

Initial Environmental Examination

June 2023

Bangladesh: South Asia Subregional Economic Cooperation Dhaka-Northwest Corridor Road Project, Phase 2 - Tranche 3

Elenga – Hatikamrul Road

Volume 5 of 5, Appendix Q

CURRENCY EQUIVALENTS

(As of 02 June 2023)

Currency unit – Bangladeshi Taka (Tk)

Tk 1.00 = \$ 0.0093

\$ 1.00 = Tk 107.50

ABBREVIATIONS

AADT	Annual Average Daily Traffic
AAQ	Ambient air quality
AAQM	Ambient air quality monitoring
ADB	Asian Development Bank
AH	Asian Highway
BCCSAP	Bangladesh Climate Change Strategy and Action Plan
BOD	Biochemical oxygen demand
BOQ	Bill of quantity
BUET	Bangladesh University of Engineering and Technology
CITES	Convention on International Trade of Endangered Species
COD	Chemical oxygen demand
CSC	Construction Supervision Consultant
DO	Dissolved oxygen
DPR	Detailed project report
EA	Executing Agency
ECC	Environmental Clearance Certificate
ECR	Environmental Conservation Rules
EHS	Environment Health and Safety
EMOP	Environment Monitoring Plan
EMP	Environment management plan
IEE	Initial Environment Examination
EHS	Environment Health and Safety
GHG	Greenhouse gas
GIS	Geographical information system
GOB	Government of Bangladesh
GRC	Grievance redress committee
GRM	Grievance redress mechanism
HFL	Highest flood level
IA	Implementing Agency
NOx	Oxides of nitrogen
PAP	Project Affected Persons
PCU	Passenger Car Units
PD	Project Director
PIU	Project Implementation Unit
PM	Particulate Matter
PPE	Personal protective equipment
PPTA RHD	Project Preparedness Technical Assistance Roads and Highways Department

RRTC	Road Research and Training Centre
SASEC	South Asia Subregional Corridor
SO ₂	Sulphur Dioxide
SPM	Suspended Particulate Matter
SPS	ADB Safeguard Policy Statement, 2009
TA	Technical assistance
TDS	Total dissolved solids
TSS	Total Suspended Solids

WEIGHTS AND MEASURES

dB(A)	–	A-weighted decibel
ha	–	hectare
km	–	kilometre
km ²	–	square kilometre
KWA	–	kilowatt ampere
Leq	–	equivalent continuous noise level
µg	–	microgram
m	–	meter
MW (megawatt)	–	megawatt
PM 2.5 or 10	–	Particulate Matter of 2.5 micron or 10-micron size

NOTE

In this report, "\$" refers to US dollars.

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APPENDIX Q: Traffic Management Plan

GOVERNMENT OF THE PEOPLE'S REPUBLIC OF BANGLADESH
MINISTRY OF ROAD TRANSPORT AND BRIDGES ROADS AND
HIGHWAYS DEPARTMENT

SASAEC Road Connectivity Project-II



TRAFFIC MANAGEMENT PLAN (TMP)

CONSULTANT'S

KCI – Gauff – Chodai – Soosung-LASA JV
(In association with BCL-BETS-DTCL-Philkoei)

CLIENT

Roads and Highways Department

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Abbreviation and Acronym

The following list shows the abbreviations and acronym used in this plan.
(In alphabetical order)

Abbreviation / Acronym	Description
BRTA	Bangladesh Road and Transport Authority
SASEC	South Asia Sub-regional Economic cooperation (SASEC)
OSHA	Occupational Safety and Health Administration
JV	HEGO – MIR AKHTER JV
PPE	Personal Protective Equipment
RHD	Roads and Highways Department
TMCP	Traffic Management Control Plan

1.0 Introduction

1.1 Brief of the Project (SASEC)

The south Asia Sub-regional Economic Cooperation (SASEC) programme brings together Bangladesh, Bhutan, India, Maldives, Myanmar, Nepal and Sri Lanka in a project based partnership that aims to promote regional prosperity, improve economic opportunities and build a best quality of life for the people of the region. This project will also strengthen the capacity of the road sector by increasing road capacity of a major international trade corridor and enhancing land port capacity. the important part of SASEC Road Connectivity Project. The road corridor remains with 2-lanes highway with lots of old 2-lane existing bridges, which are almost is over capacitated by the present traffic movements from Dhaka to northern districts of Bangladesh. To alleviate the traffic hazards & congestions with aim to discard risk to unlikely road accidents, and to enhance the capacity of Sub-regional connectivity, the Government of Bangladesh has undertaken a project by assistance of Asian Development Bank (ADB) providing loans for upgrading the existing road to a 4-lane highways with provision of separate single lane road for Slow Moving Vehicular Traffic (SMVT) on both sides and the structures. Accordingly, the SASEC Road Connectivity Project to improve social and economic development.

1.2 The Project Details of Wp-06

This contract will start at Km 90+700 West side of Bangabandhu bridge to this contract road will end at Hatikumrul intersection (Km 110+500) of Sirajganj District. The total length of this Contract is about 19.8 km and the average width of existing carriageway is 7.3m. This road section belongs to Bangladesh Bridge Authority (BBA).

Under this Work Package WP-06, the existing 2-lane 19.80 km Bangabandhu Bridge-Hatikamrul road section will be upgraded to a 4-Lane Highway with Slow Moving Vehicular Traffic (SMVT) lane on both sides including structure- flyover, Bridge, Underpass, culverts Bus bay, etc. the existing road suffers from inadequate capacities and lack of safety . the project will upgrade the road to four lane road with safety features, dedicated SMVT lane SASEC Road Connectivity Project-02, WP – 06 Project employer by The Roads and Highways Department (RHD). The Consultant: Joint Venture of KCI-Gauff-Chodai-Soosung-LASA JV. In association with BCL Associates Ltd. (BCL), BETS Consulting Services Ltd., Development Technical Consultants Pvt. Ltd, and Philkoei International Inc.

3.0 Scope of Work

3.1 Project Location of SASEC in BD Map



3.2 Project Location Map

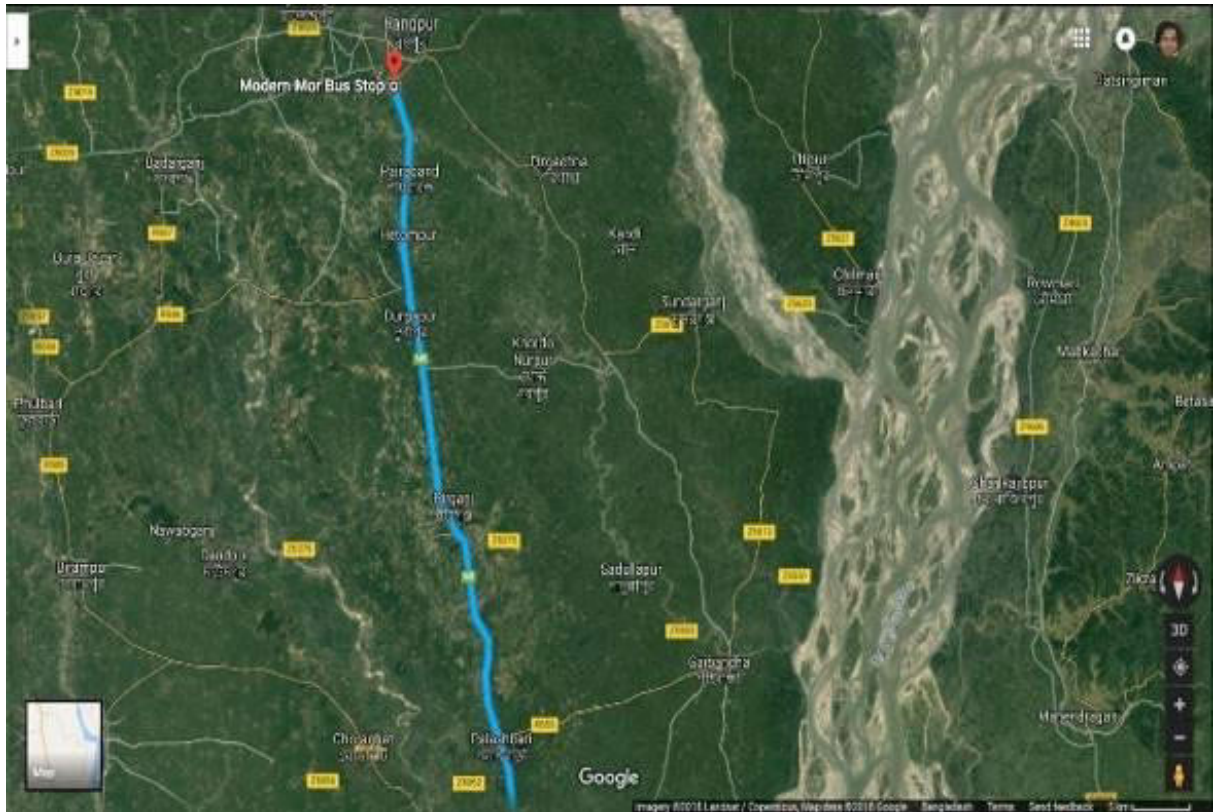


Figure: Project Road ends at Modern Bus Stop in Rangpur District

3.3 Reference

This Traffic Control Plan is prepared with reference to the following document:

- Contract Documents
- Scope of Works (Navigational Channel During Construction)
- OHSAS 18001:2007 – Occupational Health and Safety Management Systems
- Bangladesh Road Transport Authority – BRTA (Traffic Sign Manual Volume 1 -2)
- Roads and Highways Department (RHD) Standards National Technical Regulation on Traffic Control Devices

This Traffic management Control Plan is a mandatory document for implementation in this project as per Contract's requirements, legislation and regulations of the Government of the People's Republic of Bangladesh and OHSAS 18001:2007 and/or equivalent standard. Any issuance of this Plan is under the authorization of the Project Manager.

4.0 Traffic Management Plan and Safety Policy

4.1 Introduction

The Management is committed to review all of the Project's relevant plans. Traffic Management Plan (TMP) part of a comprehensive suite of environmental controls within the Construction Environmental Management Plan (CEMP) for the construction phase of the SASEC-II, Road Connectivity Project. The CTMP addresses the potential construction traffic effects associated with the construction of the Project

4.2 Purpose

The purpose of this Traffic Management Plant (TMP) to Perform the requirements and concerns of about the road safety of vehicular traffic, pedestrians and workers in the General and Particular Conditions of each work under the Contract. It shall comply the procedures, requirements and standards necessary for managing the traffic effects during construction works of the Project so that safe, adequate and convenient facilities for local movements by all transport modes are maintained throughout the construction period" The site specific traffic management plan is designed to protect the workers and the local community and also the environment of the area. The traffic will move for loading /Unloading and hauling in different locations at site using the local and national highway road where the areas are predominantly residential areas. To take Seriously care to the local residents. and Safety Policy is to state clearly the objectives of the project in relation to Environment, Health and Safety, Quality and Security and also in compliance to requirements stipulated in the contract documents and legislation and regulations of the Government of the People's Republic of Bangladesh.

4.3 Phases of Traffic Management Plan

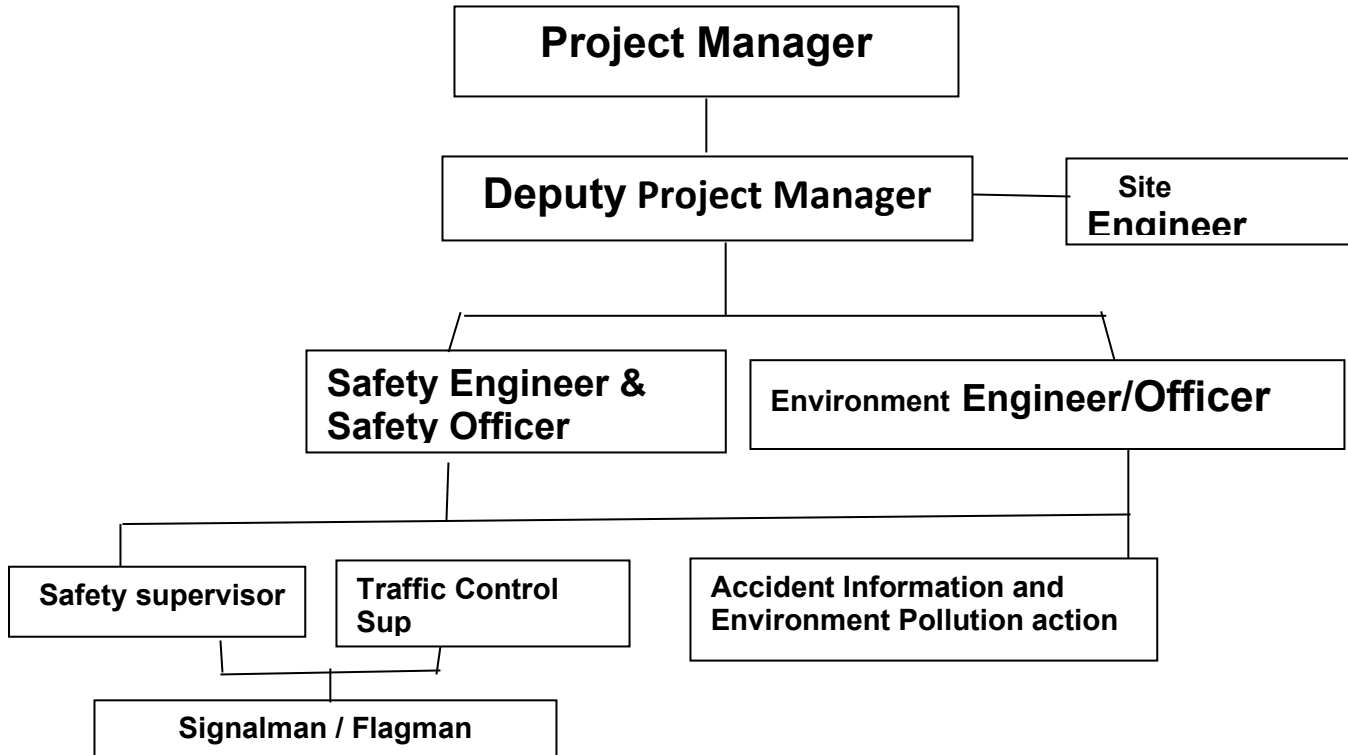
- New Construction of Road Embankment and Pavement Work
- New construction diversion road
- New Construction of Flyover
- New Constriction of Bridges
- New Construction of Under Passes
- New Construction or Extension Box Culvert
- New Construction or Extension Box Culvert

4.5 Project Organization

Even though the specific responsibilities of each staff are described in the structured of site organization for Health and Road Safety and Traffic Management Plant it should be clearly understood by and educated shall emphasize to every personnel associated in this project that the responsibilities of Safety belong to every personnel associated in this project, not to only Safety Team.

The recommendation spelled out in the contract of providing required Safety personnel to ensure adequate supervision of the construction activities, plant, equipment and materials. Organization has been provided to below.

4.6 Traffic Control Organization Chart



4.7 Responsibility / Authority

Contractor's Responsibility (as per BRTA Sign Manual)

- Contractor shall be responsible for providing signing in accordance with the BRTA Code of Practice.

The Contractor shall take necessary measures for the safety of traffic, pedestrians and workmen during the road works. The contractor shall provide, erect, operate and maintain signs, markings, lights, barricades and traffic control equipment in accordance with the Bangladesh Road and Transport Authority's Code of Practice for Signing at Roadworks, as modified by the Consultant or the Client's Representative.

The contractor shall maintain an acceptable standard of signing and shall provide adequate signing, if it is detailed in the list of works to be done. This way the contractor will get the paid for each sign supplied and placed correctly.

4.7.1 Project Manager

The Project Manager is responsible for the establishment to the Temporary Traffic Management Plan programmed. This programmed shall be according to policies with the recommendations and assistance of the Deputy Project Manager, Site Engineer and the Safety Officer. Accident prevention procedures will be included in all activities by the application of good safety planning. Specifically, the Project Manager shall provide advice to his management staff for administration, implementation and monitoring of the Site

Temporary Traffic Management Plan programmed with safety advice from the Safety Manager that include the following:

- Direct the activities of the Safety and traffic control Team as the Project Manager;
- Promote full support of the health Safety & Traffic Planning programmed;
- Delegate responsibilities for the various safety functions and authorities with The Traffic control promoted at all of the Project;
- Ensure prompt investigation action on any accident investigations with proper reports completed and follow-up action

4.7.2 Deputy Project Manager

The Deputy Project Manager will be in-charge of the activities with Quality Health Safety and Traffic aspects after implementation of the site EHST system in the Project. He will oversee the activities concerning these aspects by reviewing/discussing with the Safety Officer or even together with the Project Manager to ensure the compliance of the laws and regulations and OHSAS 18001:2007 or equivalent. The specific health and safety Traffic control plan responsibilities of the Deputy Project Manager:

- Ensure compliance to the Traffic Management safety programmed by all departments in the Project;
- Responsible for all safety activities on the Project and maintain liaison with the Construction Engineer / Safety Officer/Traffic engineer.
- Establish and direct the site health, safety Traffic control plan programmed and the rehabilitation plan whenever requires;
- Ensure the Safety Team is formed and actively involved in the health safety Traffic and environment matters in the Project;
- Ensure information and follow-up action of HSE & Traffic control team after discussion with Project Manager.

4.7.3 Safety Officer/Traffic Engineer:

Safety Officer will be responsible for the administration of the health, Safety & Traffic management system, the site security plans and must have a thorough knowledge of the safety.

These responsibilities include:

- Overall in-charge of all traffic control operations
- Develop and establish Traffic Control Plans
- Prepares and conducts training for all traffic crew on traffic management plans
- Provision of resources (materials, signage, traffic cones, barricades, lighting, relevant PPE etc.) and maintain inventory
- Maintenance of all traffic control related materials equipment periodically and replenishment of these as needed.
- Regular inspection/audit on implementation of the traffic control plans
- Liaise with Consultant, Authorities and Safety Officer on traffic related matters.

- Monitors road closures to maintain traffic control and ensures compliance with applicable regulations.
- Regular updates and reports to the HEGO-MIR AKHTER JV management regarding traffic control plan implementation.
- Identify potential safety/health hazards & risks and significant environmental aspects & impacts and implement the controls.
- Authorized to stop or divert traffic with the consent of Consultant and authorities.

4.7.4 Traffic Control Supervisor:

- Be aware of the local regulations and changes on traffic control management based on codes and standards
- Implement all established traffic control plans
- Ensure compliance with regulatory requirements,
- Regulate traffic during peak hours and non-peak hours as per plans, with support from traffic.
- Conduct daily tool box meeting to brief the crew before starting their work
- Ensure and enforce compliance with PPE requirements for traffic control
- Provide feedback to supervisors on any concerns & suggestions for improvement
- Inform the coordinator upon noticing any abnormal or dangerous signs and symptoms related to traffic management.
- Participate and involve in consultation activities to provide constructive suggestions and implementation measures.
- Implement the control measures effectively for identified hazards related to traffic.
- Directing the movement of traffic through or around the work site location.

4.7.5 Signal Men / Watch men

Trained guider/signal men shall be employed to guide the traffic and the pedestrian. Guiders/Signal men shall have an additional precautionary measure to prevent any accident. There should be at least two Guiders/Signal men in each set having two different coloured flags (green & red) at both ends of diversion road. Signal men I guiders shall work for round the clock in number of sets (as per labour law). Special attention shall be made during night time.

Watch men are mandatory to be employed at structure site, bituminous work site, construction equipment movement locations and welding operations areas.

Guider/Signal man shall be trained properly (may be from traffic police) before sent to work. Few examples are given regarding the Traffic Police directing manually the traffic on the road.



T Traffic Police Directing the Traffic

A traffic control person may also be known as a flag person (flag woman/flag man) or Signaler The main role is to:

- Stop, slow, and safely direct traffic through work or construction sites.
- Protect workers in the construction zone by regulating traffic flow.
- Give traffic control directions and signals clearly and precisely so that motorists understand their meaning.
- Keep the flow of traffic moving with as few delays as possible.

Only use traffic control persons when other methods of traffic control are not adequate. Always use barriers, barricades, lane control devices, traffic signal lights, sign trucks, and other methods as appropriate instead of, and/or in addition to, traffic control persons to ensure the safety of all workers and protected against any risk to general public traffic using the road.

4.8 Training Plans

The Traffic Control engineer, with support from Traffic Control supervisor shall develop a training plan for workforce associated with traffic management and implement the trainings effectively for all project sites.

The Traffic Control engineer shall provide regular and appropriate training to all personnel in the operation of Traffic Control Plan (including subcontractors and their workforce) as necessary to ensure their competency to do their work and maintain records of all such

trainings.

Additional training will be provided when there is a change in the plan or requirements. The Traffic Control engineer, together with the Project Manager and other SASEC 2,Wp-06, Road project team members, shall develop and maintain training.

4.9 Meetings and Instructions

The Project Manager/Safety Officer/Traffic Control Supervisor shall organize regular monthly meetings with relevant stake holders on the status of traffic control implementation measures.

The team will identify shortcomings if any and improvement opportunities and implement the corrective measures in a timely manner. Meetings Minutes or Reports shall be maintained. Any special instructions arising from these meeting discussions shall be communicated to relevant traffic control team for implementation at site level.

4.10 Working Hours

Working hours for the project shall be followed as stipulated by the regulation of Bangladesh (8am to 5pm).Night time will be 5pm to 8am.

4.11 Labour Laws

HEGO-MIR AKHTER JV will follow with all relevant labour laws applicable to the contractor's personnel, including laws relating to their employment, health, safety, welfare, immigration and emigration, and will allow them all their legal rights.

4.12 Forced Labour

HEGO-MIR AKHTER JV will not employ forced labour, which consists of any work or service, not voluntarily performed, that is exacted from an individual under threat of force or penalty, and includes any kind of involuntary or compulsory labour, such as indentured labour, bonded labour or similar labour-contracting arrangements.

4.13 Child Labour

The Contractor will not employ children in a manner that is economically exploitative, or is likely to be hazardous, or to interfere with, the child's education, or to be harmful to the child's health or physical, mental, spiritual, moral or social development. Where the relevant labour laws of Bangladesh have provisions for employment of minors the Contractor will follow those laws applicable to the Contractor. Children below the age of 18 years will not be employed in dangerous work.

4.14 Communications and Publicity

Necessary communication modes and channel shall be established for internal and external communications, which include the general public and authorities, relating to traffic control measures and plans.

The following measures shall be implemented for communications

- Internal Communications => Meetings, E-mails, Display Posters and Signage's
- External Communication => Through Media, Publicity materials, Banners and bulletins, Hoardings, Signage's, E-mails

Communication campaigns and programs shall be initiated by the Traffic Coordinator and team. These measures include issuing flyers, handouts, radio & walkie-talkie etc. as deemed necessary prior to commencement of temporary or permanent works.

5.0 Traffic Control Devices and Facilities

Materials for traffic control devices shall conform to the below requirements.

1. Water Filled Barriers

Water filled barriers are modular water filled plastic container of various sizes and shapes. Hollow polyethylene barriers in trapezoidal shape of about 80cm – 10cm length have been developed for a short-term application where portability is important.

2. Cones

Cones shall be a minimum of 75 cm in height with a broadened base and shall be capable of withstanding impact without damage to the cones or vehicles. All cones shall be orange/white colored and highly visible both in daylight and darkness. Cones shall be capable of remaining bright and in position during normal traffic flow and wind conditions in the area where they are used. Lamps for cones shall be suitable for purpose.

3. Warning Lights (flashing or steady)

Warning lights shall be Type A (low intensity flashing), Type B (high intensity flashing), or Type C (steady burn) as deemed appropriate, and as approved by the Consultant.

4. Stop and Go boards

Where there is a lot of traffic or the work site is very long, traffic will be controlled manually using these Stop and Go boards. If obstruction is less than 30 meters long and is on straight section road you will only need a single board operating at one end or in the middle. Boards will be operated by a competent person.

5. Traffic Flags

The traffic flag is a red square cloth measuring at least 300mm x 300mm. It is fastened to a staff about 600mm. The flag does not contain any message so to give motorists the correct message, the flagger must hold the flag properly and use the correct hand signals.

6. Wand Flashing Batons

During night time work flashing batons are used to supplement the stop and go paddle. The flagger shall hold the flashlight in the left hand, shall hold the paddle or flag in the right hand and shall use the flashlight in the following manner to control approaching road users:

- To inform road users to stop, the flagger shall hold the flashing baton with the left arm extended and pointed down toward the ground, and then shall slowly wave the flashlight in front of the body in a slow arc from left to right such that the arc reaches no farther than 45 degrees from vertical.
- To inform road users to proceed, the flagger shall point the flashlight at the vehicle's bumper, slowly aim the flashlight toward the open lane, then hold the flashlight in that position. The flagger shall not wave the flashlight.
- To alert or slow traffic, the flagger shall point the flashlight toward oncoming traffic and quickly wave the flashlight in a figure eight motion.
- Extra reserve batteries should be available to continue usage.

7. Flashing Lights

Flashing lights are often used to supplement a traffic control device. Flashing lights shall be flashing yellow light with a minimum nominal diameter of 200mm with rotating amber lights equipped to be operated over the entire 24hr duration.

Construction Requirements

Traffic control devices and services shall be provided and maintained both inside and outside the project limits as needed to facilitate traffic guidance should this be necessary.

The provision of traffic control devices and services shall comply with the Bangladesh Road Transport Authority (Road Signal Regulations).

Prior to the start of construction operations, project site team shall erect such signs, barricades, and other traffic control devices as may be required by the plans and directed by the Consultant.

Traffic control devices shall be operated only when they are needed and only those devices that apply to conditions actually in existence shall be operable.

Temporary fence shall be placed to provide a visual barrier between the work area and adjacent traffic or buildings and at locations directed by the Consultant. All traffic control devices and materials shall be maintained in good condition at all times.

5.1 Six C's of Good Road Sign

REQUIREMENT	SIGN REQUIREMENT	HEGO-MIR AKHTER JV TO ENSURE
Conspicuous	Each shall be able to be readily seen	All signs can be seen by approaching drivers/riders

Clear	Each sign shall be clear and easy to read	All sign is kept in good clean condition.
Comprehensible	Each sign should be easy to understand and not confusing	All signs used comply with BRTA/RHD
Credible	Each sign shall be easy to understand and not confusing	No sign shall be use that show no credible believable message
Consistent	The same type of sign shall be used for the same situation everywhere across the state.	Use standard signs at all road work sites so the driver can understand quickly what the message is.
Correct	The sign shall be correct sign for the situation. There are some warning signs that appear the same but have quite different meaning.	That only correct signs are used. Near enough is not good enough. Do not use any sign if the correct one is missing, rather get a correct one and install it.

5.2 Three types of Signs to be used at Road Works

TYPE	WHAT THIS TYPE DOES	EXAMPLES
Regulatory Sign	This signs regulate drivers / motorist. It must be obeyed; the police enforce this signs	Speed Restriction No Overtaking No Turns Stop Give Way Keep/Move Left/Right
Warning Signs	These signs provide warning to drivers / motorist about possible hazards ahead.	Road Works Ahead Lane Drop Ahead Diversion Ahead
Guide Signs	These signs provide information and guidance to drivers / motorist to reduce their chance of getting lost or taking the wrong path	Delineators Traffic Cones Chevron Alignment Markers

5.3 Plant and Equipment

All vehicles used in traffic control operations shall be equipped with the appropriate vehicle mounted warning devices in accordance with BRTA / RHD / Other Approved Traffic Control at Work-Sites Manuals.

During daytime, plant and equipment working in a position adjacent to traffic and should be having a projection beyond the normal width of the item.

During poor light conditions or at night, an additional traffic controller with an illuminated

red wand shall direct traffic around such plant and equipment.

During night time, where traffic is permitted to use the whole or portion of the existing road, all plant items and similar obstructions shall be removed from the normal path of vehicles, to provide a lateral clearance of at least 6m where practicable, with a minimum clearance of 1.2m.

Plant and equipment, within 6m of the normal path of vehicles, shall be lit by not less than two yellow steady lamps suspended vertically from the point of the obstruction nearest to a traffic lane, and one yellow steady lamp at each end of the obstruction on the side furthest away from the traffic lane.

5.4 Basic Signs at Road Works and Installation Procedure

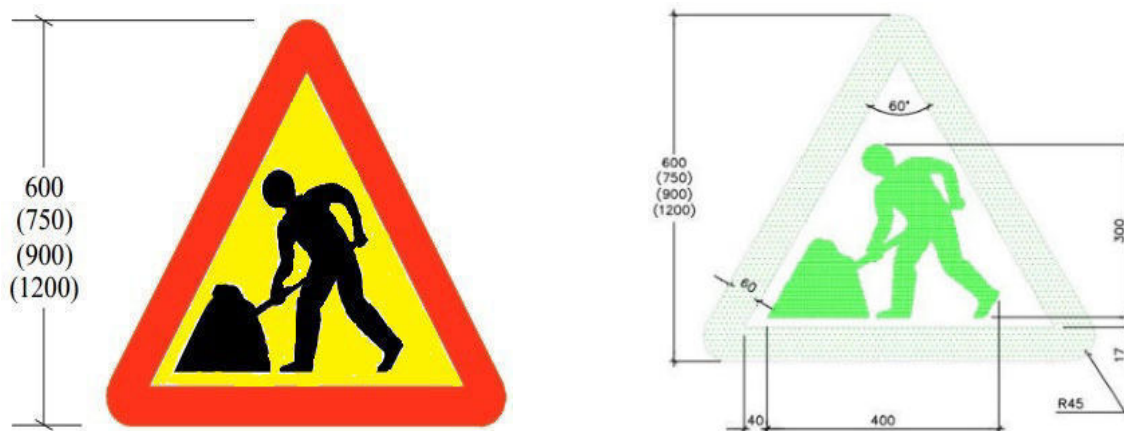
Basic Traffic Signs

The basic traffic signs shall have YELLOW Background, with definition Plate written in both English and Bengali languages

Road Works Ahead (BRTA B38)

Description: Triangular Sign with a symbol of a workman

Application: The sign warns drivers of a temporary obstruction caused by men working in the road ahead. In practice this sign is used for all roadwork's regardless of whether the work is being carried out by manual labor. The sign will normally be positioned on the left hand side of the road in advance of the hazard. On dual carriageways a second sign will be placed on the median. The size of the sign and distance from the hazard will be as detailed below. Where there is a series of warning signs, such as at major roadwork's, the sign position may need to be altered in order to keep at least 50 meters between signs. It will always be the first sign that drivers see when approaching roadwork's.



