not overloaded</li> <li>Organize storage with heavy / bulky objects at lower levels.</li> <li>Frequently used items will be stored at easily accessible locations.</li> <li>Use team handling where necessary.</li> <li>Staff will be trained in moving and handling techniques.</li> </ul>	<b>Contractor</b>
			<b>Dust generation due to construction activities and movement of equipment.</b>	<ul style="list-style-type: none"> <li>Dust suppressive agents such as water will be used</li> <li>Use of personal protective equipment (PPE)</li> </ul>	<b>Contractor</b>
			<b>Increased Transmission of STIs/HIV</b>	<ul style="list-style-type: none"> <li>Contractor employed <b>GENUINE LIFE LIMELIGHT CO. LTD</b> that will be responsible for providing HIV/AIDS and family planning awareness programme</li> </ul>	<b>GLL (Sub contractor)</b>
			<b>Noise generation</b>	<ul style="list-style-type: none"> <li>vehicles and machinery will be fitted with effective exhaust silencers and timely maintained in order to ensure better and efficient working order</li> <li>will be shifting of workers after 8 hours for the area that noise will be 85dBA</li> </ul>	<b>Contractor</b>
			<b>Deep cutting</b> <ul style="list-style-type: none"> <li>Fall</li> <li>Falling of objects</li> <li>Serious body injury</li> </ul>	<ul style="list-style-type: none"> <li>Contractor will follow excavation limit standard as instructed in environmental code of practice for road works 2009.</li> <li>Sloping and benching the sides not greater than 1:2 of the excavation to protect against wall falling.</li> <li>Contractor will install warning signs</li> </ul>	<b>Contractor</b>
	Collection and disposal of spoil materials, demolition materials from buildings/ structures and excavated debris.	<b>Not applicable</b>	<b>Risks of Leakage of Hazardous Materials</b> <ul style="list-style-type: none"> <li>Eruption of diseases</li> <li>fatal</li> </ul>	<ul style="list-style-type: none"> <li>Contractor will implement solid and liquid waste management programme to control hazardous waste generated waste</li> </ul>	<b>contractor</b>
			<b>Increasing of HIV/AIDS and other STI's</b> <ul style="list-style-type: none"> <li>fatal</li> <li>loss of man-power</li> </ul>	<ul style="list-style-type: none"> <li>Contractor employed <b>GENUINE LIFE LIMELIGHT CO. LTD</b> that will be responsible for providing HIV/AIDS and family planning awareness programme</li> </ul>	<ul style="list-style-type: none"> <li><b>GLL (Sub contractor)</b></li> <li><b>Local government</b></li> </ul>

IMPACTS				CONTROL MEASURES	
PHASE	MAIN PROJECT ACTIVITIES	CHAINAGE	DESCRIPTION	Mitigation/Enhancement Measures	RESPONSIBILITY
			<b>Manual Handling Unstable / unwieldy loads</b> <ul style="list-style-type: none"> <li>Falls</li> <li>falling objects</li> </ul> serious body injury	<ul style="list-style-type: none"> <li>Will ensure shelving is not overloaded</li> <li>Organize storage with heavy / bulky objects at lower levels.</li> <li>Frequently used items will be stored at easily accessible locations.</li> <li>Use team handling where necessary.</li> <li>Staff will be trained in moving and handling techniques.</li> </ul>	<b>Contractor</b>
			<b>Dust generation due to construction activities and movement of equipment.</b>	<ul style="list-style-type: none"> <li>Dust suppressive agents such as water will be used</li> <li>Use of personal protective equipment (PPE)</li> </ul>	<b>Contractor</b>
<b>DEMOBILIZATION</b>	Demobilization or project closure activities	<b>Not applicable</b>	Creation of potential breeding sites for water borne disease transmitting vectors due to stagnant water in borrow pits or quarry pits.	<ul style="list-style-type: none"> <li>Contractor will restore all borrow pits after being used (exploration of materials)</li> <li>Community will follow proper official procedure for borrow pits to be their water reservoir after being used.</li> </ul>	<b>Contractor</b>
			Creation of risk of accidents to livestock and people in abandoned borrow pits and quarry pits.	<ul style="list-style-type: none"> <li>Contractor will restore all borrow pits after being used (exploration of materials)</li> <li>Community will follow proper official procedure for borrow pits to be their water reservoir after being used.</li> </ul>	<b>Contractor</b>
			<b>Increasing of HIV/AIDS and other STI's</b> <ul style="list-style-type: none"> <li>Fatal</li> <li>loss of man-power</li> </ul>	<ul style="list-style-type: none"> <li>Contractor employed <b>GENUINE LIFE LIMELIGHT CO. LTD</b> that will be responsible for providing HIV/AIDS and family planning awareness programme</li> </ul>	<ul style="list-style-type: none"> <li><b>GLL (Sub contractor)</b></li> <li><b>Local government</b></li> </ul>
<b>POSITIVE</b>					
<b>MOBILIZATION</b>	Establishment of Contractor's camp and Engineers camp at Sido street and Sumbawanga Municipal respectively	<b>Sido street and Sumbawanga Municipal</b>	Increased accessibility to safe and clean water	<ul style="list-style-type: none"> <li>Contractor will provide safe and clean water to its workers</li> <li>Contractor will provide water to the nearby communities if any</li> </ul>	<ul style="list-style-type: none"> <li><b>Contractor</b></li> </ul>
			increase accessibility to reliable electricity service	<ul style="list-style-type: none"> <li>Contractor will have TANESCO electricity service that will be easier for neighbors to have it when needed. This will enable local people to use electricity instead of candles, ultimately improve community's health</li> </ul>	<ul style="list-style-type: none"> <li><b>Contractor</b></li> <li><b>Local Authority</b></li> </ul>
			Construction of toilet facilities	<ul style="list-style-type: none"> <li>Toilets facilities will be constructed to ensure health of workers and surrounding communities</li> </ul>	<ul style="list-style-type: none"> <li><b>Contractor</b></li> <li><b>Local authority</b></li> </ul>
			Fire extinguishers	<ul style="list-style-type: none"> <li>All fire extinguishers will be serviced</li> </ul>	<b>Contractor</b>
	Quarry site/area at Kizungu village And Borrow pit sites	<ul style="list-style-type: none"> <li><b>Asphalt plant at</b></li> </ul>	Dust management	<ul style="list-style-type: none"> <li>Dust suppression will be applied</li> </ul>	<b>Contractor</b>
			Construction of toilet facilities	<ul style="list-style-type: none"> <li>Toilets facilities will be constructed to ensure health of workers and surrounding communities</li> </ul>	<ul style="list-style-type: none"> <li><b>Contractor</b></li> <li><b>Local authority</b></li> </ul>



PHASE	MAIN PROJECT ACTIVITIES	IMPACTS		CONTROL MEASURES	
		CHAINAGE	DESCRIPTION	Mitigation/Enhancement Measures	RESPONSIBILITY
		Kizungu Village <ul style="list-style-type: none"> <li>• <b>Quarry site</b> at Kizungu Village</li> <li>• <b>Borrow pits</b> Acquiring in progress</li> </ul>	Management of dust	<ul style="list-style-type: none"> <li>• Contractor will apply dust suppression twice per day</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Contractor</b></li> </ul>
	Construction of Access roads to the quarry, borrow pit, and crusher sites	<b>Many sections of project road</b>	<ul style="list-style-type: none"> <li>• Management of dust</li> </ul>	<ul style="list-style-type: none"> <li>• Contractor will apply dust suppression twice per day</li> </ul>	<b>Contractor</b>
<b>CONSTRUCTION/ OPERATION</b>	Operations of Contractor's and Engineer's camps	<b>Sido street and Sumbawanga Municipal</b>	Safety awareness training	<ul style="list-style-type: none"> <li>• Contractor will provide safety awareness to all employees regarding to health and safety awareness</li> </ul>	<b>Contractor</b>
			Fire extinguishers	<ul style="list-style-type: none"> <li>• Will be serviced appropriately</li> </ul>	<b>Contractor</b>
	Sourcing of borrow pits and quarry materials.	<ul style="list-style-type: none"> <li>• <b>Asphalt plant</b> Kizungu Village</li> <li>• <b>Quarry site</b> Kizungu village</li> <li>• <b>Borrow pits</b> Acquiring in progress</li> </ul>	Safety awareness and training	<ul style="list-style-type: none"> <li>• Contractor will provide safety training to community and workers</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Contractor</b></li> </ul>
	Transportation of equipment and construction materials	<b>Not applicable</b>	Road safety awareness and training	<ul style="list-style-type: none"> <li>• Contractor in collaboration with local government officers will provide road safety training to community and workers</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Contractor</b></li> <li>• <b>Local government</b></li> </ul>
			Installation of traffic signs	<ul style="list-style-type: none"> <li>• Traffic signs will be installed</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Contractor</b></li> </ul>
	Earth works – Construction of Realigned sections and existing road	<b>Sumbawanga Municipal Streets Roads Project</b>	Safety awareness and training	<ul style="list-style-type: none"> <li>• Contractor in collaboration with local government officers will provide safety training to community and workers</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Contractor</b></li> <li>• <b>Local government</b></li> </ul>
		Provision of PPE	<ul style="list-style-type: none"> <li>• Workers to be provided PPE according to the exposure</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Contractor</b></li> </ul>	
		Medical check-up	<ul style="list-style-type: none"> <li>• Mandatory medical check-up to be done</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Contractor</b></li> <li>• <b>OSHA</b></li> </ul>	

		IMPACTS		CONTROL MEASURES	
PHASE	MAIN PROJECT ACTIVITIES	CHAINAGE	DESCRIPTION	Mitigation/Enhancement Measures	RESPONSIBILITY
	Structure works – Construction of Realigned sections and existing road	<b>Sumbawanga Municipal Steets Roads Project</b>	Safety awareness and training	<ul style="list-style-type: none"> <li>Contractor in collaboration with local government officers will provide safety training to community and workers</li> </ul>	<ul style="list-style-type: none"> <li><b>Contractor</b></li> <li><b>Local government</b></li> </ul>
			Toolbox talk and induction training	<ul style="list-style-type: none"> <li>Toolbox talk and induction training to be provided</li> </ul>	<ul style="list-style-type: none"> <li><b>Contractor</b></li> </ul>
	Management of diseases (COVID 19)	<b>Not applicable</b>	Health awareness and training	<ul style="list-style-type: none"> <li>Contractor will provide health training against COVID 19</li> </ul>	<ul style="list-style-type: none"> <li><b>Contractor</b></li> </ul>
			PPE provision	<ul style="list-style-type: none"> <li>Workers will be provided mask</li> </ul>	<ul style="list-style-type: none"> <li><b>Contractor</b></li> </ul>
			Washing hand basin	<ul style="list-style-type: none"> <li>Washing hand basin will be installed to all active sites</li> </ul>	<ul style="list-style-type: none"> <li><b>Contractor</b></li> </ul>
			Thermo scanning machine	<ul style="list-style-type: none"> <li>Will be available at main camp, engineers and quarry sites</li> </ul>	<ul style="list-style-type: none"> <li><b>Contractor</b></li> </ul>
<b>DEMO BILIZATION</b>	Demobilization or project closure activities	<b>Not applicable</b>	Safety awareness and training	<ul style="list-style-type: none"> <li>Contractor will provide health and safety training to its employees before removing/dismantling of project equipment and facilities</li> </ul>	<ul style="list-style-type: none"> <li><b>Contractor</b></li> </ul>

### 3.3.3 Industrial Health and Hygiene

Hazards to health on a construction industry can arise from the use of a number of materials, substances and process if they are not properly controlled. Some of the more serious risks are caused by the inhalation of dust, toxic fumes, exposure to high temperature, noise, vibration, radioactive substances, ergonomic hazards etc.

We will be responsible for maintaining healthy and safe working conditions for all our employees and sub – contractors. If it is not possible to remove the cause of harm, then suitable and sufficient Personal Protective Equipment (PPE) shall be provided to those who could be affected.

### 3.3.4 Protection of Workers against Hazardous Substances

Material Safety Data Sheet (MSDS) of all hazardous materials that are used on site shall be obtained. An inventory shall be kept of all such materials with the relevant MSDS and shall be available for the inspection by the RE. An assessment shall be conducted in relation to the intended usage of the hazardous substances on site and adequate precautionary and control measures shall be taken according to the assessment. Such MSDS shall be available for inspection from Tanzania Health and Safety law in force. An assessment shall be conducted in relation to the intended use of the hazardous substances on site and adequate precautionary and control measures shall be taken according to the assessment.

### 3.3.5 Protection of Workers against Heat

Workers exposed to extreme heat in the asphalt pavement and crushing machines can be subjected to illness due to heat comprises a wide range of problems from minor inconvenience to critical medical emergency and death. The functioning of the thermoregulatory system of the body gets upset, (balance between heat gain and heat loss), which results in the subsequent loss of salt and water. This takes the following forms like heat rashes; heat cramps; heat exhaustion; and heat stroke.

The following precautions shall be taken against heat stress:

- i. Wear light, airy clothes.
- ii. Avoid the use of gumboots or mud boots during dry seasons.
- iii. Drink plenty of water even if you do not feel thirsty.
- iv. Wear sunglasses/balaclava while working outside.
- v. New employees shall give adequate time to acclimatize with the hot/light environment before deploying to the work site.

### 3.3.6 Protection of Workers against Dust

Dust control will be initiated prior to any activity in dusty condition. Such control will adopt but not limiting to de-dusting procedures. In case of unavoidable dust emissions, introduction of PPE will be adopted. In any case no personnel shall be exposed directly to harmful airborne contaminants of Silica, Rust (ferrous oxide), Blasting grit, Asbestos, Glass wool & Paint solvent mist. Water sprinkling shall be done at least three times in a day to control the dust on all identified areas of the project to prevent damaging dwellings or causing nuisance to persons and traffic or any other measures as directed by RE. Construction safety nets will be used as appropriate.