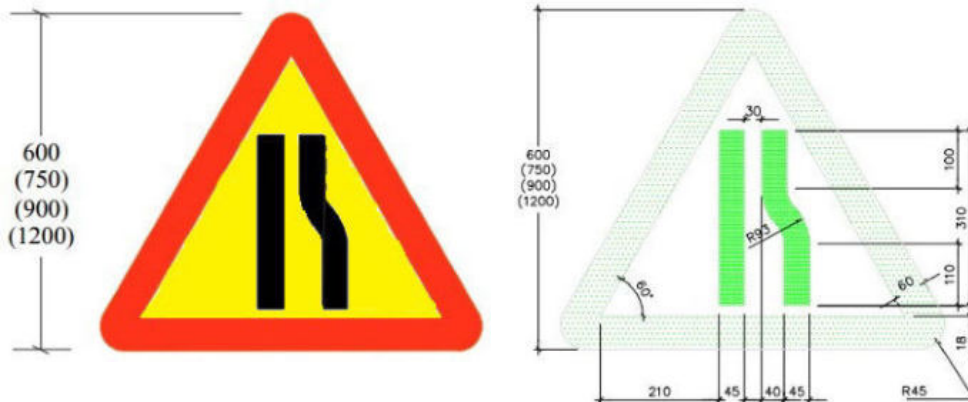
Actual Men at Work signage used at worksite



Road Narrow Ahead (BRTA B15)

Description: Triangular Sign with symbol indicating the width of the road ahead narrowing from right or left.

Application: This sign warns that the width of the road ahead will suddenly become narrower from the right (left). The sign is often used at roadworks. The sign should not be used where the reduction in width is gradual. The sign will be positioned on the left hand side of the road in advance of the hazard. The symbol can be reversed to indicate that the road ahead narrows from the left.



Speed Limit (BRTA A26)

DESCRIPTION: VARIATION: Circular sign with numbers indicating the speed limit.

APPLICATION: The sign shows the maximum permitted speed in kilometer per hour for the section of road ahead. Do not impose a speed limit unless it is essential for road safety. Unrealistically low speed restrictions will be ignored, which will make the signing look silly. Only use limits of 25, 40, 50, and 60 -see Section E2.3. Always ensure that the end of the speed restricted section is marked, either with the A27 sign or with another A26 sign indicating a different speed limit. Where the special speed limit is to apply only to a

particular type of vehicle this should be indicated on a supplementary plate - such as D20 or D21. A supplementary plate explaining in Bangla the meaning of the sign must be added until the new signs have been in use for five years.

LOCATION: The sign should be positioned on both sides of the road, for maximum impact. The sign should be repeated after every major junction and about every 400meter between junctions. The 40 km/h signs are not usually repeated in towns.

COLOURS:	
Background	: WHITE
Border	: RED
Number	: BLACK

Keep Left / Keep Right (BRTA A33)

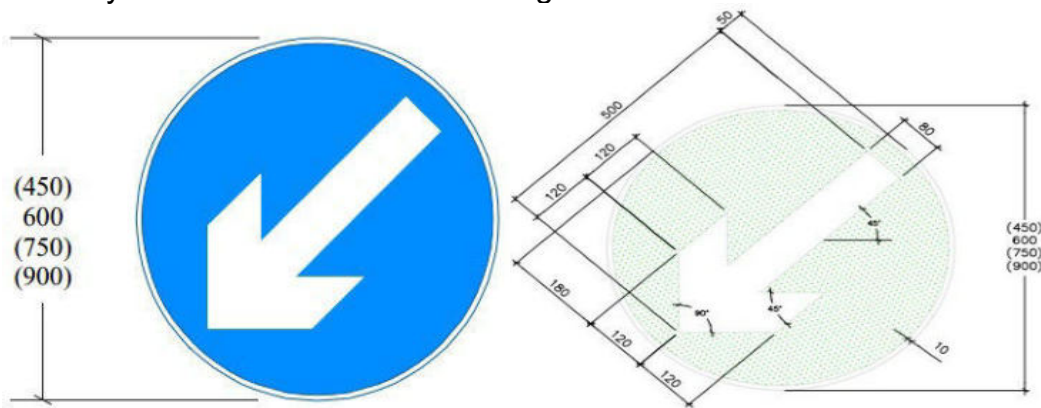
Description: Circular Sign with single arrow to indicate Keep Left or Keep Right where the arrow is pointing.

Application: Vehicular traffic may only proceed by keeping to the side indicated by the arrow. The sign is used to mark obstructions, such as traffic islands, medians on dual carriageways, and work areas at roadworks. The Keep Right sign

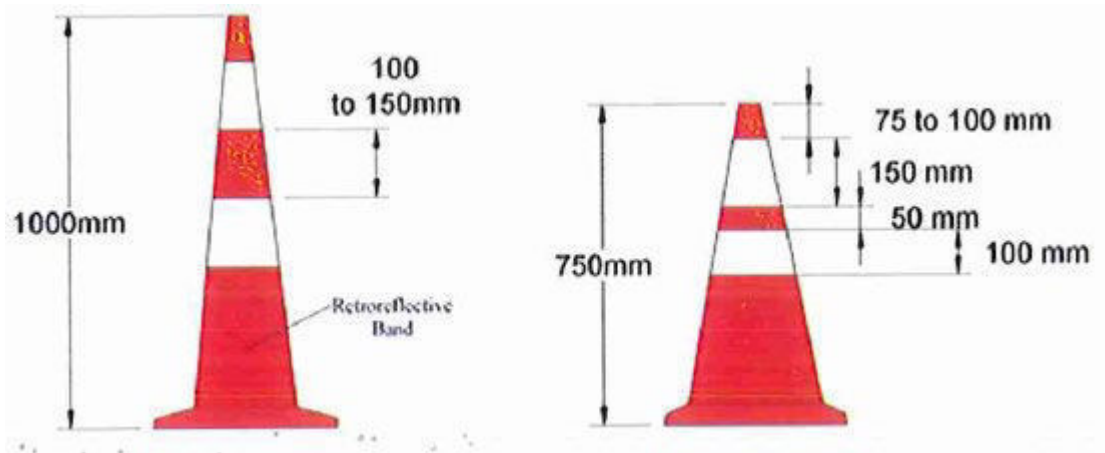
is only used at temporary roadworks.

Vehicular traffic may only proceed by keeping to the side indicated by the arrow. The sign is used to mark obstructions, such as traffic islands, medians on dual carriage ways and work areas at road. The keep right sign is only used at temporary road works.

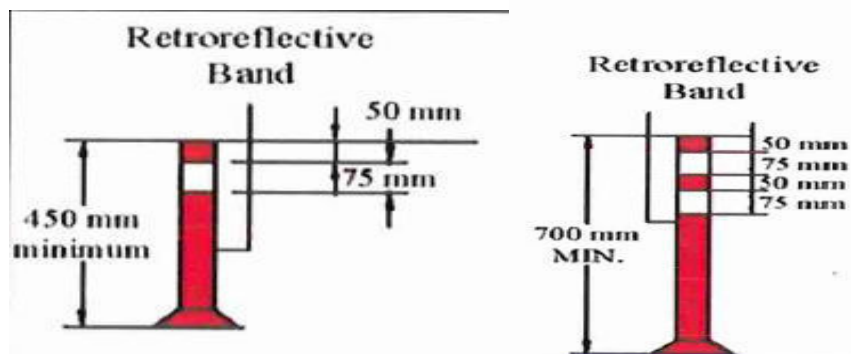
Location: The sign must be placed on or close to the beginning of the obstruction with adequate clearance between the sign and the edge of the carriageway. When used on traffic islands it may be mounted with the lower edge 1 meter above the carriageway so that it is directly in the beam of vehicle headlight.



Traffic Cones - Place a line of traffic cones to guide pedestrian and vehicle traffic past the works. Leave some working space between the lines and cones and the actual works area. Traffic cones should be red and if used at night, should preferably have white reflective sleeves.



Tubular Markers



Stop and Go – Where there is a lot of traffic or the work site is very long, traffic will be controlled manually using these Stop and Go boards. If obstruction is less than 30 meters long and is on straight section road you will only need a single board operating at one end or in the middle. Boards will be operated by a competent person.

Portable Stop & Go Boards



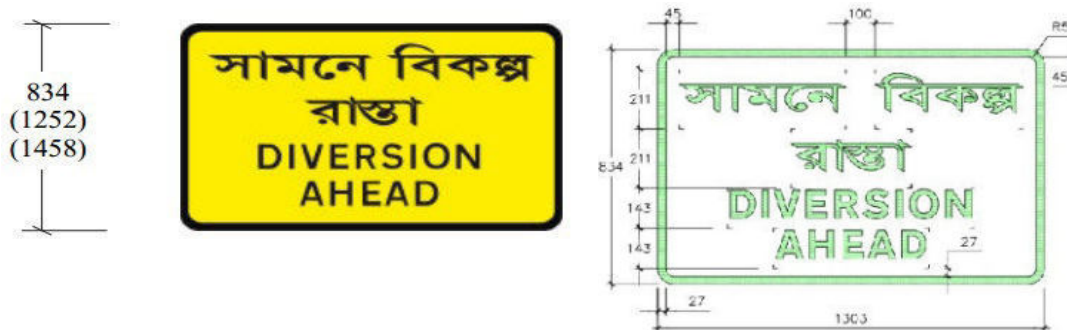
Diversion Ahead (BRTA B51)

Description: Rectangular sign with text stating diversion ahead in both English and Bengali.

Application: This signs warns that due to roadworks or temporary obstruction of

carriageway there is a diversion in operation ahead.

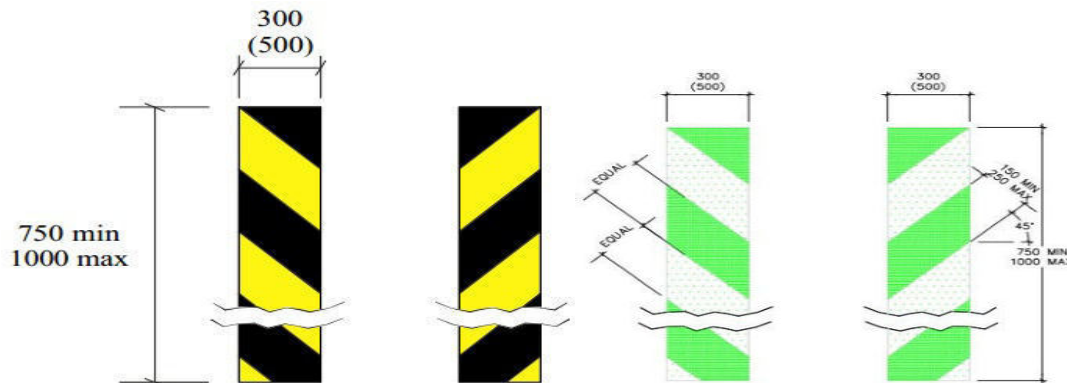
Location: The sign will be positioned on the left hand side of the road in advance of the hazard.



Dangerous Obstruction – One Way (B49 BRTA)

Description – Rectangular sign with diagonal stripes from top left to bottom right for left side obstruction; from right to bottom left for right side obstruction.

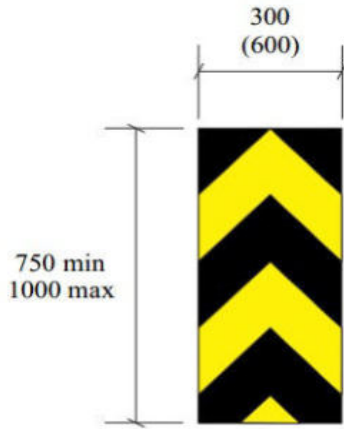
Application – This is used to highlight an obstruction which is close to the edge of the carriage way – such as bridge parapet or bridge pier. The yellow stripes point downwards to the side where the traffic shall pass. The sign plate may be fixed to the end of obstruction.



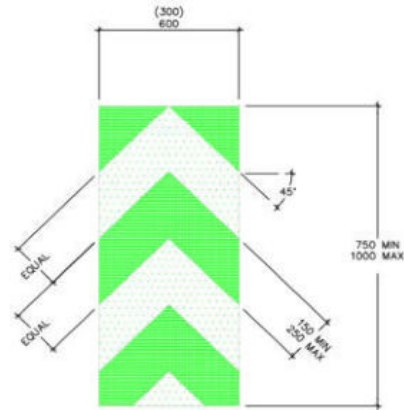
Dangerous Obstruction – Two way (B50 BRTA)

Description – Rectangular sign with arrow shades stripes facing upwards.

Application – The sign is used to highlight an obstruction which is close to the edge of the carriage way and where traffic can pass either side. It can also be used to draw attention to a channelizing island where traffic streams divide. The sign is sited either on an obstruction or on the nose of the channelizing island where traffic divides.



Other road









signs to

be used if required follows:

Note: Road signs that have Red, White, Black color shall be Red, YELLOW Background and Black color with definition Plate written in both English and Bengali languages. Yellow replacing White. Other road signs will be the same color.

WARNING SIGN

























সতর্কতামূলক সাইনসমূহ

 <p>(CROSS ROAD - MINOR ROAD AHEAD) সামনে আড়াআড়ি ছোট সড়ক আছে</p>	 <p>(CROSS ROAD - MAJOR ROAD AHEAD) সামনে আড়াআড়ি প্রধান সড়ক আছে</p>	 <p>(SIDE ROAD RIGHT) সামনে ডানদিকে পার্শ্ব রাস্তা আছে</p>	 <p>(STAGGERED JUNCTION) সামনে বামে-ডানে একধিক সংযোগ সড়ক আছে</p>
 <p>(T JUNCTION) সামনে টি-জংশন আছে</p>	 <p>(Y JUNCTION) সামনে ওয়াই-জংশন আছে</p>	 <p>(TRAFFIC MERGES FROM LEFT) সামনে বামদিক থেকে গাড়ি এসে মিশতে পারে</p>	 <p>(MERGE WITH TRAFFIC FROM RIGHT) সামনে ডানদিকের গাড়ির সাথে মিশতে হবে</p>
 <p>(ROUNDABOUT) সামনে গোলচক্কর</p>	 <p>(SHARP BEND TO THE RIGHT) সামনে ডানদিকে আচমকা মোড় আছে</p>	 <p>(SHARP BEND TO THE LEFT) সামনে ডানদিকে খাঁড়া বাঁক আছে</p>	 <p>(DOUBLE BEND FIRST LEFT) সামনে দুটি বাঁক আছে, প্রথমটি বামে</p>
 <p>(ROAD NARROWS ON BOTH SIDES) সামনে উভয়পাশ হতে রাস্তা সরু হয়েছে</p>	 <p>(ROAD NARROWS ON THE RIGHT) সামনে ডানদিক হতে রাস্তা সরু হয়েছে</p>	 <p>(DUAL CARRIAGEWAY ENDS) দুটি পৃথক সড়ক সামনে মিলিত হয়ে দু'পাশে একটি সড়কে পরিণত হয়েছে</p>	 <p>(TRAFFIC SIGNALS) সামনে ট্রাফিক সিগন্যাল আছে</p>
 <p>(STEEP HILL DOWNWARDS) সামনে ঢালু পাহাড় আছে</p>	 <p>(STEEP HILL UPWARDS) সামনে খাঁড়া পাহাড় আছে</p>	 <p>(HEIGHT LIMIT AHEAD) প্রতিবন্ধকতার কারণে সামনে সীমিত উচ্চতা আছে (এই বেলে ৪.৪ মিটার)</p>	 <p>(TWO WAY TRAFFIC STRAIGHT AHEAD) সামনে উভয়দিকে সোজাসুজি চলাচল</p>

REGULATORY SIGNS

 <p>(NO ANIMAL-DRAWN VEHICLES) পশুবাহিত যান চলাচল নিষেধ</p>	 <p>(NO PEDESTRIANS) পথচারী চলাচল নিষেধ</p>	 <p>(NO RICKSHAWS) রিকশা চলাচল নিষেধ</p>	 <p>(NO CYCLES) সাইকেল চলাচল নিষেধ</p>
 <p>(NO TRACTOR OR LIKE MOVING VEHICLE) ট্রাক্টর অথবা ধীরগতির মোটরযান চলাচল নিষেধ</p>	 <p>(NO VEHICLES CAUSING DUST/DIRT) বিস্কোড়কর/বাহী মোটরযান চলাচল নিষেধ</p>	 <p>(NO VEHICLES OVER LENGTH 10M) প্ৰদর্শিত মাপের বেশি দৈর্ঘ্যের মোটরযান চলাচল/প্রবেশ নিষেধ</p>	 <p>(NO VEHICLES OVER HEIGHT 4.4M) প্ৰদর্শিত মাপের বেশি উচ্চতার মোটরযান চলাচল/প্রবেশ নিষেধ</p>
 <p>(NO VEHICLES OVER WIDTH 2.4M) প্ৰদর্শিত মাপের বেশি প্রস্থের মোটরযান চলাচল/প্রবেশ নিষেধ</p>	 <p>(NO VEHICLES OVER MAXIMUM GROSS WEIGHT 17T) প্ৰদর্শিত ওজনের বেশি মোটরযানে মোটরযান সোপান নিষেধ (মূল সোপা)</p>	 <p>(AXLE WEIGHT LIMIT 4T) প্ৰদর্শিত ওজনের বেশি এক্সেল ওজনের মোটরযান চলাচল নিষেধ</p>	 <p>(NO PARKING) পার্কিং নিষেধ</p>
 <p>(NO STOPPING) থামানো নিষেধ</p>	 <p>(NO OVERTAKING) ওভারটেকিং নিষেধ</p>	 <p>(NO PASSING WITHOUT STOPPING) না থামে অতিক্রম করা/চলা নিষেধ</p>	 <p>(NO RIGHT TURN) জনদিকে মোড়ানি নেওয়া নিষেধ</p>
 <p>(NO LEFT TURN) বামদিকে মোড়ানি নেওয়া নিষেধ</p>	 <p>(NO U-TURN) ইউটার্ন নেওয়া নিষেধ</p>	 <p>(NO USE OF HORN) হর্ন বাজানো নিষেধ</p>	 <p>(SPECIAL SPEED LIMIT) বিশেষ গতিসীমা বা সর্বোচ্চ গতিসীমা</p>
 <p>(NATIONAL SPEED LIMITS APPLY) পূর্বের সর্বোচ্চ গতিসীমার বাস নিষেধ শেষ এক সীমিত গতিসীমা সঙ্কেত</p>	 <p>(RESTRICTION ENDS) গতিসীমা ব্যতীত অন্যান্য বাসনিষেধ শেষ</p>	 <p>(TEMPORARY STOP SIGN) সাময়িক থামার চিহ্ন</p>	 <p>(TEMPORARY GO SIGN) সাময়িক চলাচলের চিহ্ন</p>

INFORMATIVE SIGNS

 <p>(TWO-WAY TRAFFIC CROSSES ONE-WAY ROAD) একদ্রী রাস্তা সামনে (ব-রাস্তার মিলিত হয়ে সে-রাস্তার উভয়দিকে গতি সাড়কত্বি জালাস করে</p>	 <p>(PEDESTRIAN CROSSING) সামনে পথচারী পরালাসার</p>	 <p>(PEDESTRIANS IN ROAD AHEAD) হুঁটপাত না খাতায় সামনে সাড়কে পথচারী চলাচল করে</p>	 <p>(CHILDREN) সামনে স্কুল খাতায় রাস্তায় শিশু-কিশোর চলাচল করে</p>
 <p>(CATTLE) সামনে গবানিপিত্ত রাস্তায় চলাচল করতে পারে</p>	 <p>(WILD ANIMALS) সামনে বন্যপ্রাণী রাস্তায় চলাচল করতে পারে</p>	 <p>(RIVER BANK) সামনে নদী/পাতীর খাতের কিনারা আছে</p>	 <p>(UNEVEN ROAD) সামনে অসামতল/হুঁটপূর্ণ সাড়ক</p>
 <p>(SLIPPERY ROAD) সামনে শিথিল সাড়ক</p>	 <p>(ROAD HUMP) সামনে গতিরোধক</p>	 <p>(LOW FLYING AIRCRAFT) সামনে বিমানবন্দর। নিম্নউচ্চতর উচুত বিমানের উত্থান করা হুঁতে পারে</p>	 <p>(FALLING ROCKS) সামনে পাহাড়ের পার্শ্ব হুঁতে রাস্তায় শিলা/ধকরখণ্ড পড়তে পারে</p>
 <p>(DANGEROUS DIP) সামনে বিপজ্জনক খাত/গর্ত আছে</p>	 <p>(NARROW BRIDGE) সামনে সরু/সঙ্কীর্ণ সেতু আছে</p>	 <p>(OTHER DANGER) সামনে বিভিন্ন রকম বিপদশকা আছে</p>	 <p>(CHECKPOINT) সামনে চেকপয়েন্ট আছে</p>
 <p>(ROAD WORKS) সামনে সাড়ক মেসামন্তের কাজ চলাছে</p>	 <p>(LOOSE CHIPPINGS) সামনে রাস্তার ওপর ডিলা/ অজালা নুড়ি-পাথর আছে</p>	 <p>(CYCLES AND RICKSHAWS) সামনে রাস্তায় সাইকেল/রিকশা চলাচল করে</p>	 <p>(DANGEROUS SHOULDER) সামনে রাস্তার শোভার বিপজ্জনক</p>
 <p>(FERRY) সামনে ফেরিবাট আছে</p>	 <p>(BLIND PERSONS) সামনে রাস্তায় অক্ষমানুষ চলাচল করতে পারে</p>	 <p>(RAILWAY LEVEL CROSSING WITHOUT GATE OR BARRIER) অরক্ষিত (গেইট/পাহারাদারবিহীন) রেলক্রসিং</p>	 <p>(RAILWAY LEVEL CROSSING WITH GATE OR BARRIER) রক্ষিত (গেইট/পাহারাদার আছে) রেলক্রসিং</p>

বিশেষ সতর্কতামূলক সাইনসমূহ

<p>(SHARP CHANGE OF DIRECTION TO THE LEFT) আচমকা বামে মোড়</p>  <p>এই ধরনের সাইন বিপজ্জনক বাঁক, বিশেষ করে যে-সব বাঁক সম্পর্কে পূর্ন হতে থাকে। করা যায় না সে-সব বাঁকে ব্যবহৃত হয়।</p>	<p>(SHARP CHANGE OF DIRECTION TO THE LEFT) আচমকা বামে মোড়</p>  <p>গাময়িক বিকল্প সড়কের ক্ষেত্রে ব্যবহৃত আচমকা বামে মোড় সাইন।</p>	<p>(T JUNCTION CHEVRON) সামনে টি-জংশন</p>  <p>এই ধরনের সাইন টি-জংশনের প্রবেশ মুখে ছোট রাস্তার বিপরীতে প্রদর্শন করা হয়, যাতে চালক ছোট রাস্তা দিয়ে অসময় হওয়ার সময় জংশন গনাক্ত করতে পারে এবং প্রয়োজন অনুযায়ী সড়ক বা বাঁক দিকে যেতে পারে।</p>
<p>(TEMPORARY DIVERSION AHEAD) সামনে সাময়িক বিকল্প সড়ক</p>  <p>মেসামত বা অন্য কোনো কারণে মূল রাস্তা বন্ধ থাকলে, বিকল্প রাস্তা ব্যবহারের বিষয়ে সতর্ক করতে এই সাইন ব্যবহৃত হয়।</p>	<p>(DIRECTION OF TEMPORARY DIVERSION AHEAD) সামনে সাময়িক বিকল্প সড়কের নকশা</p>  <p>এই সাইনটি বিকল্প রাস্তার নকশা বা বিন্যাস বুঝতে ব্যবহৃত হয়। এই নির্দিষ্ট নকশাটি দেখাচ্ছে যে, দু-পেন বিশিষ্ট একটি বিকল্প রাস্তা, যা বিপরীত দিকে ক্রম রাস্তায় গড়েছে।</p>	<p>(DIRECTION OF TEMPORARY DIVERSION) সাময়িক বিকল্প সড়কের নির্দেশনা</p>  <p>এই সাইনটি শহরের মধ্য দিয়ে প্রবাহিত বিকল্প রাস্তা চিহ্নিত করতে ব্যবহৃত হয়। এটি বিকল্প রাস্তার শুরুতে এবং বিকল্প রাস্তা বরাবর জংশনে ব্যবহৃত হয়।</p>
<p>(LANE CLOSED TO TRAFFIC AHEAD) সামনে সার্ময়িকভাবে গেন বন্ধ</p>  <p>সামনে এক বা একাধিক গেন সার্ময়িকভাবে বন্ধ করতে এই ধরনের সাইন ব্যবহার করা হয়। এই নির্দিষ্ট সাইনে লেখা আছে যে, তিন লেন বিশিষ্ট রাস্তায় চানপাশের লেনটি বন্ধ রয়েছে।</p>	<p>(COUNT-DOWN MARKERS) নিম্নমুখী গণনা সাইন</p>  <p>গেজটসিংলের দূরত্ব বুঝতে এই সাইন ব্যবহৃত হয়। তিনবাড়ের সাইন দিয়ে মোট সূচক, দু-বাড়ের সাইন দিয়ে দু-তৃতীয়াংশ এবং একবাড়ের সাইনটি দিয়ে এক-তৃতীয়াংশ বুঝতে পারে।</p>	<p>(LOCATION OF RAILWAY CROSSING) গেজটসিংলের অবস্থান</p>  <p>এই সাইনটি গেজটসিংলের অবস্থান বুঝতে জরুরি পর্যায়ে নিরুত্তে প্রদর্শন করা হয়। একদর অধিক গেজটসিংল থাকলে লেখা আছে 'অধিক জঙ্গ' সাইনটি ব্যবহৃত হয়।</p>
<p>(SINGLE SIDED DANGEROUS OBSTRUCTION) একপাশে বিপজ্জনক প্রতিরোধক</p>  <p>সেতু/ব্রিজ, কাগজাট ইত্যাদি বিপজ্জনক প্রতিরোধকের প্রাচীর/পিয়ারে এই ধরনের সাইন ব্যবহার করে আলোর প্রতিফলনের মাধ্যমে বিপজ্জনক প্রতিরোধক সম্পর্কে চালকের দৃষ্টি আকর্ষণ করা হয়। হৃদয় জোরাকারী দাগসমূহ যে-পাশেরদিকে (বরাবর) নিয়গামী হয়, সে-পাশ দিয়ে যানবাহন অতিক্রম করবে।</p>	<p>(DOUBLE SIDED DANGEROUS OBSTRUCTION) উভয়পাশে বিপজ্জনক প্রতিরোধক</p>  <p>এই ক্ষেত্রে গাড়ি যে-কোনো পাশ দিয়ে যেতে পারে। চ্যালেঞ্জিত সড়কস্থাপন, যেখানে জটিল প্রবাহ বিভক্ত হয় সেখানে চালকের মনোযোগ আকর্ষণ করতে এই ধরনের সাইন ব্যবহৃত হয়।</p>	

5.5 Clothing and Personal Protective Equipment (PPE)

High visibility clothing shall be provided for all safety and traffic crew such as Reflective personal vests / clothing for better visibility.

Traffic control Supervisors / Coordinators shall ensure traffic related equipment and protective clothing are available at the site at all times and implement measures for effective enforcement of proper usage and necessary replacement / replenishment of such equipment and clothing.

Personal protective equipment shall include as minimum (but not limited to):

- Protective Headgear (hard hat or similar)
- Reflective Jacket
- High Visibility Vest
- Safety Boot with steel toe caps and steel sole plate
- Other items such as Safety Glasses, Gloves and Rubber boot etc.

6 Planning And Implementation of Traffic Managements

6.1 Delineation of Work Site

Construction site shall be delineated, in absence of boundary walls, by fences. The jobsite should be adequately marked to warn the public of construction activities. Warning signs can be used to restrict public access.

Special attention shall be made for excavation, piling and pre-stressing. Excavation, piling and pre-stressing sites shall be fenced all around. No trespassing shall be allowed. Sufficient number of notice boards, danger signs, flashing lights etc shall be provided in the area.



Jobsite marked with



Jobsite delineated by



Jobsite cleaning

The work area should be kept clean in order to minimize hazards to workers. During the erection of tall structures, nylon net shall be put around the structure periphery 3 to 4 meters below the working level. No scaffolding, ladder, working platform, gangway, runway, etc. shall be placed within 3 meters of an un-insulated electric wire.

- All signs and delineator shall be maintained in good clean condition.
- The worksite shall be clearly delineated with reflective devices including soft plastic bollards, guide post, hazard markers, and other approved devices. Dangerous items such as concrete blocks, tree branches, individual concrete barricades shall not be used for delineation or traffic control at the work site.
- Use fluorescent traffic cones at least 750mm high to delineate the traffic path into, through and out of the work site. Always place the cones in smooth lines so they look like the edge of traffic path. Always replace any cones that are knock out of line.
- Use long tapers. Remember that drivers / motorist need longer tapers than you think
- No alternative paths for road users shall be allowed. Any other possible optional route is to be closed off with strong delineation.
- Vertical Clearance
- In general, any temporary works placed over roads or diversions used by public traffic should maintain a vertical clearance of at least 4.5 meters.
- Where required by the Consultant the respective site team shall erect and maintain suitable approved check gates, fitted with warning signs indicating the vertical clearance.
- All Temporary road works and associated materials used for temporary purpose shall be constructed, including temporary traffic fences, road works, temporary traffic ramps, Traffic Control for Public Roads etc.
- The respective site project's team shall erect and maintain at prescribed points on the work and at the approaches to the work, traffic aids, markings, signs, lights, flares, barricades, rubber cones with traffic lamps and other facilities as indicated in the Drawings or required by the Consultant for the direction and control of traffic.

6.2 Traffic Safety and Control

The Contractor shall take all necessary measures for the safety of traffic during construction and provide, erect and maintain such barricades, including signs, markings, flags, lights and flagmen as may be required by the Engineer for the information and protection of traffic approaching or passing through the section of the highway under improvement. The barricades erected on either side of the carriageway / portion of the carriageway closed to traffic, shall be of strong design to resist violation, and painted with alternate black and white stripes. Red lanterns or warning lights of similar type shall be mounted on the barricades at night and kept lit throughout from sunset to sunrise. At the points where traffic is to deviate from its normal path (whether on temporary diversion or part width of the carriageway) the channel for traffic shall be clearly marked with the aid of pavement markings, painted drums or similar devices as per the directions of the Engineer. At night, the passage shall be delineated with lanterns or other suitable light source.

6.3 Safety in Road Construction Zones

The construction zone creates an environment where the road user is faced with a series of unusual hazards in the form of unfamiliar routes, substandard horizontal and vertical alignment, adverse cambers, construction equipment etc. The road user also has to watch for traffic control devices apart from performing normal driving functions of vehicle control and responding to other traffic and hazards. These factors increase the strain on driver performance and lead to accidents. The safety practices in construction zones should, therefore, be orientated towards reducing conditions which lead to such hazards and consequent stress whereby risk of accidents is increased. The guiding principles for safety in road construction zones are: i) Warn the road user clearly and sufficiently in advance; ii) Provide safe and clearly marked lanes for guiding road users; iii) Provide safe and clearly marked buffer and work zones; iv) Provide adequate measures that control driver behavior through construction zones.

6.4 Construction zone

Highest regard is to be given to traffic safety as well as to provide a safe working environment to the workmen. Before starting the construction work, which will influence traffic, the contractor has to get the legal permission of the road traffic authority and local police about the means and extent of securing the construction zone. The traffic management strategies to be used at construction zones should ensure that traffic safety is an integral and high priority element of the project. This can be ensured by avoiding inconvenience to traffic as far as possible and by guiding the drivers in a clear and positive way. Routine inspections of traffic control elements and traffic operations must be carried out so that care and attention to roadside safety is never slack during the progress of project.

6.5 Traffic Control Means During Non-Working Time

The Safety Officer ensure that during non-working hours and following completion of a particular construction operation, all warning signs, except those necessary for the safety of the public are removed or entirely covered with either metal or plywood sheeting so that the sign panel will not be visible.

Retro-reflective sheeting on signs, barricades, and other devices shall be kept clean. Stretches, rips, and tears in the sheeting shall be promptly corrected by the responsible site personnel as and when necessary. The Traffic Control Coordinator together with the Safety Officer shall ensure Retro-reflective sheeting are maintained to have retro-reflection at all times.

6.6 Traffic Control Means During Night Time

In many situations' night construction may be preferred as the volume of traffic is generally lower and conflicts are minimized. Consideration must be given to the effect of night operations on the surrounding environment as well as the workers. Further, even if the work occurs at night, a lane or lanes may need to remain closed during higher traffic times.

Lighting Devices--Lighting devices should be provided in work zones on based on engineering judgement. When used to supplement channelization, the maximum spacing for warning lights should be identical to the channelizing device spacing requirements. Four types of lighting devices are commonly used in work zones. They are floodlights, flashing warning beacons, warning lights, and flashing batons.

Floodlights--Utility maintenance or construction activities on highways are frequently conducted during night time periods when vehicular traffic volumes are lower. Large construction projects are sometimes operated on a double shift basis requiring night works. When night time works is being performed, floodlights should be used to illuminate the work area, equipment crossings, and other areas. The adequacy of floodlight placement and elimination of potential glare should be determined by driving through and observing the floodlighted area from each direction on all approaching roadways after the initial floodlight setup, at night, and periodically.

Flashing Warning Beacons – Flashing warning beacons are often used to supplement a traffic control device. Flashing warning beacon shall be a flashing yellow light with a minimum nominal diameter of ss200mm with the rotating amber lights equipped to be operated over the entire 24hrs duration. The temporary terminus of an expressways is an example of a location where flashing warning beacons alert the drivers to change roadway conditions and the need to reduce speed in transitioning from expressway to another roadway type.

Warning Lights - Type A, Type B, Type C, and Type D 360° warning lights are portable, powered, yellow lens-directed and enclosed lights. When warning lights are used they shall be mounted on signs or channelizing devices in a manner that, if hit by an errant vehicle, they will not penetrate through the windshield. The maximum spacing for warning

lights should be identical to the channelizing device spacing requirements. Flashing lights should not be used as delineation, as a series of flashers fails to identify the desired vehicle path.

- Type A – A low-intensity flashing warning lights are used to warn road users during night time that they are approaching or proceeding in a potentially hazard area. Type A warning light maybe mounted on channelizing device.
- Type B – High intensity flashing warning lights are used to warn road users during both daylight and nighttime hours that they are approaching a potential hazard area.
- Type C -- Steady-burn warning lights and Type D 360° steady-burn warning lights may be used during night time to delineate the edge of the traveled way and channelize traffic.

Flashing Baton - During the night time works, or in other conditions of poor visibility, each traffic control person must be provided with and must use in addition to the personal protective equipment, a flashing baton/wand. The traffic controller must have immediate access to spare batteries for the flashing baton/wand.

6.7 Maintenance of Diversions and Traffic Control Devices

Signs, lights, barriers and other traffic control devices, as well as the riding surface of diversions shall be maintained in a satisfactory condition till such time they are required as directed by the Engineer. The temporary diversion road shall be kept free of dust by frequent applications of water, if necessary

7.0 Safety Induction and Training Program

GEGO-MIR AKHTER JV will take all reasonable steps including training and drills to ensure the safety of all person on the Site, and shall at all times promote the merits of safety awareness.

Awareness program shall be ensured for Contractors staff and workers and new employees regarding safety practices while at work before being allowed to work at project sites. Such items will include “fundamental Safety Rules applicable to each employee”.

No worker shall be allowed to access the Site unless they have undergone an induction course prepared by the HEGO-MIR AKHTER- Participants who successfully complete such a course shall be presented with a laminated card and lanyard, indicating their authority to enter the site, such card being prominently displayed for the period that the holder is on site.

Training is one of the most important ways to ensure that the workers are capable and effective in maintaining a safe and healthy work environment. All workers (including casual, hired and trained workers), supervisors, engineers, sub-contractors, visitor will be

inducted in this training.

Training and Record Keeping

HEGO-MIR AKHTER JV will provide Induction Training for all new employees. Workers shall be trained so that they can apply systems of work and work practices that are safe and without risk to health.

HEGO-MIR AKHTER JV will make sure that all employees have been adequately trained and instructed to perform their work safely before allowing them to commence construction work.

HEGO MIR AKHTER JV will conduct training on monthly/quarterly basis to make aware of any dangers involved with their work and safety precautions that need to be taken to avoid accident or injury.

Work Activity and Traffic Induction Training

The objective of Work Activity-based health and safety traffic induction in the Road of highway sector is to give workers knowledge of the OHS issues relevant to road construction and maintenance, if this training is Conducted as a training course, where the employer has 10 or more employees it shall be developed by a person who holds a 'Certificate of HIV in Workplace Assessment and Training' and be run by a person who has Statement of Attainment in 'Train Small Groups'.

Emergency Response Training

Regular training in the form of drills and exercises will be conducted by the Emergency teams will be conducted at regular intervals. These drills will be designed to test the knowledge and understanding of the training undertaken and its application to the varying environments within the site.

The drills will cover the training elements j,e, Fire Rescue, Collapse of lifting appliances and transport equipment, Collapse of building, sheds or structure etc. Gas leakage or spillage of dangerous goods or chemicals, criminal or terrorist attack, Landslides getting workers buried floods, Earthquake, storms and other natural calamities, Rescue from Height& Medical Emergency etc. relevant to the extent of their initial training and the risks identified within the location. For each drill a scenario will be developed that clearly identifies the drills objective, including but not limited to; team working, equipment, interfaces, communication and response items.

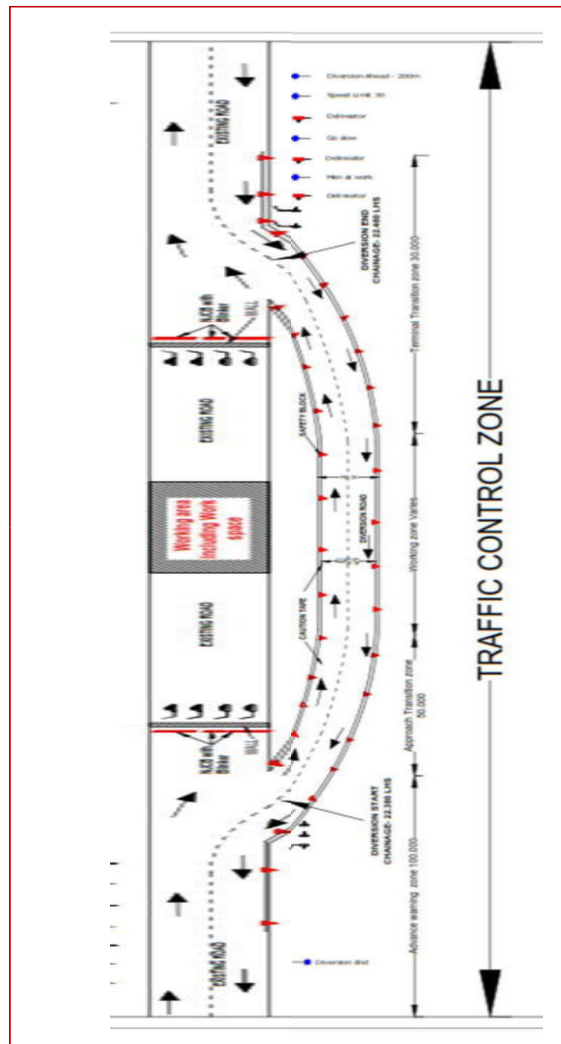
A Series of exercises will be defined to test each element of the management control aspects of the emergency response arrangements.

Pedestrian Crossings

If the works are on or near formally marked pedestrian crossings, care must be taken to avoid confusing pedestrians. Clear guidance must be given as to where they are expected to cross while the works are ingoing.

Sample Figure –

see below



RIGHT SIDE DIVERSION

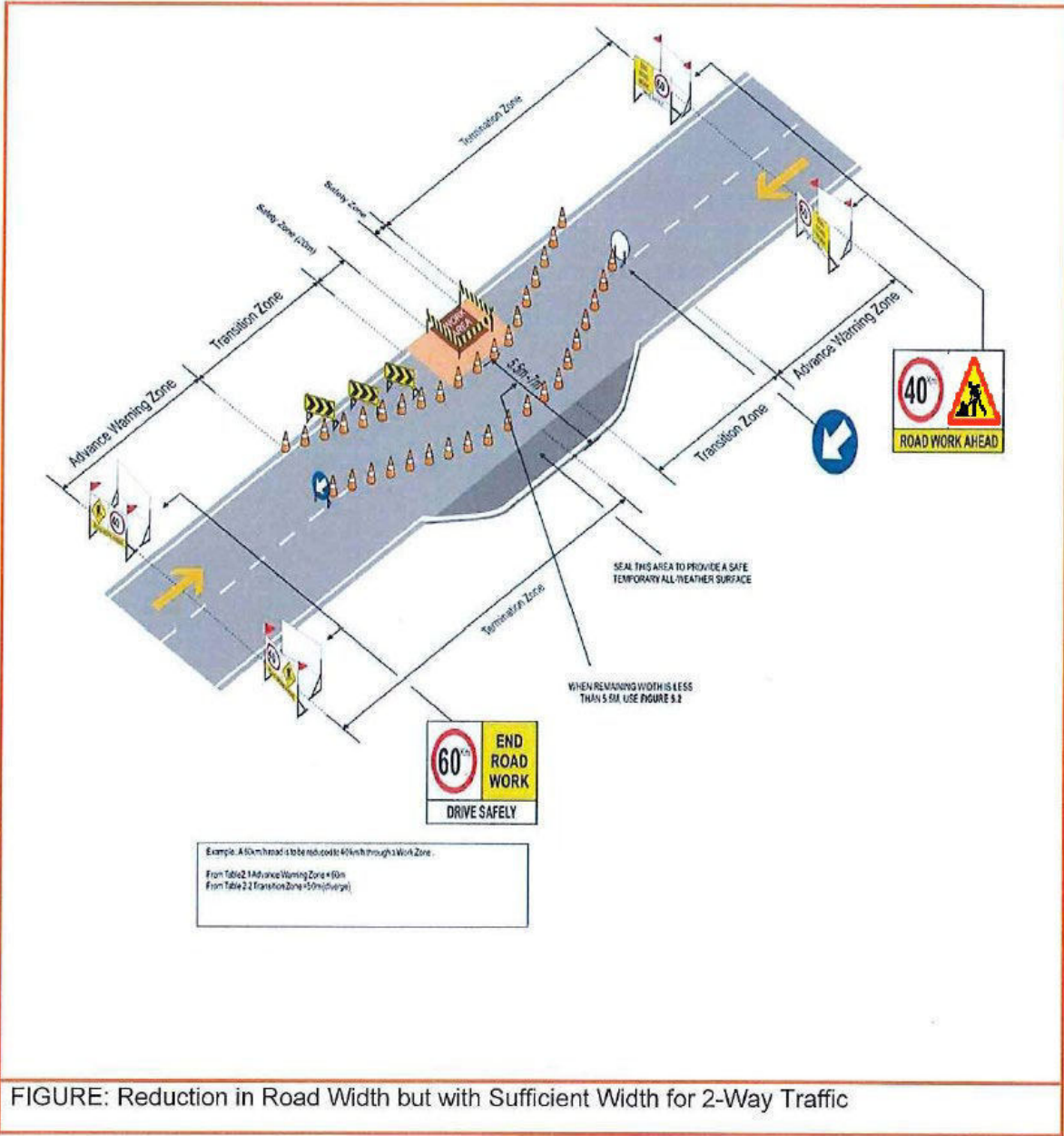
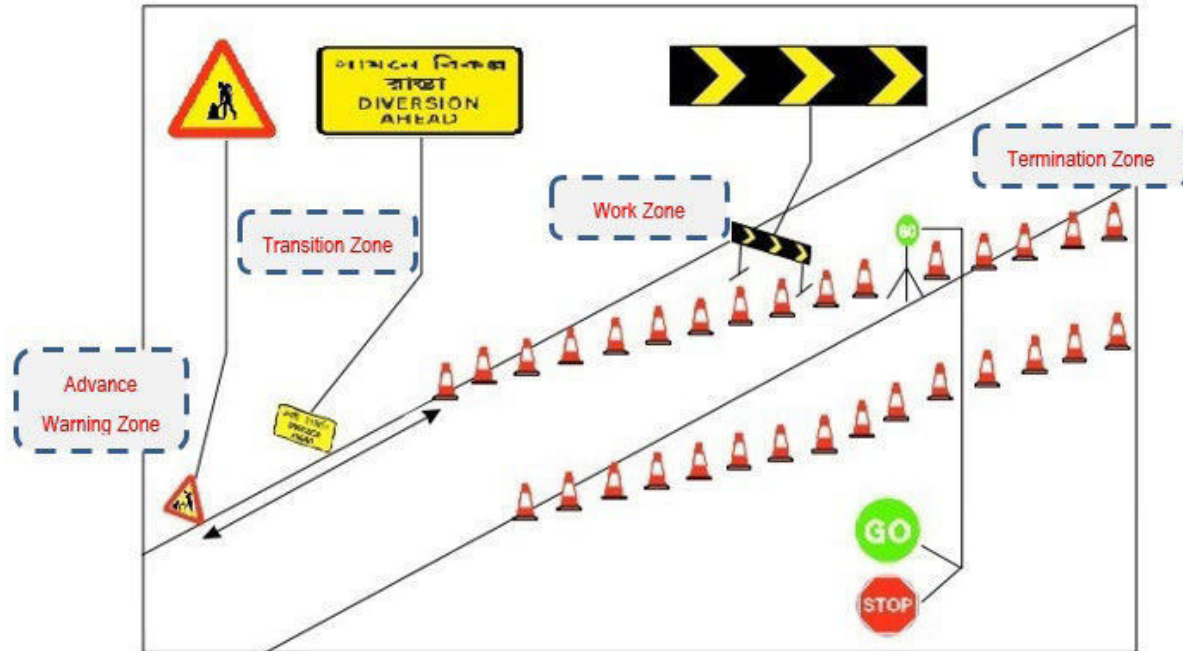


FIGURE: Reduction in Road Width but with Sufficient Width for 2-Way Traffic



7.1 Temporary Traffic Control Zone Components

The Temporary Traffic Control Zone Component is a method of separate breaking zones according to the purpose of each. It follows the path of the road users as they approach, pass through and depart from the work site. The four components that constitute a temporary traffic control zone are describe in the order that drivers encounter them includes the following.

- a. Advance warning zone is to alert drivers / motorist of road works ahead and to instruct them how to safely proceed. On freeways and expressways, where the driving speed is generally 45mph or more, signs may be placed from 500ft to ½ mile or more before the temporary traffic control zone.
- b. Transition Zone is used where there is a need to direct traffic into another lane. To guide drivers /motorist into correct alignment in which they should remain in order to pass safely through the work zone.
- c. Work Zone is the length of the work area. To control drivers /motorist through the area where the work is taking place at a speed and is a lane that is safe for them and which is also safe for the road workers.
- d. Termination Zone is to inform drivers /motorist that they are now past the work zone, to inform them of a new speed limit that applies on the road ahead, to thank them for driving carefully through the work and remind them to always drive safely.

8.0 Conclusion

The contractor will put into practice a list disturbance policy and will implement the specific traffic managements identified in this document. Contractor will ensure that the site rules as set out in this document are complied with by all who work at the SASEC Road Connectivity Project-II, It' s important to note that this Plan will be under constant review and will be revised as required to take into account any improvements or modifications which will improve the safety aspects of the route.

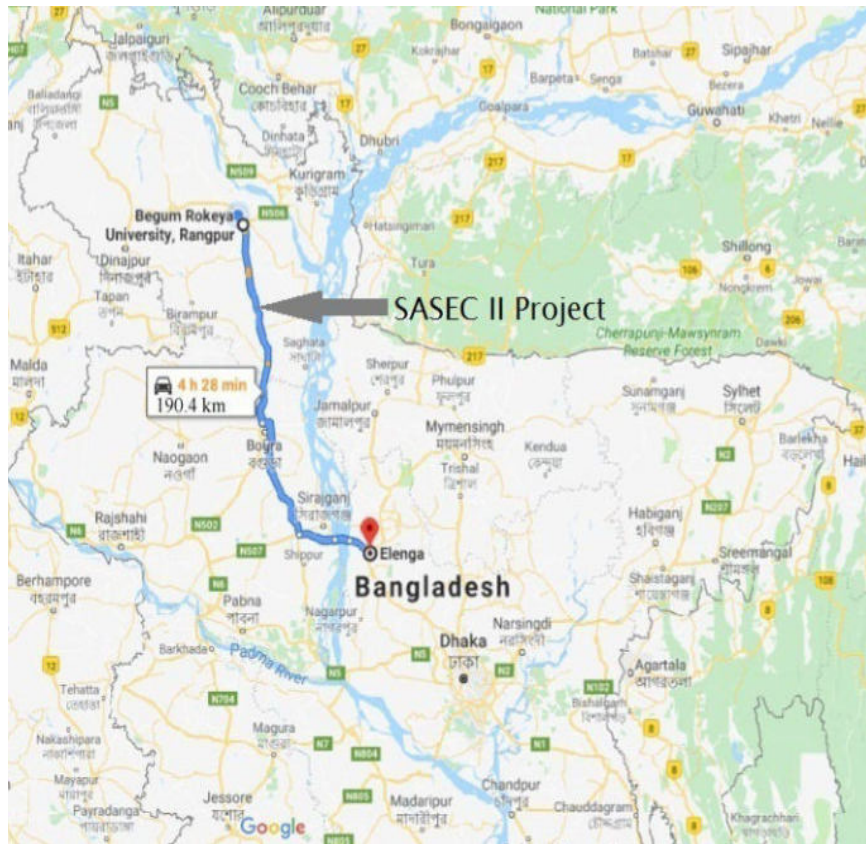
Appendix Q: Occupational Health and Safety Management Plan for SASEC Road Connectivity Project-II



1.1 Bangladesh Map



1.2 Project Map @ site map



1.3 Introduction

Healthcare management is the profession that provides leadership and direction to organizations that deliver personal health services, and to divisions, departments, units, or services within those organizations.

1.4 Project Brief

The Health, Safety and Environment Plan has been prepared to ensure the Health and Safety of SASEC-2 under ADB's South Asia Sub regional Economic Cooperation (SASEC) CONTRACTOR for the work (1) Mobilization, Demobilization and Specified Provisional Sums, (2) General Requirements, (3) Earthworks, (4) Track, (5) Bridges and Culverts (6) Stations and Buildings, (7) Ancillary Works and (8) Day-works Schedule of Bangladesh RHD. The Safety and Security Plan is for general application under Bangladesh Labor law 2015 and OSH guidelines as per the contracts that are funded by, supervised jointly by the Employers and the Engineers. The HSE Plan covers all the Health, Safety and issues that affect the Health, Safety and issue of works achieved within RHD contracts, namely the preparation of contract documents and Health, Safety and Environment during the works. Responsibility for checking and monitoring all Health & Safety issue for the identification of non-conformities, taking corrective measures, Preventive measures, on limiting the recurrences, taking constant and close supervision, formulation and execution of inspection and test plan etc.

1.5 Health and Safety Policy

A strong commitment to safety from the management is required for the construction works. Hence, it is pertinent in this Project that all personnel and workers are required to understand the safety policy, procedures and implementation of this HSP system. With authorities and responsibilities as mentioned in this plan, the participation and involvement of all parties under this HSP system will ensure its effectiveness in the implementation, monitoring and improvement of the safety system.

The main purpose of the Health and Safety policy is to promote high standards in safety performance health preservation, and security through developing and maintaining the appropriate Health and Safety Plans and Procedures covering such elements as Risk Assessments, education, motivation, participation, implementation and accountability. It is designed to enable those involved to enjoy an accident-free workplace and to prevent harm to the environment.

1.6 Policy Statement Health & Safety Our Commitment

CONTRACTOR GROUP Values the safety culture and health environment on the project site to establish a happy work site.

1.7 Our Approach

CONTRACTOR GROUP Addresses its commitment to a safe and healthy environment with a key target on Zero incident and Accident through the consistent implementation of an effective Health & Safety management system

1.8 Health & Safety Policy and Roles

Comply with relevant legal obligation, Standards, Employer requirements, and any obligations that CONTRACTOR GROUP has adopted voluntarily.

Comply with the OHSAS 18001 Occupational Health & Safety Management System Safety and health Commitment for ensuring the safety and health of all workers construction sites and to creating comfortable workplace environments.

Establish high standards in safety performance, health preservation and security through developing and

Maintaining appropriate site – specific Health and Safety Plan and Procedure.

Providing safe, healthy and secured work environment and personal protection as paramount priority.

Promote a culture of shared responsibility for safe, Healthy and secured work environment outcomes.

Enhance the awareness, knowledge and skills of employees, sub-contractors and suppliers in relation to safe, healthy and secured work environment requirements and practices.

Achieving Zero Incident / Accident in compliance with legal obligations, standard, Employers requirements and communication action take or required to prevent recurrence.

Work with peers partners, the local community, regulators and other stakeholders to understand their perspective and achieve improved environment regard to health and safety issues.

We are Constructor of Road , Bridge ,culverts &Other infrastructures with skill and passion that benefit our Employer , people communities & Stockholders .

1.9 Scope of Work and plan

The Project will facilitate building a highway line. It will have two Components: (i) RHD design and construction, and (ii) institutional development. This Manual applies to all site personnel employed to undertake construction work at SASEC 2 Construction site.

Contractors and subcontractors will also observe all requirements laid down in the contractual documentation in relation to health and safety at work pertaining to the developer. Necessary changes and project-specific additions will be made and implemented by subcontractors in agreement with the outputs will be

Upgraded marshaling yard and stations

Bus station

Transportation of bulk material and humanitarian relief goods,

Improve connectivity in the region,

The works will be done as under:

Establishment and setting up of temporary facilities;
Utility relocations and other associated works;
Setting out of the works (Survey);
Demolition works.
Yard earthworks;
Embankment construction from setting out, preparation to finalization;
Borrow pit(s) location, establishment, management and reinstatement;
Preloading of embankments;
Piling including in-situ, driven and sand piles;
Pile testing;
Culvert works;
Bridge works;
Steel fabrication for bridges and buildings;
General building works;
Platform construction works;
Tube well construction and Tube well water supply;
Testing and commissioning – all aspects;
Demobilization.
Wastes remove.
Temporary Lighting and power installations
Electrical Works.
Electrical cabinet erection

1.10 System Approach

All the activities carried out by ISO CONTRACTOR GROUP are aimed at ensuring the health and safety of the workers. To achieve this, it is essential that the following principles are observed:

Optimization of performance and results, with the development of safe processes and products.

Identification of occupational hazards and their removal or control to tolerable levels.

Continuous efforts to improve the system.

Management defines the Occupational Health and Safety policy, the objectives and the commitment assumed by CONTRACTOR GROUP and ensure that the policy is understood, applied and maintained in the company as a whole. Furthermore, it defines functions, assigning responsibilities and delegating authority to facilitate the management of OHS (all of which duly documented and communicated). The Management must demonstrate its commitment by ensuring the availability of the resources needed to establish, implement, maintain and improve the system.

2.0 Interference and Services Affected

When two or more companies are carrying out work at the same worksite, they must cooperate in the application of Occupational Risk Prevention codes and standards. To this end, they shall establish the necessary means of coordination regarding protection from and Occupational Risk Prevention.

Before beginning work, subcontractor must inform to contractor of the existence or location of the various existing utility piping and conduits such as electricity, water, gas, etc., and their area of influence.

If any are found, they must be appropriately signposted and adequately protected. If necessary,

the corresponding utility company for the location where work is to take place must be contacted so that a mutual agreement may be reached regarding the preventive measures to be taken or, in extreme cases, a temporary disconnection of the utility concerned is requested.

2.1 Document Owner, Approval and Accessibility

This Plan, any revisions or amendments to it, and any subsidiary procedures, Tools and Templates referenced within it, are to be reviewed and approved by the Engineer and the Employer will be owner of such approved document. On approval, this Plan is to be accessible its Sub-contractors for the purposes of implementation of the Project.

2.2 Health and Safety Plan



2.3 General

The Contractor is obligated to implement measures to ensure the health and safety of all workmen and properties affected under its custodianship or contractual commitments and is further obligated to monitor that these measures are structured and applied according to the requirements of Health and Safety Specifications. This HSP is to define the requirements with regard to health and safety standards in the project as stipulated in the Contract Documents and associated regulations of Government of the People's Republic of Bangladesh. Besides, this HSP document is prepared in compliance to the requirements of OHSAS 18001 standard because the Contractor Integrated Management System which is established and implemented in accordance to ISO 14001:2015. A strong commitment to safety from the management is required for the construction works. Hence, it is pertinent in this Project that all personnel and workers are required to understand the safety policy, procedures and implementation of this HSP system. With authorities and responsibilities as mentioned in this plan, the participation and involvement of all parties under this HSP system will ensure its effectiveness in the implementation, monitoring and improvement of the safety system. The main purpose of the Health and Safety policy is to promote high standards in safety performance, health preservation, and security through developing and maintaining the appropriate Health and Safety Plans and Procedures covering such elements as Risk Assessments, education, motivation, participation, implementation and accountability. It is designed to enable those involved to enjoy an accident-free workplace and to prevent harm to the environment.

2.4 Scope of the Health and Safety Plan

Contractor produces this health and safety plan to address major aspects of occupational health and safety as affected by the Project contract and outlines the proposals in connection with the occupational health and safety. The plan will provide the view as to how Contractor will

endeavor to comply with the requirements as set out in the laws/regulations and Contract Specifications in order to reduce the risks associated with the Project work that may lead to incidents causing injury and/or fatalities. The intention of the plan is to prevent incidents and minimize them to a level as low as reasonably practicable.

2.5 References (Legislations and Documentation)

This HSE Plan is prepared with reference to the following document:

Bangladesh Labor Act 2006

Bangladesh National Building Code 2006 BNBC – Construction Practices & Safety

Contract Documents; Specifications

OHSAS 18001:2007 – Occupational Health and Safety Management Systems

Bangladesh National Environment Policy, 1992

Bangladesh Environmental Conservation Act, 1995

Bangladesh Environment Conservation Rule, 1997

National Water Policy, 1999

Management of Health and Safety at Work Regulation 1999

The Health and Safety at Work Etc. Act 1974

2.6 Issuance and Authorized Change

This HSP Plan is a mandatory document for implementation in this project as per Contract's requirements, legislation and regulations of the Government of the People's Republic of Bangladesh and OHSAS 18001:2007 or equivalent standard. Any issuance of this Plan is under the authorization of the Project Manager. All personnel shall comply with the requirements of this document and the agreement from the Project Manager must be obtained prior to any amendment is to be carried out.