### 3.3.7 Protection of Workers against Noise

The Contractor shall comply with the applicable Tanzanian laws, orders and regulation concerning the prevention, control and abatement of excessive noise. Industrial deafness is cause by over exposure to high levels of noise from plant, machinery or construction processes. No Personnel shall be allowed to work in baleful noisy places without appropriate

PPE, no employees shall be exposed to noise dose that exceeds 85 dB (A), unless they are wearing suitable hearing protectors, which effectively reduce the sound level at the user's level to or below 85 dB (A). Consideration shall be given first to reducing the noise level at source. The precautionary measures for the exposure limits shall be as follows:

- i. 80 to 85 dB (A) – Provide hearing defenders with proper training to use them.
- ii. 85 dB (A) – Signposts shall be erected to inform all employees that usage of ear defenders is mandatory in the area.
- iii. 115dB (A) – No exposure to steady noise irrespective of hearing protection.
- iv. 135 dB (A) – No exposure to impulse noise irrespective of duration of hearing protection.

In case of blasting, the use of Jackhammer, pile driving, rock crushing or other operational producing high intensity impact noise may be performed at night upon approval of the RE and giving prior (at least 24 hours) notice to the nearest receptors.

### **3.3.8 Protection of Workers against Vibration**

Vibration causes health hazards in two ways:

- i. Vibration of body parts due to hand held tools like concrete vibrator, plate compactor, jackhammer, hand drill, hand grinder etc.
- ii. Vibration of the whole body experienced while traveling in vehicle and operating equipment's like dozer, grader, roller etc.
- iii. Excess vibration will result in discomfort to the worker, which leads to a decrease in efficiency and finally causes damage to health. The following precautionary measures will be taken;
- iv. Vibrating equipment shall be equipped with proper handles to prevent causing any impact on the operator.
- v. Personnel shall be given intermittent rest or shall be changed and replaced frequently i.e. the length of exposure should be limited/rotating of jobs.
- vi. Workers should be provided with anti-vibration working platforms or stands if any
- vii. Workers exposed to vibration risks shall be given PPE such as ant-vibration gloves (ant-vibration handles) that will afford effective and reliable protection against the risk.
- viii. Contractor will follow manufacturer instructions for use and maintenance, and
- ix. Workers will be given training to understand the nature of vibration, how to control or limit exposure, and the signs of fatigue or discomfort.

### **3.3.9 Provision of Sanitary Facilities**

Adequate sanitary conveniences will be provided in strategic point of the workplace like quarry; Engineers office; Contractor's office; and contractor's camps shall be equipped with toilets, water and connected to septic and soak way pits. Such conveniences are toilets, urinals and

washbasins. According to the Occupational Health and safety Act No. 4 of 2003 (URT, 2003), for every number of females or males the provision of sanitary conveniences shall be one toilet for every twenty-five persons. Such facilities shall be kept clean and in good working condition at all times. A registered dealer will be commissioned to collect sewage and domestic wastes as appropriate.

Contractor shall construct mobile toilets or temporary latrine for the road site workers. Contractor will ensure that mobile toilets/temporary latrines have:

- i. Water to enable workers wash hands after using the toilets,
- ii. A brushen water or toilet paper;
- iii. Mobile toilets/facilities are freely and readily accessible; and
- iv. Sanitary facility has disposal bin, toilets soap or similar cleansing agent.

### **3.3.10 Provision of Drinking Water and Canteen for Workers**

The Contractor will provide clean and safe drinking water to workers in all construction sites. The main sources of drinking water will be bottled water or treated tap water or borehole water drilled on site or local trusted water sources. Water drums will be placed around the sites. Contractor will provide cups to the employees when drinking water from drums will ensure that workers are not allowed to share cup.

Contractor's HSM will register vendors who will provide food services to the construction workers in designated places. The food vendors will have to meet certain minimum requirements (selling hot food, clean dishes, soap for washing hands, avoid use of plastic materials, etc.) so as to protect the health of the workers. The Contractor will either allow the people (mostly Project workers) served by the food vendors to use sanitary facilities (especially toilets) at the camp or construct some near food vendors.

### **3.3.11 Provision of Changing Rooms**

The contractor will provide/construct changing rooms to workers in the campsite including all construction/active sites and ensure that change room:

- i. is not connected directly by means of a door or any other opening to any room in which the exposure to a high-risk substance
- ii. have adequate seating in the form of chairs or benches for the maximum number of employees that will be used at any one time
- iii. is not stored any materials, tools or other goods not related to the use of a change-room
- iv. Have a conspicuous sign at the entrance to indicate the sex of the persons for whom the change-room is intended, and
- v. Is naturally or artificially ventilated in accordance with the Tanzania Building Regulations.






### **3.3.12 Personal Protective Equipment**

Personal protective equipment (PPE) protects the employee from identified non-eliminated hazards at the site. PPE safeguard the employee from the identified hazards so which he is exposed. PPE is the last line of defence for employee protection. PPE does not and cannot eliminate hazard, it can only prevent or reduce exposure to hazards and reduce the severity of the consequent injury.

All employees of the Contractor shall be provided with necessary PPE (as per Monthly PPE Management Schedule included in Annex 14). Sub – contractors' personnel will also be required to be properly protected by appropriate PPE. Such provision will be free of charge.




Employees shall be trained and monitored by HSM and line supervisors for the correct utilization of the PPE. Individuals shall not be allowed to work if they are not equipped with the appropriate PPE. Table 7 below is a description of recommendable PPE. Suitable signboards shall be kept in work area indicating the potential hazards (e.g. noise, radiation etc.) and PPE that is required to be worn in that area/for that activity, in applicable languages and visual signs. The signage will be in Kiswahili and English languages and posted in visible areas.

*Table 6: Description of Recommended PPE*

S/N	Recommended Equipment	Equipment description/specifications
	 <p data-bbox="306 801 679 835"><i>Figure 2: Hand-Specific Gloves</i></p>	<p data-bbox="831 546 1442 757"><b>Hand-specific gloves</b> designed for handiness and comfort in addition to protection. Texture in palm area should provide grip and cleaning sensation to enable safety during janitorial activities. For maximum protection from contaminated liquids. Cuff should reach at least 75 mm from the upper arm surface when the elbow is flexed at 90°.</p> <p data-bbox="831 790 1385 824">They are suitable for light duty waste handling.</p>
	 <p data-bbox="306 1077 679 1111"><i>Figure 3: Full Coverage Gloves</i></p>	<p data-bbox="831 902 1442 965"><b>Full Coverage Gloves:</b> offers better durability with good dexterity and moderate puncture.</p> <p data-bbox="831 1055 1198 1088">For heavy duty waste handling</p>
	 <p data-bbox="306 1379 767 1442"><i>Figure 4: Safety Gloves (Puncture and Cut Protection Gloves)</i></p>	<p data-bbox="831 1184 1390 1247"><b>Safety gloves (Puncture and Cut Protection gloves)</b></p> <p data-bbox="831 1247 1442 1335">Protect against threats from nails, wire, glass fragments, metal shards, wood splinters &amp; all types of needles.</p> <p data-bbox="831 1368 1362 1402">Suitable to be used by solid waste collectors</p>
	 <p data-bbox="306 1675 603 1709"><i>Figure 5: Leather Gloves</i></p>	<p data-bbox="831 1487 1442 1626"><b>Leather Gloves:</b> These should be used when welding, as the leather can resist sparks and moderate heat. The risk of cuts and abrasions also can be minimized by wearing leather gloves.</p>
		<p data-bbox="831 1749 1430 1888"><b>Overall/Overcoat:</b> better protection for your body during collection and transportation of solid waste. It is made of heavy fabric or garment to protect your body from neck down to your foot.</p>

S/N	Recommended Equipment	Equipment description/specifications
	<i>Figure 6: Overall/Overcoat</i>	
	 <p><i>Figure 7: Reflective Vest</i></p>	<p><b>Reflective Vest:</b> are designed for the purpose of keeping the wearer clearly in view, they make use of colors that can always be seen and glows in the dark. For instance, fluorescent colors such as green, yellow and orange make it easier for workers to see and locate one another.</p>
	 <p><i>Figure 8: Safety Goggles</i></p>	<p><b>Safety goggles:</b> with side protection or goggle design. Protective eyewear from splashes and other possible physical injuries</p>
	 <p><i>Figure 9: Safety Boot (Heavy Duty)</i></p>	<p><b>Safety boot (Heavy Duty)</b>        Hide long lasting, heat resistant hard wearing, lightweight, flexible, rust and corrosion resist. Offers heel protection, Comfort with odour reducing, moisture wicking properties.</p>
	 <p><i>Figure 10: Gumboots</i></p>	<p><b>Gumboots:</b>        Supposed to be used during working or solid waste management in wet areas.</p>
	 <p><i>Figure 11: Dust Mask</i></p>	<p><b>Dust mask:</b> For waste handlers (high efficiency particulate masks, etc.)         Should be disposed after use.</p>
	 <p><i>Figure 12: Safety Goggles</i></p>	<p><b>Safety Goggles:</b> are forms of protective eyewear that usually enclose or protect the area surrounding the eye in order to prevent particulates, water or chemicals from striking the eyes.</p>
	 <p><i>Figure 13: Ear Noise Protectors</i></p>	<p><b>Ear Noise Protectors:</b>        Suitable for people working in noisy areas or with noisy equipment.</p>



S/N	Recommended Equipment	Equipment description/specifications
	 <p data-bbox="304 521 560 555"><i>Figure 14: Respirator</i></p>	<p data-bbox="831 304 1445 461"><b>Respirators:</b> A respirator is a device designed to protect the wearer from inhaling hazardous atmospheres, including fumes, vapours, gases and particulate matter such as dusts and airborne microorganisms.</p>
	 <p data-bbox="304 705 568 741"><i>Figure 15: Head Gear</i></p>	<p data-bbox="831 584 1394 712"><b>Head gear:</b> To protect the operators head from mechanical injuries and any possible drop of solid waste materials.</p>
	 <p data-bbox="304 1003 719 1030"><i>Figure 16: Safety Belts or Harness</i></p>	<p data-bbox="831 842 1406 936"><b>Safety belts or harnesses:</b> are ideal for construction work which requires working above ground-level.</p>

### 3.3.13 First Aid Facilities and Procedures

All accidents, which involve personal injury, whether it is minor or major, shall be given medical treatment and report to concerned Supervisor. Trained nurses/First Aiders will be in charge of the kits/stations. All injury cases, except minor injuries shall be sent to medical centre/hospital for treatment. There will be availability of transport at the contractors' camp and sites for transferring the casualties to the health centers or hospitals for treatment. Adequate number of first Aid boxes or equipment and facilities will be fixed within trucks and in strategic points like active construction sites where employees will be notified the nearest location of the same, telephone number of emergency control will be also displayed. Adequate number of first Aid boxes shall be available at all work sites and offices. First aid boxes shall be frequently inspected and re-stocked/updated by using First Aid – Kit Log Form (see Annex 16).

The Contractor shall comply with the Government medical or labour requirements at all times and provide, equipment and maintain base dressing stations where and at all times have experience nursing officer for attending minor injuries including presence of first aid kit/equipment and facilities. Also, contractor shall keep first aid equipment, supplies and facilities in clean environment and ready for use, and be readily accessible at any time. The first aid kit/box shall contain the following:

- i. Sterile cotton balls, sterile pieces of gauze, Bandages of various sizes including crepe;
- ii. Bandages and elastic bandages, Arms ling or triangular bandages, Safety pins, Pair of scissors;
- iii. Gloves, Splint of various sizes, Tourniquets, Maillol pain killers (Paracetamol or Aspirin);
- iv. Antiseptics (spirit weak iodine), Bottle of clean safety water (for eye wash in absence of tape water), and
- v. Blanket, note book for record keeping, and Stretcher.



The contractor shall inform workers procedures for providing first aid at the worksite including-

- i. The equipment, supplies, facilities, first aid attendants and services available;
- ii. the location of, and how to call for, first aid;
- iii. how the first aid attendant shall respond to a call for first aid;
- iv. the authority of the first aid attendant over the treatment of injured persons;
- v. reporting injuries to the authority; and
- vi. a person responsible for calling transport for the injured person and the method of calling that transport.

### **3.3.14 Fire Prevention and Fighting Facilities**

Construction sites, offices and camp premises are very prone to fire hazards because of different kind of combustible material used in these places. The three components of a fire are fuel (combustible substance), heat and oxygen. Unless all three are present fire will not occur. Contractor will do the following measures;

- i. The Contractor will commission mandatory fire inspection to the Fire and Rescue Force so as to obtain applicable fire safety certificates.
- ii. The mandatory inspection will recommend type and size of fire extinguishers to be installed in different locations including Contractors' camp, Engineers' camp, fuel station, explosive store, construction equipment, etc. The fire extinguishers shall be regularly inspected during H&S monthly inspections and serviced by registered dealers as appropriate.
- iii. Contractor shall keep close relation and communication with Sumbawanga City District fire brigade or relevant government department.
- iv. Contractors staff will be given training and promote awareness on how to extinguish fire including how to use extinguishing cylinders, safe means of evacuation, and emergency contacts for fire outbreak shall be displayed in conspicuous point, etc.

### **3.3.15 Road Safety Management**

This project as every infrastructure development project relies heavily on road transport. Analysis shows that road accidents contribute a major portion of total accidents in such construction projects. To avoid road accidents the following measures shall be adopted during the execution of project.

- i. All drivers and operators shall possess a valid Tanzania license for the types of vehicle being driven or machinery operated.
- ii. All vehicles shall be kept in a plot with good conditions and preventive maintenance system shall be followed.
- iii. An in-house training on defensive driving techniques and safe tipping operation shall be imparted to all drivers before allotting vehicles to them.
- iv. The drivers shall follow all traffic rules and regulation of Tanzania.
- v. Over speeding shall not be allowed at any case and if observed do so disciplinary actions shall be taken against the defaulter.
- vi. Drivers shall not allow working more than 8 hours shift period. The shift period includes loading, unloading, waiting and driving time.
- vii. Nobody is allowed to drive if under the influence of alcohol or drugs.
- viii. Drivers shall wear necessary PPE while driving.
- ix. A driver forum shall be constituted and shall meet once in a month or immediately after

an incident to discuss the general safety issues as well as specific leaning points from incidents.

- x. Beware signage shall be established on public institutions' entrances.

Also, strategies to address intersection safety for proposed road project and rough/access road have been considered. Such strategies include application of traffic control devices (such as signs, markings, signals and presence of flagmen).

In order to achieve the above, a Traffic Management Plan (TMP) will be in place during construction and appropriate traffic control signs shall be installed along the project road, along detours, and intersection points between project road and other roads including railway line collaboration with Police force in monitoring vehicles and drivers' behaviour.

The road design has taken into consideration safety issues related to traffic accidents especially near settlements, business centres, and urban centres and in all intersection sections.