2.7 Worksite Safety Measures

The Contractor shall enforce and follow as per the below mentioned safety measures at worksite at all times:

Maintain control of the work site, all personnel on the work site and all equipment on the work site;

Keep worksites as clean and tidy as is reasonably practicable;

Upon completion of the work, promptly clear away and remove from the work site all surplus materials and equipment and reinstate as required to the satisfaction of the Employer;

Provide continuous adequate protection at the work site, of the property and the construction site;

Take responsibility for the safety of all persons on the work site;

All employees, agents and others entering the premises shall comply with the safety laws, rules or regulations;

Ensure all equipment in use is operated in accordance with safe systems of work;

Provide rest and welfare facilities at work locations;

Provide Safety officers and/or paramedics at site;

Provide access to any area as required to conduct investigations, inspections, safety meetings or any other activity.

2.8 Principle of Health and Safety

All employees shall be trained properly and periodically by the competent organization to work safely by working with full cooperation and assistance from the Employer and the Engineer, statutory authorities and local communities.

Contractor shall consider that Safety and Health as a top priority under any circumstance during the construction phase of this project. Contractor shall also ensure that all employers working in this project are responsible for exemplary Health and Safety performance. Good Health and Safety performance of everyone who works in this project will be critical to the success of the project by ensuring that all works shall be undertaken in a responsible manner. Decisions shall be made with full consideration of Health, Safety and Security factors as a priority in everything we do by working and cooperating with the Engineer and the Employer at all times.

2.9 The Health and Safety at Work Etc. Act 1974

This Act applies to all work activities. It requires employers to ensure, so far as reasonably practicable, the health and safety of their employees, other people at work and members of the public who shall be affected by their work.

Employers shall have a health and safety policy. If they employ five or more people, the policy shall be in writing in a book to draw up a policy. The policy clear and simple & shall be ensured that everybody in the company knows about and understands the health and safety systems which have been developed and that these systems directly relate to the operations of the company.

The safety policy shall cover three distinct aspects as follows:

A general statement of the company's health and safety policy. This announces the company's intent to have high standards of health and safety, what it intends to achieve and how it intends to achieve it;

The organization for carrying out the policy, including reference to the management systems and safety representatives. It shall include who is responsible for what and when and how they will achieve it; and the specific arrangements shall be made that the company operates for managing health and safety during its normal work activities. It shall cover, Procedures, provision of welfare facilities, accident reporting, site induction etc. Employees have to co-operate with their employer on health and safety matters. and not do anything that puts themselves or others at risk. Employees shall be trained and clearly instructed in their duties.

2.10 Management of Health and Safety at Work Regulation 1999

The Management of Health and Safety at Work Regulations (MHSWR) apply to everyone at work, regardless of what that work is. They require employers to plan, control, organize, monitor and review their work. To do this they shall:

assess the risks associated with work to identify the control measures necessary to reduce these risks; have access to competent health and safety advice; provide health and safety information and training to employees; have arrangements to deal with serious and imminent danger; and Co-operate in health and safety matters with others who share the workplace

3.0 Organization Structure, Management, Responsibilities and Procedures

Even though the specific responsibilities of each staff are described in the structured organization for Health and Safety Management, it should be clearly understood by and educated contractor shall emphasize to every personnel associated in this project that the responsibilities of Safety belong to every personnel associated in this project, not to only Safety Team. Contractor shall implement the recommendation spelled out in the contract of providing required Safety personnel to ensure adequate supervision of the construction activities, plant, equipment and materials. An organization has been provided below;

Contractor Group Organogram For HSSE Department:

HSSE Organogram

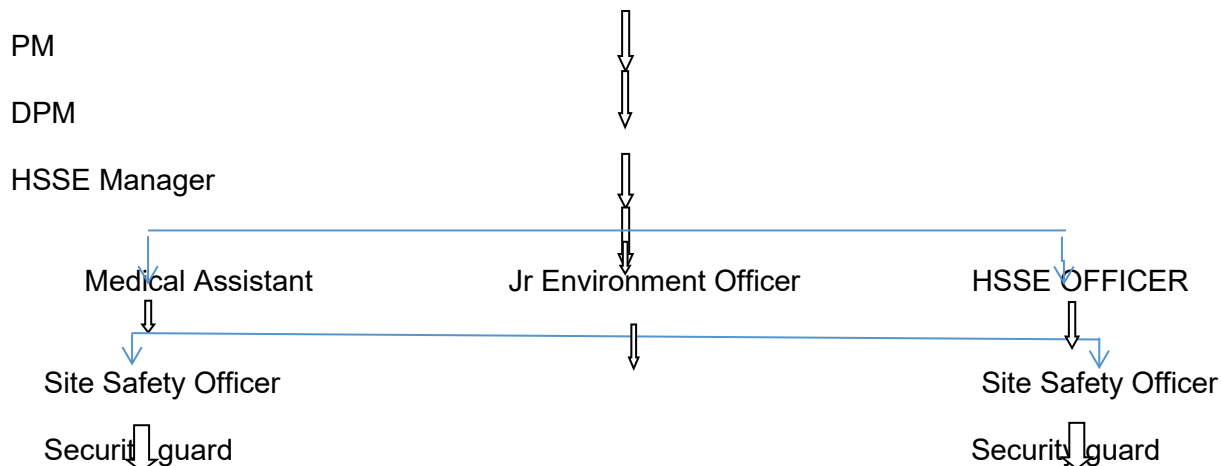


Figure: HSSE Organ gram will be updated whenever it is required

3.1 Roles and Responsibilities of HSSE Department

HSE Department will:

Be responsible in implementing the principles, policies, laws, regulations, and standards, norms of the Bangladeshi state, industry and local governments in relation to the construction, and relevant rules and regulations for CONTRACTORGROUP.

Be Responsible for the supervision and inspection of operation management on environmental protection, occupational health, safety management program and emergency preparedness.

Be responsible for the inspection work on safety, security, environmental protection and occupational health of the project; Participate in the construction design review and completion acceptance.

Organize and participate in the investigation and analysis of accidents and problems on safety, environmental protection, and occupational health.

Be Responsible for organizing publicity education and training activities about safety, environmental protection, occupational health, etc., and carrying out inspection and supervision on certificates on special operations personnel.

Check and guide the related works of the sub-contractor.

Be Responsible for the safety supervision of special equipment.

Organize and participate in the regular meeting on safety, and collect and summarize the related reports of safety, environmental protection and occupational health, and report it to superior departments on time.

Organize and participate in the assessment work on the safety, environmental protection and occupational health work of the sub-contractor's project.

Complete the other work handed over by leader.

3.2 The Personnel:

a) The Project Manager:

Responsible for the project safety and quality management, and achieving safety and quality objectives; Responsible overall for the safety of the project, implement the money for keeping safety, timely solving and reporting all kinds of emergencies.

b) Deputy Project Manager:

Deputy project manager is responsible, in respect to his project, to:

Assist and develop regular reports regarding:

The effectiveness of project HSE programs and operations,

The occurrence of any significant HSE incidents

Implementation of corrective or remedial actions arising out of significant incidents

Receives reports or recommendation from HSE manager;

Implement HSE standards and procedures;

Comply with regulatory requirements and building codes, as to construction means, methods and project specifications;

Where practical participate in site orientations;

Participate in the required training for their position;

Be Responsible for the supervision and inspection of operation management on environmental protection, occupational health, safety management program and emergency preparedness.

Be responsible for the inspection work on safety, security, environmental protection and occupational health of the project; Participate in the construction design review and completion acceptance.

Organize and participate in the investigation and analysis of accidents and problems on safety, environmental protection, and occupational health.

Be Responsible for organizing publicity education and training activities about safety, environmental protection, occupational health, etc., and carrying out inspection and supervision on certificates on special operations personnel.

Check and guide the related works of the sub-contractor.

Be Responsible for the safety supervision of special equipment.

Organize and participate in the regular meeting on safety, and collect and summarize the related reports of safety, environmental protection and occupational health, and report it to superior departments on time.

Organize and participate in the assessment work on the safety, environmental protection and occupational health work of the sub-contractor's project.

Complete the other work handed over by leader.

c) The Chief Engineer

Organize and participate in project safety technical measures for specific items and solve the existed technical problems in the construction process.

d) Health, Safety & Security Manager

Organizing staff safety education and training, including the employment, the employee before training job transfer, the special operations person and carrying out inspection and supervision of special operations personnel holding certificates cooperate with relevant departments to.

Participating in the safety technical clarification, according to the Safety Technical Classification, the Operating Procedures of Safety Technical, and the Special Safety Scheme of Dangerous Project, supervising and inspecting the impletion of project management staff and subcontracting operations personnel.

Responsible for inspecting, testing and accepting labor protection articles, safety protection facilities and mechanical equipment before use. For the goods, facilities, equipment that are not in conformity with the conditions for safe production, having the right to stop using and sealing up on the spot.

Supervising and inspecting the input and use of safety production cost in construction projects.

Supervising the operation and application of safety protection articles for operators.

Participating in investigation, treatment, prevention and control of accident organized by the ministry. Supervising technology department and other relevant departments formulate

corrective and preventive measures for hidden danger, and supervising that timely rectifying and eliminating the hidden accidents in safety production.

Participating in regular safety inspections, special inspection and renovation of safety production organized by the project department, and adhere to inspect routine.

Familiar with the contents of the emergency rescue plan for the production safety accidents.

Participating in the drilling and evaluating the emergency rescue plans, and rescuing the casualties on-site.

Reporting production safety accidents truthfully on time. Cooperating with the accident investigation team to conduct, invest, analysis the cause of the accident, and urging the implementation of the correcting preventive actions.

Putting forward to commend and reward the persons who perform well in the technology advanced, creating standard site, preventing accident; Criticizing, fining the persons who violating in command, labor discipline and other actors. And having the right to leapfrog report.

Establishing and improving the safety management data of projects under constructing, and timely reporting the safety statistics.

Completing the other work ordered by leader.

e) Health, Safety and Security Officer

HSE officer is responsible for executions of Safety plan/ Policy/SOP

He is responsible manage all safety issue of the facility

Co-ordinate with Management.

Perform the responsibilities mentioned under Middle management responsibilities

Safety Management Meeting (SMM)

Proper documentation of Safety activities and Reporting (Daily, Monthly and Quarterly)

Accident & Incident Investigation Report and near miss reporting

Hazards Identification and Risk assessment (HIRA)

Safety Observation Tour (SOT)

Communication with site Personnel

Safety Open Meeting, Toolbox Meeting

To ensure safety procedures at all the areas.

To ensure Training and Awareness for safety procedures for all dept. /section.

To ensure record and documentation for safety.

Daily safety monitoring activities.

Training & Orientation on safety activities.

f) Environmental Specialist:

Preparation and timely updating of the "Environmental Management Implementation Work Schedules (EMWS).

Implement the environmental and imitative and monitoring tasks defined in the EMP, pursuant to (Technical Specification Subsection H: Env. Safeguards of the Main Contract between Client and RHD).

Conduct coordination cum training, workshop/meeting with participants from BR, ADB's SPS (2009) and DoE's environmental safeguard requirements and implementation of the EMP.

Execute al the works and services relating to EMP credibly on behalf of the Client on timely manner to fulfill the obligations/ requirements of the Main Contract and in doing so complete the imitative and monitoring checklists;

Arrange disclosure of Environmental issues and group focused consultation during construction;

Assist environmental monitoring team of ENRAC to conduct air quality, noise measurement, surface water quality, and groundwater quality monitoring, testing and analysis etc.

Address diligently and promptly all the issues relating to Environmental Specifications\ BoQ items.

Protect Client Interest and shall respond to the requests of the client for resolving the issue(s) that may arise during the implementation of EMP as well as for fulfilling the object of this agreement;

Shall attend all environmental safeguard briefings and training sessions undertaken by the appropriate authorities

Prepare Environmental Monitoring report, Quarterly report, Due Diligence report, Semi-annual/Annual report, and other reports as instructed.

Field visit to monitor environmental safeguard and reporting purposes report to higher authorities if any noncompliance issues found in the field level to take necessary measures.

g) Safety & Security Inspector/ supervisor

Ensure Open / Close of all Gate/door as per timing given in check list.

All those vehicles come after the general duty hours which has the permission of authorities, record the weight in the system and obtain permission of shift in charge to allow the vehicle inside / outside.

Register in respect of attendance of SECURITY to be produced to Security officer / admin officer.

Housekeeping, Gardener / Contract worker are to be entered in respective register and obtain signature before allowing inside.

Do not allow the visitors less than 18 years inside the project/premises.

Contractor's tools are to be accounted by raising returnable gate pass and clear the same after through checking while returning.

Attend all the telephone calls and note down messages if any and intimate to concern person.

Do not give residence telephone numbers of any staff / Managers of company to outsiders.

Visitors are to be allowed only if they have prior appointment with concerned individual. If not ask the concern person, obtain permission and allow inside with visitor pass.

Visitors / Workers / Managers are to be informed to switch off their mobile phones inside the base camp premises.

Medical Officer:

To ensure good standard of medical care - preventive, curative and promotive

To ensure compliance with statutory regulations and maintain the required records

To handle First Aid and Emergencies arising out of accident, sickness etc.

To ensure smooth functioning of the Rural Health Centers in nearby villages

Liaison with Hospitals and Specialists for conducting periodical health camps

Pre-employment and periodical Medical Examinations for employees and Sub-contractors

Promoting Occupational Health and Hygiene

Maintenance and Administration of Occupational Health Center

To conduct periodic training programs on First Aid, General health & hygiene.

Coordination of HIV test program.

Medical Assistant

Report to clinical coordinator or practice administrator

Perform nursing procedures under supervision of physician or physician assistant

Assist physician and physician assistant in exam rooms

Escort patients to exam rooms, interviews patients, measure vital signs, including weight, blood pressure, pulse, temperature, and document all information in patient's chart

Give instructions to patients as instructed by physician or physician assistant

Ensure all related reports, labs and information is filed is available in patients' medical records.

Keep exam rooms stocked with adequate medical supplies, maintain instruments, prepare sterilization as required

Take telephone messages and provide feedback and answers to patient/ physician/ pharmacy calls

Maintain all logs and required checks (i.e. refrigerator temperatures, emergency medications, expired medications, oxygen, cold sterilization fluid change, etc.)

All other duties as assigned by the management.

3.3 Health and Safety Communication Method

CONTRACTOR Management shall ensure and be responsible for the arrangement of Safety Meeting which is to be regularly conducted at site and on the assurance of following and implementing Communication procedures.

3.4 Health and Safety Meeting – Communications

As part of the communication and availability of Safety-related Documents, CONTRACTOR shall comply with the Engineer's requirements so far as displaying in each of its site offices, workshops and canteens a copy of such safety and industry health posters and keeping on the Site copies of such regulations and documents. All regulations and documents shall be translated into languages which are understood by the workers and operators engaged by our Contractor or subcontractors and such translations shall be displayed or kept alongside those in Bengali and English languages.

All internal and external HSE communications, participation and consultation on the project shall be managed in accordance with CONTRACTOR Integrated Management System (IMS) procedure Communication, Participation & Consultation and comply with all local codes and regulations.

The following table lists the various modes that will be used for the internal communication of pertinent H&S information across all levels to project stakeholders, employees and workers. The chairperson shall ensure relevant records of the meeting e.g. Minutes of meeting, is documented and maintained.

Description	Frequency	Chaired by	Participants
Tool Box Meeting/Pre-Task Briefing	Daily	Safety Supervisor/ Work Supervisor	Workers
Risk Assessment/SWP Briefing	As required, just before prior to start of work at beginning	Task owner	Supervisors, Workers
Site Coordination Meeting	Weekly	Project Manager/ Construction Manager	Project Team members, Contractor, Representatives
Safety Patrol Inspection	Weekly	Safety Manager	Nominated Project Team Members, Subcontractors Management.
H&S Committee Meeting	Monthly	Project Manager	Nominated Project Team Members, Subcontractors

CONTRACTOR staff, Client, Subcontractors and other involved parties may put forth their H&S concerns, issues or suggestions for improvement through the Safety Observation program or at any of the meetings above. The Project Manager and Project Health & Safety Manager or Safety Officer (SO) shall be responsible to ensure the prompt closure of all issues and concerns raised with immediate corrective actions implemented.

3.5 Health and Safety Committee Meeting

Contractor Health, Safety and Environmental Meeting (HSE Meeting) will be held on monthly basis. A team shall be formed which is known as Environmental, Health and Safety Committee. The attendees for this meeting shall be the Project Manager, Deputy Project Manager, Construction Manager, Safety Manager and relevant staff with the agenda of this meeting but not limited to, as follows:

- Health and Safety Policy/Program review;
- Summary of monthly health and safety report;
- Monthly safety inspection;
- Any other matters related to Health and Safety.

3.6 Induction and Training Programmer

The Contractor shall take all reasonable steps including training and drills to ensure the safety of all persons on the Site, and shall at all times promote the merits of safety awareness. No worker shall be allowed to access the Site unless they have undergone an induction course prepared by the Contractor. Participants who successfully complete such a course shall be presented with a laminated card and lanyard, indicating their authority to enter the site, such card being prominently displayed for the period that the holder is on site.

Training is one of the most important ways to ensure that the workers are capable and effective in maintaining a safe and healthy work environment. All workers (including casual, hired and trained workers), supervisors, engineers, sub-contractors, visitor will be inducted in this training.

3.7 Training and Record Keeping

Contractor will provide Induction Training for all new employees.

Workers shall be trained so that they can apply systems of work and work practices that are safe and without risk to health.

Contractor shall make sure that all employees have been adequately trained and instructed to perform their work safely before allowing them to commence construction work.

Contractor will conduct training on monthly/quarterly basis to made aware of any

Dangers involved with their work and safety precautions that need to be taken to avoid accident or injury.

3.8 General Health and Safety Induction Training

The objective of a general health and safety induction course is to familiarize worker with basic principles of health and safety in the construction industry to assist in the prevention of injury and illness at work. This training be provided in the form of a documented training course. After conducting the training an induction register will be maintained.

3.9 Work Activity-Based Health and Safety Induction Training

The objective of Work Activity-based health and safety induction in the highway sector is to give

workers knowledge of the OHS issues relevant to highway construction and maintenance. If this training is conducted as a training course, where the employer has 10 or more employees it shall be developed by a person who holds a 'Certificate of HIV in Workplace Assessment and Training' and be run by a person who has Statement of Attainment in 'Train Small Groups'.

3.10 Emergency Response Training

Regular training in the form of drills and exercises will be conducted by the Emergency teams will be conducted at regular intervals. These drills will be designed to test the knowledge and understanding of the training undertaken and its application to the varying environments within the site.

The drills will cover the training elements i.e. Fire Rescue, Rescue from Height & Medical Emergency etc. relevant to the extent of their initial training and the risks identified within the location. For each drill a scenario will be developed that clearly identifies the drill objective, including but not limited to; team working, equipment, interfaces, communication and response items. A series of exercises will be defined to test each element of the management control aspects of the emergency response arrangements.

4.0 Tool Box Meeting / Pre-Task Briefing

Tool Box Meeting / Pre-Task Briefing will be conducted by Safety officer and Safety Supervisors (Subcontractors' staff) on a regular basis such as daily or weekly basis which will be decided later to suit the working site conditions. This meeting is to address the safety related matters with the workers with regular reminders on safety issues related to the work in-progress throughout the construction period. These issues will be raised or identified during the safety inspections and reminded at the Tool Box Meetings. Safety Manager will prepare the items for these Tool Box Meetings. Section Managers/Site Engineers will take the necessary action for those issues mentioned at these Tool Box Meetings to ensure conformity of such issues are carried out. (Refer to Appendix-HSEP-01)

4.1 Records

Contractor shall keep a record of any induction training undertaken for each person carrying out construction work on the project, until the project is completed.

4.2 Training Matrix

Employee training is a key component of any safety program. The matrix provides guidance for supervisors to identify employee training requirements. An employee shall have training to do their job safely. People engaged in duties and those are in potentially hazardous condition shall be provided appropriate information in advance. More detailed training assessment tool shall be found in the IIPP (Injury and Illness Prevention Program) shown in training matrix below. Any time the duties, equipment and/or processes change, the employee shall receive updated training). Training shall be documented and records shall be kept for a minimum of three years. Training matrix has been added, but not limited to following:

Supervisors shall ensure that all employees receive general and job-specific training prior to initial or new job assignments. In addition, training is required:

Whenever new substances, processes, procedures or equipment are introduced to the workplace which may create new hazards.

Then new or previously unrecognized hazards are introducing in to the work environment or brought to a supervisor's attention

When an employee cannot demonstrate adequate understanding of the safety requirements of a task.

All training shall be documented and kept in HSE department files for a minimum of three years.

4.3 Hazards Identification & Risk Assessment

Contractor shall provide a Risk Assessment and Management Program in all major activities, and it shall be attached in the Work Method Statements and submitted to the Engineer prior to the commencement of construction works. The following matters shall be included in the Risk Assessment and Management program:

- Identifications of Hazards
- Hazard Effect
- Risk Ranking
- Mitigation Measures
- Recovery Measures

4.4 Method, Risk Analysis/Assessment

A risk assessment team will be formed, headed by the Project Manager and Deputy Project Manager to ensure all hazards are identified and mitigated. Members of the risk assessment team will be Contractor personnel who will prepare the Risk Assessment and this will be included in method statement of specific activities. This will be prepared by our qualified, experienced, knowledgeable and competent personnel.

4.5 Risk Assessment Methodology

For a proper risk evaluation, it is first of all necessary to identify, in the working places, the sources of hazard and the resources (people, property, etc.) exposed to the hazard resulting from the same sources. For each operational phase and before assessing the risk, all hazards and exposed subjects are identified. For each source of identified danger, the numeric factors (P) and (S) are calculated with the assistance of the Tables 1 & 2.

= Probability / Likelihood the event occurs, - (S) = Severity / Seriousness of the event. The numerical value of risk (R) is calculated as the product of the factor's "P" and "S".

$$R = P \times S$$

Is compared with the values exposed in Table 3. If the numerical value falls within the green fields, the risk may be considered acceptable; in all other cases (yellow and red fields), preventive and/or protective measures must be planned to reduce the risk value to an acceptable level (green field).

The numerical value of the risk (R) and the identified preventive and protective measures are included in the risk's evaluation form.

S 5	Very serious effects	Fatal accident or multiple major injuries. Public or others could be Involved as well.
S 4	Serious effects	Major injury, long term absence. Major damage, serious Environmental impact.
S 3	Moderate effects	Reportable injury to the HSE with over three days' time lost, but Not a major injury. Substantial property damage or something Causing environmental damage.
S 2	Slight effects	Minor injury. Less than three days' work time lost. Property damage more than just minor likely to happen, and would not be Totally unexpected.

S 1	No relevant affects	No injury. It would be a 'near miss'. Minor property damage.
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Table 2: Likelihood an Event Occurs

Numeric Value	State of Occurrence	Description of likelihood of injury to workers
P 5	Frequent	It is certain to happen
P 4	Very probable	It is very likely to happen, and would not be at all unusual
P 3	Probable	Likely to happen, and would not be totally unexpected
P 2	Possible	Unlikely to happen, but not by any means impossible
P 1	Improbable	Very unlikely to happen

Risk Assessment = Seriousness X Likelihoods

Table of Risk Evaluation R = S X P		LIKELIHOOD THE EVENT OCCURS				
		Improbable =1	Possible =2	Probable =3	Very probable =4	Frequent =5
Seriousness of Events	Very serious effects = 5	5	10	15	20	25
	Serious effects = 4	4	8	12	16	20
		3	6	9	12	15
	Moderate effects = 3	3	6	9	12	15
	Slight effects = 2	2	4	6	8	10
		1	2	3	4	5
No relevant effects = 1	1	2	3	4	5	

Table 4: Acceptability Table of Resulting Risk, R = Probability X Seriousness

Risk level	Description	Timeframe
R ≥ 16	VERY HIGH RISK Risks with a rating above 16 are totally unacceptable and the work will not be undertaken until the risk has been reduced	Immediate actions must be taken before work starts or relevant work permit is granted
10 ≤ R ≤ 15	HIGH RISK The risk is unacceptable, immediate action must be taken, including a stoppage of work if necessary, to reduce the risk level	Immediate action must be taken, including a Stoppage of work if necessary, to reduce the risk level.
5 ≤ R ≤ 9	MEDIUM RISK The risk is acceptable provided that everything reasonably practicable	Necessary controls and actions must be developed as soon as

Risk level	Description	Timeframe
	has been done to reduce the risk.	possible
R ≤ 4	LOW RISK The risk is acceptable, provided that the assessment is reviewed at regular intervals and further reduced if possible	Consider benefits of reducing risks in terms of costs

4.7 Daily Hazards Management

Control Measures: All potential hazards related to the construction operations to be performed by Contractor shall be systematically identified, the risks assessed and appropriate controls and actions implemented by:

Developing and maintaining hazard identification and risk assessment procedures and criteria. Individuating parameters which need personal exposure monitoring / health surveillance. Identifying hazards and risks and eliminating or controlling / reducing them to a level which can be accepted according to the CONTRACTOR risk acceptability criteria and as low as reasonably practicable implementing the relevant preventive / protective measures.

Identified control measures shall be implemented following the hierarchy known as ESEAP. "ESEAP" means-

Elimination: remove the hazard

Substitution: replace the hazardous activity, material, equipment with a less hazardous

Engineering: controls relevant to the design of work environment design and planning, e. g. design of proper work areas (handrails, illumination, etc.), moving parts' guards, noise abatement enclosures and screens, etc.

Administrative: procedures, training, PTW, etc.

PPE: personal protective equipment is used only to face the residual risk, after having implemented the control measures having a higher priority as per ESEAP hierarchy.

Systematically reviewing all operations to identify hazards and risks. Reporting the process of hazard identification, risk assessment, selection of controls and records of implementation.

Each subcontractor involved in the Contractor project shall develop its own risk assessment and will be responsible for its implementation. These risk assessments will be examined by the Contractor to make sure that they are properly done in accordance with general method statements and to check their implementation. The purpose of risk management is to identify hazards, eliminate or control them and mitigate the residual risk. The process combines management oversight and engineering analyses to provide a comprehensive, systematic approach to managing the system risks.

4.7 Hazard Analysis

The completion of a Job Hazard Analysis (JHA) is required to verify that hazards and risks associated with a specific task are identified and appropriate controls are implemented prior to execution of the task. All hazards identified must be prioritized. The JHA must be communicated to all workers involved with the task prior to the start of the task. The Contractor will be responsible for the development of JHA's for all hazardous at DCRP Lot 2 work. The Contractors' subcontractor will be responsible to develop their own JHA's or safe work procedure for any work in their scope that is hazardous and/or complex. (Refer to Appendix-HSEP-08)

Workplace Safety and Health Audit

In compliance with workplace safety and health regulations, Contractor will arrange for regular safety and health audit team at least once in a year. The audit will be conducted by an audit team formed by Engineer and Contractor the audit team will be required to develop audit

methodology including the detailed resumes of the audit team and audit checklists before commencement of any audits.

The scope of the safety audits will cover all or any of the following:

Safety and health management system of the workplace;
Any risk assessment relating to the workplace or the work carried out;
Any work process at the workplace.

4.10 Safety Inspection. In-House Safety Inspection Program

It is the responsibility of Safety Manager and his safety supervisors to conduct regular safety, health and environmental inspections to ensure that all works are carried in a safe manner and that all unsafe conditions and acts are discovered and rectified accordingly.

An effective in-house safe, health and environmental inspection program will be implemented by the relevant competent safety staffs. Checklists will be formulated to make the inspections comprehensive. These inspections will be carried out frequently as to suit the dynamic nature of the construction activities and to ensure that all work activities are effectively covered.

5.0 Safety Patrol

Site engineers/supervisors in-charge of particular work will conduct safety patrol to check any unsafe acts/conditions and, if observed, to order the relevant Subcontractors/worker to carry out immediate corrective action. The Safety Manager will establish the frequency of safety patrol to suit with the actual site requirement. He will monitor these patrols and ensure that the personnel involved carry out their Tasks responsibly and effectively. The site engineers/supervisors will submit the observation and safety reports to the Safety Manager. The Safety Manager will summarize all the safety reports and outputs from these safety patrol and submit the same together with his comments and recommendations to correct the reported unsafe acts/condition to the Project Manager and to the relevant manager in-charge of construction activities.

5.1 Non-Conformance and Corrective Action

Control of Non-Conformance: Non-conformance is categorized into two types:

HSE (Health, Safety and Environment) System Non-conformance, which are define as deviations of systems and/or processes that are required in ISO Standards, Contract Specifications, Plans, Procedures and any other Project Management documents; and HSE Product Non-conformance, which are produced and detected during the Project execution.

HSE System Non-conformance can arise as a result of the following:

IMS (Integrated Management System) Audits;
Monitoring and measurement activities;
Internal and external communication and consultation;
Complaint from Project Stakeholders or any interested parties;
Incidents occurred at site; and
Conditions/incidents that could create significant EHS impacts/risks.

HSE Product Non-conformance can be detected by any of the following parties during the course of the Project:

CONTRACTOR HSE or Construction Team;
Contractor Internal Auditors;
Contractor Suppliers and Service Providers;
The Engineer; and
The Employer.

When non-conformance in Health & Safety Management system is detected, Non-Conformance Report (NCR) must be raised within 24 hours. The Health & Safety Manager or the responsible personnel shall update the Register of Non-conformances.

The Responsible Manager will analyze the detected non-conformance and will make proposals for the corrective and preventive measures to contain and rectify the non-conformance as well. The Section Manager will review and report the NCR together with the proposed corrective and preventive measures to the Project Manager for his approval, and the PM will report the NCR and agreed remedies to contain and rectify the non-conformance to the Engineer.

After the submission of initial fact report in the form of NCR as mentioned above, CONTRACTOR will submit to the Engineer the Corrective/Preventive Action Request (CPAR). This will serve as notice/request to the Engineer or their responsible personnel in-charge for the particular non-conformities reported. A committee meeting will then be arranged between the Engineer and Contractor to discuss in detail the nature of non-conformities, the cause root analysis, the final decision for the disposition, the corrective and remedy work(s), and finally the preventive measures to ensure the non-conformances recurrence.

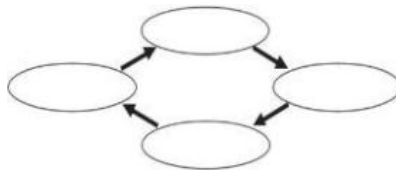
The Section Manager and Project Manager will conduct the verification and close-out of the NCR after all remedial work(s) are completed satisfactorily. The responsible personnel for the NCR shall provide sufficient and photographic evidence of the remedial work(s) to enable the Engineer to review the closing of NCR's

The NCR status will form as part of Contractor Monthly Returns and will be communicated to all concerned stakeholders to prevent recurrence. Non-conformance Reporting and Dissemination System will be utilized as tool for lessons learned for continual improvement of quality processes in general; and towards the achievements of the overall goal of QEHS in particular as mentioned in the – Project Management Objectives and Targets.

Contractor shall continually improve the effectiveness of the Quality Management System through the use of the quality policies, quality objectives, audit results, analysis of data, corrective and preventive actions and management reviews.

Contractor has been repeating the PDCA cycle again and again for continuous improvement.
Plan

Action Do



Check

5.2 Corrective Actions

Contractor shall take actions to eliminate the cause of nonconformities in order to prevent recurrences. Corrective actions shall be appropriate to the effects of the nonconformities encountered.

A documented procedure defines requirements for:

Reviewing non-conformities (including the Employer's complaints);

Determining the causes of nonconformities;

Evaluating the need for action to ensure that nonconformities will not recur;

Determining and implementing action needed;

Records of the results of action taken;

Reviewing corrective action taken and verifying its effectiveness.

The model of a process-based quality management system shown in Figure-1 illustrates the process linkages. This illustration shows that Employer's play a significant role in defining requirements as inputs. Monitoring of its satisfaction requires the evaluation of information relating to Employer perception as to whether the Contractor has met the Employer's

requirements.

Key:

- ▶ Value-adding activities
- ▶ Information flow

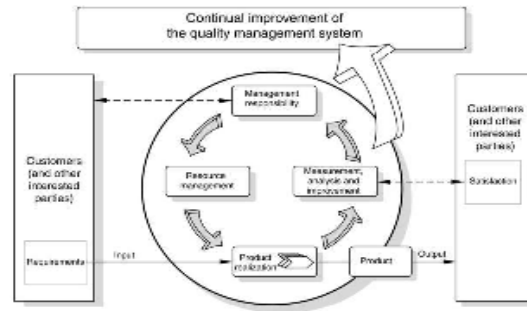


Figure-1: Model of a process-based quality management system

In addition, for accomplishment of QMS the methodology known as Plan-Do-Check-Act (PDCA) shall be applied to all processes. PDCA could be briefly described as follows.

Plan: To establish the objectives and processes necessary to deliver results in accordance with customer requirements and the organization's policies.

Do: To implement the processes.

Check: To monitor and measure processes and product against policies, objectives and requirements for the product and report the results.

Act: To take actions to continually improve process performance.

5.3 Management Review

The Contractor management will monitor and control the objectives and targets set for the health and safety audit and inspection procedures with the management program which will be updated later with analysis. This review of system will enable the site to improve continuously during the construction period. Audit findings will indicate areas that are good and areas that may need some improvement. Action plans will be developed based on the Audit findings. Follow up actions will be conducted to ensure that the improvement of Non-conformity.

5.4 Health and Safety Files and Records

CONTRACTOR will keep a record of any audit, training, monthly reports and safety inspection on the project,

Until the project is completed. Such as:
Health, Safety & Environment (HSE) Plan
Traffic Management (TMP) Plan
Environment Reports-

Monthly Report, Quarterly Report, Semi-Annual and Annual Report
HIV/AIDS Awareness program Reports-Monthly Report, Quarterly Report
RFIW
Training Records
Incident Records

5.5 Accident/Incident, Near Misses, Dangerous Occurrence Reporting Procedures

5.6 Incident Reporting

The Contractor shall responsible for reporting certain types of accidents under the law of RIDDOR (Reporting of Injuries, Diseases and Dangerous Occurrences Regulations), 2013.

The work-related accident which causes death, serious/major injury (Ref- specified injuries' in

RIDDOR 2013). The specified injury to workers, occupational diseases, carcinogens, mutagens, biological agents, dangerous occurrences shall be reported to the consultant engineers. In the event of a Health & Safety or Environmental Accident/Incident, the following immediate action/steps will be followed:

Contractor Supervisor/representative will;

ensure to stop the work immediately,
ensure the area shall be cordoned off, the access shall be restricted, the electricity shall be isolated

prompt and appropriate action shall be taken to call emergency team/emergency services, firefighting services, first aider to provide the first aid, and ambulance shall be arranged if medical treatment required,

secure the site and protect any injured person(s) from further injury,
notify and liaise with the company Environment, Health and Safety Representative and line management in relation to the incident,

follow the instruction of HSE team and act accordingly,
will stay close with the safety team for further assistance,
list out the workers in affected areas.

5.7 Notification of Reportable Incident/Accident

In case of any reportable incident/accident the Contractor shall notify the Consultant Team Leader, Deputy Team Leader and Resident Health and Safety Expert within 02 hours by SMS and Contractor will submit the Incident/Accident report within 48 hours by writing. The incident investigation report shall be submitted within 10 days. In case the incident/accident investigation report not possible to submit within 10 days, the Contractor should notify this to the Engineers in writing. The complete detailed report will be submitted by Contractor the Employer/the Engineer within 48 hours with the form attached in Appendices (Refer to Appendix-HSEP-04).

5.8 Incident Investigation

The Contractor shall conduct Incident investigations for all reported incidents / accidents to identify the root causes.

The followings shall be considered to be included in the procedures.

Proceed to scene where an incident / accident has been reported;

Assess the condition of the affected area before proceeding with investigation;

Remove injured worker(s) from dangers based on the above assessment;

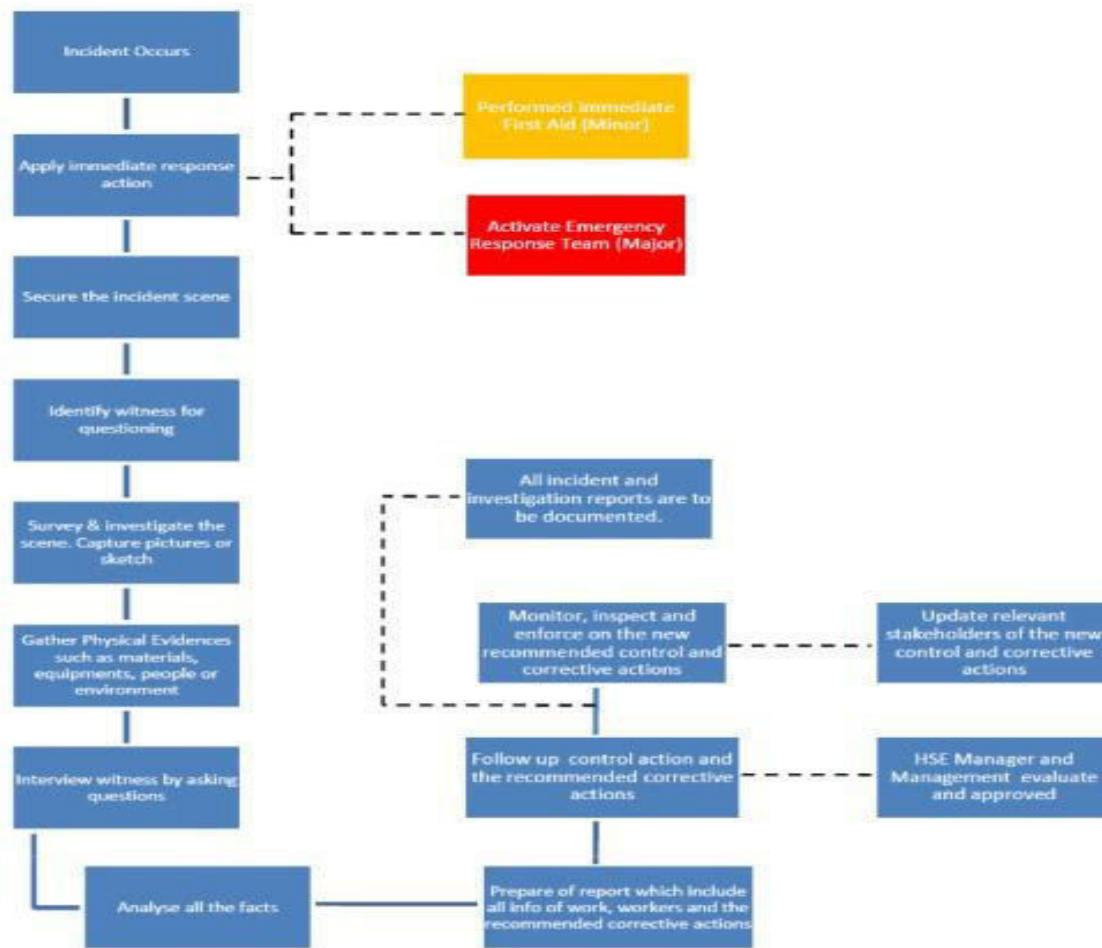
Identify potential witnesses before proceeding to interview them;

Inspect machinery, equipment and affected structure if situation permits;

Record all evidences including facts and materials, machinery and equipment involved;

Photographs should be taken as evidence whenever possible
Analyze control and prevention measures.

Incident Investigation Flowchart



5.9 Corrective Action

This Incident / Accident Investigation & Reporting Procedure are only effective when effective corrective action(s) are implemented in accordance with the control and prevention measures recommended by the Investigation Team. The Contractor project management and safety team shall be responsible for overseeing the corrective action(s) is effectively implemented within the stipulated time and that such corrective action(s) are communicated to all employees working in the Project Site and as it congregates on the status of such implementation shall be reported to the Engineer regularly.

Injured person shall be responsible to report the injuries to their immediate Section Managers/Site Engineers and Safety Officers as soon as possible. If injured person is unable to do the reporting, then the immediate superior has to do the reporting task. The respective Supervisor shall decline any report submitted by another person instead of the injured person unless circumstances do not permit him/her to do so.

5.10 First Aid Kits/Boxes

Well stocked First-Aid kit(s) for employee use will be maintained.

The basic inventory of each first aid kit must be approved by the company Medical officer/doctor. This approval shall be initiated and record maintained by these kits will be located so as to allow easy and quick access. First-aid kits and required contents are to be maintained in a serviceable condition.

All items which must be kept sterile, must be individually wrapped and sealed. Items such as scissors, tweezers, tubes of ointments with caps, or rolls of adhesive tape, need not be individually wrapped, sealed, or disposed of after a single use or application.

The first-aid supplies are to remain easily accessible. Each kit is to be regularly inspected.

Contents of the first-aid kit should at least include:

1 box Adhesive Bandages (50, 3/4" strips)

1 box Antibiotic Ointment (6 foil packets)

1 box Cold Pack

1 box Gauze Bandages (2" strips)

2 boxes Gauze Pads (4, 3" x 3" pads)

1 box Medical Gloves (2 pair)

1 box Rescue Blanket (Reflective Type)

1 box Scissors & Forceps

2 boxes Triangular Bandages

1 box Wound Wipes (Antibacterial)

1 box Pocket Mask (with one-way valve)

2 pigs Combine Dressings (8 x 12, 2 each)

1 box Adhesive Tape (2-1/2" rolls)

Any other equipment advice by medical officer

Some pain tablet.

First-Aid Response: If any employee is injured and needs first aid or medical attention, contact one of the first-aid certified employees. Only certified first-aid trained employees should administer first-aid. First-aid supplies are maintained in first-aid kits throughout the facility.

Medical Attention: It is the intent to provide immediate and appropriate care for an injured employee. The protocol for the care of an employee in need of medical attention is as follows:

Any minor injury first aid will be provided by medical officer or first aiders.

Any major injury preliminary treatment provided by medical officer and immediately transfers to nearest hospital by standby ambulance.



6.0 Health Surveillance

Sometimes workers' health shall be protected by checking for early signs of illness. Such surveillance is a duty in a restricted range of cases for work involving some health risks such as asbestos. Surveillance shall be appropriate in other cases, such as for workers regularly engaged in blast-cleaning surfaces containing silica, or where workers are exposed to high levels of noise or hand-arm vibration, especially for long periods.

Where appropriate, arrangements shall be made for workers to have regular examinations by an occupational health professional to detect early signs of skin complaints, such as dermatitis. In addition, workers shall be encouraged to carry out 'self-checks' and report skin irritations to their supervisor at an early stage.

6.1 Sanitation, Hygiene and Welfare provision

Contractor shall develop and establish Housekeeping, Sanitation and Hygiene Plan (HSHP) to minimize any safety and health hazards associated with ineffective housekeeping, sanitation and hygiene measures during construction. This Plan applies to all construction activities and areas, including the construction site, workshops, warehouses, offices, camps, tank farm, roads and common areas. Contractor shall check that this Housekeeping, Sanitation and Hygiene Plan (HSHP) shall be thoroughly communicated to all relevant personnel during all construction phases of the Project, and this Plan is strictly observed and complied with by the contractor and our employees to ensure compliance with applicable laws, legislation, regulations and requirements of Bangladesh.

This Plan includes, but is not limited to, the following issues:

General Housekeeping and Site Cleanliness;
 Dust Control;
 Waste Management;
 Washing Facilities;
 Sewage Treatment;
 Water Supply;
 Pest Management;
 Rest Areas



Sanitary Conveniences:

Adequate numbers of toilets shall be provided for people working on the site. Toilets shall be flushed by water and connected to a mains drainage system. If this is not possible, toilets with a built-in water supply and drainage tank shall be provided. Men and women shall use the separate toilet, A washbasin with water, soap and towels or dryers shall be located close to the toilets.

Sanitary Conveniences:

Adequate numbers of toilets shall be provided for people working on the site. Toilets shall be flushed by water and connected to a mains drainage system. If this is not possible, toilets with a built-in water supply and drainage tank shall be provided. Men and women shall use the separate toilet, A washbasin with water, soap and towels or dryers shall be located close to the toilets.

Hand Hygiene:

A significant prognosis exists to show that pathogens can be transferred from dirty hands of the worker to their intestine when they are consuming food. The axillae, trunk and hands are frequently colonized with potential pathogens. This is of particular relevance to chiropractic's (First Aider) who typically do not wear gloves to adjust and examine workers. Washing hands with soap and water has long been known to be an important part of personal hygiene. Human skin and mucosa harbor a variety of microorganisms. These can be divided into four categories:

Causative Organism	Intestinal Disease	Prognosis
EntamoebiaHistolytica	Amoebiasis	Bloody Diarrhoea
Giardia Lamblia	Giardiasis	Foamy Loose Motion
EnterohemorrhagicE.Coli	Travelers Dirrhoea	Violent Diarrhoea (Watery)
Bacteroides	Diverticulosis and diverticulitis	Lower Abdominal Pain

6.2 Welfare Facilities

Contractor people who shall work on any site shall have access to adequate toilet and washing facilities, a place for preparing and consuming refreshments and at defined places for storing and drying clothing and personal protective equipment.

Contractors shall make available site welfare facilities for his people

The welfare facilities shall be made sufficient for everybody who is working in oil store. They shall be kept clean, warm and properly ventilated.

Welfare facilities shall be-made easily available to people working on the site. Toilets shall be made easily accessible from where the work is being done.

Washing facilities shall be as close as possible to the toilets. Washing facilities shall be close to

canteens and rest rooms so that people can wash before eating.

Site Security

The Contractor shall be responsible for the security of the Site and for maintaining it as a safe-working environment at all times. The overall site boundary as well as the specific boundaries of the various site facilities shall be identified by Team and be submitted to the Engineer for approval, complete details of the proposed method or methods for maintaining the security of the various boundaries and for the security of the buildings, personnel, material and equipment contained therein.

The security arrangements shall include a security control system which shall consist of sufficient equipment and personnel to prevent unauthorized access and which can meet the prevailing circumstances to ensure safety and security of persons and property on the Site. Contractor shall erect and maintain at his own expense suitable and approved boundary fencing and gates to enclose all works at highway stations, bridges, accommodation compounds, and other areas of land as may be necessary to implement his obligations under the Contractor and separate and protect the area from unauthorized public access. Contractor shall prepare a register of all persons authorized to be upon the Site which shall include the Engineers and the Engineer's personnel. CONTRACTOR shall have it available for inspection by the Engineer at any reasonable time.

Site Rules

A copy of the site rules for all employees will be displayed in the notice boards and at other places. These rules will be posted in a prominent position and will be brought to the attention of all personnel on the site at induction. Any person who is in flagrant breach of these rules will not be allowed to continue working on the site.

6.5 Site Access

Visitors entering the site are required to log in and out. A visitor's book will be kept at the reception desk and it is the responsibility of the host to manage guests

6.6 Work Site Protection

The Worksite Protection Plan shall identify the site access and egress points. The Worksite Protection Plan shall also identify any pedestrian, commuter, or traffic management issues. It is the responsibility of the site supervisor to ensure controls documented in the Worksite Protection Plan are implemented.

A Safety officer will supervise the safety arrangement at the site of work. From starting to completion of the Embankment, bridge/culvert and track construction work, following safety measures will be taken by CSCEC-7:

The work site will be protected by temporary demarcation marks (red tape inking) to keep intruders out of the work area.

A team of security personnel will be deputed at work site with whistles and hand mikes. They will warn people by blowing whistles and announcements using hand mikes to keep clear of the work site. They will also safeguard the construction materials (new and released) against theft/pilferage.

All site supervisors and staff of will undergo a short training course on "safe working procedure" before they are allowed to work at the site. Safety Officer of the Project will arrange the training. The site supervisors and staff of the Project will be provided with helmets, safety jackets, hand gloves, safety shoes, spectacles etc. as necessary.

Precautions will be taken not to cause damage to existing utility lines like gas and water pipe

lines, electric or telecommunication cables etc.

A First Aid Box will be kept at the site of work for emergent medical aid to injured staff during the work.

A list of local doctors and telephone numbers and address of nearby hospitals will be prepared and kept at site for emergent medical aid to injured staff.

6.7 Other areas

Supervisors are responsible for maintaining safe access and egress in all work areas. Access and egress provisions, shall be considered in all to ensure suitability for each given situation.

6.8 Site Transport

Contractor will plan all site transport/vehicle movement to minimize the impact on the road network. Where possible, movements will be limited to the construction site, by modifying the alignment to achieve an earthworks balance and reusing materials generated by excavations to reduce the need for off-site transportation.

When on-road haulage operations are required Contractor will, for each phase of work:

- conduct a traffic analysis to determine the number of vehicle movements and assess the potential impact on the road network;
- develop a route that maximizes the use of the arterial roads and minimizes the use of local roads;
- assess the route and determine the potential impacts on existing developments / traffic generating facilities (such as schools and child care facilities, shopping centers, intersections, etc.);
- select a route that has a minimal impact, and or where the potential impacts can be effectively managed;
- as required, consult with Local Councils, road authorities and key stakeholders;
- select haulage vehicles that can safely negotiate the route;
- where possible, avoid movements during peak period
- develop a detailed VMP and toolbox all drivers;
- ensure the fleet are regularly maintained;
- maintain communication with TMC to manage vehicle breakdowns etc.;
- obtain a special permit from the TMC for oversize and over mass vehicles and loads as required by the Bangladesh Traffic Rules.

6.9 Site Signage's and Barricading, Notices, Signs, and Barricading

Relevant safety notices and signs will be prominently displayed in such a manner as to ensure both the Contractor and Engineer's personnel in the vicinity, are made aware of potential hazards.

When planned process will create a temporary hazardous condition (i.e., noise from equipment and tools, air/electric tools)

When a hazard has been identified but cannot be immediately rectified (i.e. a liquid spill which cannot be immediately mopped up). Any hazard so, signposted will also be reported immediately.

Any of the Contractor employee can signpost or barricade an area they believe to be hazardous. Once an area has been barricaded or flagged off for an unplanned hazardous condition, a supervisor shall inspect the area and authorize the removal of the barricade or

flagging when the hazard has been rectified.

The appropriate warning sign or flagging will be used to identify all potentially hazardous areas or processes, and will be promptly removed when the hazard/s no longer exists

All safety signage requirements shall be strictly followed. Other signage such as internal site signage will give information such as location of first aid kits, fire extinguishers, danger signs

The Contractor staffs are responsible for erecting signs where their activities are conducted in an area that could affect the people working in the vicinity or the public.

Consultation between the HSE officer and Supervisor using their skills and experience will determine the class of barricade based on the risks

6.10 Management of Sub-contractors

When a need arises for the engagement of the sub-contractor Contractor management will base on a list of Sub-Contractors whom the Company has maintained. Contractor management will evaluate their safety standards; either based on their previous work with the company or from reports available from elsewhere. The following sequences of events are followed to the extent that each step is necessary. The contractor's site performance will be under constant surveillance by the Site Construction Manager inclusive of Health and Safety.

The varying environments matters. The detailed performance will be recorded within the Site Construction Manager's weekly report and also be discussed / observed by the Project Manager and Safety Manager or Safety Officer.

Carry out regular reviews of the sub-contractor's performance, including safety inspections of their work and adherence to the Company's rules, practices and procedures. CONTRACTOR will keep a register of the contractor's performance, including a record for safety incident involving contractors in the worksite.

7.0 Emergency Response Plan and Procedures

Plan to address contingencies associated with process upset and accidental circumstances.

They include clearly assigned responsibilities for the assessment of the degree of risk to life and property with procedures on whom to communicate different types of emergencies and how.

In an emergency, CONTRACTOR shall refer to emergency management procedures which are included in site inductions, and posted in prominent locations around all sites. Where present, a Warden is to be notified; otherwise the Site HSE Officer is responsible for directing emergency responses and evacuations. All staff and sub-contractor are required to follow such directions.

7.1 Emergency Response Equipment and Devices

Emergency response supplies and equipment allows workers to react to emergencies appropriately.

No one knows when an emergency will happen so it's important that we are ready for it.

Whether it is a cardiac arrest, someone fainting, or worse, it is ideal to keep emergency response supplies and equipment on hand for dealing with such occurrences. High traffic areas should look into investing in Cardiopulmonary Resuscitation (CPR) masks, stretchers, and maybe even some oxygen tanks to assist in reviving or stabilizing the afflicted parties.

Equipment and Devices: An emergency safety kit might include items such as ointment, bandages, tourniquet, fire starter, thermal blanket, or batteries, depending on its purpose. For example, a roadside kit might contain a fire extinguisher, reflective triangles, flashlight, blanket, toilet paper, Eye wash, chemical/oil spill kit and other relative emergency supplies.

Clinical service: It will offer emergency or urgent Primary Health Care, as well as emergency medical care and monitoring of chronic conditions.

7.2 Training, Information and Drills

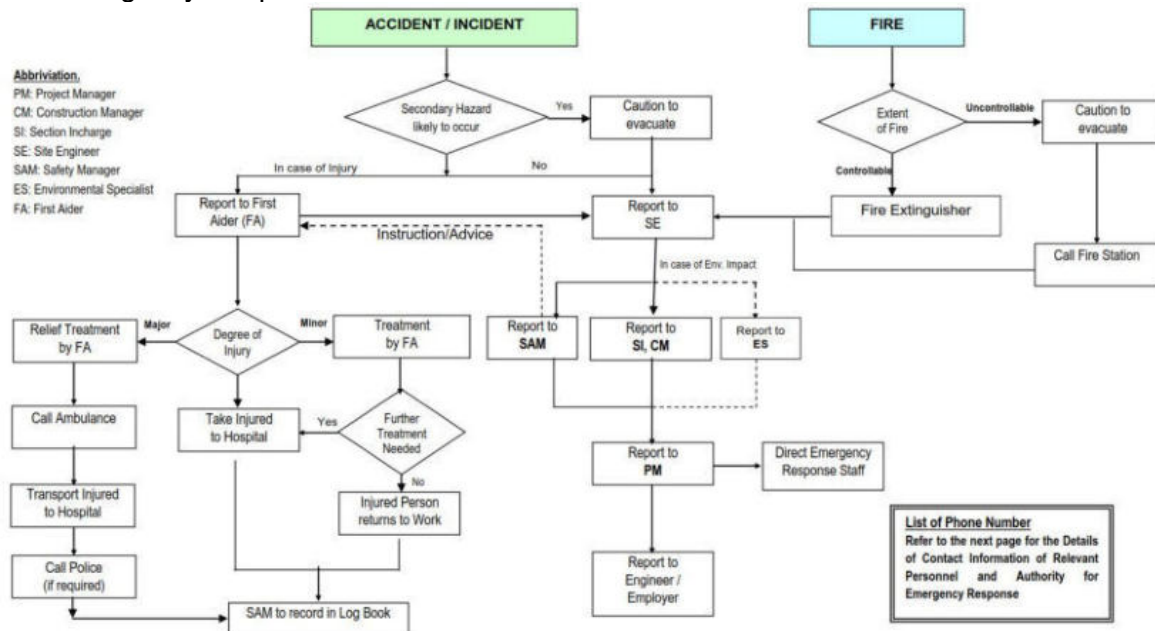
Regular training in the form of drills and exercises will be conducted by the Emergency teams will be conducted at regular intervals. These drills will be designed to test the knowledge and understanding of the training undertaken and its application to within the site

The drills will cover the training elements i.e. Fire Rescue, Rescue from Height & Medical Emergency etc. relevant to the extent of their initial training and the risks identified within the location.

For each drill a scenario will be developed that clearly identifies the drill objective, including but not limited to; team working, equipment, interfaces, communication and response items.

A series of exercises will be defined to test each element of the management control aspects of the emergency response arrangements.

7.3 Emergency Response Flow Chart



SL NO	HOSPITAL NAME	ADDRESS	CONTACT NUMBER
01	Rangpursadur	Rangpur Medical collage & hospital, Rangpursadur ,	+0521-63344
02	Rangpur Community hospital	Rangpur Community Medical collage & hospital	+0521-61113
03	MihapukurUpazaila hospital	MihanpukurUpazailahealyh complex , Durgapur , Rangpur ,	+880173 -0324712 +88017171247804
04	Royal Health city hospital	Royal Health city hospital, Durapur , Rangpur ,	+8801719409988
05	Medical college hospital (out door	Medical college hospital (out door. Ranpursadur,	+88 521-66738
06	Emergency Ambulance	Rangpur , Pourosova	+8801735679401
07	Fire service Emergency Ambulance	Emergency Ambulance, Rangpur.	+052165224

Other Emergency Numbers:

Rangpur Police Station(DSB) – +8801713373873
Rangpur RAB – 13 - + 8801718657777
Rangpur Fire Service – +8801732-707172
Rangpur D.I.G office – +52168100
Police Super, zaila :- +05216213
Rangpur D/C office :- +052162121/052162211

7.5 Role of Emergency Response Team

Incident Commander/Team Leader: CONTRACTORHSE Manager / HSE Officer will act as an Incident Commander who will lead the organizational response and serves as a liaison with outside emergency response agencies. Responsibilities include:

- Internal and external notifications
- Initial emergency procedures
- Manage ongoing internal and external communications
- Manage internal and external reporting
- Dispatch requests for assistance
- Direct ongoing emergency activities

Wardens: The Contractor wardens will assist in the evacuation of the general workforce, and direct the general workforce from their work space through the designated evacuation route to the assembly area.

Security/Search and Rescue Team: The Contractor Security/Search and Rescue Team will check that the construction site, yard and building is clear of personnel and assists in the evacuation of distressed employees. Responsibilities include:

- Search designated building areas to ensure workers has been evacuated
- Respond to distress calls and assist in evacuation
- Communicate and report to Incident Commander/Team Leader

General Workforce: The Contractor workers have one primary responsibility: safely evacuate the workplace by taking directions from the Wardens, by following the evacuation plan to reach the pre-designated assembly area and by communicating their safe exit.

7.6 Personnel Protective Equipment: The relevant mandatory safety equipment will be issued to all employees. Employees shall ensure their safety equipment is in a clean and serviceable condition. Minimum PPE requirements for projects include:

- Steel capped boots (with lace up ankle supports)
- Long pants
- Long sleeved shirt
- High Visibility Vest
- Safety helmet with brim
- Safety Gum boot

Other PPE requirements may include:

- Gloves-leather & cotton
- Sun screen and insect repellent

Sun brim and neck flap
Hearing protection
Respiratory protection dust mask
Medium impact safety glasses
Hand Gloves
Water containers

Specialist Equipment:

Welders mask and apron
Safety goggles
Rubber boots etc.
Safety Harness

Personnel with torn or defective clothing or PPE shall not perform any work, and shall report to their supervisor any defects or advise if PPE needs to be replaced.



SAFETY TOOL BOX MEETING (PPE)
PPE





7.7 Housekeeping

Housekeeping is significant aspect of daily life style and in particularly at any construction sites. The clean and tidy conditions of the construction site and all associated areas shall be ensured to minimize the potential accidents and incidents in workplace (e.g. trips, slips, fires and spills), and to avoid blockage of important emergency access.