### **3.3.16 General Safety Principles**

CGC's H&S Principles are included in Annex 15. All personnel working at site always shall strictly follow the following health & safety principles:

- i. The employee has to make sure that Personal Protective Equipment (PPE) is used appropriately as per job assigned.
- ii. After use, PPE has to be cleaned and kept in a good condition.
- iii. The employee has to make sure it's working environment is clean all the time.
- iv. It is not allowed for one employee to destroy and or pollute the working environment of other employees.
- v. For the lost and or destruction of any PPE under the control of employee, compensation should be done.
- vi. The employee should attend the toolbox meeting as the date arranged by Health, and Safety Manager (HSM).
- vii. It is prohibited for the employee to drink any kind of alcohol while in working environment.
- viii. For the new employee, he/she must attend the Health, Safety and Environment Induction then after sign the induction form/checklist.
- ix. Violation of H&S Principles will automatically cause company-employee working contract termination without any terminal benefits.

## 4 SAFETY IN VARIOUS CONSTRUCTION SITES AND ACTIVITIES

### 4.1 Excavation

Excavation is one of the most important activities of road construction phase. Any insufficient attention to the safety aspects may cause of accident, therefore we shall take utmost care in planning and executing all excavations. The following precautionary measures shall be followed in excavation sites:

- i. The area to be excavated shall be inspected thoroughly by a competent person for any underground services or structures.
- ii. Trial pits shall be taken manually to identify the exact location of underground service and necessary protection shall be done prior to further excavation.
- iii. It shall be ensured that a person having good knowledge and experience supervises all excavations.
- iv. The integrity of excavation and supports shall be inspected prior to the commencement of work on daily basis.
- v. No soil or other materials shall be stored close to the sides of the excavation and at least clearance shall be providing for storage and dumping of excavated materials.
- vi. Edges of excavations shall be barricaded to prevent falling of persons and materials.
- vii. If vehicular traffic is allowed near to the excavation, we shall provide adequate lighting, warning signs and concrete blocks painted with reflective paints.
- viii. Excavations exceeding 1m shall be demarcated with solid barricades plus warning tapes. The rest shall be barricaded with warning tapes.
- ix. Where there is a possibility of ingress of water then pumping sumps shall be established with pumps being readily available for use and additional ladders placed for use in the event of emergency evacuation.
- x. Adequate means for entry and exit shall be provided for excavations over 1.5m and it shall be either ramp or ladder.
- xi. All the personnel engaged shall be made aware about safe digging practices, hazards in the operation and emergency procedures.
- xii. Adequate number of strong and stable temporary crossing with handrails shall be provided for personnel.

### 4.2 Borrow Pits and Quarry Areas

Borrow pit and quarry sites work will be very relevant, as the project requires mass amount of fill and pave materials. The main hazards associated with borrow pits and quarry site works are vehicle and equipment accidents, collision with trucks or heavy equipment, falling when the borrow pits are very deep, hit by flying rock or trapped by machineries, environmental pollution due to dust, noise, personal injuries and occupational diseases like asthma and pneumoconiosis. The following safety measures shall be taken to prevent such H&S issues to occur:

- i. Before starting work in borrow pits and quarry all necessary clearances and approvals shall be obtained. All safety procedures of excavation shall also be applied for borrow and quarry area work.
- ii. The access road to borrow pit and quarry shall have enough width to facilitate smooth movements of two-lane traffic.
- iii. The dust eruption from the borrow pit and quarry sites shall be controlled by sprinkling water at regular intervals.
- iv. Enough number of trained flag men/women wearing high visibility jackets shall be deployed to control the movements of equipment's and tippers in borrow and quarry area.
- v. All the heavy vehicles transporting the materials from borrow and quarry area to site shall follow traffic rules and regulations of Tanzania. The tippers shall be covered with tarpaulin/shade net to avoid dust generation and spillage while transportation.
- vi. In case of night time working, the same shall be informed to the RE Office and get the permission and necessary lighting and other safety measures as communication, emergency vehicle and proper supervision shall be ensured.
- vii. For sanitation and hygiene, toilets will be constructed in quarry sites while mobile toilets will be used in borrow areas.
- viii. Workers will be provided with appropriate PPE (e.g. dust masks and ear protectors) to protect them against dust, noise and vibration etc.
- ix. A well-stocked First Aid kit (administered by a trained first aider) shall be made available at each borrow and quarry site.
- x. Clean and safe drinking water will be provided on site.
- xi. Safety and warning signs will be placed in all work stations as appropriate.
- xii. Security team will guard working areas especially in quarries and fencing will be erected where necessary.
- xiii. All accidents will be recorded and reported appropriately.
- xiv. Emergency procedures will include the following:
  - (i) Emergency escape routes will be designated.
  - (ii) Emergency contact numbers of different rescue organization will be displayed.
  - (iii) Fire extinguishers will be installed as appropriate.
  - (iv) Community will be informed in advance of events like blasting at quarry sites.
- xv. Solid waste management: Waste will be collected in dust bins and either sold for reuse, recovery or recycling, or transported to the approved dumping sites for proper waste disposal.
- xvi. Liquid waste management (oil, grease, and chemicals):
  - i. All mechanical activities for vehicles and machinery maintenance will be conducted on concrete surfaces which prevent soil contamination from used oil leaks.
  - ii. All waste oil generated will be collected by dip tray and filled into drums placed

on waste oil bays before being transferred for safe disposal or reuse.

### **4.3 Reinforcement Steel Work**

Reinforcement steel work is an essential part of any construction phase. The activity involves unloading, bar bending, cutting and fixing of bars in position and people's unsafe acts. The main hazards are handling hazards, working with machinery, using of electricity and falling of material on body.

The following measures will be observed:

- i. Loading and unloading of steel shall be done by proper lifting equipment under proper supervision.
- ii. All persons handling steel bars shall be provided with necessary PPE required for the job.
- iii. The lengthy steel bars shall be stored in safe manner to avoid in tripping hazards and protruding hazards. Proper signage shall also be provided.
- iv. Bar cutting machines and bending machines shall be in good working condition and provided with emergency stop switches and necessary guards. Both the machine shall be placed in such a way that the operation on it shall not create any danger to nearby workers.
- v. The electrical connections to the machine shall be done by electrician by providing appropriate circuit breakers and proper earthing after conducting risk assessment.
- vi. Persons deployed for cutting and bending shall be trained and instructed about the job and its inherent hazards.
- vii. The work area shall be kept clean and steel cut pieces will be kept separate.
- viii. Adequate number of works shall be deployed to handle and fix the steel.
- ix. The tools used for fixing the steel in place shall be inspected regularly and maintained properly.
- x. If the steel fixing work is at height or in an excavated pit/trench, safety measures shall be taken in accordance with the accordance with the particular procedure.

### **4.4 Concreting**

Concreting includes shuttering, formwork, de-shuttering and concreting. The main hazards are falling of objects; struck by object, falling of persons from height, crush injuries and impact injuries, ergonomic related, tripping and slipping.

The following practices shall be adhered to ensure the safe operation in these activities.

- i. The persons deployed on work shall be given a safety induction related to the job. They shall participate in the risk assessment.
- ii. The persons deployed on work shall be well experienced and provided with all tools in

good working condition.

- iii. Handling, erection and dismantling of heavy shuttering shall be done with proper lifting equipment under close supervision.
- iv. Required PPE shall be provided to all persons engaged in the job.
- v. The workers shall be informed about the hazards of the activity.
- vi. The area shall be barricaded to prevent the entry of unauthorized persons and visitors.
- vii. Hand tools shall be inspected on daily basis.
- viii. There shall be effective communication between the crew members while erecting and dismantling the shuttering.
- ix. Good housekeeping shall be maintained all over the area.
- x. Formwork for the concreting shall be inspected by a competent person, prior to the pouring.
- xi. The concrete pump shall jack-up properly and park at firm and level ground.
- xii. Two persons wearing reflective jackets shall be deployed to hold the concrete pouring pipe.
- xiii. Always look for overhead electrical cables while parking the concrete pump.
- xiv. Temporary platforms shall be provided on steel work for people to stand while working at the area.
- xv. Tipping shall be done away from overhead power lines.

## **4.5 Asphalt Plant and Asphaltting at Site**

### **4.5.1 Operation of Asphalt Plant**

Operation of Asphalt Plant will observe the following measures:

- i. Statutory inspection by OSHA authority prior to operation.
- ii. Adequacy of the utility provisions i.e. water and electricity.
- iii. Monitoring of traffic behavior to and from the site.
- iv. Monitoring level of noise generated and ensure the acceptability during the Project implementation time.
- v. Monitoring of the level of dust emission and ensuring its compliance with the existing norms.
- vi. Installation of adequate fire extinguishers.

### **4.5.2 Training of the Personnel**

The training programme will cover broadly the following aspects:

- i. The hazards of the machine environment and precaution to be taken of personal as well as equipment.
- ii. Application of the functions of the various components of the production facilities.
- iii. Familiarization with the equipment including name of the important Control and operating parts.
- iv. Pre- start- up inspection procedure of the equipment.
- v. Preparation for the startup of the Machineries.
- vi. Routine operation work.
- vii. Routine inspection work.
- viii. Shutdown procedure to be followed for equipment.
- ix. Procedure for attending urgently to critical equipment at the time of sudden stoppage due to power failure.
- x. Procedure for remote switches on the machineries.
- xi. Safety provisions and restrictions of machineries.
- xii. Procedure for emergence stoppage of machineries in case of emergency.

The above listed training features will have the aim of achieving good housekeeping practice among technician and semi- skilled personal of the Contractor.

#### **4.5.3 Transportation of Asphalt**

Asphalt is typically stored and transported at the Temperature around 150 degrees Celsius. Therefore, extreme care is required for transportation of the Asphalt only profession driver shall be used in this work.

***During offloading Hazard:*** Related to the stability of the end dump unit when the box is in the raised position. When the centre of the gravity of the box and load is not roughly between the frame rails of the unit, there is risk of tip over

#### ***Precautions to be taken:***

- i. Driver should be trained.
- ii. The tipper/ Dump Truck should be on the level ground while dumping.
- iii. Tire pressure in the rear wheel to be checked daily and the tire pressure should be equal on each side of the vehicle.
- iv. Inspect suspension system under load to ensure that they work properly
- v. Make sure that the repairs to boxes leaves bottom and sides cleared and unrestricted.

- vi. The lifting hydraulic system should be checked daily in a regular basis.
- vii. Before dumping driver should ensure the tail gate is unlocked.
- viii. Driver should guide by the Banks man while offloading the asphalt in paver hopper.
- ix. During Tipping, driver, Banks man should ensure that there is no overhead power line. In case of overhead power line, min safe distance should be maintained.
- x. Asphalt tipper must be equipped with alarm and flashlight systems.

#### 4.5.4 Laying of Asphalt at Site

This includes the spraying of bitumen over the road surface, unloading of asphalt and laying of asphalt. The main hazards in these activities are fire, dust generation, burn injuries, personal injuries, people, machineries, slippery surfaces and vehicle accidents. The following precautions shall be taken to do these activities in a safe manner.

- i. The bitumen shall be stored in closed drums at the designated place with restricted entry and all necessary safety measures shall be taken while transferring bitumen into tanker.
- ii. Safety practices for working in hot and humid environment shall be strictly followed.
- iii. Bitumen spraying tanker shall be inspected by a competent person to ensure that spray nozzles and spray bars are adjusted properly.
- iv. The bitumen spraying shall be barricaded to prevent unauthorized entry.
- v. Banks man shall be provided at unloading point to control the reversing of tippers.
- vi. Appropriate fire extinguisher shall be provided in the Paver and shall ensure that it is operational.
- vii. Asphalt rollers shall be fitted with reverse warning alarm, rear view mirrors and revolving light at top.
- viii. Adequate amount of potable water shall be available at the Paver at all times.
- ix. Intermittent rest periods shall be provided for asphalt crew to reduce fatigue.
- x. All persons deployed with asphalt Paver shall be provided with reflective jacket, coveralls, safety boots and other appropriate PPE.
- xi. Paver shall be maintained in a good condition and all rotating / moving parts shall be guarded properly.
- xii. First aid box and trained first aider shall be available with the crew at all time.
- xiii. All the activities related to asphaltting shall be performed under close supervision of an experienced person.



## 4.6 Materials and Equipment Handling

### 4.6.1 Mechanical Handling

Lifting equipment and lifting gears shall be inspected per occupational safety and health laws of Tanzania and should be used for handling of construction materials. All lifting equipment shall be checked and ensured that they are in good operating condition and free from defects. All lifting equipment and tackles shall have valid third-party certificate. Inspection intervals shall be as per Tanzania laws and safety regulations. Inspection and certification shall be done from Tanzania's approved competent authority which is Occupational Safety and Health Authority (OSHA). Colour coding system for lifting equipment shall be followed. All lifting operations shall be done by experienced persons and supervised by competent persons. In case of tandem lifting only the Project Manager shall authorize such lifting.

The following safe practices shall be adhered in all mechanical lifting operation.

- i. All lifting equipment and tackles shall be maintained in good operative condition.
- ii. Every dangerous and rotating parts of lifting equipment shall be guarded.
- iii. Care shall be taken to avoid the overloading lifting equipment and tackles.
- iv. All lifting operation shall be performed under the supervision of an experienced and trained supervisor.
- v. Signaller with reflective jacket shall be deployed with the lifting equipment.
- vi. Only one signaller shall direct the operator.
- vii. Proper communication shall be maintained between the operator and signaller during the operation.
- viii. Wind speed shall be taken into consideration before lifting and if it exceeds the safe limit all lifting operation shall be ceased.
- ix. Extreme care shall be taken while working near overhead power lines and safe distance shall be maintained.
- x. Toolbox talks shall be conducted before lifting operation for prevention of incidents.
- xi. Operation close to power line shall be authorized by the project Manager.
- xii. Only the Project Manager shall authorize tandem lifting.

### 4.6.2 Manual Handling

Correct manual lifting and handling procedures can prevent back injuries and strains that account for a major portion of all industrial injuries. Before handling any material, its weight, size, shape and physical characteristics are to be seen and further action shall be taken accordingly.

The following are the measures to prevent the incidents during manual handling.

- i. Load to be lifted shall be assessed for its weight, shape and size.

- ii. Load shall be sized up and assistance sought if necessary.
- iii. Adopt proper method and posture of lifting.
- iv. Use strength of legs not the back while lifting the load.
- v. Load being carried shall not obstruct the view in front.
- vi. Do not change position of load while moving.
- vii. Slipping and tripping hazards shall be taken care of.

## **4.7 Working at Height**

### **4.7.1 Scaffolding**

If needed, proper scaffolding and working platform shall be provided to work at height. All scaffolds shall be designed by a competent person and shall be made of good and standard materials. Prior to use, all scaffolds shall be subjected to the inspection of Engineer and shall get approval. All persons involved in the erection and dismantling of scaffold shall be trained and experienced for the same. No persons other than the scaffolds and supervisor involved shall be permitted to be upon any part of an incomplete scaffold.

The following additional measures will be adhered to:

- i. All personnel shall be provided with necessary PPE.
- ii. Persons with vertigo shall not be allowed to work at any height.
- iii. All poles, planks and general materials used for scaffolding shall be kept in good condition and be inspected by a competent person on each occasion before being issued from stores.
- iv. As long as the scaffold is in use, supervisor concerned shall inspect it daily before allowing persons to work on it and satisfy him that the scaffold is complete and is fit for use.
- v. Subsequent to rain or heavy wind, the scaffolding supervisor shall inspect all scaffolds prior to restart the work.
- vi. All working platforms shall be close boarded and all boards shall be lashed and secured.
- vii. Handrail and toe board shall be provided for all scaffolds and the planks shall be tied to the ledgers properly.
- viii. Scaffolds shall be supported adequately wherever possible.
- ix. Always ensure that no loose items and materials are left at height that may fall on person working or passing beneath.
- x. In case of mobile towers, the height shall never exceed three times the length of the shortest side and there shall be only one working platform on a mobile scaffold.

- xi. The mobile tower shall only be moved by pulling or pushing the base and the working platform shall be clear of men and materials when the tower is being moved.
- xii. The wheels of mobile tower shall be turned outwards and brakes shall be on and locked before use.
- xiii. Diagonal bracing shall be fitted on all lifts on all sides and cross bracing shall be fitted at the base and every alternative lifts of an independent tower scaffold.
- xiv. Adequate ladders shall be provided for the access to and egress from the scaffold.

#### 4.7.2 Use of Ladders

Use of ladders will observe the following:

- i. All ladders shall be factory made and of sound construction.
- ii. Wooden ladders shall not be used with the scaffold.
- iii. If the work is being done in and around electrical equipment and/or cables only wooden (non-conductive) ladders shall be used.
- iv. Ladders shall be secured properly at top and base.
- v. Ladder shall be extended for at least one meter above the landing.
- vi. Ladders shall not be used as working platform or part of load bearing component of a scaffold.
- vii. The base to height ratio of ladder shall be maintained as 1:4 such that the angle is 75° from the horizontal can be maintained.

#### 4.7.3 Heavy Equipment and Workshop

The infrastructure development project mostly depends on heavy equipment like Dozer, Excavator, Grader, Wheel Loader, Backhoe and Crane. So the safe operation and maintenance of heavy equipment play a major role in accident prevention. A workshop facility shall be set up in the lay down area to perform routine maintenance and repairs of equipment deployed for the project.

The following measures shall be taken to ensure safe operation and maintenance of equipment and plant:

- i. Equipment shall be put into service after obtaining approval by a competent technical authority (TRA and OSHA).
- ii. All the operators shall have valid Tanzania license and thoroughly educated about the safe operation and maintenance of equipment.
- iii. It shall be ensured that operators are performing daily checks before commencing the activity and report abnormalities, if any.
- iv. All operators shall undergo frequent refresher training on safe operation and basic firefighting.

- v. No one shall be allowed to travel in the cabin along with the operator.
- vi. Equipment shall be transported from one place to another only by low bed trailers and proper lashing shall be ensured while transporting through road.
- vii. Adequate space shall be available in the workshop for free movement of vehicle / equipment and each activity shall be performed in a clearly defined area.
- viii. Hazardous activities like painting, welding, cutting, grinding etc. shall segregate from other activities normally will do in dedicated booths.
- ix. Storage of hazardous materials shall be in a secured and dedicated area as per Tanzania Policy standards.
- x. Emergency exit, fire alarm and firefighting equipment, first aid box, requirement to wear PPE and other necessary safety information shall be displayed at prominent locations with visible signs.
- xi. Adequate lighting and ventilations shall be provided in all work places.
- xii. Adequate provision shall be made for the collection, temporary storage and disposal of solid and liquid waste material from all workplace.
- xiii. Good housekeeping standards shall be maintained.
- xiv. Smoking and consumption of food shall be restricted to designate area.
- xv. No horseplay or practical work jokes shall be allowed in work place.

#### **4.8 Cable Laying, Termination and Jointing and Electrical Works**

Laying of high voltage and low voltage cable and other electrical works are one of the activities in this project camp site. The main hazards involved in these are struck by, falling of materials, fall of persons, and failure of lifting equipment and tackles, fire and burn injuries.

The following precautionary measures shall be taken to avoid any incidents:

- i. Risk assessment shall be conducted prior to execution of such job.
- ii. All electrical works shall be performed by qualified persons who shall be provided with adequate and necessary personal protective equipment.
- iii. Prior to maintenance operations on any electrical equipment or appliances, the electrical current shall be disconnected, (lockout and tag out) with a lock or any other adequate means and tagged out to ensure the prevention of reenergizing of the equipment by any person during work.
- iv. Employees working in electricity shall be instructed in using the proper fire extinguishers in electrical fires such as Dry Chemical and CO<sub>2</sub> extinguishers.
- v. Water or extinguishers containing water shall not be used in extinguishing electrical fires which occur in electrical equipment or conductors as water is a good conductor

which causes electrical shocks for the person using the extinguisher.

- vi. Metal ladders or non-insulated hand tools shall not be used while working in electrical installations.
- vii. Handles of all hand tools used shall be insulated and wooden ladders shall be used.
- viii. When the fuse or circuit breaker disconnect the electrical circuit, electrical current shall not be re-connected before inspecting the cause of the fault and repair it and thus replace the fuse with other fuse of the same rating or the circuit breaker shall be returned to its first position by a qualified employee.
- ix. Electrical circuit shall not be overloaded to prevent occurrence of fires.
- x. Electrical wires shall not be passed through doors or windows and shall be kept away from heating sources such as heaters and shall not be hung from nails to prevent the damage or wearing of the insulating material.
- xi. Defective or corroded electrical wires shall not be used and shall immediately replace.
- xii. Cable drums shall be placed on level and firm ground and properly wedged to prevent rolling off.
- xiii. Jacks and other accessories for cable laying shall be inspected by a competent person to make sure that it is free from defects.
- xiv. Rollers shall be placed properly to avoid the over exertion of force on cables while lying.
- xv. The winch shall be fixed firmly on ground to prevent any unintended movement while pulling the cable.
- xvi. Experienced and trained persons shall be deployed for cable laying and winch operation.
- xvii. All cable jointing and terminations shall be done by certified and approved cable jointers.
- xviii. Adequate fire safety measures shall be taken care while termination and jointing the cable.
- xix. The area shall be barricaded to prevent the entry of unauthorized persons during the operation.
- xx. In case a person receives an electrical shock, this person shall not be touched, first, disconnect the power and remove the injured person away using a piece of wood or any other insulated material, and then, first aid shall be provided to the injured person such as Cardiac Pulmonary Resuscitation (CPR). The doctor shall be informed immediately or the injured person shall be taken to the nearest hospital.
- xxi. When recharging batteries, employees shall be instructed not touch the battery liquids, and shall be provided with adequate and suitable personal protective equipment when doing that (face shield, rubber gloves, aprons) and when refilling batteries by acid, acid

shall be added to water (and not water to acid), in case any burns by the effects of acids occurred, immediately flush the burn with big amount of water.

#### **4.9 Portable Power and Hand Tools**

The main causes of most injuries involving hand tools are the use of unsuitable tools, their incorrect use or their incorrect storage. Inspect the tool and ensure that it is in good condition. Unsafe tools include wrenches with cracked or worn jaws, screwdrivers with broken tips etc. must be avoided.

The following has to be done in using portable power and hand tools:

- i. Select the right tools for the job.
- ii. Use all tools correctly.
- iii. Keep tools in a safe place.
- iv. We shall train the workers to select the right tools for each job, and ensure that the tools are available.
- v. Protect the edges of the sharp tools while carrying.
- vi. Tools shall not be kept lying on floor, walkways or scaffolds.
- vii. Tools shall not throw from one level to another. It shall be lifted and lowered by hand lines.
- viii. All guards and covers shall be securely fitted and correctly adjusted.

#### **4.10 Concrete Mixers and Batching Plant**

For concrete mixers and batching plant with large capacity cement silos, sand and aggregate bins and a power shovel to a load the mixer, the principles of using good maintenance and properly trained operator shall apply.

- i. All chains, gears and revolving shafts must be guarded.
- ii. Safety chains and catches must be operative and the lifting mechanism must be in good order.
- iii. Men must not be allowed work under or near the leading skip unless it is held in position by safety chain or catch or positive blocked.
- iv. The mixer drum and the area around the machine should be thoroughly cleaned at the end of each day's operation.
- v. A hopped access ladder must be firmly fixed to silos when access is required to the top man hole. Men must not be allowed to work inside the silo unless they are wearing safety belt and a life line attached with an attendant posted outside to assist in case of emergency.

#### **4.11 Compressors and Generator**

The following safety practices will be observed in the use of compressors and generators:

- i. All air receivers on compressors shall be inspected by relevant authority (OSHA) in a prescribed period prior to use.
- ii. The danger of compressed air must be impressed at site. It should not be used for dusting off clothing or machinery. Horse play must be strictly forbidden.
- iii. Compressor must be properly inspected, tested and maintained. Relief valves should be installed and air receiver must be periodically inspected.
- iv. A daily check should be made of the machine before starting it. In addition to checking fuel, oil and water levels, the air reservoir should be drained to trapped water. Manufactures operating manual should be strictly followed.
- v. All pulleys, belt and fan must be totally enclosed or otherwise guarded.
- vi. The side panels to the engine are designed to give access to the machinery for maintenance or repair. They must be closed at all times when the engine is running.
- vii. The machine must be properly grounded before use.

#### **4.12 Transportation**

The following are the procedures and guidelines for avoidance for motor vehicle accidents:

- i. Every person driving a motor vehicle or operating a machine must possess valid driving licenses appropriate to the class of vehicle being driven.
- ii. All drivers should observe posted speed limits. Adverse weather conditions, traffic and light (visibility) require lower speeds than posted speed limit. Maximum speed limit must be limited 40 KPH in camps and 60 KPH on haul roads.
- iii. Vehicle shall be maintained in good condition and regular inspection carried out to check steering system, foot and parking breaks, tires, seat belts, horn, Head lights, tail lights, stop light and indicators, rear view mirrors, wind shield wipers and washer, crank case and radiator level.
- iv. Drivers and passengers in all vehicles including buses should wear seat belts.
- v. Diversion shall be maintained adequate following distance and be alert for unexpected and sudden moves from other drivers.
- vi. Driver shall slowdown in inter section, blind corners and stop completely at all stop.
- vii. Drivers shall be considered to other road users.

#### **4.13 Camp Sites**

The project comprising campsites (one main camp and one satellite/sub-camp). The main camp is located at Eden A street. The satellite camp will be used for the workers working at crusher and quarry site will be located at Kizungu village of Muze ward, and Engineer's camp located at Sumbawanga Street. Establishing this part of the project is associated with several hazards which are; - electricity, machineries, dust, excavation and excavates, noise, ergonomic related activities, working at height during brick work and roofing as well as hand

tools. Therefore, persons working during construction and after construction shall adhere to the following:

**(a) During construction**



- i. Excavations and excavates hazards shall be collected per Section 4.1 of this HSMP.
- ii. Manual handling shall be as per Section 4.6.2 of this HSMP.
- iii. Working at height shall be as described on Section 4.7 of this HSMP.
- iv. Proper PPE shall be used always.
- v. Toolbox meeting will be used to recall all safety hazards.
- vi. Proper sanitary conveniences will be established and maintained.

**(b) After construction**







- i. Special personnel will be hired to keep a good housekeeping at the contractor’s and Engineer’s campsite.
- ii. Use of proper tools during accessing the overhead stacks shall be enforced.
- iii. Clean and safe drinking water will be provided freely to all employees on site. The main sources of drinking water will be bottled water or treated tap water or borehole water drilled on site. Water dispensers will be placed around the sites.
- iv. Postures will be considered in areas where ergonomic related hazards is serious.
- v. Cabling and chording procedures will be enforced.
- vi. Isolation and lock out procedures in all electrical maintenance will be enforced.

The following are recommended equipment that shall be used by personnel during cleaning activities such as sweeping, slashing, raking and other activities. They are widely used for cleaning building, roads, drainage channel as well as open spaces.

*Table 7: Recommended Cleaning Equipment at Camp Sites*

S/N	Recommended Equipment	Equipment description/specifications
1.		<b>Soft Broom:</b> This is a cleaning tool consisting of stiff fibres attached to, and roughly parallel to, a cylindrical handle, the broomstick. It is thus a variety of brush with a long handle. It is commonly used in combination with a dustpan. It is preferably for domestic and institutional indoor environment.
2.		<b>Hard brooms:</b> This is a cleaning tool consisting of hard, stiff attached to, and roughly parallel to, a cylindrical handle, the broomstick. It is preferably for domestic and institutional outdoor environment and drainage channels



S/N	Recommended Equipment	Equipment description/specifications
3.		<b>Rubber squeezer:</b> It is designed to drain water from floor surfaces. Preferably used in wash rooms in domestic, institutional, and public places to avoid direct contact with waste water.
4.		<b>Scooper:</b> It is designed like shovel, with a curved dish and a short handle to aid the collection of waste from the floor or ground surface to storage container. It helps to avoid skin contact with solid waste. It can be used for domestic and institutional environments.
5.		<b>Spade:</b> It is a tool with a broad blade and a handle used for lifting of solid waste from the ground surface to a collection equipment or vehicle.
6.	 	<b>Rake:</b> It is a tool consisting of a metal bar with teeth at the end of long handle, used for smoothing, gathering waste materials in domestic, institutions, open spaces and commercial areas and markets.  Fork rake is a tool with two or more pointed pieces for piercing and lifting bulky solid waste material particularly grass and leaves from the ground surface in domestic, institutions and market.
7.		<b>Wheelbarrows:</b> Recommended for transportation of sandy and muddy waste within a short distance from the waste generation source. It has a radius of operation of 0.5 km

The following facilities are recommended for the storage of solid waste at campsites prior to collection and disposal at designated dump site from contractors' camp sites. The collection and disposal will be done either using Contractor's own personnel or equipment or by a contracted dealer.