Contractor shall guarantee that construction waste both hazardous and non-hazardous shall be properly collected and disposed daily to appropriate waste collection bins at the end of each day/shift. Flammable and combustible materials shall be properly stored in appropriate containers located in designated storage area. Spillages of oil, chemical, solvent or any other hazardous waste shall be clean up immediately and reported to the competent personnel.

7.8 Lone Working

Working alone includes all employees who may go for a period of time where they do not have direct contact with a co-worker or member of the public; when they are on their own and are not directly supervisor; and, when they cannot be seen or heard by another person.

The greatest risk in working alone is that no one is available to help a worker who may be injured, raped, or unconscious. In addition, studies have shown that workers working alone are more likely to take risks by cutting corners or not following established procedures.

The following check-in procedure has been developed and will be used on sites by Contractor workers who are assigned to work alone, or in isolation under various conditions, which present a risk of disabling injury, and establishes how they will be able to secure assistance should an injury or other misfortune occur.

NOTE: It is against the law to work alone where the work involves:

High voltage

Toxic chemicals

Confined spaces

Trenches

Lock-out/tag-out operations

Procedure: A check-in procedure should be relevant to the type and scope of the Contractor project, and should include the following:

Prepare a daily work plan so it is known where the lone worker will be and for what duration.

Identify one main person to be the contact at the site, plus a backup person.

Define under what means the lone worker will check-in and how often. (Verbal check-in via telephone, cell phone, or two-way radio and/or visual check-in by the worker, or co-worker, on a regular basis.)

Establish whether the plan is suitable for both regular business hours and after main site hours, or if it needs to be modified to suit each work period.

Set up a written log of check-ins noting the set intervals.

Have the contact person call or visit the lone worker periodically to make sure they are okay.

Develop a plan to be followed if the lone worker does not check-in when they are scheduled to.

Establish how emergency services will be able to access the workplace if it is inside a locked building.

Prior to working alone, the worker's immediate supervisor shall conduct a detailed tailgate talk, the hazards associated to the task and location, and the specific plan developed to monitor the well-being of the worker.

7.9 Driving and Traffic Safety Procedures

Contractor shall provide a Traffic Management Plan (TMP) to provide a framework describing how the Principal Contractor, Contractor will manage the traffic aspects of the project. The TMP provides the processes to ensure that the Project maintains appropriate controls to manage traffic in and around the project during the design, construction and commissioning phases of the project. Accordingly, the Contractor will:

- Ensure the safety of road users and construction traffic.
- Ensure there is a safe interface between construction traffic and local traffic.
- Eliminate the risk of injury to local traffic users and construction personnel.
- Ensure that access to adjoining properties is maintained during construction.
- Minimize traffic delays and traffic issues.

The key objective of this Traffic management plan (TMP) is to set in place a Project TMP which addresses the traffic measures required on the Project. The traffic measures to be put in place or least smooth flow of traffic so that general people are not affected due to project work. The following targets have been established for the management of traffic and access during the project:

- no increase in roadwork related crashes during construction;
- minimize impact to effective and efficient operation of the asset during construction;
- achieve an outstanding result in all functional areas; and
- implement traffic management that raises the industry standard.

Contractor shall appoint a Traffic, Health and Safety Officer at the Site, responsible for maintaining safety and protection against driving and traffic accidents. This person shall be qualified for this responsibility, and shall have the authority to issue instructions and take protective measures to prevent accidents. Throughout the execution of the works Contractor shall provide whatever is required by this person to exercise his responsibility and authority.

7.10 Plan and manage work site to minimize the number of vehicle movements

The Contractor will design ground works/landscaping to minimize the need to import fill or take spoil off site. Try to reuse spoil close to where it was excavated to reduce the distance it has to be carried.

Limit the number of vehicles on site: The CONTRACTOR will ensure:

- The Contractor will provide car and van parking for the workforce and visitors away from the work area and strictly control parking within the work area;
- The CONTRACTOR will use gates or barriers etc., to control entry into the work area and display the procedure for obtaining entry (such as a mobile phone contact number).
- The delivery vehicles to travel through site.

Plan and manage the routes on CCECC-MAX JV's site:

- The Contractor will set appropriate speed limits considering all routes under DCRP Lot 2. Sign the limits clearly and consider using physical measures to restrict speeds (such as road humps).
- Control measures for reversing vehicles: The Contractor will:

Provide drive-in/drive-out access to delivery and work areas. Contractor shall need to add extra temporary roadways to the site's permanent road system and/or delay building parts of the project to allow exit routes from dead ends.

- Ensure one-way system where roadways are narrow, or are constricted by parked vehicles or stored materials;

Design storage compounds to allow drive-through deliveries and collections; will design ground works/landscaping to minimize the need to import fill or take spoil off site. Try to reuse spoil close to where it was excavated to reduce the distance it has to be carried.

Limit the number of vehicles on site: The CSCEC-7 will ensure:

The Contractor will provide car and van parking for the workforce and visitors away from the work area and strictly control parking within the work area;
The Contractor will use gates or barriers etc., to control entry into the work area and display the procedure for obtaining entry (such as a mobile phone contact number).
The delivery vehicles to travel through site.

Plan and manage the routes on CSCEC-7 site:

The Contractor will set appropriate speed limits considering all routes under SASEC ROAD CONNRCTIVTYPROJECT- II. Sign the limits clearly and consider using physical measures to restrict speeds (such as road humps).

Control measures for reversing vehicles: The CSCEC-7 will:

Provide drive-in/drive-out access to delivery and work areas. Contractor shall need to add extra temporary roadways to the site's permanent road system and/or delay building parts of the project to allow exit routes from dead ends.

Ensure one-way system where roadways are narrow, or are constricted by parked vehicles or stored materials;

Design storage compounds to allow drive-through deliveries and collections;

Provide turning circles to allow vehicles to turn around without reversing, or provide a hammerhead or similar turning area Contractor will need to fence off any turning areas to exclude all pedestrians, and they shall be kept free from obstructions and parked vehicles;

Reverse vehicles (If any) where pedestrians cannot be excluded then Contractor will ensure that: the driver has sufficient direct vision behind the vehicle to reverse safely; or other vehicle is fitted with appropriate reversing alarms, vision aids such as mirrors ,CCTV etc.;

A trained signaller shall be used to control the maneuver.

Plan to keep pedestrians and vehicles apart: The Contractor will ensure the following in order to keep pedestrians and vehicles apart:

provide separate entry and exit gateways for vehicles and pedestrians;

provide firm, level, well-drained pedestrian walkways that are separated from vehicle routes and, as far as possible, take the most direct route (it is easier to make vehicles go the long way around);

where walkways need to cross vehicle routes, provide a clearly signed, well-lit crossing point.

Make sure both drivers and pedestrians can easily see each other as they approach the crossing and at site exits where vehicles shall have to cross the public footway, ensure that vehicles leaving site can see both ways along the footway before they need to cross it by, such as constructing the site fence on either side of the gateway of welded mesh or other materials that do not obstruct vision, or setting the gateway back from the footway and angling the site fence to allow a wide field of view. If sufficient vision cannot be achieved, then a trained signaller shall be used to control exiting vehicles.

Where vehicles and pedestrians need to share a route, or working space:

Provide separate walkways alongside the vehicle route. Make sure the walkways are wide enough so that pedestrians can pass without stepping into the roadway;

Keep walkways clear of obstructions, excavations etc. If walkways have to be blocked, provide a safe diversion;

Consider separating the walkways from the roadways by at least a waist-high fence or barrier in areas of increased risk such as: near loading bays, stockpiles, lorry unloading areas, storage areas and other places where reversing is likely to occur;

Turning areas;

High traffic routes;

Entrances and exits;

In other areas it shall be sufficient to use a raised curb or marker posts to delineate the pedestrian and vehicle routes.

Take particular care at locations where pedestrians and vehicles are forced together. These locations shall be permanent (such as gateways, bridges, ramps or gaps between buildings) or temporary, perhaps due to excavations or access equipment

Make sure that drivers and pedestrians on shared routes can see each other easily;

CONTRACTOR shall need to provide lighting after sunset or in bad weather. Pedestrians shall wear high-visibility clothing;

If it is necessary to undertake work on a vehicle route (such as repairing kerbs, accessing manholes or gullies etc.) then treat it like work on a public road. Protect the work zone with barriers and provide advance warning signs and cones that are appropriate to the type and speed of the traffic.

Signs and instructions:

To make sure that all drivers and pedestrians know and understand the routes and

Traffic rules on the site and provide induction training for drivers, workers and visitors.

To consider providing printed copies that shall be marked up as necessary to guide delivery drivers. Update the notices and provide retraining if traffic routes or rules change.

Provide standard road signs to warn, guide and instruct drivers on site. In particular, make sure that routes for delivery drivers and site visitors are clearly signed

Work areas: The risks from working plant shall be controlled:

To protect any temporary structures, such as scaffolds or false work, which shall be damaged and made unsafe if struck by a vehicle;

To protect any excavations and alongside any areas of water if vehicles shall approach close by;

To take precautions, such as stop blocks, where vehicles tip materials into excavations.

To make sure vehicles are not overloaded as it shall obstruct the driver's view and they shall become unstable, difficult to steer or the brakes shall be inadequate to stop the vehicle;

To segregate the area around plant that slews (such as 360° excavators and mobile cranes). Do not rely on the driver using mirrors, cameras etc. to check that the slewing area is clear, as their attention will typically be concentrated on the machine boom.

Park vehicles on level ground. Avoid parking or stopping any vehicle on a slope, handbrake malfunctions are a common contributor to run-away accidents;

8.0 Vehicles and Plant

The Contractor Heavy equipment or vehicle will be maintained and inspected as per manufacturers guidelines which shall include:

braking systems, including the handbrake;
seat belts, hydraulic system;
tires, including condition and pressures;
steering;
windows, windscreen washers and wipers;
mirrors, CCTV, and other vision aids.
safety devices such as interlocks or isolation devices;
warning signals;
driver protection, such as roll over protective structures (ROPS) and falling object protective structures (FOPS);
lights and indicators;
functional checks on controls;
correct location of guards and panels;
Fire-fighting equipment.

8.1 Inspection and maintenance

Construction vehicles work in harsh environments which require effective maintenance. A program of daily visual checks, regular inspections and servicing schedules shall be established according to the manufacturer's instructions and the risks associated with the use of each vehicle.

Information of all plant and equipment shall be collected from all plant hire companies, to enable it to be used and maintained safely. Vehicles shall have a maintenance log to help manage and record maintenance operations.

Drivers shall be encouraged to report defects or problems. Reported problems shall be put right quickly and if they are safety critical, the machine shall be taken out of use until they are repaired.

Training and competence:

Drivers:

Drivers shall also be trained for the safe operation of the specific machines that they are required to drive. This shall include:

Driving and operation of the controls;

Stability limits;

Limits on drivers' vision and the use of any vision aids;

Daily checks, and how to do them safely.

Drivers who are addicted by alcohol, drugs or medication shall not be permitted to drive any vehicle.

Daily briefing shall be provided to drivers to update them on any problems with traffic routes or areas where other activities shall cause difficulties.

Workforce:

Many construction workers are killed or seriously injured during lifting operations because of accidents such as:

Cranes overturning;

Material falling from hoists; and

Slinging failures.

Many more suffer long-term injury because they regularly lift or carry items that are heavy awkward to handle, such as:

Block, layers lifting dense concrete blocks;

Pavers laying slabs; and

Laborers lifting and carrying bagged products, such as cement and aggregates.

8.2 Working at Height

Work at height means work in any place, including a place at or above ground level, a person could fall a distance liable to cause personal injury. Work at height also includes obtaining access to or egress from a place of work at height.

Control measures of working at height:

This clarifies that for any work at height, precautions shall be required to prevent or minimize the risk of injury from a fall.

To prevent or minimize risk when planning for work at height, shall consider the work to be done and take a sensible risk-based approach to identify suitable precautions.

Hierarchy of control measures shall be adopted for determining how to work at height safely.

The hierarchy shall be followed systematically and only when one level is not reasonably practicable shall the next level be considered.

Where it is reasonably practicable to prevent a fall, precautions shall be taken to do so.

It shall not be acceptable to select work equipment from lower down the hierarchy (such as personal fall arrest systems such as harnesses and lanyards) in the first instance.

Control of the work shall:

To avoid work at height where if possible.

To use work equipment to prevent falls where work at height cannot be avoided;

Where the risk of a fall cannot be eliminated, use work equipment to minimize the distance and consequences of a fall shall one occur;

To consider measures that protect all those at risk, i.e. collective protection measures (scaffolds, nets, soft landing systems) before measures that only protect the individual, i.e. personal protection measures (a harness)

To ensure work is carried out only when weather conditions do not jeopardize the health and safety of the workers.

Steps to take before working at height:

To define whether any of the work shall be carried out without working at height.

Start at the top of the hierarchy to decide what equipment will provide the safest method of getting to the work area and carrying out the job.

Check that the selected equipment is suitable for the conditions on site.

Make sure that the equipment needed is delivered to site in good time and that the site has been prepared for it.

Check that the equipment is in good condition and make sure that whoever puts the equipment together is competent and knows what they are doing.

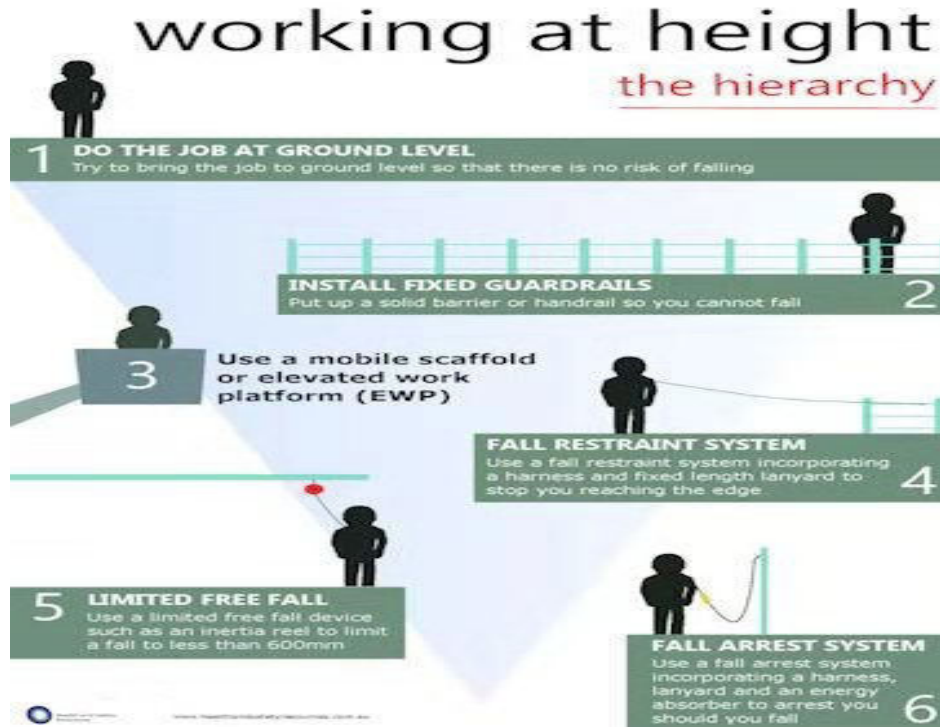
Make sure those who use the equipment are supervised so that they use it properly.

The more specialized the equipment such as boatswain's chairs and rope access equipment), the greater the degree of training and supervision required to ensure safety.

Check any equipment provided by another company is safe before using it.

Find out whom to tell if any defects need to be remedied or modifications need to, he made and

keep them informed.



8.3 Safe Working procedure of Platforms

A working platform is any surface from which work is carried out, such as a root scaffold, tower scaffold, trestle etc. It becomes a safe working platform when people can't fall off it or through it or when measures have been taken to mitigate a fall from it.

CSCEC-7 shall make sure that the working platform is:

Capable of supporting the weight of the workers using it and any materials and equipment they are likely to use or store on it;

Stable and will not overturn. For example, scaffolds usually need to tie to a supporting structure and MEWPs (mobile elevating work platform safety) shall not be operated on sloping or uneven ground;

Wide enough to allow people to pass back and forth safely and. use any requirement or material necessary for their work at that place;

Kept clear of loose materials and constructed to prevent materials from falling.

The platform shall be constructed to prevent any object that shall be used on the platform from falling through ugh gaps or holes, causing injury to people working below.

Free of openings and traps through which people's feet could pass, causing them to trip, fall or be injured in any other way; and

Keep free of tripping and slipping hazards. Keep platforms clean and tidy and do not allow materials or waste to build up on them.



Figure: Example of the safe Working Platform

8.4 General Access Scaffolds

Scaffolds shall be designed, erected, altered and dismantled by competent engineer and the work shall always be carried out under the direction of a competent supervisor. Scaffold shall always adopt methods of work to prevent falls during the erection of scaffolding. This shall be achieved by using an advanced guard rail system. Where this is not practicable, harnesses shall be worn to provide a means of fall arrest.

Scaffolds shall never be erected or dismantled over people or busy construction areas. If the work presents a danger to the public, Contractor shall apply for a road closure to eliminate the risk of a member of the public being injured. If this is not granted, erection and dismantling shall be done inside a segregated area and during the times when there are fewer members of the public in the vicinity.

Ensure the scaffold is based on a firm, level foundation. The ground or foundation shall be capable of supporting the weight of the scaffold and any loads likely to be placed on it. Watch out for voids such as basements or drains, or patches of soft ground, which could collapse when loaded. Provide extra support as necessary.

Ensure it is braced and tied into a permanent structure or otherwise stabilized. Racers only provide stability when they are braced and footed adequately; single-tube racers alone do not usually provide this and need to be braced to prevent buckling. Put ties in place as the scaffold is erected and only remove them in stages as it is struck. If a tie is removed to allow work to proceed, an equivalent tie shall be provided nearby to maintain stability. Ties shall be used within their safe working load limit. A typical scaffold assembly is shown herein below:

Before using any scaffold, shall sure that it is safe and suitable for the intended job:

- ensure platforms are fully boarded and wide enough for the work and for access (usually at least 600 mm wide);
- check that scaffold boards are properly supported and not overhanging excessively (such as no

more than four times the thickness of the board);
ensure there is safe access onto the work platforms, preferably from a staircase or ladder tower;
check that loading bays are fitted with fall protection, preferably gates, which shall be safely moved in and out of position to place materials on the platform; and
make sure the scaffold is suitable for the task before it is used and checked whenever it is substantially altered or adversely affected, such as high winds.

Guard rails, toe boards and brick guards:

Guard rails, toe boards and other similar barriers shall be provided to prevent falls whenever Practicable. They shall:

be strong and rigid enough to prevent people from falling and be able to withstand other loads likely to be placed on them. For example, guard rails fitted with brick guards need to be capable of supporting the weight of stacks of bricks which could fall against them;
be fixed to a structure or part of a structure capable of supporting them;

They include:

main guard rail at least 950 mm above any edge from which people are liable to fall; - a toe board and brick guards where there is a risk of objects rolling or being kicked off the edge of the platform; and

a sufficient number of intermediate guard rails or suitable alternatives positioned so that the unprotected gap does not exceed 470 mm.

Barriers other than guard rails and toe boards shall be used, so long as they are at least 950 mm high, secure and provide an equivalent standard of protection against falls and materials rolling or being kicked from any edges. Brick guards are designed to prevent falls of material between the gaps in the guard rails and are not intended to protect against people falling.

Therefore, brick guards shall always be used in addition to the required fall protection consisting of guard rails and toe boards or other similar barriers.

If the risk comes from falling through openings or fragile surfaces (such as roof lights or asbestos roof sheets), an alternative to guard rails or a barrier is to cover the opening or material. Any covering shall be:

Strong enough to support any loads likely to be placed on it (including the weight of a person);
and

Fixed in position to prevent accidental dislodgement. To prevent people removing coverings, mark them with a warning ('Hole below - do not remove').

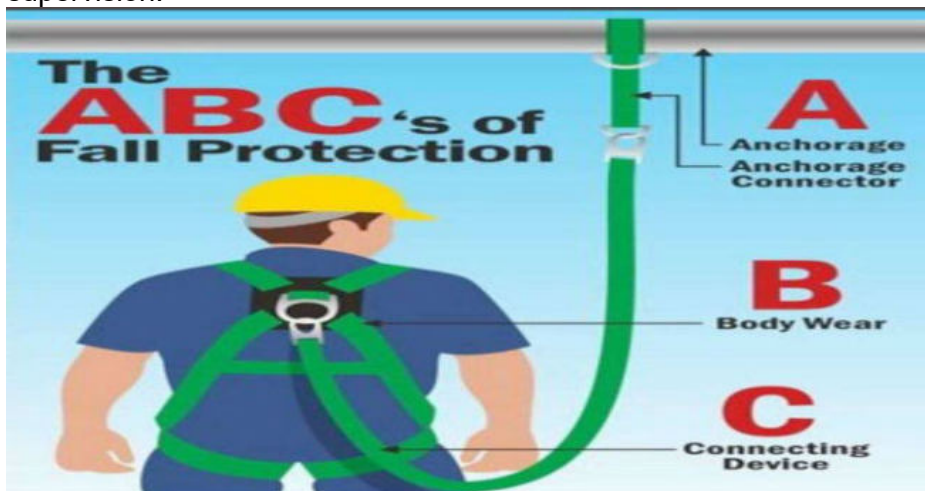


Figure: Safe Scaffolding platform
8.5 Safety Harnesses

When work at height cannot be avoided, putting measures in place to prevent falls shall always be the first consideration.

Fall-protection equipment can prevent people falling when it is used as a work-restraint system. When used: in this way, the lanyard is kept as short as possible while allowing operators to reach their place of work. This prevents them from getting into a fall position. A permanent or temporary horizontal lifeline could allow safe working. A harness can also be used as a work restraint when working from MEWPs cradles.

Harness systems shall not be used unless a suitably positioned and fully secure anchorage is specified. The use of any such system requires a high degree of training, competence and supervision.



8.6 Lifting and Rigging Safety Plan for Material Handling

Prior to job starts, it is to be decided what sort of material handling is going to be taken place and what equipment will be needed;

To avoid double handling - it increases risks and is inefficient; the following are needed:

To make sure that any equipment is delivered to the site in good time and that the site has been

prepared for it. Materials and products shall, where possible, be delivered in a form that can easily be moved around the site with minimal manual handling, such as palletized loads that shall be moved by fork-lift truck;

To ensure the equipment is set up and operated only by trained and experienced workers;

To co-ordinate site activities so that those involved in lifting operations do not endanger other workers and vice versa;

Not to stand under loads being lifted;

To arrange inspection of equipment regularly and thoroughly at relevant time periods by a competent person.

To make sure the reports of through examinations and records of inspections are kept.

8.7 Manual handling

When manual handling is necessary, to prevent injury by: Avoiding unnecessary handling before work starts, identify operations which involve either lifting heavy or awkward loads or repetitive lifting operations. It is essential to find out the weight of heavy items which shall have to be manually handled. Find ways of either:

avoiding the operation altogether; or

using lightweight materials, such as light weight curbs are available, which weigh less than 10 kg;

using mechanical aids, such as vacuum inters or grabs for kerfs and paving positioning loads by machine and planning to reduce the weight from which they have to be lifted and the distance over which they have to be carried.

setting limits on the size of commonly used products or materials, such as not requiring anyone to manually lift building blocks, curbs or paving weighing more than 20kg;

plan difficult manual lifts carefully, particularly if the load is to be shared.

training of workers in safe lifting techniques and sensible handing of loads.

Manual handling injuries occurring at work shall need to be reported to HSE under the Reporting of Injuries, Diseases and Demurrage occurrences Regulations and anyone injuring their back at work shall get early medical attention and return only gradually to handling duties.

8.8 Safe lifting depends on three key elements, which require that the operation shall be

properly planned by a competent person (also known as the 'appointed person');

appropriately supervised (by a competent 'crane supervisor'); and

carried out in a safe manner.

No lift is small enough to be left to chance. Every lift shall be planned and carried out by trained, competent people. If no one has the expertise, contract out the work to someone who does. If a lift is going to be carried out, accidents shall be avoided by appointing someone (not the crane operator) with the expertise to take charge and control the lifting operation.

Planning and preparation:

The degree of planning and preparation will depend upon the complexity of the lifting operation to be undertaken. The first step in any operation shall be to identify the risks involved by carrying out a risk assessment. The next step is to draw up a plan to show how the risks will be eliminated or controlled. Only the appointed person shall plan the lifting operation. The appointed person shall be competent in planning lifting operations as well as possessing adequate practical and theoretical knowledge and experience of lifting operations. The outcome of the planning process shall be a comprehensive and clear method statement or lift plan.

8.9 Planning for a safe lifting operation will include

Selecting the right crane for the job. It will need to be:

- able to lift the heaviest load at the required radius with capacity to spare;
- the maximum load a crane can lift decreases the further the load is from the crane, so a crane rated at 20 tons shall be needed to lift a one-ton load;
- able to get on and off the site, be assembled if required and operate within the confines of the site;
- positioning the crane in a safe place, so that:
 - o the crane operator has a clear view;
- it is well away from overhead power lines, excavations and highway lines;
- it is on level ground that can take its full weight and its load (timber packing shall be needed). Check there are no voids such as drains or basements which could collapse suddenly and that ground conditions have not been affected by the weather;
- making sure a rated capacity indicator (automatic safe load indicator) is fitted (when the crane is able to lift more than one ton) and is in good working order;
- selecting the most suitable lifting accessories (such as chains, slings, wire rope, hooks, spreader beams etc.) and method of slinging (choker sling, double wrap, cradle sling etc.) relative to the weight, shape, center of gravity, lifting points and load stability;
- checking that the crane and any lifting accessories have a current thorough examination report;
- making sure the crane supervisor, crane operator, slinger and signaler are trained and experienced by asking for evidence to be produced.

8.10 Supervising the lift

Every lifting operation shall be appropriately supervised to ensure that the lifting plan is distributed, understood and followed and that the work is being carried out safely the supervision required shall be proportionate to the risk and the level of experience of the personnel involved. The supervisor shall be someone other than the crane operator. Supervisors shall have received sufficient training and be competent to supervise the operation.

A supervisor shall:

- direct and supervise the work;
- be fully briefed on the safe system of work described in the lift plan;
- be able to identify any problems either arising from changed site conditions or occurring while the lifting operation is in progress and have the authority to stop the operation until guidance shall be provided by the person who planned the lift;
- be capable of giving clear, unambiguous instructions to all the members of the team.



Carrying out the lift/lifting operation:

Lifting operations shall be carried out by following the lifting plan under the supervision of a lifting supervisor, who controls the competent/trained team (crane operator, stinger, signaler, worker etc.) and who can stop the lift at any time shall they consider the lift to be unsafe. The crane operator must be competent and valid license holders. When carrying out any lift make sure:

all those involved in the lift know their role and understand who is in control of the operation.

load routes are established to avoid loads being lifted over people;

the load is properly slung by a competent person. Ensure the chains and slings are of the correct strength and are in good condition. Chains and slings shall be damaged by the load, so packing could be necessary. The Centre of gravity of the load shall not be in the middle of the load (this is very common with pieces of plant), causing it to shift or slip out of its slings when it is raised. It is important that loads are slung so that they are in balance with their Centre of gravity beneath the hook;

a competent banks man or signaler is provided if the driver's view is restricted;

there is adequate clearance so that people are not struck or trapped by the load, counterweight or body of the crane. If traps are unavoidable, fence them off;

where necessary, tag lines are used to guide loads, such as in windy conditions or on large loads;

if the site team cannot complete the lift as planned, the appointed person shall be consulted before the plan is changed before the plan is changed.

9.0 Hot-Work

Welding:

Welding machines shall not be placed directly on the ground and must be kept in dry condition; Welding machines shall be placed at level surface and secured with a suitable wedge to keep them in a horizontal position;

All electric welding machines shall be effectively grounded. The ground lead for the welding machines shall be mechanically strong and electrically adequate for the service required;

Approved connectors shall be used to connect the welding cable between the welding machine and electrode holder;
 Only electrode holders that have passed the inspection shall be used;
 Welder has to leave the work site whenever his welding work is suspended. He has to turn-off the power and disconnects the welding rod from the holder;
 All personnel located within 30m at electric welding operations shall be screened from the welding flash.

Safe welding work PPE



9.1 Fire Prevention/Control Plan:

Where hot work is to be conducted in an area with surrounding bush land or scrubland, extreme care shall be taken. Controls shall be in place to prevent sparks and hot material contacting combustible material prior to the ignition source occurring. Controls in the form of welding and spark containment enclosures erected and an appropriate number/type of fire extinguishers shall be available.

Where the risk assessment determines the use of a fire watch person this person shall be dedicated to the watching role fulltime during hot work activity. Potentially hazardous processes which have the potential to cause fire include, welding, brazing, gas cutting, soldering and heat-shrinking via gas flame. In undertaking their works, the C Contractor will ensure:

Combustible materials (e.g. paint, gas, fuels, glues, solvents, chemicals, timber etc.) are removed or protected from potential sources of ignition. Work areas are to be kept clean of combustible materials as part of the regular housekeeping process

Flammable liquids are stored in accordance with relevant Acts and Regulations

That appropriate firefighting equipment is located in each temporary site building (e.g. offices, crib sheds, storerooms), on every item of mobile plant, and all other appropriate locations

All firefighting equipment is to undergo routine inspections and any faults rectified

In the event of a bush/grass fire, the Contractor personnel will attempt to control the situation if safe to do so, until the arrival of emergency services.