*Table 8: Recommended Equipment for Temporary Solid Waste Storage*

S/N	Recommended Equipment	Equipment description/specifications
1.		<p><b>Small bins: (7–10 lts)</b> With handle, lid, if necessary foot pedal operated these are suitable for domestic waste of family of six for daily collection or office use for daily collection.</p> <p>Suitable for office use and home use.</p>
2.		<p><b>Plastic bins with lids (20-lts to 45 lts)</b> With handle, lid, if necessary foot pedal operated. Plastic Receptacle features: Easy clean plastic shell and lid. Large step-on foot pedal operated lid. Bio-hazard labels included. Weight 9 lbs. (single box), and Box dimensions 16" x 16" x 27".</p> <p>Suitable for office use and home use.</p>
3.		<p><b>Plastic bins (50 – 70 litres)</b> These are recommended when household collection of waste is twice a weekly from a high income group or for daily collection from shops. Steel beans of the same size should be galvanized while plastic bins of this size should be of high density polythene or plastics of similar characteristics.</p>
4.		<p><b>Plastic wheeled Bins (50 – 70 litres)</b> These are provided rubber-tyre wheels and are designed for mechanical handling. They are recommended when household collection of waste is twice a weekly from a high income group or for daily collection from shops. Steel beans of the same size should be galvanized while plastic bins of this size should be of high density polythene or plastics of similar characteristics.</p>
5.		<p><b>Waste Segregation Station</b> Each Sturdy Simplicity Bin has a capacity of 70 lt. Ideal for the separation of every-day waste for recycling. They can be available with frames and containers in different colours.</p> <ul style="list-style-type: none"> <li>(i) Suitable for use in restaurants, canteens, schools, snack areas and offices</li> <li>(ii) Large bag is easily removable. (Standard size bag).</li> <li>(iii) The bag will not slip down inside the bin as it is held on with an elastic strap.</li> </ul> <p>Empty bitumen drums will alternatively be used.</p>

N.B 1: Collection items shall be appropriately labeled/color coded.

N.B 2: Waste collection points should be provided with facilities for hand washing with adequate water.

#### 4.14 Fuel Station and General Chemical Handling

- i. Fuel station will be established away from fire risk areas
- ii. Warning signs will be fixed at strategic points on the station.
- iii. The station will be demarcated to restrict people from access the pumping switches.
- iv. All safety procedures underlined by the fuel supplier will be adhered.

#### **4.15 Fueling of Equipment**

- i. Tank trucks used to transport split loads of gasoline and other fuels shall be the type provided with double bulkheads and draining between compartments to prevent contamination from leaks. A separate pump shall be used for gasoline only, and there shall be no connecting lines between compartments.
- ii. The dome openings and draw-off faucets shall be painted identifying colors such as red for gasoline, green for kerosene, and black for diesel fuel. The dome openings for the tank trucks compartments shall have the names of the products stenciled around them.
- iii. An outer shield shall be placed over the muffler on all fuel truck. The tail pipe shall be extended to a safe point clear of the unloading connections and the pump.
- iv. Each fuel truck shall be provided with at least one approved fire extinguisher.
- v. Motors on equipment shall be stopped and burners on dope pots extinguished before fueling.
- vi. Smoking within 30 meters (100 feet) shall be prohibited while equipment is being fueled and in the case of gasoline, there shall be no open fires, welding, or burning in the nearby area.
- vii. Care shall be taken not to overfill any equipment with fuel. If fuel is spilled the engine or burner shall not be started. Gasoline shall never be handled in open containers, and safety cans shall be used when handling small quantities.
- viii. In fueling equipment, the metal fill nozzle shall be kept in contact with the lip of the tank opening to eliminate any static accumulation.
- ix. The washing of equipment parts, hands, or any object with gasoline shall be prohibited, and fuel truck drivers shall not dispense it for that purpose. A Stoddard solvent, kerosene or diesel fuel shall be used for that purpose.
- x. Fuel trucks shall be equipped with reflector or approved dry cell battery type warning lights for emergency highway use.
- xi. Stationary storage fuel tanks shall be vented and entirely clear of buildings or equipment at the warehouse. If the tanks are not buried, they shall be grounded and properly vented.
- xii. The fill nozzle opening on all equipment shall have a fastened cap in place except when tank is being filled.

#### **4.16 Explosive Handling**

- i. Storage procedures of explosives (Dynamites) will be enforced.
- ii. Only qualified personnel will be allowed to handle such explosives.
- iii. Risk assessment will be conducted regularly.

- iv. Proper rating and marking per storage procedures will be emphasized.
- v. Such explosive will be stored away from people.
- vi. Local laws and regulations for handling explosives will be adhered e.g. Explosives Act, 1964 (revised in 2002)
- vii. The stores where explosives are stored shall be indicated by means of word 'danger' -'**Hatari**' and underneath the word "**Baruti - Explosives**" for explosives so that they are visible by any person approaching the stores

#### 4.17 Crushing Plant Safety

The main hazards associated with the operation of crusher plant include the following:

- i. The hazards involved with blockages, dangerous moving parts, objects being ejected from crushers and maintenance tasks all need careful management.
- ii. Dust is another widespread significant hazard in crushing and screening plants. Airborne rock dust can cause serious lung disease, as well as giving rise to visibility and environmental problems, when there is no practicable solution should respiratory protection masks become the method of minimizing harm.
- iii. Clearing blocked jaw crushers can be very hazardous. Blockage incidents can be greatly reduced by supplying rock that is properly sized to match the primary jaw opening.

The following safety measures shall be taken to prevent such H&S issues to occur:

- i. All people/personnel accessing/working either at the crusher shall be equipped with safety boots, hard hats, and high reflective jacket as minimum PPEs.
- ii. Demarcation and warning signs shall be posted around the crusher area.
- iii. First aid facilities shall be readily available in conspicuous location accessible to the team.
- iv. Generation of dust on the road to crusher site and crusher plant shall be controlled by regular watering. Workers working in severe dust level areas, in particular rock drillers and those working near crusher screen shall be equipped with dust masks;
- v. Workers working in severe noise levels such as rock drillers and those working near crusher area shall be equipped with ear plugs; and
- vi. Blockage incidents can be greatly reduced by supplying rock that is properly sized to match the primary jaw opening.

#### 4.18 Safety in Piling Hazards in Piling Fall of Tripod, Slip Hazard and Hit by Objects

Safety precautions

- i. Do competent inspection before deploying tools & tackles like chain pulley, block, winch, wire rope, D-shackles, tripod, hooks etc.

- ii. Guard all the rotating parts like flywheel, belt transmission, chain, couplers, flywheel, radiator fan etc.
- iii. Never shift the arrangement without disconnecting the electrical power supply
- iv. The approach must be tide and clean & free from hindrance, water logging etc.
- v. Use proper PPE like safety helmet, gum boot, leather hand gloves, goggles etc.
- vi. All power cables must have rated capacity and should be routed overhead only
- vii. Before leaving the workplace at night
  - a. Ensure the hammer is brought down
  - b. Adequate lighting arrangement
  - c. Covering of the pile hole to prevent fall of person or animals
  - d. Disconnecting of power supply
- viii. Use crane for shifting the rig frame from one place to other
- ix. Cordon the work area
- x. Practice good housekeeping
- xi. Provide adequate dewatering arrangement during monsoon
- xii. Inspect all electrical accessories
- xiii. Provide drainage point to prevent water logging at workplace
- xiv. Always position the tripod legs in the leveled and compacted area

#### **4.19 Safety in Blasting**

The following measures shall be strictly followed at the time of blasting operation:

- i. All the blasting activities should be carried out under the supervision of blaster. The blaster must possess a valid license.
- ii. Explosives should not be carried in the same vehicle with detonators unless the detonators are carried in a separate approved container.
- iii. Explosive to be transported in road, in a specially built vehicle called an “explosive van”.
- iv. The vehicle should be equipped with a non-sparking metal or wooden floor; the sides should be high enough to prevent the explosive from falling off or equipped with closed body.
- v. Explosive cases should not be opened using metallic tools. Use implements of hard wood, brass or other non-sparking material.

- vi. Do not use damaged/deteriorated explosives and accessories.
- vii. Smoking or other sources of fire are prohibited within a radius of 200M from the place where explosives are being handled or used.
- viii. The intensity of charge must be well calculated and safe enough to prevent any damage to nearby structures, housing colonies due to shocks and vibration resulting from the explosion.
- ix. After a hole is drilled, it should be cooled down to normal temperature before packing the charge in it, if necessary flood holes with water.
- x. Drilling of holes shall not be resumed after a blast has been fired unless a thorough examination has been made to ensure that no exploded charge is left.
- xi. Do not force the cartridges into a hole. Ensure that the shot hole is clear by inserting a stemming rod to the bottom of the hole. Also ensure that the shot hole is of sufficient diameter to allow easy passage of the cartridge.
- xii. No holes should be loaded except those that are to be fired in the next round of blasting. Holes loaded during one shift should be fired on the same shift.
- xiii. Blasting operations will be carried out only during fixed hours of the day, which shall be notified in writing and widely publicized. Caution boards indicating the timings also shall be displayed prominently in local Kiswahili, English, (and Chinese).
- xiv. A standard warning signal and all clear signal should be used before and after firing and inspection. All personal working in the area and nearby should be made aware of this established procedure.
- xv. Before firing, the holes should be rechecked so as to ensure that all the holes have been connected and delays have been laid out in the proper firing sequence.
- xvi. Post guards with red flags at a safe distance around the site to prevent persons approaching the danger area inadvertently while the shots are being fired.
- xvii. Do not fire the blast until you have made sure that the surplus explosives have been removed and all persons, vehicles and equipment are at safe distance.
- xviii. Before firing the shot holes, the blaster should give a final warning and ensure that all persons within the danger zone have taken proper shelter.
- xix. If a misfire is found, the blaster shall provide proper safeguards for excluding all employees from the danger zone.
- xx. No other work shall be done except that necessary to remove the hazard of the misfire and only those employees necessary to do the work shall remain in the danger zone.
- xxi. No drilling, digging, or picking shall be permitted until all missed holes have been detonated or the authorized representative has approved that work can proceed

## 4.20 Working With Nuclear Source

**Employees at Risk:** Laboratories of Contractor and SC.

**Main Identified Risks:** Death or burn by radiation

**Reference:** Occupational Health and Safety Act No. 5, 2003 Art.70.

For the Project, Contractor's laboratory and the Engineer's laboratory both will use a surface moisture-density gauge (Troxler) to measure the moisture content and the density of construction materials. This device contains nuclear source and can generate radiation for users or persons around.

### 3.20.1 Radiation Protection

A basic principle of radiation protection is that radiation exposure should be kept as far low the limits as is reasonably achievable. This is known as the ALARA (as low as reasonable achievable) principle. The three methods for limiting exposure are:

#### a. Time:

The simplest way to reduce exposure is to minimize the time spent around a radioactive source. If the time spent near a source is cut in half, then the exposure is halved, all other factors remaining constant.

#### b. Distance:

Distance is another effective means to reduce radiation exposure. A formula known as the inverse square law relates the radiation exposure rate to distance. Doubling the distance from a radiation source reduces the exposure to one-fourth its original value. If the distance is tripled, then the exposure is reduced by a factor of nine, and so on.

#### c. Shielding:

Shielding is any material used to reduce the radiation exposure rate from a radioactive source. The device has some built-in shielding, which reduces the exposure rate. When gauges are in storage, additional shielding may be necessary to keep exposure to personnel in adjacent areas below the dose limits for members of the public (100 m rem per year).

### 3.20.2 Storage

The Troxler will be stored in a storage cabinet, rigidly constructed and kept locked and secured at all times with keys available only to licensed operators. In addition, the gauge's source rod will be kept locked when not in use. The cabinet will be posted with appropriate radiation warning signs.

### 3.20.3 Transport

The device must always be transported in its transport case and when the source rod is in the SAFE position.

### 3.20.4 Using

Anyone working with the device must complete a radiation safety course to be designating an authorized user. Authorized user must be trained in the precautions and procedures to minimize radiation exposure and the operating, emergency, maintenance and transportation procedures for the gauge.

### 3.20.5 Daily Inspection

The gauge must be inspected daily before use to ensure proper operation of all safety features as indicated in the manual.

### 3.20.6 Emergency Procedures

In the event of physical damage to the gauge, a 5 meters radius area will be secured by means of rope, stakes and signs. This will be maintained until the extent of source damage (if any) is determined. If a vehicle is involved, it will be stopped and remain stopped until the extent of contamination hazard (if any) is determined. If visual examination of the instrument and source indicate damage to the sources, involving fracture of the weld, the HSEO, appropriate authorities and Troxler Electronic Laboratories Inc. will be notified further instructions.

A utilization log book is kept with gauge at all times. On the inside cover are the phone numbers to call in the event of an accident.

## 4.21 Safety in Piling

Hazards in piling includes fall of tripod, slip hazard and hit by objects. The following are safety precautions to be followed:

- i. Do competent inspection before deploying tools and tackles like chain pulley, block, winch, wire rope, D-shackles, tripod, hooks etc.
- ii. Guard all the rotating parts like flywheel, belt transmission, chain, couplers, flywheel, radiator fan etc.
- iii. Never shift the arrangement without disconnecting the electrical power supply.
- iv. The approach must be tide and clean & free from hindrance, water logging etc.
- v. Use proper PPE like safety helmet, gum boot, leather hand gloves, goggles etc.
- vi. All power cables must have rated capacity and should be routed overhead only.
- vii. Before leaving the workplace at night:
  - (a) Ensure the hammer is brought down;
  - (b) Adequate lighting arrangement;
  - (c) Covering of the pile hole to prevent fall of person or animals; and
  - (d) Disconnecting of power supply.
- viii. Use crane for shifting the rig frame from one place to other.
- ix. Cordon the work area.
- x. Practice good housekeeping.
- xi. Provide adequate dewatering arrangement during monsoon.
- xii. Inspect all electrical accessories.
- xiii. Provide drainage point to prevent water logging at workplace.
- xiv. Always position the tripod legs in the leveled and compacted area.



## 4.22 Traffic Management Plan

Despite detailed standalone traffic management plan (TMP) will be prepared by Contractor during the execution of the project and be approved by the Resident Engineer, the following are the recommended traffic principles:

### 4.22.1 Traffic Signs

The Contractor will ensure all traffic signs and markings for promoting road safety and efficiency are effective and should meet the following basis requirements objectively:

- i. Full-specific needs as per the site situation;
- ii. Command attention from all categories of road users;
- iii. Convey a clear, precise meaning in a simple form;
- iv. Command respect from road users and for this should be appropriately sited, visible/readable and uniform throughout;
- v. Placement should give adequate response time for a proper response;
- vi. Conspicuous to attract attention of the drivers and should be legible from sufficiently far away to be read without diverting the line of sight through too great an angle; and
- vii. Placed such that they are not obscured by other objects or vegetation and no clustering has taken place.

### 4.22.2 Traffic Control Devices

To regulate the traffic during road construction, Contractor will ensure traffic control devices are available and installed in all strategic areas, such devices include:

- i. Road signs that:
  - Will give notice of special obligations, prohibitions or restrictions with which the road users must comply, and
  - Warn road users of the existence of certain hazardous conditions either on or adjacent to the roadway, such sign may include are triangular with red border and black symbol
- ii. Delineators such as tapes;
- iii. Barricades, and
- iv. Flagmen who undergo special task training program wearing high visibility jackets will be leading drivers to respond for his/her flagging instructions.

### 4.22.3 Traffic Control through Diversions

- i. All diversions and working on bypass and existing project road shall be done with approval of Resident Engineer (RE). All temporary diversions and roadwork shall follow "Accommodation of Traffic" Section 1500 SS for Road works-2000. Traffic Management Plan (TMP) shall be submitted to CSC and opening and closing of diversions shall be only after obtaining the permission from the RE.
- ii. Traffic Management Officer (TMO) will lead implementation of the TMO. Flagmen who are aware of their responsibilities shall be deployed, to control the traffic wherever appropriate. During hours or darkness, operational flashing lamps, amber in colour, situated in such a manner as to clearly indicate the hazards to road users shall be provided.
- iii. Cleanliness of the road immediately adjacent to the work area shall be ensured, such that no hazard to road users exists. All necessary measures to eliminate the factors

that endanger the safety of road users by project activities shall be taken.

- iv. All diversions shall take special considerations on public institutions. Such diversions should be wider in public institutions particularly schools located along the project parameters.
- v. All diversions shall be established as per traffic management plan or Method Statement of Construction.
- vi. Signs showing diversions ahead shall be deployed prior to reach the same. Humps shall be fixed at twenty meters from the diversion, and
- vii. Warning signs to alert road users about diversions shall be erected at least two hundred meters as well as fifty meters from the inlet.

## 5 EMERGENCY PREPAREDNESS AND RESPONSE

### 5.1 Scope

This section provides general guidance for handling emergency situation on the project site. Specific company emergency procedure on this Project shall be implemented and shall take precedence over this section.

### 5.2 Responsibilities

**Management:** The management is committed to the principle of the safe working and desires that on no account, should any person ever put him to risk.

**Site Management:** It is the responsibility of the site management to review and ensure awareness of emergency procedure among all the site personnel.

**Employees:** It is also the responsibility of all employees to continually familiarize themselves with the assembly procedures for their relevant areas of work.

**General:** Any information being relayed about an emergency shall be clear and precise giving the exact location, the nature of the emergency and the seriousness of the emergency and contact numbers and names.

### 5.3 Training

Suitable training, including fire and use of different equipment, will be provided to all personnel during various stages of the project and when the work force is added.

### 5.4 Awareness

Necessary posters and boards announcing action in case of an emergency will be put up at prominent places, and all assembly areas.

### 5.5 Emergency Alarms

A combination of red warning lights and siren as appropriate will be used in case of:

- i. Major fire or an explosion;
- ii. Gas leak;
- iii. Major transport accident/spill of flammable liquid;
- iv. Major equipment accident; and
- v. Entrapment of personnel.

### 5.6 Emergency Plan

All actions will be coordinated with the overall emergency plan operated by the Project Manager (PM). The PM is overall responsible to coordinate all emergency procedures along with the Health & Safety Manager. All emergency telephone numbers and contact names are posted at strategic points on site. Subsequent actions as listed below will be taken either as in instruction from the Site Agent:

- i. Close all plant and equipment.
- ii. Stop all work and report to the nearest evacuation area/ assembly area and await

- further instructions.
- iii. Stop all equipment and vehicles safely.
  - iv. Contact the HSM and relay message to Resident Engineer Office/Employer.
  - v. Ensure all personnel are aware of the emergency.

### 5.7 Assembly Point

In an emergency all personnel are to proceed in an orderly manner to the nearest safe assembly point that will be designated and marked in each working site/section. The assembly point shall be easily accessible, unobstructed and well ventilated.



Figure 17: Emergency Assembly Point Sign

### 5.8 Head Count

The supervisors/HSM shall take a head count and check all employees' area at the assembly point. He shall also inform the RE of the result of the head count.

### 5.9 Rescue Team

For missing personnel, a rescue team will be formed in consultation with the Resident Engineer and depending upon the type and status of emergency, all efforts will be made to rescue the missing personnel.

### 5.10 Fire Fighting

In case of a fire, after the alarm has been sounded, all efforts will be made to put off the fire by the proper use of fire extinguishers, hoses, fire buckets etc. until more professional help come by. Fire extinguishers will be available on site at strategic locations near stores, lay down area, and electrical distribution points.

### 5.11 Gas Leak

In case of the gas leak, the following actions will be done:

- i. Open all doors and windows.
- ii. Refrain from smoking.
- iii. Close down all plant and equipment.
- iv. Operations like cutting, welding to be stopped immediately.
- v. Await further instructions

## 6 HEALTH AND SAFETY MONITORING PLAN AND BUDGET

### 6.1 Health and Safety Monitoring Plan for HSMP Implementation

In the context of the Project, Health and Safety Monitoring is a collection of information over period of time in order to provide the status of characteristics of health and safety management aspects/activities in construction sites/areas i.e. road sites, diversion road, borrow pits, crusher site, asphalt plant, camp sites, etc. The monitoring plan/programme during HSMP implementation has been identified in Table 10 below and will be operating during preconstruction to construction phases. The monitoring plan consist of a number of activities, each with a specific purpose, key indicators, and significant criteria. The HSM entails the following aspects:

- i. Aspect/activity to be monitored;
- ii. Monitoring frequency;
- iii. Measurement method;
- iv. Measurement unit; and
- v. Responsibility for monitoring.

Monitoring records will be collated in collaboration between Supervision Consultant's and Contractor's representatives and shall be reported in Monthly Compliance Reports (MCRs), whose copies will be separately submitted to the Supervision Consultant for review and comments.

*Table 9: Health and Safety Monitoring Plan*

Parameter/Activity to be monitored	Specific Area	Monitoring frequency	Method of measure	Unit of measure	Responsibility
Safeguard tools (HSMP, Checklists, certificates for compliances)	HSE office at contractor's main camp	After every six months	Observation	Number of existing/updated safeguard tools	Contractor
Safety trainings (Job safety analysis, inductions, mandatory training)	All active sites	Twice per month	Safety training report	Number of provided training per month	Contractor
Tool box talks	All active sites	Twice per week	Review on the topics and attendance records	Reports, and tool box talks attendance records/signed form	Contractor
Safety inspection (general and specific)	Active sites	Once or twice per month	General/specific inspection reports	Number of inspections conducted	Contractor
Hazard identification and Risk assessment	Quarry, crusher & campsite	After every three months	Assessment report	Zero accident, minimum no of cases treated by medicine, Execution of works without risks	Contractor
Provision of personal protective equipment	Work sites	weekly	Inspection and observation	number of workers received PPE, workers observed using PPE, and stock availability	Contractor, Workers and Consultant

Parameter/Activity to be monitored	Specific Area	Monitoring frequency	Method of measure	Unit of measure	Responsibility
First aid Kit and services	Camp, borrow pit, quarry site and construction trucks	Three months	Inspection and observation	Number of Kits available, presence of trained first aider/nurse, and records of first aid service rendered/provided	Contractor (Nurse/trained first aider HSM)
Fire safety and fire fighting	Camp, Crasher site and fuel storage area	Three months	Observation and inspection, and review training reports	Number provided training on firefighting, Number of firefighting equipment, and Compliance certificate	Contractor (Nurse/Trained first aider, and HSM) and Fire department for Sumbawanga City.
Production of temporary road traffic signs and other mandatory signage	Active road construction site Camps Quarry site, borrow pits	daily	Inspection and observation	Traffic signs/mandatory signage installed in active sites	Contractor
Blasting safety	Quarry site	weekly	Inspection	Number of blasts with its corresponding safety reports, blasting plan, quarry site with barricaded reflective tape and blasting alarm	Contractor
Emergences	Camp and Quarry sites	Three months	Inspection and observation	Availability of emergence plan, proof of drill exercises, presence of assembly point, ambulance, and emergence number	Contractor, and OSHA
Accident prevention and reporting	All sites	Monthly	Inspection and observation	Zero accident/number of accident reported, minimum number of cases treated by medicine and report, execution of works without risks/very reduced risks, prevention campaigns on site rules.	Contactore

## **6.2 Budget for HSMP Implementation**

As indicated in Contract's Bills of Quantities (BOQ); Monthly Rate to Cover Costs for Compliance with Provisions of Occupational Health and Safety (HSMP) during construction period; the allocated budget for the implementation of this HSMP is a lump sum of TZS 78,100,000. I.E5,266,666.6667 per month. The Contractor will appropriately use the allocated financial resources to effectively implement this HSMP.

The HSMP implementation budget covers the following costs:

- i. Mandatory medical examinations;
- ii. Safety Training (Fire Safety and First Aid Training);
- iii. Hazard and Risks assessment;
- iv. Fire equipment services (Fire extinguishers);
- v. Road safety awareness and sensitization; and
- vi. Provision of safety working gears.

The overall break down of the ESMP implementation is described in Annex 17.

## 7 REFERENCES

1. Contractor's Environmental and Social Management Plan (ESMP) dated November 2022.
2. Susanne Bahn (2014). Construction Induction Training: Does mandatory training work? School of Management, Faculty of Business and Law, Edith Cowan University, 270 Joondalup Drive, Joondalup, WA, 6027.
3. United Republic of Tanzania (URT). 2000. Standard Specifications for Road works - 2000. Government Printer, Dar es Salaam.
4. URT. 1963. Explosives Act. Government Printer, Dar es Salaam.
5. URT. 2003. Occupational Health and Safety Act, No.5, 2003. Government Printer, Dar es Salaam.
6. URT. 2009. Environmental Code of Practice for Road Works. Government Printer, Dar es Salaam.
7. URT. 2009. Public Health Act, 2009. Government Printer, Dar es Salaam.
8. URT. 2015. Occupational Safety and Health (First Aid and Welfare Facilities) Rules. Government Printer, Dar es Salaam.
9. Wagner M. N and Nithiyananthan L. F (2009). Safety & Health in the Stone Crushing Industry: A Practical Manual for Preventing Accidents, Preserving Health and Keeping a Company Profitable. Ecohealth Program International Development Research Centre PO Box 8500, Ottawa, ON K1G 3H9, Canada.



## 8 ANNEXES

### Annex 1: China Geo-Engineering Cooperation, H&S Policy

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#### UPGRADING OF CENTRAL BUSINESS DISTRICT (CBD) ROADS IN SUMBAWANGA MUNICIPALITY-TACTIC (13.3KM)

#### HEALTH, SAFETY AND ENVIRONMENTAL (H&S) POLICY

- a. Policy Statement:** Safety and Health of our workforce and our Environment Stewardship are just as important to our success as Operational and Financial Performance, Government Relation, Ethical Behaviour, Corporate Reputation, Social Responsibility and Employee Involvement and Commitment. We shall strive to make our facilities safer and better places to work and our attention to detail and focus on H&S will ensure high standards of performance. Our efforts in the areas of H&S will be directed by the following:
- b. Accident Prevention:** We are striving to make our workplaces free of injuries and accidents with 100% safe work practices and safe conditions throughout our operations.
- c. Environmental Stewardship:** We are committed to the protection of the environment and shall apply working best practices as appropriate to minimize the generation of emissions and waste throughout our operations.
- d. Risk Assessment:** Effective management of risk is fundamental to achieving safe operations. We are systematically identify potential hazards, assess their relative significance, develop reduction measures and establish suitable controls to ensure that risks are minimised.
- e. Emergency Preparedness:** Being properly prepared for an emergency is of vital importance and is the responsibility of management, supervisors and employees at all levels. We are maintaining emergency plans in cooperation with local authorities and emergency services groups to ensure a prompt, effective and integrated response to minimise harmful effects from any incidents including presence of ambulance at the contractor's camp.
- f. Regulatory Compliance:** We will comply with all applicable laws, regulations, standards and recognised codes of practice and, where any of these are inadequate, adopt and apply high standards that reflect AVIC commitment to safety, the protection of the natural environment and the health of our workforce.
- g. Training:** We will continue to ensure that employees understand their H&S responsibilities that they have the right training for their jobs and are competent to perform their assignments safely, effectively and efficiently.
- h. Community Citizenship:** We are dedicated to being a good citizen in the communities where we work. We will conduct our operations safely, cleanly and responsibly and will be proactive in consultation with all stakeholders' issues of mutual interest.

**Name:** .....

**Position:** .....

**Signature:** .....

**Date:** .....

**Annex 2: HSE Induction Training Checklist**

**UPGRADING OF CENTRAL BUSINESS DISTRICT (CBD) ROADS IN SUMBAWANGA  
MUNICIPALITY-TACTIC (13.3KM)  
HSE induction training checklist**

**DATE.....**

Health, Safety and Environment (HSE) is very important component in any construction activities, this is because it guides the employee to protect him/herself from accidents, injury, occupational diseases and hence increase his/her and Company productivity.

**NOTE:** Upon signing in the column sheet against his/her name, it means that, the employee has understood all the HSE topics inducted.