Fire Emergency Plan: If a fire is reported, pull the fire alarm (if available and not already activated), inform through mobile to immediate responsible rescue team/ persons, to warn

occupants to evacuate. Then Dial to alert Fire Department. Provide the following information:

Work place name and work location- address

Nature of fire

Fire location (building and floor or site facilities)

Type of fire alarm (detector, pull station, sprinkler water flow)

Location of fire alarm (building and floor or site facilities)

Name of person reporting fire

Telephone number for return call

Evacuation team to direct evacuation of employees and visitors.

9.3 Procedures

Evacuate structure/facilities occupants along evacuation routes to primary assembly areas outside.

Redirect building/facilities occupants to stairs and exits away from the fire.

Prohibit use of elevators if any.

Evacuation team to account for all employees and visitors at the assembly area.

Meet Fire Department Incident Commander (IC). Inform the IC if everyone has been accounted for and if there are any injuries. Provide an update on the nature of the emergency and actions taken. Provide building floor plans, keys and other assistance as requested.

Assign personnel to verify that fire protection systems are operating normally and to operate building utility and protection systems as directed by the fire department

9.4 Smoking

Smoking will be prohibited within all enclosed indoor areas. This includes offices, meeting rooms, stores, crib sheds, vehicles, amenities and other areas designated non-smoking. Areas used for activities such as decanting of flammable liquid or gas storage, will be prominently sign posted. No smoking areas will also be designated as deemed necessary by the CSCEC-7, Site Manager or where agreed, through consultation with interested parties.

Protective Materials and Hardware:

Other appropriate materials or hardware may be required to accomplish the lockout. Some examples include:

Chains;

Cables;

Wedges;

Blocks;

Adapter pins;

Valve and valve handle cover;

Lock-out "scissors" to accommodate multiple locks and valves handle covers.

9.5 Confined Space Entry Safety Plan (CSSP)

Confined space, such as sewers, pits, holes, flues, manholes and voids, is defined as any enclosed or partially enclosed space or trench having a restricted access or egress, a potential hazardous atmosphere and which due to its nature will form a trap and become a life-threatening environment. They also include any space in which dangerous contaminants can accumulate and ventilation is restricted e.g. excavation, trenches (normally deeper than 1.5 meters), sumps, culverts and other poorly ventilated closed spaces.

9.6 Hazards Involved in Confined Space

Fire and explosion involving flammable gases, above 10% LEL (Lower Explosive Limit), or 0% LEL if hot work is required;
Asphyxiation or Enrich Oxygen Environment: below 21% of volume and over 23% of volume;
Electrocution from electrical equipment and shock or ignition of flammable gases from electrical equipment/tools;
Injury from mechanical equipment not properly isolated;
Bodily injury from direct contact with corrosives or irritants and collapse of banks in excavation pits.

9.7 Air Quality Testing

The air within the confined space should be tested from outside of the confined space before entry into the confined space. Care should be taken to ensure that air is tested throughout the confined space - side-to-side and top to bottom. A trained worker using detection equipment which has remote probes and sampling lines should do the air quality testing. Always ensure the testing equipment is properly calibrated and maintained. The sampling should show that:
The oxygen content is within safe limits (between 19.5% and 23.5%).
A hazardous atmosphere (toxic gases, flammable atmosphere) is not present.
Ventilation equipment is operating properly.

Air testing may need to be ongoing depending on the nature of the potential hazards and the nature of the work. Conditions can change while workers are inside the confined space and sometimes a hazardous atmosphere is created by the work activities in the confined space.

9.8 Control Measures

Authorized Gas Tester makes tests for oxygen levels, toxic gases and flammable gases prior to entry and during working duration;
Dedicated 'Safety Watcher', shall always be present when the space is occupied and shall be located outside the confined space, who is able to immediately call for assistance and who shall inspect and monitor the confined space for the presence of gases and other hazards e.g. potential trench collapse due to excessive ground water;
The person entering the confined space shall be attached to a lifeline and buddy system shall apply;
If any hazards are present, entry is not allowed;
Before entering an excavation, either the excavation sides shall be graded to angle-of-repose or appropriate shoring installed to prevent collapse of earthen walls.
Buddy system shall apply: person(s) to look-out for each other;
In a confined space emergency, the first thing you should do is report the situation immediately to the entry supervisor, who will notify the emergency rescue team.
If the entrants can perform a self-rescue safely, keep in contact with them throughout the entire procedure, and assist them in any way possible without actually entering the space.
If a non-entry rescue is required and you are trained, equipped, and authorized to perform a non-entry rescue, proceed with this procedure, keeping in constant contact with entrants.
If the space must be entered to rescue entrants, keep in contact with entrants, if possible, let them know that help is on the way, and wait for the rescue team to arrive.
Do not leave your post at the entry point to the confined space until the rescue team arrives.
Do not allow anyone except the designated rescue team to enter a confined space in an emergency.

9.9 Electrical

All electrical equipment under CONTRACTOR project sites and camps shall maintain as per construction grade and approved BDS standards. This means that it must be certified in accordance with the electrical codes.

Portable electrical hand tools must be double insulated or grounded.

All electrical cords and cables if practicable must be elevated or covered to protect them from damage and to mitigate tripping hazards.

Qualified electricians are the only personnel authorized to repair electrical equipment. Field repairs or tampering with any electrical equipment by unauthorized personnel will not be tolerated. Temporary lighting must have guards over bulbs.

Electrical cords must be of commercial gauge with heavy-duty insulation, weather and sun resistant with a ground conductor and free from splices.

All electrical equipment is to be visually inspected by the user daily or before each use.

When performing work on live electrical equipment, lockout must be used. All trades performing this work must submit their own lock out procedure to CONTRACTOR for review and approval.

All temporary electrical cords must have protection.

Will the method of work require the floors to support the weight of removed material that shall build up on them, or the weight of machines, such as skid-steer loaders used to clear the surcharge? Again, expert advice shall be needed.

Are there still any live services? Gas, electricity, water and telecommunication services need to be isolated or disconnected. Where such disconnection is not possible, pipes and cables shall be clearly marked to ensure they are not disturbed during the work.

Has all the asbestos in the building been identified, such as asbestos on pipe work, boilers and wall and ceiling panels?

9.10 Pneumatic Tools

Pneumatic tools are usually operated by high-pressure compressed air and sometimes with water as in hydro blasting. High-pressure compressed air and water shall inflict serious injury to operators as well as workers working in close proximity. The Contractor will ensure:

Adequate safety measures shall be considered when such tools are being used;

Operators of pneumatic powered tools shall have received adequate training to allow him to perform a task safely. Qualified Personnel or the Manufacturer shall conduct trainings as appropriate.

Appropriate and approved fastener, coupling and restrainers shall be used to effectively secure all pneumatic tools in its attachments including couplings and hoses;

Operators shall turn off pressure from compressor before equipment is disconnected or a tool is removed;

Operators shall not improvise or attach any devices onto the switch or trigger to allow pressurized air or water to eject from the nozzle freely;

Operators shall be provided with and wear appropriate protective equipment such as helmet, face shield, goggles, ear plugs/ear muff and dust mask when necessary;

Compressed air shall be exhausted from the line before disconnecting tools from the line;

Hoses shall not be left on ladders, steps, scaffolds or walkways;

Compressed air to blow dirt from hands, face, or clothing is prohibited

10.0 The proper Storage for the Explosive Materials of the Alumina Thermal Portion

These guidelines represent “Best Practice” with respect to storage of materials. Storage should be dry, well ventilated, and where required light, power and running water should be available. In all cases building construction should be in compliance with FIRE regulations applicable to

the substances being stored. Consideration shall also be given to the relevant regulations issued in this respect. The appropriate notices should be displayed where materials such as Termite Portions and Ignites are stored.

10.1 Storage of Termite Portions

Portions should be stored in a secure, non-combustible building. While it is preferable that they should be stored separately, they may be stored with other non-inflammable materials, such as equipment and small tools, mold, looting sand in sealed bags, etc. in which case ideally, they should be segregated. The store should be dry with ventilation to prevent excess humidity or dampness, and should be designated as non-smoking area, with no naked flames. Portions must not be stored in the same building as explosive or flammable items (e.g. Fuel, fuel gases, and igniters).

The sealed boxes must not be opened until immediately prior to use. Any spillages should be immediately swept up and the materials disposed in accordance with safety data sheets. Steel shovels should not be used on concrete floors, which might create a spark.

Portions should be used in rotation i.e. first in-first out.

Proper notices should be displayed inside and outside the building together with the standard warning sign, which should read "Metallic Powder: In case of Fire DO NOT USE WATER"

The Local Fire Brigade should be informed of exact location of store and nature of contents.

Only dry powder extinguishers of appropriate class should be used in the proximity of Termite powders.

10.2 Storage of Igniters

Tubes of igniters should be stored in a locked steel cupboard, or cupboard, or other secure steel container. On no account must be stored in the same building as the portions.

10.3 Fire Prevention

The Contractor shall comply with the statutory requirements and prepare a management plan for preparation of fires during welding and associated operations.

The fire prevention management plan shall be reviewed by the Supervisor prior to the commencement of operations.

The CCECC-MAX JV shall take all necessary precautions to prevent fires being started by hot metal, slag, waste products and grinding, and shall be solely responsible for meeting the cost of any damage should a fire occur.

Each welding team shall be equipped with suitable firefighting equipment.

10.4 Handling of the Explosive Materials of the Alumina Thermal Portion

Transportation of A.T. Portion:

A.T. Portion should not be transported in passenger coaches. The package containing igniters should be kept in tin cases/steel containers.

Manufacturer of portion shall provide a sheet containing best safety practices with every package for guidance of the user covering various aspects in safe handling, storage, transportation and disposal of termite materials.

The boxes with the welding sets must be stored in a dry condition and so that there is no risk of breaking and crushing:

The components of the main set are stored on the pallets and in the package as delivered by the supplier. Do not store more than 5 boxes on top of each other.

After opening the package, keep the set from any deformation or influence of moisture. The packaging of the welding set is labeled with the product name, the serial number, the date of manufacture, and the shipment weight.

Before opening the welding, set verify that the shape and the quality correspond to the shape and grade of the steel rails to be welded.

Materials must be used immediately after opening the packaging.

The ignition matches are to be stored separately from the aluminothermy portions.

During the transportation and manipulation at the workplace welding sets are to be kept in a dry place. Most welding sets (e.g.: with damaged packaged packaging) must not be used even after being dried.

The label on plastic packaging of the portion contains the date, the serial number, and the type of the portion. This label must be removed from the packaging and attach into the record sheet of welds, alternatively into documentation of leading welder.

10.5 Bridge and Culverts

Bridges & Culverts will be constructed, maintained and removed in a manner that will not endanger the work or the public. The CONTRACTOR will prepare the design and furnish working drawings to the engineer for approval. The design will provide the clearances, alignment, load capacity, and other design parameters specified or approved in the contract documents. The working drawings and design calculations will be signed by a registered professional engineer.

10.6 Piling

Piling works will be constructed, maintained and removed in a manner that will not endanger the work or the public. The Contractor will prepare the design and furnish working drawings to the engineer for approval. The design will provide the clearances, alignment, load capacity, and other design parameters specified or approved in the contract documents. The working drawings and design calculations will be signed by a registered professional engineer.

10.7 Noise

Noise created during construction process may produce or have adverse effects upon residents in the area. Noise is a reality of the process of construction, but all efforts must be made to reduce, eliminate, or schedule activities that generate noise that could be considered excessive. The Contractor will identify activities that generate considerable noise during the process of construction. CONTRACTOR will make sure that equipment is properly maintained and that any noise reduction measures, such as pneumatic silencers, are kept in place. Signs shall be erected to keep people out of the noisy area.

10.8 Vibration

Many jobs in construction involve the use of hand-held power tools. The equipment can cause hand-arm vibration syndrome (HAYS). This condition affects the fingers, hands and arms and, in the long term, causes permanent damage. Eventually parts of the fingers go white and numb and there is a loss of touch. This condition is often called 'vibration white finger'.

Vibration damage to the fingers, hands or body is very much dose-related. The greater the exposure to vibration, the more likely there is to be damage. Other factors that can influence the degree of severity of hand-arm vibration syndrome which include:

The grip, push and other forces used to guide and apply the vibrating equipment. The tighter the grip, the more vibration energy is transferred to the hands;

the exposure pattern, length and frequency of work and subsequent rest periods:

the hardness of the material being worked upon; and

Factors that can affect blood circulation, such as workplace temperature, smoking and individual

susceptibility.

10.9 Control of Vibration

Contractor will maintain equipment so that it is properly balanced, has no loose or worn out parts and blades/cutters are sharp etc. Contractor will use the power tool and attachment which will do the job properly in the shams time. It is good practice for workers to keep their hands warm to get a good flow of blood into the fingers by:
wearing gloves;

having hot food or drinks;

massaging the fingers;

not smoking (as this can cause narrowing of the blood vessels)

10.10 Abrasive Wheels

An Abrasive Wheel is a wheel consisting of an abrasive particle bonded together with various substances. They are mounted to Grinding Machine before it can be used for the work intended for them. The wheels are generally made from a matrix of coarse particles pressed and bonded together to form a solid, circular shape. Various profiles and cross sections are available depending on the intended usage for the wheel. They may also be made from a solid steel or aluminum disc with particles bonded to the surface. The Release air trigger whenever lifting up on the jackhammer. If jackhammer trigger is operated when jackhammer is not being held down with pressure, it could jump around uncontrolled and injure the worker.

When moving the jackhammer from place to place during operation, place your hand between the handle and the operating lever.

Shut off the air supply and relieve pressure from the supply hose before changing tool points.

Do the same when leaving the jackhammer unattended.

Immediately remove defective or malfunctioning jackhammers and other tools until they are properly repaired.

Barricade the work area as much as possible to keep spectators and untrained personnel from getting exposed to the hazards of jackhammer operations.

In the event that the jackhammer bit "gets stuck": attempt to free the bit by moving the jackhammer back and forth from side to side. If bit is still stuck, put a second bit into the jackhammer and work at stuck bit from

Do not use Equipment with faulty or missing guards.

Do not mount, change or dress wheels/disc unless you are suitably trained, competent and authorized.

Always wear Eye protection (Eye Goggle or Face Shield) when grinding

Stop the Machine if abnormal vibration was noticed during operation, disconnect it from power source and check for wheel damage and worn bearing.

Pay attention to the Job (Grinding) you are doing and do it safely.

Do not leave the Grinder while it is running.

Make sure that the Grinder Switch is in OFF position before plugging it in an outlet.

11.0 Chipping

Chipper machines cut tree limbs into small chips. Hazards arise when workers get too close to,

or make contact with, the chipper. Contact with chipper operating components (blades, discs or knives) may result in amputation or death. Workers may also be injured by material thrown from the machine. To minimize these hazards, the Contractor will use appropriate engineering and work practice controls, including worker training.

11.1 Excavations and Trenching

Before digging any trenches, pits, tunnels, borrow pits or other excavations, Contractor shall plan to provide temporary support as and where required and shall take adequate precautions as under:

Against to collapse of the sides;

To be taken care of people and vehicles falling into the excavation;

To monitor that the materials falling onto people working in the excavation;

Adequate measures of undermining nearby structures;

Precautionary measures to underground and overhead services; and

Protective measures of the inflow of ground and surface water.

A competent person who fully understands the dangers and necessary precautions shall inspect the excavation at the start of each shift. Excavations shall also be inspected after any event that shall have affected their strength or stability, or after a fall of rock or earth.

11.2 People and vehicles falling into excavations

Precautionary measures shall be taken by Contractor to prevent people from falling by guarding excavations. Edges of excavations shall be protected with substantial barriers where people are liable to fall into them. This shall be achieved using guard rails and toe boards, which shall be inserted into the ground immediately next to the supported excavation side, or using fabricated guard rail assemblies that connect onto the sides of the trench box. Alternatively, shall make use of the support system itself, such as using trench box extensions or trench sheets longer than the trench depth. All excavations in public places shall be suitably fenced off to prevent members of the public approaching them.

Prevent vehicles from falling into excavations by keeping them out of the area. Vehicles passing close to the edges of excavations shall also overload the sides, leading to collapse. Where vehicles have to tip materials into excavations, prevent them from overrunning into the excavation by using properly secured stop-blocks. These shall be placed at a sufficient distance from the edge of the excavation to avoid the danger of the edge breaking away under the weight of the vehicle. The sides of the excavation shall also require extra support.

11.3 Temporary works procedures

Contractor should be able to demonstrate that they have in place effective arrangements for controlling risks arising from the use of temporary works. These are usually captured in a temporary works procedure which will contain most or all of the following elements:

Preparation of an adequate design brief.

Completion and maintenance of a temporary works register

Production of a temporary works design (including a design risk assessment and a designer's method statement where appropriate).

Independent checking of the temporary works design.

Issue of a design/design check certificate, if appropriate.

Pre-erection inspection of the temporary works materials and components.

Control and supervision of the erection, safe use, maintenance and dismantling of the temporary works – i.e., procedures to:

Check that the temporary works have been erected in accordance with the design, and issue a

formal “permit to load” where necessary.

Confirm when the permanent works have attained adequate strength to allow dismantling of the temporary works, and issue a formal “permit to dismantle” where necessary.

The procedure should include measures to ensure that the design function, the role of Temporary Works Supervisor(s) where appropriate, are carried out by competent individuals. CONTRACTOR may not have the experience to operate their own temporary works procedure and may need to obtain external expertise. It is also common for large and medium contractors to outsource aspects of temporary works design and management.

11.4 Steel Works

Steel is one of the strongest metals on earth, and as such, handling it can be dangerous. Below are five of the most common safety hazards when working with steel. CONTRACTOR knows these hazards and some guidelines on how can effectively protect our self or our workers from them:

11.5 Moving Machinery

Various heavy machinery and equipment are needed for the fabrication and proper installation of structural steel supplies. This equipment can become threats to safety when they are mishandled, are not in the best working condition, lack guards or safety features, or are designed poorly. In order to uphold safety, CONTRACTOR needs to ensure that:

Machines are properly maintained and regularly checked. Unsafe or faulty equipment must not be used and defects must be fixed.

Machines come with appropriate safety features such as ‘quick release’ controls and fixed guards.

At all times, the proper equipment for a specific task is selected and used.

Handlers wear proper protective gear and are well trained in the operation of these equipment, ensuring that all protective devices are functional. They must also be authorized to cease operation the moment these devices malfunction or become faulty.

Machinery are positioned and stored properly.

Falling from heights:

This is a common hazard not just in the construction High way, but in the field of construction in general. To prevent falls, one must:

Have stable, secure and sufficient elevation tools, such as scaffolding, planks, platforms, ladders, elevators and stairways with fixed railings and protective barriers. There should also be appropriate harnessing equipment.

Ensure that floor surfaces are strong, stable and slip-resistant; as well as free from clutter and slippery fluids.

Ensure that floors are level and any change in levels is clearly marked.

Cover all pits and floor openings when not in use, and place clear warning signs to inform people of their existence.

Set proper guidelines for working at heights and ensure that all personnel follow these at all times.

Falling objects:

Steel is a very heavy material. If it is dropped or falls, it could cause major injuries and even fatalities. To prevent this occurrence, you need to:

Make sure that all personnel wear protective gear, such as hard hats.

Establish guidelines on the safe and proper handling of materials and equipment, and make sure that everyone follows these.

Keep areas clean and clutter-free so as to prevent the accumulation of materials that can fall. All materials should be safely and properly kept and positioned. Measures should be taken to ensure that cylindrical materials, such as posts or pipes, are not loose and prone to movement. Place covers over pathways and make use of safety nets and other protective barriers. Prevent access to areas with the potential for falling objects, and place clear warning signs in these areas.

11.6 Asphyxiation or gassing:

The production and fabrication of steel entails the consumption and generation of various inhalable agents which may be harmful to health. These include gases, fumes, vapor's, dust and smoke. The effects of these to the human body range from irritation to asphyxiation, which can be fatal. It is therefore vital to apply the following preventative measures:

Thoroughly review production processes to understand the composition and volume of inhalable agents produced; the potential for exposure; and the engineering and procedural controls which can and must be applied in order to limit or prevent exposure.

All personnel must be properly informed of these agents, equipped with protective gear and properly trained on procedures that eliminate exposure.

Cranes:

Cranes are almost always necessary when working with steel, and because of their sheer size can be very dangerous when not handled or set up properly. To maintain safety, one must:

Ensure that all cranes and hoists are designed and erected properly, and are frequently inspected and maintained.

Make sure that operators are sufficiently trained.

Clearly mark the crane with its rated capacity, and ensure that loads never exceed this. Any modifications that will affect this capacity should be carefully considered and the capacity should only be adjusted by a qualified person or organization.

Make sure that the crane is equipped with safety features such as communication devices, warning signals, and automatic braking systems.

Make sure that transport routes are free from obstructions and the speed of transport and load lowering is limited.

Concrete Pouring/ Pumping:

This section outlines some of the significant hazards that are likely to occur on concrete pumping sites. The Contractor will identify and control the hazards by following initiatives: During set-up, pump workers manually handle items such as timber pads, reducers, pipes and hoses. When handling these items, the terrain or the access to the work area may increase the risk of injury. Where practicable, Contractor will establish walkways around the site and keep it clear of obstacles and debris. Contractor will provide non-slip ramps where workers are required to walk up inclines.

The Contractor will ensure that impact tools are kept in good condition; wear appropriate protective equipment, such as eye protection.

There will be a plan before pouring commences to ensure that the hose-hand can work in the optimal area.

Where practicable Contractor will use mechanical equipment to lift and move bulky objects.

Where practicable Contractor Will establish walkways that are kept clear of debris.
Use of mechanical equipment to lift pipes over objects or up to higher floors.
The Contractor will ensure position of the trucks as close as practicable to the concrete pour site.
The Contractor will provide appropriate PPE (i.e. Rubber boots, Rubber hand gloves and Musk etc.) to the workers during the handling of Cement works,

11.7Asphalting:

Workers can be exposed to fumes from asphalt during road paving, roofing, siding and concrete work. Exposure to the fumes can have both short- and long-term health consequences.

In the short term, asphalt fumes can irritate the eyes, nose and throat, leading to coughing, wheezing and shortness of breath, the department states. The fumes also can cause headaches, dizziness, nausea and vomiting. Long-term exposure to asphalt fumes may result in bronchitis. To reduce workers' asphalt-fume exposure, the Contractor recommends the following:

Enclose operations and use local exhaust ventilation at the site of the chemical release, when possible. If local exhaust ventilation or enclosure is not used, respirators should be worn.

Use a NIOSH-approved supplied-air respirator with a full face piece operated in a pressure-demand or other positive-pressure mode if asphalt fumes are greater than the NIOSH-recommended airborne exposure limit of 5 mg/m³ for longer than 15 minutes.

Post warning information in work zones about the hazards of exposure as part of an ongoing education effort.

Communicate this information to all potentially exposed workers.

Consider all potential exposures. Employers may need to provide a variety of personal protective equipment.

According to the CSCEC-7, contact with asphalt itself can irritate and cause severe skin burns, and may cause dermatitis and lesions similar to acne. Long-term exposure can cause skin pigment changes, which are made worse by sunlight exposure. Employees and workers should follow these practices when working with asphalt:

If clothing has been contaminated, change into clean clothing quickly.

Ensure eyewash stations are available.

Emergency shower facilities should be provided so that if skin comes into contact with asphalt, employees can immediately shower off the chemical.

Do not eat or drink where asphalt is being handled, as the chemical can be swallowed.

11.8 Road Safety Control Measures:

All traffic control devices (barriers, warning lights and warning signs) will be accordance with the Traffic Police Dept. Dept. showing our traffic management plan. The TPD approval will be based on site inspection.

Contractor sign traffic safety team tonsure the maintenance fall the traffic control devices.

The traffic management is ultimately the responsibility of Highway Traffic police Department.

Heavy Traffic Movement: moving out in the site will be controlled to all aviate any traffic congestion.

Entering the site will be monitored, recorded and controlled. Moving out andinsidethesiteofallvehicles/equipment'siscontrolledandinspected.

Siteentrances/exitswillbeprovidedwithflagmanfortrafficcontrolandhumpsinstalled in the exits/entrance car Road Crossing:

Vehicles/equipment is strictly prohibited to stand-by nor stopped on road Crossing for dropping and picking-up passengers.

All road crossing will be provided with appropriate road traffic signage and will be maintained. regulations. Contractor will submit drawings and method statement to the Traffic Police

All Vehicles. Site entrances/exits will be regularly maintained and free for rubbish and materials and will be in safe manner at all times.

During peak hours, equipment Site traffic:

11.9 Plan and manage work site to minimize the number of vehicle movements:

The CSCEC-7 will sign ground works/lands capping to minimize the need to import filler take spoil off site. Try to reuse policy lose to where it was excavated to reduce the distance it has to be carried.

11.10 Signs and instructions:

The CSCEC-7 will clearly identify the routes for the pedestrian, visitors and drivers. The company will provide training to all people nil in regards to site traffic rules. The Company shall provide the standard sign and instruction and will mark the routes for the delivery drivers.



Figure: Pedestrians are segregated from vehicles on this slope

Work areas:

The risks from working areas shall be controlled to control the traffic movement at the site. The Contractor shall ensure:

The construction vehicles shall be controlled so that it will not be struck to the temporarily structure such as scaffold, sarn, false work, excavation, sarn, others activities.

The vehicles must not be overloaded as it may obstruct the drivers view.

The area shall be segregated. The parking of vehicles shall be avoided in most cases.

Plants and Equipment:

All Contractor drivers and operators are holding valid BANGLADESH driving license. Where required 3rd party (competency certificate) will be obtained.

All mobile planted vehicles will be equipped with warning lights and reverse alarms.

Site vehicles and mobile plant will be controlled by trained banks men.

The Contractor maintenance team will ensure that all vehicles, planted tools are inspected regularly for general mechanical maintenance, safety guards, warning lights, warning alarms and environmental hazards caused by mechanical defects such as oil leaks.

All mobile plant and equipment will be provided with suitable fire extinguishers.

Special training for all site workers will be conducted to identify Blind Area Diagrams.

All used vehicles used on site. Sample diagrams Ares hewn below:

Trench Protection:

All trenches exceeding 1.5 m in depth will be protected by one of the following methods:

Sloping

Benching

Shoring

Shielding

Access, egress and walk ways will be available and free of any obstructions. The trench protection method will consider any adjacent structures and roads. During Concrete or Jersey Barriers will be fixed to prevent vehicles from falling into daily inspections the site supervisors will monitor the existing as halt condition for any cracks or settle mints. Particular precautions are required where the public are involved, which will require the fixing of continuous rigid barriers to mark the walkways and protect pedestrians from traffic, excavation and plant excavations.

12.0 Health Protection:

Ensuring good maintenance of all planted equipment will minimize the production of dangerous fumes generated on site.

Water tankers will regularly spray the site access roads to control dust.

Where required, noise control measures (mechanical and physical) will be applied to reduce noise level.

12.1 Working Zone Barricading:

Precautions will be taken to prevent persons or plant from falling into any excavation. Particular precautions are required where the public are involved, which will mean the fixing of continuous rigid barriers to mark any temporary foot way and to protect pedestrians from traffic, excavations and plant. Where applicable Temporary barriers will be used to mark walkways and guardrails will be at least 910 mm above ground level and there will be to aboard soprano thermal, approximately 150mm above the ground.