<b>No.</b>	<b>HSE Induction Training Topics</b>	<b>YES</b>	<b>NO</b>
01.	Health, Safety and Environmental (HSE) Policy		
02.	Health, Safety and Environmental (HSE) Principles		
03.	Workers' Code of Ethical Conduct (CEC)		
04.	HSE signs around project/construction sites		
05.	Emergency response procedures		
06.	Use of Personal Protective Equipment (PPE) during working period		
07.	Fire prevention and fighting		
08.	The importance of road safety signs		
09.	The working environment (proper housekeeping)		
10.	The importance of first aid		
11.	HIV/AIDs, STDs, TB, Malaria and COVOD-19 prevention and control		
12.	The effect of alcohol and drug abuse in working place		
13.	Accident and incidence reporting and investigation		
14.	The effect of environmental pollution i.e.		
15.	Grievance and complaints management procedures		

**HSE Induction Trainers and Approval**

	<b>Name</b>	<b>Position</b>	<b>Date</b>	<b>Signature</b>
1.				
2.				
3.				
4.				

**Annex 3: HSE Induction Training Register**

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**UPGRADING OF CENTRAL BUSINESS DISTRICT (CBD) ROADS IN SUMBAWANGA MUNICIPALITY-TACTIC (13.3KM)**

**HSE induction training register**

<b>SN</b>	<b>Name/Jina</b>	<b>Job Title/Cheo</b>	<b>Work Site/Sehemu ya Kazi</b>	<b>Date/Tarehe</b>	<b>Signature/Saini</b>
01.					
02.					
03.					
04.					
05.					
06.					
07.					
08.					
09.					
10.					
11.					
12.					
13.					
14.					
15.					

**Annex 4: Tool Box Talks Records**

**UPGRADING OF CENTRAL BUSINESS DISTRICT (CBD) ROADS IN SUMBAWANGA  
MUNICIPALITY-TACTIC (13.3KM)**

**TOOL BOX TALK SUMMARY**

**Date..... Section.....**

**MAIN TOPIC:**

.....  
 .....

**Subtopics:**

.....  
 .....

**Meeting Summary:**

**Toolbox Meeting Attendance**

No.	Name	Yes	No
01.			
02.			
03.			
04.			
05.			
06.			
07.			
08.			
09.			
10.			

**HSEO ..... Project Manager/Site Manager .....**

**Annex 5: Monthly HSE Inspection Checklist for Contractor's Camp**

**UPGRADING OF CENTRAL BUSINESS DISTRICT (CBD) ROADS IN SUMBAWANGA  
MUNICIPALITY-TACTIC (13.3KM)  
Monthly HSE inspection checklist for contractor's camp**

**Contractor:** \_\_\_\_\_ **Date:** \_\_\_\_\_  
**Location:** \_\_\_\_\_ **Time:** \_\_\_\_\_

No	Categories of Items under inspection	Previous inspection status	Present inspection status	Action required	Remarks
01	<b>Medical Care</b>				
	Is the First Aid point identified?				
	Are there adequate First Aid Kits at the camp?				
	Are there enough and qualified First Aiders at the camp?				
	Is HIV campaign conducted at the camp?				
	Are HIV posters displayed at the camp?				
	Are there adequate condom boxes with enough condoms provided at the camp?				
02	<b>Personal protective equipment (PPE)</b>				
	Are proper PPE identified/provided?				
	Are PPEs maintained in a good condition?				
	Are adequately PPE Stock?				
	Are PPE complying with acceptable standard?				
	Are Personnel know the use of PPE?				
03	<b>Hygiene Situation</b>				
	Are there enough toilets at the camp?				
	Is there good wastewater management system at the camp?				
	Is sufficient drinking water available and used at camp?				
	Is canteen clean and in good condition?				
04	<b>Environmental and Housekeeping</b>				
	Is general environment clean?				
	Are the components in good arrangement?				
	Is good solid waste management system practiced?				

No	Categories of Items under inspection	Previous inspection status	Present inspection status	Action required	Remarks
	Are grasses and trees planted around the camp?				
	Are hazardous waste managed properly at the camp?				
	Are food remains disposed properly?				
	Is dust suppression practiced at the camp?				
	Are oil and grease managed properly?				
<b>05</b>	<b>Emergency Preparedness</b>				
	Are there sufficient warning signs at the camp?				
	Are there emergency assembly points at the camp?				
	Is there emergency escape route plan at the camp?				
	Are there emergency contacts numbers at the camp?				
	Are there enough fire-fighting equipment around the camp?				

For Contractor: .....

For Engineer: .....

Date: .....

Date: .....

**Annex 6: Monthly HSE Inspection Checklist for Engineer's Camp**

**UPGRADING OF CENTRAL BUSINESS DISTRICT (CBD) ROADS IN SUMBAWANGA  
MUNICIPALITY-TACTIC (13.3KM)  
Monthly HSE Inspection Checklist for Engineer's Camp**

**Contractor:** \_\_\_\_\_ **Date:** \_\_\_\_\_  
**Location:** \_\_\_\_\_ **Time:** \_\_\_\_\_

No	Categories of Items under inspection	Previous inspection status	Present inspection status	Action required	Remarks
01	<b>Medical Care</b>				
	Is the First Aid point identified?				
	Are there adequate First Aid Kits at the camp?				
	Are there enough and qualified First Aiders at the camp?				
	Is HIV campaign conducted at the camp?				
	Are HIV posters displayed at the camp?				
	Are there adequate condom boxes with enough condoms provided at the camp?				
02	<b>Personal protective Equipment (PPE).</b>				
	Are proper PPE identified/provided?				
	Are PPEs maintained in a good condition?				
	Are adequately PPE Stock?				
	Are PPE complying with acceptable standard?				
	Are Personnel know the use of PPE?				
03	<b>Hygiene Situation</b>				
	Are there enough toilets at the camp?				
	Is there good wastewater management system at the camp?				
	Is sufficient drinking water available and used at camp?				
	Is canteen clean and in good condition?				
04	<b>Environmental and Housekeeping</b>				
	Is general environment clean?				
	Are the components in good arrangement?				

No	Categories of Items under inspection	Previous inspection status	Present inspection status	Action required	Remarks
	Is good solid waste management system practiced?				
	Are grasses and trees planted around the camp?				
	Are hazardous waste managed properly at the camp?				
	Are food remains disposed properly?				
	Is dust suppression practiced at the camp?				
	Are oil and grease managed properly?				
<b>05</b>	<b>Emergency Preparedness</b>				
	Are there sufficient warning signs at the camp?				
	Are there emergency assembly points at the camp?				
	Is there emergency escape route plan at the camp?				
	Are there emergency contacts numbers at the camp?				
	Are there enough fire-fighting equipment around the camp?				

For Contractor : .....  
Date : .....

For Engineer : .....  
Date : .....



**Annex 7: Monthly HSE Inspection Checklist for Road Sites**

**UPGRADING OF CENTRAL BUSINESS DISTRICT (CBD) ROADS IN SUMBAWANGA  
MUNICIPALITY-TACTIC (13.3KM)  
Monthly HSE Inspection Checklist for Road Sites**

**Contractor:** \_\_\_\_\_ **Date:** \_\_\_\_\_  
**Location:** \_\_\_\_\_ **Time:** \_\_\_\_\_

No.	Categories of Items under inspection	Previous inspection status	Present inspection status	Action required	Remarks
01	<b>House Keeping</b>				
	Are access/exit routes unobstructed and clear of tripping hazard?				
	Are toilets around site: clean and free of hazard?				
	Are lifting equipment adequate in areas?				
	Are materials stored properly?				
	Rubbish containers available, adequate & color coded?				
	Are surplus materials stored in site?				
	Is the site free from sharp/pointed objects such as nails?				
02	<b>Tools</b>				
	Are all hand tools in safe working condition?				
	Are tools properly stored?				
03	<b>Electrical Equipment</b>				
	Are all electrical and control panels secured and accessible?				
	Are electrical shock posters sited?				
	Electrical equipment properly earthed?				
	Are portable grinder guarded?				
	Are all rotating tools protected?				
04	<b>Machinery and equipment</b>				
	Are there valid certificates for mobile equipment?				
	Are all rotating equipment and drive belts protected?				
	Are qualified and experienced operators used on site?				
05	<b>Lifting equipment</b>				
	Are lifting equipment comply with current colour code?				

No.	Categories of Items under inspection	Previous inspection status	Present inspection status	Action required	Remarks
	Are there valid certificates for lifting equipment?				
	Are qualified and experienced operators used onsite?				
<b>06</b>	<b>Compressed Gases</b>				
	Are all welding gas cylinders capped, marked and stored properly?				
	Are gas cylinders secured properly?				
	Are empty gas cylinders isolated?				
<b>07</b>	<b>Personal Protective equipment (PPE).</b>				
	Are proper PPE identified/provided?				
	Are PPEs maintained in a good condition?				
	Are adequately PPE Stock?				
	Are PPEs complying with acceptable standard?				
	Are personnel know the use of PPE?				
<b>08</b>	<b>Excavation</b>				
	Are excavated materials away from the road edge?				
	Are there safe accesses to the excavation?				
	Are there sufficient hazards warning signs?				
<b>09</b>	<b>Firefighting Equipment</b>				
	Are fire extinguishers readily accessible and clearly identified?				
	Are fire extinguishers in good working condition?				
<b>10</b>	<b>First Aid Equipment</b>				
	Are first aid stations identified?				
	Are the first aid boxes adequately stocked?				
	Are eye wash bottle available, in date and good order?				
<b>11.</b>	<b>Emergency</b>				
	Are assembly points identified?				
	Are people aware of emergency procedure?				
	Are there more than one exit from area?				
	Are there sufficient direction and information signs?				
<b>12</b>	<b>Personnel welfare</b>				
	Is sufficient drinking water available for use at site?				

No.	Categories of Items under inspection	Previous inspection status	Present inspection status	Action required	Remarks
	Are adequate rest shelters provided at site?				
	Are the toilet facilities provided on site?				
	Is dust suppression practiced onsite?				

For Contractor : .....  
Date : .....

For Engineer : .....  
Date : .....

**Annex 8: Monthly HSE Inspection Checklist for Diversion Roads**

**UPGRADING OF CENTRAL BUSINESS DISTRICT (CBD) ROADS IN SUMBAWANGA  
MUNICIPALITY-TACTIC (13.3KM)  
Monthly HSE Inspection Checklist for Diversion Roads**

**Contractor:** \_\_\_\_\_ **Date:** \_\_\_\_\_  
**Location:** \_\_\_\_\_ **Time:** \_\_\_\_\_

No	Categories of Items under inspection	Previous inspection status	Present inspection status	Action required	Remarks
01	<b>Diversion Construction</b>				
	Is the diversion follow into pre-existing road?				
	Is it a new diversion?				
	Is the construction following proposed designing?				
	Are the road safety signs present according to the design?				
	Are the bus stops present along the diversion stretch?				
	Is the diversion passing into Road reserve?				
	Are the water ditches constructed along the diversion stretch?				
02	<b>Maintenance of the diversion</b>				
	Is the dust suppression done regularly?				
	Is the diversion grading regularly?				
03	<b>Rehabilitation</b>				
	Is there any rehabilitation plan prepared for the diversions?				
	Is there any diversion rehabilitation done for this month?				
	Are the rehabilitation activities following the proposed plan?				

For Contractor : ..... For Engineer : .....  
 Date : ..... Date : .....

**Annex 9: Monthly HSE Inspection Checklist for Borrow Pits**

**UPGRADING OF CENTRAL BUSINESS DISTRICT (CBD) ROADS IN SUMBAWANGA  
MUNICIPALITY-TACTIC (13.3KM)  
Monthly HSE Inspection Checklist for Borrow Pits**

**Contractor:** \_\_\_\_\_ **Date:** \_\_\_\_\_  
**Location:** \_\_\_\_\_ **Time:** \_\_\_\_\_

SN	Categories of Items under inspection	Previous inspection status	Present inspection status	Action required	Remarks
01	<b>Tools</b>				
	Are all hand tools in safe working condition?				
	Are tools properly stored?				
02	<b>Personal protective equipment (PPE)</b>				
	Are proper PPE identified /provided?				
	Are PPEs maintained in a good condition?				
	Are adequately PPE Stock?				
	Are PPE complying with acceptable standard?				
	Are Personnel know the use of PPE?				
03	<b>Excavation</b>				
	Is excavation not exceeding 3 meters?				
	Are there safe accesses to the excavation?				
	Are there sufficient hazards/ warning sign?				
04	<b>First Aid Equipment</b>				
	Are first aid station identified?				
	Are first aid boxes adequately stocked?				
	Are eye wash bottle available and good order?				
05	<b>Personnel welfare</b>				
	Is sufficient drinking water available and used at site?				
	Are there adequate rest shelter provided at site?				
	Are mobile toilet facilities provided?				
	Is dust suppression practiced?				

SN	Categories of Items under inspection	Previous inspection status	Present inspection status	Action required	Remarks
06	<b>Location</b>				
	Are the pits located at least 60m far from Right of Way?				
	Are the pits located at least 100m far from centerline of the road?				
	Are the pits located at least 500m far from major settlements?				
	Are the pits located at least 500m far from railway?				
	Are the pits located at least 500m far from the fuel pipelines?				
07.	<b>Compensations and Rehabilitation</b>				
	Are compensations done following valuation report?				
	Are there any complaints from the land owners?				
	Are rehabilitation plans prepared?				

For Contractor : .....

For Engineer : .....

Date : .....

Date : .....

**Annex 10: Monthly HSE Inspection Checklist for Quarry Sites**

**UPGRADING OF CENTRAL BUSINESS DISTRICT (CBD) ROADS IN SUMBAWANGA  
MUNICIPALITY-TACTIC (13.3KM)  
Monthly HSE Inspection Checklist for Quarry Sites**

**Contractor:** \_\_\_\_\_ **Date:** \_\_\_\_\_  
**Location:** \_\_\_\_\_ **Time:** \_\_\_\_\_

SN	Categories of Items under inspection	Previous inspection status	Present inspection status	Action required	Remarks
01	<b>Tools</b>				
	Are all hand tools in safe working condition?				
	Are tools properly stored?				
02	<b>Personal protective equipment (PPE).</b>				
	Are proper PPE identified/ provided?				
	Are PPE complying with acceptable standard?				
	Are Personnel know the use of PPE?				
03	<b>Excavation</b>				
	Is excavation not exceeding 5 meters depth?				
	Are there safe accesses to the excavation?				
	Are there sufficient hazards warning sign?				
	Are there pit water outlets?				
04	<b>First Aid Equipment</b>				
	Are first aid station identified?				
	Are first aid boxes present?				
	Are eye wash bottle available and good order?				
05	<b>Personnel welfare</b>				
	Is sufficient drinking water available and used at site?				
	Are there adequate rest shelter provided at site?				
	Are toilet facilities provided?				
06	Is dust suppression practiced?				
	<b>Location</b>				

SN	Categories of Items under inspection	Previous inspection status	Present inspection status	Action required	Remarks
	Are the pits located at least 100m far from Right of Way?				
	Are the pits located at least 500m far from main road (Trunk or regional road)?				
	Are the pits located at least 500m far from major settlements?				
	Are the pits located at least 500m far from railway?				
	Are the pits located at least 500m far from the fuel pipelines?				
	Are the pits located at least 500m far from protected sites?				
	Are the pits located at least 500m far from water pipes?				
	Are the pits located at least 500m far from classified forest?				
<b>07</b>	<b>Compensations and Rehabilitation</b>				
	Are compensations done following valuation reports?				
	Are there any complaints from the land owners?				
	Are rehabilitation plans prepared?				
<b>08</b>	<b>Explosives</b>				
	Are explosives stored in good condition?				
	Are explosives kept far from the operation sites?				
	Is qualified blaster used during explosion?				
	Are there valid permits used during transportation and uses of explosives?				

For Contractor : .....  
Date : .....

For Engineer : .....  
Date : .....



**Annex 11: Monthly HSE Inspection Checklist for Crusher Sites**

**UPGRADING OF CENTRAL BUSINESS DISTRICT (CBD) ROADS IN SUMBAWANGA  
MUNICIPALITY-TACTIC (13.3KM)**

**Monthly HSE Inspection Checklist for Crusher Site**

**Contractor:** \_\_\_\_\_ **Date:** \_\_\_\_\_  
**Location:** \_\_\_\_\_ **Time:** \_\_\_\_\_

SN	Categories of Items under inspection	Previous inspection status	Present inspection status	Action required	Remarks
01	<b>Tools</b>				
	Are all hand tools in safe working condition?				
	Are tools properly stored?				
02	<b>Personal protective equipment (PPE).</b>				
	Are proper PPE identified/ provided?				
	Are PPE complying with acceptable standard?				
	Are Personnel know the use of PPE?				
03	<b>First Aid Equipment</b>				
	Are first aid station identified?				
	Are first aid boxes present?				
	Are eye wash bottle available and good order?				
04	<b>Personnel welfare</b>				
	Is sufficient drinking water available and used at site?				
	Are there adequate rest shelter provided at site?				
	Are toilet facilities provided?				
	Is dust suppression practiced?				
05	<b>Location</b>				
	Are the pits located at least 100m far from Right of Way?				
	Are the pits located at least 500m far from main road (Trunk or regional road)?				

SN	Categories of Items under inspection	Previous inspection status	Present inspection status	Action required	Remarks
	Are the pits located at least 500m far from major settlements?				
	Are the pits located at least 500m far from railway?				
	Are the pits located at least 500m far from the fuel pipelines?				
	Are the pits located at least 500m far from protected sites?				
	Are the pits located at least 500m far from water pipes?				
	Are the pits located at least 500m far from classified forest?				
<b>06</b>	<b>Compensations and Rehabilitation</b>				
	Are compensations done following valuation reports?				
	Are there any complaints from the land owners?				
	Are rehabilitation plans prepared?				

For Contractor : .....  
Date : .....

For Engineer : .....  
Date : .....

## Annex 12: OSHA Accident Log Book



### OCCUPATIONAL ACCIDENT AND DISEASE RECORD SHEET

THIS FORM IS MADE UNDER SECTION 90 OF THE ACT No. 5 of 2003; IT SHALL BE FILLED IN BY AN EMPLOYER OR OTHER RESPONSIBLE PERSON

**Report No. 28**  
**OSHA 5**

#### A- Particulars of the Workplace (Maelezo ya Eneo la kazi)

1. Name of the workplace (Jina la eneo la kazi):
2. Postal address (Anuani ya Posta):
3. Location of the workplace (Mahali lilipo eneo la kazi):
4. Telephone No. (Simu):

#### B- Particulars of the Affected Person (Maelezo Binasia ya Majeruhi/Mgonjwa/Marehemu)

5. Name of the person involved in the incident (Jina la mhusika):
6. Title (Cheo):
7. Date of birth (Tarehe ya kuzaliwa):   
Sex: M/F (Jinsia: Me/Ke):
8. Period of employment (Kipindi cha utumishi):  
Months (Miezi):
9. Date/time of incident (Tarehe/muda wa tukio):
10. Location where the incident happened (Jina la sehemu ya tukio):
11. The affected person is [tick v] (Mhusika ni [weka v]):  
 An employee (Mwajiriwa)  
 An employer (Mwajiri)  
 Self employed (Mtu aliyejajiri)  
 Other (Ingine): .....

#### C- Mechanism of Event (Chanzo cha Tukio/Ajali)

12. [tick v] ([weka v])  
 Fall, trip or slip (Kuanguka, kujikwaa au kuteleza)  
 Hitting objects (Kujigonga kwenye kitu)  
 Sound or pressure (Mlio mkali au mgandamizo)  
 Body stressing (Kubanwa na kitu/shinikizo)  
 Heat, radiation or energy (Joto, mionzi au nishati)  
 Being hit by moving objects (Kugongwa na kitu)  
 Mental stress (Msongo wa mavazo)  
 Biological factors (Vijidudu vya magonjwa)  
 Contact with electricity/ electrical discharge (Shoti ya uneme)

- Drowned or asphyxiated (Kuzama au kukosa hewa)
- Injured by an animal (Kujeruhiwa na mnyama)
- Exposed to an explosion (Mlipuko)
- Any other kind of incident, please mention (Ingine, tafadhali taja): .....

#### D- Nature of Injury or Disease (Aina ya Jeraha au Ugonjwa)

13. [tick v] ([weka v])  
 Fatal (Kifo)  
 Fracture of spine (Kuvunjika uti wa mgongo)  
 Puncture wound (Kuchomwa na kitu chenye ncha)  
 Other fracture (Jeraha lingine)  
 Poisoning or toxic effects (Sumu)  
 Dislocation (Kuteguka)  
 Multiple injuries (Majeraha)  
 Sprain or strain (Maumivu ya kifundo au msuli)  
 Damage to artificial aid (Kuvunjika kiungo bandia)  
 Head injury (Jeraha la kichwa)  
 Disease, nervous system (Athari kwenye mfumo wa fahamu)  
 Internal injury of trunk (Maumivu ya kivitivili)  
 Disease, musculoskeletal system (Kulemaa viungo)  
 Amputation (Kukatika kiungo)  
 Disease, skin (Ugonjwa wa ngozi)  
 Disease, eye (Ugonjwa wa macho)  
 Open wound (Kidonda)  
 Disease, digestive system (Athari kwenye mfumo wa chakula)  
 Superficial injury (Jeraha dogo)  
 Disease, infectious or parasitic (Maambukizi ya vimelea)  
 Bruising or crushing (Kuchubuka au kukandamizwa)  
 Disease, respiratory system (Athari kwenye mfumo wa kupumua)  
 Foreign body (Kuingiwa na kitu au kihatarishi mwilini)  
 Burns (Kuingua)  
 Tumour (malignant or benign) (Uvimbe)  
 Nerves or spinal cord (Neva au ugwe mgongo)  
 Mental disorder (Matatizo ya akili)  
 Any other, please specify (Ingine, tafadhali taja): .....

#### E- Description of the Incident (Maelezo ya Tukio)

14. Describe briefly, or you may attach separate sheet(s) (Fafanua kwa kifupi, au ambatanisha karatasi ya maelezo):

#### F- Treatment of the Affected Person (Matibabu)

15. Type of treatment provided (Matibabu yaliyotolewa):  
 None (Hakuna)       First Aid (Huduma ya kwanza)  
 Sent to Doctor (Kutibiwa)       Hospitalized (Kulazwa)

#### G- Notification of the Incident (Taarifa ya Tukio)

16. Is the incident reported to OSHA? (Je, taarifa ya tukio imepelekwa OSHA?):  
 YES (Ndiyo)       NO (Hapana)
17. If YES, has an investigation been carried out? (Kama NDIYO, Je, uchunguzi umefanyika?):  
 YES (Ndiyo)       NO (Hapana)
18. Date of investigation was (Tarehe ya uchunguzi ni):  
 .....
19. Name and position of the person recording the event (Jina na cheo cha anayejaza taarifa ya tukio):  
 .....  
 Signature (Saini): .....
- Date (Tarehe): .....
20. Checked by (Taarifa hii imekaguliwa na):  
 .....

**Annex 13: Monthly Health and Safety Report**

**UPGRADING OF CENTRAL BUSINESS DISTRICT (CBD) ROADS IN SUMBAWANGA  
MUNICIPALITY -TACTIC (13.3KM)**

REPORT NO	DOCUMENT CATEGORY:	HEALTH SAFETY MANAGEMENT SYSTEM		
MONTHLY HEALTH AND SAFETY REPORT:		MONTH OF:		
		ELAPSED TIME		
		DATE		
<b>SAFETY ISSUES</b>				
No.	DESCRIPTION	THIS MONTH	CUMMULATIVE	REMARKS
	<b>SAFETY ISSUES</b>			
1.	Total personnel at site			
2.	Total hour man worked			
3.	No. of near missed			
4.	No. of accidents			
5.	No. of traffic /road accident			
6.	No. of lost days due to accident			
7.	No. of toolbox meeting			
8.	No. of safety training done			
9.	No. of safety inspection carried out			
10.	No. of statutory inspection			
11.	No. of safety meeting			
12.	No. of safety accidents			
<b>HEALTH ISSUES</b>				
1.	No. of available first aid station			
2.	No. of first aid kits			
3.	No of first aider/Nurse			
4.	No. of workers attended for first aid			
5.	No. of workers referred to hospital for further treatment			
6.	No. of statutory inspection			
7.	No of health meeting			
8.	No of designated toilets at each construction site in relation to the available laborers			
9.	No of garbage disposal pit and its condition			
<b>ACTIVITIES DONE ON THE MONTH ENDING</b>				
	Activity	Control Health and Safety Hazard	Control measures to be taken	
1.				
2.				
3.				
4.				
<b>Name of Health and Safety Manager:</b>  <b>Signature:</b>  <b>Date:</b>				

**Annex 14: Monthly PPE Management Schedule**

**UPGRADING OF CENTRAL BUSINESS DISTRICT (CBD) ROADS IN SUMBAWANGA MUNICIPALITY-TACTIC (13.3KM)**

**Monthly PPE Management Schedule**

	<b>Name of worker</b>	<b>Work section</b>	<b>Employment type (temporary or permanent)</b>	<b>Type of PPE issued</b>	<b>Date</b>	<b>Other types of PPE in use by the worker</b>	<b>Phone number</b>	<b>Signature</b>
1.								
2.								
3.								
4.								
5.								
6.								
7.								
8.								
9.								
10.								

Month ..... PPE Issued by ..... Position ..... Signature .....

## Annex 15: HSE Principles

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### UPGRADING OF CENTRAL BUSINESS DISTRICT (CBD) ROADS IN SUMBAWANGA MUNICIPALITY-TACTIC (13.3KM)

#### HEALTH, SAFETY AND ENVIRONMENTAL (HSE) PRINCIPLES

- i. The employee has to make sure that Personal Protective Equipment (PPE) is used appropriately as per job assigned.
- ii. After use, the PPE has to be cleaned and kept in a good condition.
- iii. The employee has to make sure his/her working environment is clean all the time.
- iv. It is not allowed for one employee to destroy and or pollute the working environment of other employees.
- v. For irresponsibly lost and or destruction of any PPE under the control of employee, compensation should be done.
- vi. The employee should attend toolbox meetings as per dates prearranged by Health, Safety and Environmental Officer (HSEO).
- vii. It is prohibited for the employee to drink any kind of alcohol while in a working environment.
- viii. For the new employee, he/she must attend the Health, Safety and Environment Induction Training afterwards signs the induction form/checklist.
- ix. **Company-Employee Working Contract Termination:** Violation of the Company HSE Principles will automatically cause company-employee working contract termination without any terminal benefits.

Name: .....

Position: .....

Signature: .....

Date: .....

**Annex 16: First Aid – Kit Log Form**

**UPGRADING OF CENTRAL BUSINESS DISTRICT (CBD) ROADS IN SUMBAWANGA  
MUNICIPALITY-TACTIC (13.3KM)  
First Aid – Kit Log Form**

<b>Project:</b> Contract No.		<b>Document:</b> Health, Safety and Environment	
Date:		Recorded by:	Signature:
<b><u>GENERAL SUMMARY AND REQUIREMENTS:</u></b>			
<b>KIT No.</b>	<b>LOCATION</b>	<b>AVAILABLE MEDICINE</b>	<b>STATUS/REMARKS</b>

### Annex 17: Budget Breakdown for HSMP Implementation

Activities	Unit	Type	Unit	Type	Unit Cost (TZS)	Total cost (TZS)
<b>Activity 1: Mandatory annual medical check-up</b>						
1. Engage Occupational Health and safety authority (OSHA) to undertake Medical examination to workers	120	Workers	2	15 months	150,000	<b>18,000,000</b>
<b>Activity 2 : HS Training</b>						
1. OSHA mandatory training for HS representatives						
Training fee	20	Representatives	3	15 months	250,000	<b>5,000,000</b>
2. OSHA mandatory training for first aiders						
Training fee	25	First Aiders	3	15 months	250,000	<b>6,250,000</b>
<b>Activity 3: Safety Training</b>						
1. Fire Safety Training	12	Year	2	15 months	300,000	<b>3,600,000</b>
<b>Activity 4: Hazard and Risk Assessment report</b>						
1. Engage consultant to conduct hazard and risk assessment)	20	18 months	1	15 months	200,000	<b>5,000,000</b>
<b>Activity 5: Equipment servicing</b>						
1. Servicing fire extinguishers (6 kg)	15	Quarterly	4	15 months	350,000	<b>5,250,000</b>
<b>Activity 6: Provision of Safety gears</b>						
Provision of safety working gears	-	Half year	2	15 months	17,500,000	<b>35,000,000</b>
<b>Total Cost for HSMP Implementation</b>						<b>78,100,000</b>