12.2 Temporary Signage's: Advance signs:
 Road Works Ahead 'signs shall be placed in advance of the road works and shall be the first signs to be seen by the driver ,as indicated below

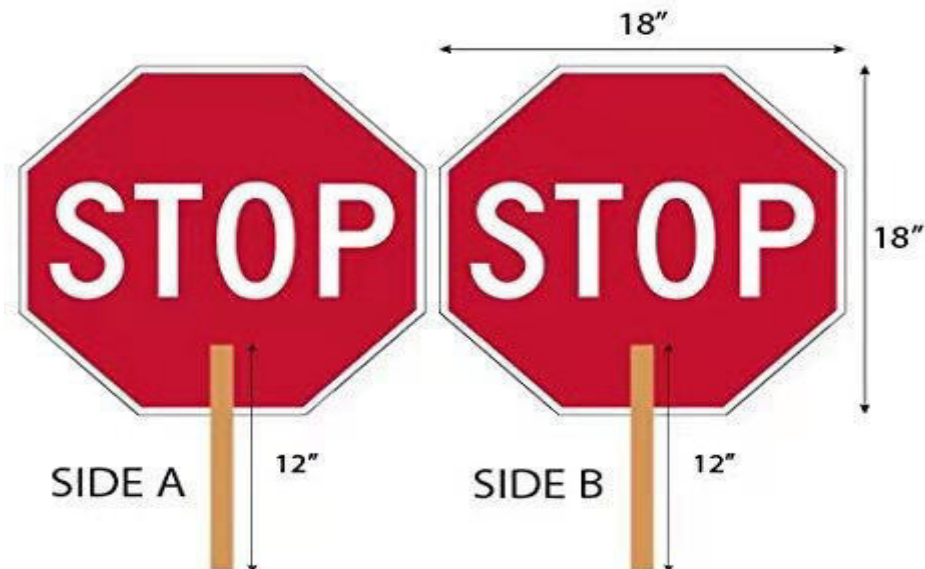


সাবধান!
 অগ্রগতি নির্মাণ কাজ চলিতেছে
 শুধুমাত্র ট্রাক আসার রাস্তা।



























12.3 Stop and Go Sign:

Where the resale to traffic or the work site is very long, traffic will be controlled manually using these Stop and Go boards. If obstruction is less than 30 meters long and is on straight section road will only need as in gel board operating at one end or in the



12.4 Regulatory Sign:

12.5 Informative Sign:

 <p>(TWO WAY TRAFFIC CROSSES ONE WAY ROAD) একদুই দিক সামনে যে-দিকের মিলিত হবে সে-দিকের উভয়দিকে গাড়ি বাহনাবাহি চলার করে</p>	 <p>(PEDESTRIAN CROSSING) সামনে পথচারী পারাপার</p>	 <p>(PEDESTRIANS IN ROAD AHEAD) হুটপাত না থাকায় সামনে সড়কে পথচারী চলাচল করে</p>	 <p>(CHILDREN) সামনে স্কুল থাকায় রাস্তায় শিশু-কিশোর চলাচল করে</p>
 <p>(CATTLE) সামনে গবাদিপশু রাস্তায় চলাচল করতে পারে</p>	 <p>(WILD ANIMALS) সামনে বন্যপ্রাণী রাস্তায় চলাচল করতে পারে</p>	 <p>(RIVER BANK) সামনে নদী/গভীর খালের কিনারা আছে</p>	 <p>(UNEVEN ROAD) সামনে অসমতল/ক্রটিপূর্ণ সড়ক</p>
 <p>(SLIPPERY ROAD) সামনে পিচ্ছিল সড়ক</p>	 <p>(ROAD HUMP) সামনে গতিরোধক</p>	 <p>(LOW FLYING AIRCRAFT) সামনে বিমানবন্দর। নিম্ন উচ্চতর উড়ন্ত বিমানের উচ্চতর জ্ঞা হতে পারে</p>	 <p>(FALLING ROCKS) সামনে পাহাড়ের পার্শ্ব হতে রাস্তায় শিলা/ধাতুরখণ্ড পড়তে পারে</p>
 <p>(DANGEROUS DIP) সামনে বিপজ্জনক খাদ/গর্ত আছে</p>	 <p>(NARROW BRIDGE) সামনে সরু/সঙ্কীর্ণ সেতু আছে</p>	 <p>(OTHER DANGER) সামনে বিভিন্ন রকম বিপদাশঙ্কা আছে</p>	 <p>(CHECKPOINT) সামনে চেকপয়েন্ট আছে</p>
 <p>(ROAD WORKS) সামনে সড়ক মেরামতের কাজ চলছে</p>	 <p>(LOOSE CHIPPINGS) সামনে রাস্তার ওপর ডিগা/ আলগা নুড়ি-পাথর আছে</p>	 <p>(CYCLES AND RICKSHAWS) সামনে রাস্তায় সাইকেল/রিকশা চলাচল করে</p>	 <p>(DANGEROUS SHOULDER) সামনে রাস্তার শোভার বিপজ্জনক</p>
 <p>(FERRY) সামনে ফেরিঘাট আছে</p>	 <p>(BLIND PERSONS) সামনে রাস্তায় অন্ধমানুষ চলাচল করতে পারে</p>	 <p>(RAILWAY LEVEL CROSSING WITHOUT GATE OR BARRIER) অরক্ষিত (গেইট/পাহারাদারবিহীন) ক্রেসলসিং</p>	 <p>(RAILWAY LEVEL CROSSING WITH GATE OR BARRIER) রক্ষিত (গেইট/পাহারাদার আছে) রেশালসিং</p>

বিশেষ সতর্কতামূলক সাইনসমূহ

<p>(SHARP CHANGE OF DIRECTION TO THE LEFT) আচমকা বামে মোড়</p>  <p>এই ধরনের সাইন বিপজ্জনক বাঁক, বিশেষ করে যে-সব বাঁক সম্পর্কে পূর্ব হস্তে ধারণা করা যায় না সে-সব বাঁকে ব্যবহৃত হয়।</p>	<p>(SHARP CHANGE OF DIRECTION TO THE LEFT) আচমকা বামে মোড়</p>  <p>সাময়িক বিকল্প সড়কের ক্ষেত্রে ব্যবহৃত আচমকা বামে মোড় সাইন।</p>	<p>(T JUNCTION CHEVRON) সামনে টি-জংশন</p>  <p>এই ধরনের সাইন টি-জংশনের প্রবেশে মুখে ছোট রাস্তার বিপরীতে প্রদর্শন করা হয়, যাতে চালক ছোট রাস্তা দিয়ে আসার হওয়ার সময় জংশন সনাক্ত করতে পারে এবং প্রয়োজন অনুযায়ী জুম্বায় বাম বা ডানদিকে যেতে পারে।</p>
<p>(TEMPORARY DIVERSION AHEAD) সামনে সাময়িক বিকল্প সড়ক</p>  <p>মেরামত বা অন্য কোনো কারণে মূলরাস্তা বন্ধ থাকলে, বিকল্প রাস্তা ব্যবহারের বিষয়ে সতর্ক করতে এই সাইন ব্যবহৃত হয়।</p>	<p>(LAYOUT OF TEMPORARY TRAFFIC DIVERSION AHEAD) সামনে সাময়িক বিকল্প সড়কের নকশা</p>  <p>এই সাইনটি বিকল্প রাস্তার নকশা বা বিন্যাস বুঝতে ব্যবহৃত হয়। এই নির্দিষ্ট নকশাটি দেখাচ্ছে যে, দু-দু'দিক বিশিষ্ট একটি বিকল্প রাস্তা, যা বিপরীত দিকে দৈত রাস্তায় গড়েছে।</p>	<p>(DIRECTION OF TEMPORARY DIVERSION) সাময়িক বিকল্প সড়কের নির্দেশনা</p>  <p>এই সাইনটি শহরের মধ্য দিয়ে প্রবাহিত বিকল্প রাস্তা চিহ্নিত করতে ব্যবহৃত হয়। এটি বিকল্প রাস্তার শুরুতে এবং বিকল্প রাস্তা বরাবর জংশনে ব্যবহৃত হয়।</p>
<p>(LANE CLOSED TO TRAFFIC AHEAD) সামনে সাময়িকভাবে লেন বন্ধ</p>  <p>সামনে এক বা একাধিক লেন সাময়িকভাবে বন্ধ করতে এই ধরনের সাইন ব্যবহার করা হয়। এই নির্দিষ্ট সাইনে দেখানো হয়েছে যে, তিন লেন বিশিষ্ট রাস্তার তালগাশের গোলটি বন্ধ রয়েছে।</p>	<p>(COUNT-DOWN MARKERS) নিম্নমুখী গণনা সাইন</p>  <p>রেলক্রসিংয়ের দূরত্ব বুঝতে এই সাইন ব্যবহৃত হয়। তিনব্যাজের সাইন দিয়ে মোট দূরত্ব, দু-ব্যাজের সাইন দিয়ে দূ-তৃতীয়াংশ এবং একব্যাজের সাইনটি দিয়ে এক-তৃতীয়াংশ দূরত্ব বুঝায়।</p>	<p>(LOCATION OF RAILWAY CROSSING) রেলক্রসিংয়ের অবস্থান</p>  <p>এই সাইনটি রেলক্রসিংয়ের অবস্থান বুঝতে জরুরি গাড়ির নিকটে প্রদর্শন করা হয়। একের অধিক রেল-ট্রাক থাকলে সেখানে অতিরিক্ত 'অর্ধেক জরুরি' সাইনটি ব্যবহৃত হয়।</p>
<p>(SINGLE SIDED DANGEROUS OBSTRUCTION) একপাশে বিপজ্জনক প্রতিরোধক</p>  <p>সেতু/ব্রিজ, কাগডার্ট ইত্যাদি বিপজ্জনক প্রতিরোধকের প্রাচীর/পিলারে এই ধরনের সাইন ব্যবহার করে আগের প্রতিফলনের মাধ্যমে বিপজ্জনক প্রতিরোধক সম্পর্কে চালকের দৃষ্টি আকর্ষণ করা হয়। হৃদয় ডোরাকাটা দাগসমূহ যে-পাশেরদিকে (বরাবর) নিম্নমুখী হয়, সে-পাশ দিয়ে যানবাহন অতিক্রম করবে।</p>	<p>(DOUBLE SIDED DANGEROUS OBSTRUCTION) উভয়পাশে বিপজ্জনক প্রতিরোধক</p>  <p>এই ক্ষেত্রে গাড়ি যে-কোনো পাশ দিয়ে যেতে পারে। চ্যানেলকৃত সড়কদ্বীপ, যেখানে ত্রিভুজ প্রবাহ বিভক্ত হয় সেখানে চালকের মনোযোগ আকর্ষণ করতে এই ধরনের সাইন ব্যবহৃত হয়।</p>	

12.6 Traffic/Road Diversion Plan:

Changes on traffic for diversion at construction area near highway road side, there will be provided diversion road. In order to ensure that the traffic can be maintained as proposed the plan view will us trationison a standard scale, and clearly illusory an test sequence of the construction process. All traffic controls devices meet there requirements established by the BRTA manual.

No Stopping-Circular sign with two redid agonal lines crossing at right angles teach other indicating that“stopping”is not allowed. “stopping “means keeping vehicle stationary for the time needed to pick up or set down persons or to load or unload goods.

Speed Limit-Acicular sign with numbers indicating the speed limit. The signs show the maximum permitted speed in kilometers per hour for the section of road ahead. The signage is positioned on both side so the road for maximum impact.

KeepLeft-Acircular sign with single arrow to indicate KeepLeft. Vehicular traffic may only proceed by keeping to the side indicated the arrow.

Pass Either Side-Circular sign with two arrows pointing down wards and out wards allowing traffic to pass either side.

Dangerous Obstruction-Rectangular sign with diagonal stripes from to left to bottom right for left side obstruction.

Traffic Lane Arrows-White arrows with single or multiple he ad indicating the direction. These 6 meters arrows are reflectorized and used to indicate to drivers which lane they should take when approach in junction. No more than 2 direction scan be shown on 1arrow.

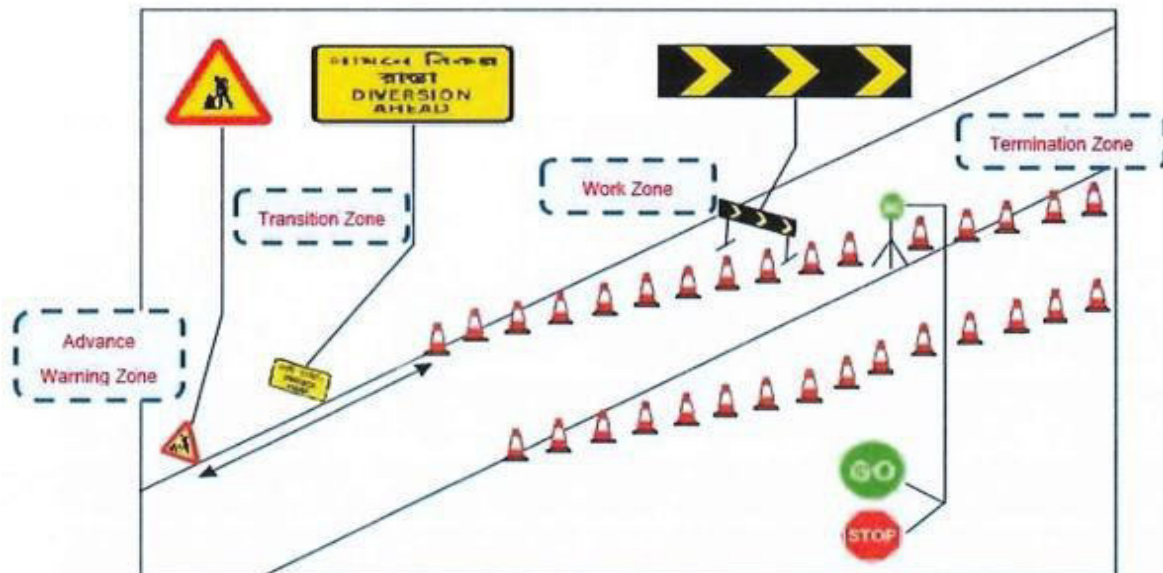
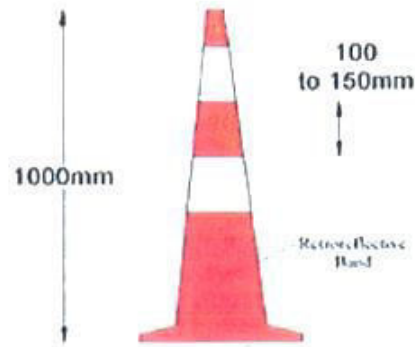


Figure: Sample Figure for Road Diversion

Traffic Cones:

Place a line of traffic cones to guide pedestrian and vehicle traffic castle works. Some working space between the lines and cones and the actual works area. Traffic cones should be red and if used at night, should preferably have white reflective sleeves.



Warning Lights:

Traffic warning sign boards will be provided for use at night, in poor day time visibility and in bad weather and they will not have barracked higher than 1.2 meters above the road. Warning lights shall be Type A (lowing density flashing, type (high intensity flashing), or type steady burn) as deemed appropriate.

12.10 Flashing Lights:

Flashing lights are of tenses to supple manta traffic control device. Flashing lights shall be flashing yellow light with a minimum meter of 200 mm with rotating amber lights equipped to be operated over then tire 24hrs duration. Only to be used if all of the following are satisfied: the road speed limit will be under 60 km per hour the flashing light will be within 50 meters of as treat lamp the street must be illuminated

13.0 Revolving Lights:

Revolving lights will be used on any road with or without street lighting.

13.1 Traffic Flags:

The traffic flag is a red Square cloth measuring at least 300mmX300mm. It is fastened to a staff about 600mm. The flag does not contain any messages to give motorist he corrects messages; the flagger must hold the flags properly and used the correct than signals.

13.2 Traffic Security, Flagmen:

Construction work zone will be having, doors/gate access routes maybe Some locations and surveillance system same need to be installed for full security.

Site entry point with blind crone will be avoided, or controlled by traffic mirrors.

Understanding traffic safety rules and regulations work zone and flagging sites, including placing signs, barricades, and other warning devices.

Responds to emergencies as direction form tasks in the interest of public safety and property protection during emergencies.

Knowledge of Techniques of traffic control.

Understanding the different control.



13.3 Night Work:

During night time work but on lights are used to supplement the stop and go paddle. The flagger shall hold the flashing in the left hand, shall holds the paddle or flag the right hand and shall use the flash light. Arrangement of light, training, but on light, High Visibility vests will be provided to the workers/flagmen.

The workers and others operative shall be educated they should take sound sleep, they will get the regular interval break and they will acknowledge the risk to work at night. They will wear the correct PPE (i.e. Hard hats, High Visibility vest, safety sheet.).Flagman will be delegated at night to control the traffic .Heavy traffic shall be avoided during night work (if any).



13.4 Electrical:

All electrical equipment under CSCSE-7 project sites and camps shall maintain as per construction grade and approved BDS standards. This means that it must be certified in accordance with the electrical codes. Portable electrical hand tools must be double insulated or grounded.

All electrical cords and cables if practicable must be elevated or covered to protect them from damage and to mitigate tripping hazards.

Qualified electricians are the only personnel authorized to repair electrical equipment. Field repairs or tampering with any electrical equipment by unauthorized personnel will not be tolerated. Temporary lighting must have guards over bulbs.

Electrical cords must be of commercial gauge with heavy-duty insulation, weather and sun resistant with a ground conductor and free from splices.

All electrical equipment is to be visually inspected by the user daily or before each use.

When performing work on live electrical equipment, lockout must be used. All trades performing this work must submit their own lock out procedure to CSCSE-7 for review and approval.

All temporary electrical cords must have protection

13.5 Demolition, Dismantling and Structural Alteration:

During demolition and dismantling, workers are injured in falls from edges and through openings and fragile surfaces. Workers and passers-by shall be injured by the premature and uncontrolled collapse of structures or parts of structures and by flying debris. Effective traffic management systems shall be taken to avoid workers being put at risk of being hit by stowing or reversing plant. Dust, noise and vibration are also significant problems and such shall be considered and controlled when planning any demolition work. Before demolition work starts, the site shall be surveyed for hazardous material and structural condition, CONTRACTOR will organize and consider the following:

What is the age of the structure and what was its previous use?

What was the type of construction (such as reinforced concrete frame or steel frame)?

Are there any pre-stressed or post-stressed concrete beams present within the structure?

Are floor slabs or piles involved?

What materials are for reclamation and what precautions are required to carry out this work

safely?

This is particularly important during roof work when falls from height shall be prevented.

Will the demolition sequence make the structure itself or any nearby buildings or structures unstable? Is temporary propping required? What are the separation points? The advice of a structural engineer shall be needed.

Will the method of work require the floors to support the weight of removed material that shall build up on them, or the weight of machines, such as skid-steer loaders used to clear the surcharge? Again, expert advice shall be needed.

Are there still any live services? Gas, electricity, water and telecommunication services need to be isolated or disconnected. Where such disconnection is not possible, pipes and cables shall be clearly marked to ensure they are not disturbed during the work.

Has all the asbestos in the building been identified, such as asbestos on pipe work, boilers and wall and ceiling panels?

13.6 Working Around/Near over Head Power Lines:

Contact with overhead power lines is a regular cause of death and injury. Any work near electric distribution cables or High way Road power lines shall be carefully planned by the Contractor to avoid accidental contact. The Contractor will identify the most common operations leading to contact with overhead lines are:

operating cranes and other lifting equipment;

raising the body or inclined container of tipper lorries;

operating excavators and other earth-moving equipment;

Handling long items such as scaffold tubes, metal roof sheets, ladders etc.

Using MEWPs.

Where overhead line is very near in contact with working areas in such events the works shall be done in an area well clear of the line itself. If plant is working in the vicinity of an overhead power line, the distance between the plant and the overhead line shall be at least:

15 m (plus the length of the jib) if the lines are suspended from steel towers; or

9 m (plus the length of the jib) if the lines are supported on wooden poles

In addition to the specific precautions required when working in the vicinity of overhead power lines, CSCSE-7 will also

erect high-visibility barriers at least 6 m away, to prevent inadvertent approach by other site vehicles install clearly marked crossing points beneath the lines at a height specified by the electricity supplier;

Prohibit the storage of materials in the area between the overhead lines and the ground-level barriers.

13.7 Danger Signs:



13.8 Surveying on a Construction Site Hazards:

Struck-by or caught in between incidents. The major hazard for surveyors on a construction site is moving equipment.

Dropped objects. Personnel working below higher work areas are put a risk for dropped object related injuries.

Slips, trips, fall.

Hand injuries.

Eye injuries.

13.9 Best Practices When Surveying:

When possible, have equipment stop when it is required to survey close to moving equipment. Plan out work tasks so they do not interfere with one another. For example, survey when operators are on lunch or break.

Always communicate in morning tool box meetings about the plans for surveying that day when other work tasks are being completed in the area. Communication allows for planning as well as awareness between work groups of other people entering a work area. Make contact with operators when entering a work area.

Never walk under suspended loads or put in the line of fire from higher work levels. Objects on higher work levels need to be secured and proper guardrail systems with toe boards need put into place to protect personnel below.

To prevent slip, trip, fall injuries practice good housekeeping. Eliminate as many of these hazards as possible instead of just walking around them. For muddy work areas, have a dozer or maintainer dress up the area instead of facing difficult working conditions when surveying. Eliminate dust by using water to suppress it. Avoid working downwind from moving equipment to avoid eye injuries. Wear proper safety glasses with side shields. Never rub eye if you get dust in it. Notify a supervisor and rinse the eye with the proper eyewash solution.

Site Survey:

Site Survey work will be carried out in accordance with the Contract Document which includes establishment of Control Point and Topographic Surveying for the Construction SASEC Road Connectivity Project-II. During construction period site survey, CONTRACTOR will consider the following:

Understand the site survey requirements.

Obtain a facility diagram.

Visually inspect the facility.

Assess existing network infrastructure.

Identify coverage areas.

Determine preliminary access point locations.

Verify access point locations. The site survey work also includes the following:

Checking of all relevant points and locations such as Bench Mark from Survey of Bangladesh (SOB), Permanent Ground Marker (PGM), all Bench Mark named as (Highway Road), establishment Temporary Bench Mark (TBM).

Preliminary Survey work and Traverse Survey Control, Setting Out, Measurement. Survey work as specified in the relevant contract drawings.

Topographic survey which includes longitudinal and cross-sectional survey of the existing Road Track & Proposed Road track including bridges, culverts with station building.



Figure: Safe Site Surveys Work

14.0 Embankment Work:

The scope of this works covers cofferdam, dewatering, clearing & grubbing, stripping, excavation, backfill, other appurtenances required for the construction of embankment works. Construction operations shall be carried out in such a manner that erosion, air, water, and noise pollution will be minimized and held within legal limits as established by regulations. The CSCEC-7 will:

Assess the risk of harm to health safety arising from the hazards identified that have the potential to harm the health or safety of an employee or any other person at the place of work.

Ensure suitable PPE before start the work.

Arranging carbolic acid & other chemical for anti-snake, stinging insects.

Make a barrier by using caution tap around the embankment area during the work.

Provide skilled signal man during excavator operation.

Provide emergency procedures for the work place, including arrangements for emergency communications.

Prepare and secure proper stockpiling and disposal area of excavated materials.

Avoid equipment oils and others from contamination of surface and underground matters that will cause pollution.



Figure: Safe Embankment work

14.1 General Objectives of the Project Construction:

Integrity and innovation, high quality and dedication;
Innovate project management mode to promote efficient management of the CSCEC-7
Adhere to the management policy of “people-oriented, honest and law-abiding, harmonious and natural, and building quality products”;
Adhere to the construction policy of “quick, orderly, high quality and high efficiency”;
Carefully organize, finely design, scientifically manage, standardize construction, and comprehensively improve the highway construction management level

14.2 Security Objectives:

Adhere to the principle of "safety first, prevention first", eliminate heavy safety accidents, eliminate death accidents, avoid general accidents, eliminate all human accidents, and ensure personal and property safety.

14.3 Environmental Protection Objectives:

In accordance with the relevant regulations of environmental protection and environmental quality standards of Bangladesh and local governments, timely prepare environmental management plans to meet the environmental protection requirements during road construction to ensure good air quality and avoid dust pollution in the construction area and surrounding areas. Control noise pollution, strictly control the use of petroleum products, use proper methods to deal with garbage and equipment maintenance, protect surface water, protect groundwater, protect wetlands/rivers, complete legal procedures for borrow pit, reduce the impact on existing road traffic, and special Pay attention to the measures to protect elephants, clean up and restore all temporary land after the project is completed, and replant trees according to the contract.

14.4 Occupational Health and Safety Objectives:

According to the labor laws and safety regulations of Bangladesh, combined with the actual situation of the highway project construction site, timely prepare occupational health and safety management plans, attach importance to and standardize the occupational health and personal labor protection of on-site employees, set up full-time safety management officials on site. safety training before starting work, implementation of various safety production measures, traffic management plans, handling accidents, ensuring smooth on-site construction, supervising and controlling on-site food hygiene, drinking water safety, prevention of pests, and ensuring the health and safety of on-site construction personnel. Eliminate the occurrence of occupational diseases; put an end to the spread of AIDS; strengthen health surveillance to ensure that there is no major epidemic, no infectious diseases.

14.5 Improvement Continual Improvement:

Contractor shall continually improve the effectiveness of the Quality Management System through the use of the quality policies, quality objectives, audit results, analysis of data, corrective and preventive actions and management reviews. Contractor has been repeating the PDCA cycle again and again for continuous improvement

14.6 Corrective Actions:

Contractor shall take actions to eliminate the cause of nonconformities in order to prevent recurrences. Corrective actions shall be appropriate to the effects of the nonconformities encountered. A documented procedure defines requirements for:
Reviewing non-conformities (including the Employer’s complaints);

Determining the causes of nonconformities;
 Evaluating the need for action to ensure that nonconformities will not recur;
 Determining and implementing action needed;
 Records of the results of action taken;
 Reviewing corrective action taken and verifying its effectiveness.

14.7 Preventive Action:

Contractor shall determine action to eliminate the causes of potential nonconformities in order to prevent their occurrence. Preventive action shall be appropriate to the effects of the potential problems. A documented procedure defines requirements for:

Determining potential nonconformities and their causes;
 Evaluating the need for action to prevent occurrence of nonconformities;
 Determining and implementing action needed;
 Records of the results of action taken;
 Reviewing preventive action taken and verifying its effectiveness.

The model of a process-based quality management system shown in Figure-1 illustrates the process linkages. This illustration shows that Employer's play a significant role in defining requirements as inputs. Monitoring of its satisfaction requires the evaluation of information relating to Employer perception as to whether the Contractor as met the Employer's requirements.

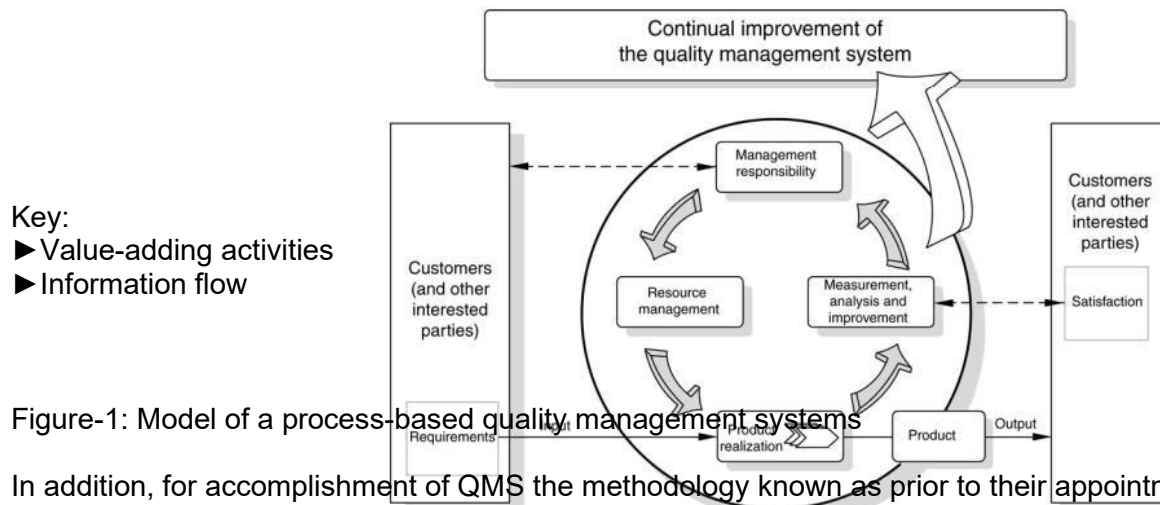


Figure-1: Model of a process-based quality management systems

In addition, for accomplishment of QMS the methodology known as prior to their appointment prior to their appointment. Plan-Do-Check-Act (PDCA) shall be applied to all processes. PDCA could be briefly described as follows.

Plan: To establish the objectives and processes necessary to deliver results in accordance with customer requirements and the organization's policies.

Do: To implement the processes.

Check: To monitor and measure processes and product against policies, objectives and requirements for the Product and report the results.

Act: To take actions to continually improve process performance.

14.8 Drinking Water Quality:

Additional environmental sampling will also be undertaken for air, noise, surface water,

groundwater testing and analyses or any other aspects as decided by the Environmental Officer of the Engineer. However, final date and time of sampling will be determined by the engineer. The parameters to be measured are such as pH, DO, TDS, TSS, AS, TC, FC, Fe, Salinity, and Temperature.

DAILY PRE-TASK BRIEFING/TOOL BOX MEETING FORM

Contractor:		Date:
Emergency Contact No:		No of workers:
Work Activities:		

SECTION B: TASK PLANNING – HAZARD IDENTIFICATION AND CONTROLS

Mandatory PPE	Additional PPE Required	Tools, Equipment, First Aid and Housekeeping
Hard Hat or Helmet	Working at height required: FULL BODY HARNESS	Equipment = Equipment inspected
Safety Boot or Shoes Hand Gloves when required	Using of compressor; Ear plug Highly required	Always inspect your equipment & tools before using them. Electrical cords must be inspected.
High Visibility Jacket/Vest Safety Glass/Goggles when required	Use a Face shield before welding or cutting rebar's, Dust mask when required.	First Aid Box will be available on site. Housekeeping must be carried out.

SECTION C: ATTENDEES SIGNATURE

Name of workers	CARD ID/Company	Signature

DAILY ATTENDANCE TOOL BOX MEETING

Date: -

Time: -

Location: -

SL No.	Name	Designation	Department	Signature
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Feedback:
Safety Officer Sign

INCIDENT REPORT FORM

No:			
Business Line:	SASEC ROAD CONNECTIVITY PROJECT -II		
Company/ Plant/ Country:	Chain construction seventh engineering Division corp. ltd.	Country	Bangladesh
Date/ Time:		Lost days:	
Location			
What happened:			
Incident type			
Injury/ Damage:			
Root cause			
Correction	.		
Corrective action			
Preventive action	.		

Investigate, Analysis, Action Plan & Signed by:
Manager Safety & Security:

Occupational Health and Safety Action Plan

OHS Area and Actions	What is to be established and implemented	Responsibilities – allocated to whom?	Completion date	Review date
Responsibilities Policy & Procedures Job descriptions Accountability				
Consultation Employees, HSR's, Health & Safety Committee Staff & Tool box meetings Memos				
Identify Hazards Identification method All processes Frequency				
Assess/Determine Risks Initial Reassessment				
Control Risks Hierarchy of controls Review effectiveness				
Information, instruction and Training Relevant OHS information Induction training, Training needs & Initial training, Refresher training				
Managing injuries First aid assessment RTW/Rehabilitation & Compensation issues				
Record keeping Availability and what type? Archives and retrieval Security				
Review/improvement Audits Compliance Implement improvements				

Appendix Y: Bentonite Slurry Management

01	Sludge Management	Flowing liquid Bentonite slurry stored in a double chambered pond provided with polythene for reusing and kept long for settling. Dry Bentonite cake transported to nearby low land for disposal	
02	Sludge Management	Bentonite slurry stored in a pond kept long for settling down to convert into dry cake. Dry Bentonite cake transported to nearby low land for disposal	
03	Waste Pollution	Excavation on going to dump Bentonite Sludge at site for temporary.	